Seat No.	

Set P

T.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Design of Steel Structures (BTN01501)

Day & Date: Saturday 17-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Furniture is an example of _____.
a) dead load b) live load
c) dynamic load d) environmental load

2) Which of the following sections has minimum value of shape factor?
a) Diamond Section b) I-section
c) Rectangular section d) Circular section

3) The max. slenderness ratio of the component member C/ry of the column between the consecutive lacing connections.
a) should not be greater than 0.7 times the most unfavorable slenderness ratio of the member as a whole
b) should not be greater than 50
c) Both a) & b)
d) None of the above

4) The thickness of the flat lacing bars between inner end bolts in case of single lacing should not be less than _____ of its effective length of single lacing.
a) 1/40 b) 1/45
c) 1/60 d) 1/50

5) Minimum edge distance of bolted joint for machine cut edge is not less than _____.
a) 2.5 times diameter of bolt b) 1.7 times diameter of bolt
c) 1.5 times diameter of bolt d) 1.5 times diameter of hole

6) High Strength Friction Grip bolts (HSFG) are designed for _____.
a) Tension b) Friction
c) Compression d) Shear

7) Which of the following is not a limit state of serviceability?
a) Deflection b) Vibration
c) Brittle failure d) Fire

8) The square root of the ratio of moment of inertia of cross section to its cross sectional area is called _____.
a) Second moment of area b) Section modulus
c) Radius of gyration d) Slenderness ratio

9) Design tensile strength of tension member is given by _____.
a) Rupture at critical section b) Yielding of gross section
c) Block shear of end region d) Lesser of above three

10) The effective length of member which is restrained against translation at both ends & free against rotation at both ends is _____.
a) 1.0L b) 0.65L
c) 0.85L d) 0.80L

11) The design shear strength of a fillet weld is _____.
a) $\mathrm{f_y}/\sqrt{3}\,\gamma\mathrm{mw}$ b) $\mathrm{f_y}/\sqrt{3}$
c) $\mathrm{f_y}/\sqrt{3}\,\gamma\mathrm{m0}$ d) $\mathrm{f_y}/\sqrt{3}\,\gamma\mathrm{mb}$

12) The thickness of base plate in slab base is given by _____.
a) $ts = \frac{\sqrt{2.5w(a2 - 0.3b2)\gamma m0}}{\sqrt{fy}}$ b) $ts = \frac{\sqrt{2.5w2(a2 - 0.3b2)\gamma m0}}{\sqrt{fy}}$
c) $ts = \frac{\sqrt{2.5w2(a2 - 0.3b2)m0}}{\sqrt{fy}}$ d) $ts = \frac{\sqrt{2.5w2(a - 0.3b)m0}}{fy}$

13) The deflection of steel beams in buildings other than industrial building is limited to a span divided by _____.
a) 180 b) 250
c) 300 d) 325

14) A beam section is selected and provided on the basis of _____.
a) section modulus b) deflection
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Seat No.	

Set P

T.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025
Design of Steel Structures (BTN01501)

Day & Date: Saturday 17-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.5 and Q.7 are compulsory and solve any 2 questions from the remaining questions of each Section.
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4) Assume suitable data if necessary and mention state it clearly before the solution.
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Section – I

Q.2 **a)** Differentiate Bolted Connection over Welded Connection. **03**
b) Calculate the Strength of 18 mm diameter bolt of grade 4.8 for the lap joint. The main plate to be jointed are 10 mm thick. Use Fe 410 steel. **06**

Q.3 Design a Double angle tie member to carry a factored load of 540kN. Use 16 mm diameter bolts of grade 4.6 for the connection. Length of the member is 2.6 m. Use Fe 410 steel. **09**

Q.4 Calculate the strength of a single angle discontinuous strut of length 3.0 m. The strut consists of two unequal angle lSA 90 x 60 x 8 mm with long legs connected by two bolts with hinged fixity. Use steel of grade Fe 410, fy = 250 N/mm^2. **09**

Q.5 **Attempt the Following.**
a) Differentiate PEBs and Conventional steel building. **03**
b) What is shape Factor? Find the shape factor for Circular Section. **04**
c) Explain Philosophy of limit state of Design for a steel structures. **03**

Section – II

Q.6 A simply supported beam 4.5 m span carries UDL of 45 kN/m. The beam is laterally supported. Design the section for shear and deflection. Use Fe410 steel. **09**

Q.7 Design a built up column consisting of two rolled Channel sections placed back to back to resist an axial load of 1100kN. The length of the column is 4.5 m. It is restrained against rotation and translation at bottom and restrained against rotation and free at top. Take fy=250MPa. Also design the single lacing system. **10**

Q.8 A column ISHB 400 @77.4 kg/m carries an axial compressive factored load of 1300 KN. Design a suitable welded slab base. The base rests on M20 grade concrete pedestal. **09**

Q.9 A Continuous Beam ABCD, fixed at A and simply supported at other supports. Span AB Carries a central point load of 50KN of 4m span, Span BC of 5m subjected to point load of magnitude 75 KN at a distance 1.5 m from B. Span CD of 3.5 m carries a UDL of 35 KN/m. Find the Collapse Moment and draw the bending moment diagram. **09**

Seat No.	

Set Q

T.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Design of Steel Structures (BTN01501)

Day & Date: Saturday 17-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) The square root of the ratio of moment of inertia of cross section to its cross sectional area is called _____.
a) Second moment of area b) Section modulus
c) Radius of gyration d) Slenderness ratio

2) Design tensile strength of tension member is given by _____.
a) Rupture at critical section b) Yielding of gross section
c) Block shear of end region d) Lesser of above three

3) The effective length of member which is restrained against translation at both ends & free against rotation at both ends is _____.
a) 1.0L b) 0.65L
c) 0.85L d) 0.80L

4) The design shear strength of a fillet weld is _____.
a) $f_y/\sqrt{3}\,\gamma mw$ b) $f_y/\sqrt{3}$
c) $f_y/\sqrt{3}\,\gamma m0$ d) $f_y/\sqrt{3}\,\gamma mb$

5) The thickness of base plate in slab base is given by _____.
a) $ts = \frac{\sqrt{2.5w(a2 - 0.3b2)\gamma m0}}{\sqrt{fy}}$ b) $ts = \frac{\sqrt{2.5w2(a2 - 0.3b2)\gamma m0}}{\sqrt{fy}}$
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6) The deflection of steel beams in buildings other than industrial building is limited to a span divided by _____.
a) 180 b) 250
c) 300 d) 325

7) A beam section is selected and provided on the basis of _____.
a) section modulus b) deflection
c) shear d) all the above

8) Furniture is an example of _____.
a) dead load b) live load
c) dynamic load d) environmental load

9) Which of the following sections has minimum value of shape factor?
a) Diamond Section b) I-section
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10) The max. slenderness ratio of the component member C/ry of the column between the consecutive lacing connections.
a) should not be greater than 0.7 times the most unfavorable slenderness ratio of the member as a whole
b) should not be greater than 50
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12) Minimum edge distance of bolted joint for machine cut edge is not less than _____.
a) 2.5 times diameter of bolt b) 1.7 times diameter of bolt
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13) High Strength Friction Grip bolts (HSFG) are designed for _____.
a) Tension b) Friction
c) Compression d) Shear

14) Which of the following is not a limit state of serviceability?
a) Deflection b) Vibration
c) Brittle failure d) Fire

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025
Design of Steel Structures (BTN01501)

Day & Date: Saturday 17-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.5 and Q.7 are compulsory and solve any 2 questions from the remaining questions of each Section.
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Section – I

Q.2 **a)** Differentiate Bolted Connection over Welded Connection. **03**
b) Calculate the Strength of 18 mm diameter bolt of grade 4.8 for the lap joint. The main plate to be jointed are 10 mm thick. Use Fe 410 steel. **06**

Q.3 Design a Double angle tie member to carry a factored load of 540kN. Use 16 mm diameter bolts of grade 4.6 for the connection. Length of the member is 2.6 m. Use Fe 410 steel. **09**

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Q.5 **Attempt the Following.**
a) Differentiate PEBs and Conventional steel building. **03**
b) What is shape Factor? Find the shape factor for Circular Section. **04**
c) Explain Philosophy of limit state of Design for a steel structures. **03**

Section – II

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Q.9 A Continuous Beam ABCD, fixed at A and simply supported at other supports. Span AB Carries a central point load of 50KN of 4m span, Span BC of 5m subjected to point load of magnitude 75 KN at a distance 1.5 m from B. Span CD of 3.5 m carries a UDL of 35 KN/m. Find the Collapse Moment and draw the bending moment diagram. **09**

Seat No.	

Set R

T.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Design of Steel Structures (BTN01501)

Day & Date: Saturday 17-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The design shear strength of a fillet weld is _____.
a) $f_y/\sqrt{3}\,\gamma mw$ b) $f_y/\sqrt{3}$
c) $f_y/\sqrt{3}\,\gamma m0$ d) $f_y/\sqrt{3}\,\gamma mb$

2) The thickness of base plate in slab base is given by _____.
a) $ts = \frac{\sqrt{2.5w(a2} - 0.3b2)\gamma m0}{\sqrt{fy}}$ b) $ts = \frac{\sqrt{2.5w2(a2} - 0.3b2)\gamma m0}{\sqrt{fy}}$
c) $ts = \frac{\sqrt{2.5w2(a2} - 0.3b2)m0}{\sqrt{fy}}$ d) $ts = \frac{\sqrt{2.5w2(a} - 0.3b)m0}{fy}$

3) The deflection of steel beams in buildings other than industrial building is limited to a span divided by _____.
a) 180 b) 250
c) 300 d) 325

4) A beam section is selected and provided on the basis of _____.
a) section modulus b) deflection
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5) Furniture is an example of _____.
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6) Which of the following sections has minimum value of shape factor?
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a) should not be greater than 0.7 times the most unfavorable slenderness ratio of the member as a whole
b) should not be greater than 50
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8) The thickness of the flat lacing bars between inner end bolts in case of single lacing should not be less than _____ of its effective length of single lacing.
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9) Minimum edge distance of bolted joint for machine cut edge is not less than _____.
a) 2.5 times diameter of bolt b) 1.7 times diameter of bolt
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13) Design tensile strength of tension member is given by _____.
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a) 1.0L b) 0.65L
c) 0.85L d) 0.80L

Seat No.	

Set R

T.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025
Design of Steel Structures (BTN01501)

Day & Date: Saturday 17-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.5 and Q.7 are compulsory and solve any 2 questions from the remaining questions of each Section.
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Section – I

Q.2 **a)** Differentiate Bolted Connection over Welded Connection. **03**
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Q.5 **Attempt the Following.**
a) Differentiate PEBs and Conventional steel building. **03**
b) What is shape Factor? Find the shape factor for Circular Section. **04**
c) Explain Philosophy of limit state of Design for a steel structures. **03**

Section – II

Q.6 A simply supported beam 4.5 m span carries UDL of 45 kN/m. The beam is laterally supported. Design the section for shear and deflection. Use Fe410 steel. **09**

Q.7 Design a built up column consisting of two rolled Channel sections placed back to back to resist an axial load of 1100kN. The length of the column is 4.5 m. It is restrained against rotation and translation at bottom and restrained against rotation and free at top. Take fy=250MPa. Also design the single lacing system. **10**

Q.8 A column ISHB 400 @77.4 kg/m carries an axial compressive factored load of 1300 KN. Design a suitable welded slab base. The base rests on M20 grade concrete pedestal. **09**

Q.9 A Continuous Beam ABCD, fixed at A and simply supported at other supports. Span AB Carries a central point load of 50KN of 4m span, Span BC of 5m subjected to point load of magnitude 75 KN at a distance 1.5 m from B. Span CD of 3.5 m carries a UDL of 35 KN/m. Find the Collapse Moment and draw the bending moment diagram. **09**

Seat No.

Set S

T.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Design of Steel Structures (BTN01501)

Day & Date: Saturday 17-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) High Strength Friction Grip bolts (HSFG) are designed for _____.
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c) 1/60 d) 1/50

14) Minimum edge distance of bolted joint for machine cut edge is not less than _____.

a) 2.5 times diameter of bolt b) 1.7 times diameter of bolt
c) 1.5 times diameter of bolt d) 1.5 times diameter of hole

Seat No.	

Set S

T.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025
Design of Steel Structures (BTN01501)

Day & Date: Saturday 17-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.5 and Q.7 are compulsory and solve any 2 questions from the remaining questions of each Section.
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Section – I

Q.2 **a)** Differentiate Bolted Connection over Welded Connection. **03**
b) Calculate the Strength of 18 mm diameter bolt of grade 4.8 for the lap joint. The main plate to be jointed are 10 mm thick. Use Fe 410 steel. **06**

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Q.5 **Attempt the Following.**
a) Differentiate PEBs and Conventional steel building. **03**
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Section – II

Q.6 A simply supported beam 4.5 m span carries UDL of 45 kN/m. The beam is laterally supported. Design the section for shear and deflection. Use Fe410 steel. **09**

Q.7 Design a built up column consisting of two rolled Channel sections placed back to back to resist an axial load of 1100kN. The length of the column is 4.5 m. It is restrained against rotation and translation at bottom and restrained against rotation and free at top. Take fy=250MPa. Also design the single lacing system. **10**

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SLR-BD-290

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Geotechnical Engineering (BTN01502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume additional data if required and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

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

2) Which of following factor does not affect the permeability of soil?
a) Shape of soil particle b) Size of soil particle
c) Specific gravity d) None of these

3) In soil classification soil group has dual symbol when plasticity index is in between _____.
a) 4 to 7 b) 3 to 7
c) 2 to 7 d) 5 to 7

4) In flow net equipotential lines and flow lines intersect each other at an angle of _____.
a) 45-degrees b) 90-degrees
c) 30-degrees d) 60-degrees

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

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

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

8) Optimum moisture content is the moisture content when _____.
a) settlement is maximum b) permeability is maximum
c) shear strength is maximum d) dry density is maximum

9) For a standard compaction test, the mass of the hammer and drop of hammer are as follows _____.
a) 2.6 kg and 450mm b) 2.6 kg and 310mm
c) 4.8 kg and 310mm d) 4.89 kg and 450mm

10) With an increase in the liquid limit, compression index _____.
a) decreases b) increases
c) remains constant d) may increase or decreases

11) Slope of e-log p curve for a soil mass gives _____.
a) Coefficient of permeability b) Coefficient of consolidation
c) Compression index d) None of these

12) The maximum depth of excavation that can be made in a saturated clay having $C = 40\text{kN/m}^2, \Phi = 00, \gamma = 20\ \text{kN/m}^3$ without any lateral support _____.
a) 5m b) 8m
c) 9m d) 10m

13) As per Rankin's theory, the wall friction is _____.
a) Equal to Φ b) greater then Φ
c) less then Φ d) zero

14) The constant head permeability test is suitable for _____.
a) coarse-grained soils b) fine-grained soils
c) both these soil d) neither of these soils

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Geotechnical Engineering (BTN01502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 and Q.6 are compulsory.
2) Solve any two questions out of Q.no. 3, 4 and 5.
3) Solve any two questions out of Q.no. 7, 8 and 9.
4) Figures to the right indicate full marks.
5) Assume additional data if required and mention it clearly.

Section – I

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

a) Define air content and degree of saturation.
b) What are the different drainage conditions used in shear test on soil? Which drainage condition is called as quick test?
c) Draw particle size distribution curve for soil showing well graded, poorly graded and gap graded soil.
d) Write any two applications of flow net.
e) What is the difference between discharge velocity and seepage velocity of flow of water through soil?

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

b) A soil specimen has water content 12% and bulk unit weight 22 KN/m^3. If specific gravity is 2.70 find dry unit weight, voids ratio, degree of saturation, porosity, air content. **05**

Q.4 **a)** What is permeability of soil? Derive equation to calculate coefficient of permeability by falling head method. **05**

b) Calculate the coefficient of permeability of a soil sample 8 cm in height and 50 cm^2 in cross sectional area, if a quantity of water equals to 440 ml passed down in 12 minutes under an effective constant head of 40 cm. On oven drying the test specimen has mass of 498 gm, calculate seepage velocity. Take G = 2.70. **05**

Q.5 **a)** Explain triaxial compression test to determine shear strength parameter of soil. **05**

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

Normal Load	180 N	380 N	780 N
Shear Force at Failure	200 N	250 N	350 N

The size of box is 60 mm x 60 mm. Determine shear strength parameter of soil. If the same sample is tested in tri axial compression test with a cell pressure of 75 kN/m^2. Find the deviation stress at which the failure is expected.

Section – II

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

a) Define zero air void line.

b) Draw a typical e-p curve and label its various parts.

c) Enlist the assumptions made in Rankine's theory.

d) Define Passive earth pressure.

e) Define compression Index.

Q.7 **a)** Explain the various types of rollers used for compaction with their suitability. **05**

b) The following results were obtained from a standard compaction test on a sample of soil. **05**

Water content %	7.7	11.5	14.6	17.5	19.7	21.2
Mass of wet soil (kg)	1.7	1.89	2.03	1.99	1.96	1.92

The volume of the mould used was 950 ml. Make necessary calculations and plot the compaction curve and obtain the maximum dry density and optimum water content.

Q.8 **a)** Derive Terzaghi's equation governing 1-D consolidation. State assumptions associated with the equations. **05**

b) The laboratory consolidation data for an undisturbed clay sample are as follows **05**

$\mathrm{e1} = 1.00, \sigma 1 = 85\ \mathrm{kN/m^2}$ and $\mathrm{e2} = 0.80, \sigma 2 = 465 \mathrm{kN/m^2}$.

Find the compression index.

Q.9 **a)** Derive the earth pressure coefficient for active case. **05**

b) A retaining wall 10 m height with a smooth vertical back retains a backfill with $\mathrm{C} = 0\ \mathrm{kN/m^2}, \Phi = 25°$ and $\mathrm{Y} = 17\ \mathrm{kN/m^3}$. What is the total Rankine's active thrust on the wall. **05**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Geotechnical Engineering (BTN01502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume additional data if required and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Optimum moisture content is the moisture content when _____.
a) settlement is maximum b) permeability is maximum
c) shear strength is maximum d) dry density is maximum

2) For a standard compaction test, the mass of the hammer and drop of hammer are as follows _____.
a) 2.6 kg and 450mm b) 2.6 kg and 310mm
c) 4.8 kg and 310mm d) 4.89 kg and 450mm

3) With an increase in the liquid limit, compression index _____.
a) decreases b) increases
c) remains constant d) may increase or decreases

4) Slope of e-log p curve for a soil mass gives _____.
a) Coefficient of permeability b) Coefficient of consolidation
c) Compression index d) None of these

5) The maximum depth of excavation that can be made in a saturated clay having $C = 40\text{kN/m}^2, \Phi = 00, \gamma = 20\ \text{kN/m}^3$ without any lateral support _____.
a) 5m b) 8m
c) 9m d) 10m

6) As per Rankin's theory, the wall friction is _____.
a) Equal to Φ b) greater then Φ
c) less then Φ d) zero

7) The constant head permeability test is suitable for _____.
a) coarse-grained soils b) fine-grained soils
c) both these soil d) neither of these soils

8) If solid portion is half that of void portion in each mass of soil, then porosity of this soil is _____.
a) 0.33 b) 0.66
c) 0.50 d) 0.25

9) Which of following factor does not affect the permeability of soil?
a) Shape of soil particle b) Size of soil particle
c) Specific gravity d) None of these

10) In soil classification soil group has dual symbol when plasticity index is in between _____.
a) 4 to 7 b) 3 to 7
c) 2 to 7 d) 5 to 7

11) In flow net equipotential lines and flow lines intersect each other at an angle of _____.
a) 45-degrees b) 90-degrees
c) 30-degrees d) 60-degrees

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

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

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Seat No.	

Set Q

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Geotechnical Engineering (BTN01502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
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b) Calculate the coefficient of permeability of a soil sample 8 cm in height and 50 cm^2 in cross sectional area, if a quantity of water equals to 440 ml passed down in 12 minutes under an effective constant head of 40 cm. On oven drying the test specimen has mass of 498 gm, calculate seepage velocity. Take G = 2.70. **05**

Q.5 **a)** Explain triaxial compression test to determine shear strength parameter of soil. **05**

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

Normal Load	180 N	380 N	780 N
Shear Force at Failure	200 N	250 N	350 N

The size of box is 60 mm x 60 mm. Determine shear strength parameter of soil. If the same sample is tested in tri axial compression test with a cell pressure of 75 kN/m^2. Find the deviation stress at which the failure is expected.

Section – II

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

a) Define zero air void line.

b) Draw a typical e-p curve and label its various parts.

c) Enlist the assumptions made in Rankine's theory.

d) Define Passive earth pressure.

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Q.7 **a)** Explain the various types of rollers used for compaction with their suitability. **05**

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Water content %	7.7	11.5	14.6	17.5	19.7	21.2
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Find the compression index.

Q.9 **a)** Derive the earth pressure coefficient for active case. **05**

b) A retaining wall 10 m height with a smooth vertical back retains a backfill with $\mathrm{C} = 0\ \mathrm{kN/m^2}, \Phi = 25°$ and $\mathrm{Y} = 17\ \mathrm{kN/m^3}$. What is the total Rankine's active thrust on the wall. **05**

Seat No.	

Set R

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Geotechnical Engineering (BTN01502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) Slope of e-log p curve for a soil mass gives _____.
a) Coefficient of permeability b) Coefficient of consolidation
c) Compression index d) None of these

2) The maximum depth of excavation that can be made in a saturated clay having $C = 40\text{kN/m}^2, \Phi = 00, \gamma = 20\ \text{kN/m}^3$ without any lateral support _____.
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Seat No.	

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CIVIL ENGINEERING
Geotechnical Engineering (BTN01502)

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

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Section – II

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Seat No.		Set	S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Geotechnical Engineering (BTN01502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

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Seat No.	

Set **S**

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CIVIL ENGINEERING
Geotechnical Engineering (BTN01502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

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

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Section – II

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SLR-BD-291

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Highway and Tunnel Engineering (BTN01503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The maximum utility system is based on the concept of _____.
a) Maximum utility per cost of the road
b) Maximum utility per unit length of the road
c) Maximum Utility per unit population
d) None of the above

2) Third Road developed plan was prepared for the period of _____.
a) 1921-1941 b) 1941-1961
c) 1961-1981 d) 1981-2001

3) Which one of the following factors control the highway alignment?
a) Obligatory point b) Traffic and economic
c) Geometric Design d) All of the above

4) Width of the shoulder carriage way is generally kept _____.
a) 100cm b) 125cm
c) 150cm d) 250cm

5) Which one of the following equipment is used to assure the pavement unevenness index?
a) Bump Integrator b) Odometer
c) Network survey vehicles d) None of the above

6) For the calculation of stopping sight distance the reaction time of the driver may be taken as _____.
a) 2.5 second b) 5 second
c) 7.5 second d) 10 second

7) In CBR test the value of CBR is calculated at _____.
a) 2.5 mm penetration
b) 5.0 mm penetration
c) 7.5 mm penetration
d) Both 2.5 mm and 5.0 mm penetration

8) The study on weathering action on road aggregate, which one of the following tests is carried out _____.
a) Abrasion test b) Crushing Test
c) Impact Test d) Soundness Test

9) The thickness of road surface depends upon the _____.
a) type of traffic b) type of the material
c) intensity of traffic d) all of the above

10) Failure in flexible pavement are due to failure of
I) Sub grade
II) Base course
III) Wearing course
a) (I) and (II) b) (I) and (III)
c) (II) and (III) d) (I), (II) and (III)

11) The maximum spacing of contraction joint in rigid pavement is _____.
a) 2.5 m b) 3.5 m
c) 4.5 m d) 5.5 m

12) In which one of the following joint, dowel bars are provided in cement concrete pavement?
a) Expansion joint b) Longitudinal joint
c) Construction Joint d) None of the above

13) In order to maintain desired shape of the tunnel the cross section of the tunnel must be checked at a regular interval of _____.
a) 2 m to 3 m b) 4 m to 6 m
c) 5 m to 7 m d) 8 m to 15 m

14) The process of removal rock protrusions by hammering immediately after the blasting is known as _____.
a) Mucking b) Skimming
c) Trimming d) Scaling

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Highway and Tunnel Engineering (BTN01503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve Any Two. **14**

a) The Highway is designed for a design speed of 80 kmph. There is a horizontal curve of radius 200 m on a certain locality. Safe limit of transverse coefficient of friction is 0.15.
i) calculate the super elevation required to maintain this speed,
ii) If the maximum super elevation of 0.07 is not to be exceeded, calculate the maximum allowable speed on this horizontal curve as it is not possible to increase the radius.

b) What is highway alignment? Discuss different factors affecting the highway alignment.

c) What is SSD? Explain PIVE theory in SSD.

Q.3 Solve Any Two. **14**

a) Write a Detailed note on “Significance of CBR & plate load test on subgrade soil”.

b) Define camber. State its importance. Explain different type of camber.

c) Write a short note on.
i) Geosynthetic material in highway construction
ii) Softening point and ductility test on bitumen

Section – II

Q.4 Solve Any Two. **14**

a) What are the factors to be consider in the design of the flexible pavement? Discuss significance of each.

b) Determine the warping stresses at interior, edge and corner of a 25 cm thick cement concrete pavement with transverse joints at 5.0 m interval and longitudinal joints at 3.6 m intervals. The modulus of subgrade reaction K is 6.9 kg/cm^3 and radius of loaded area is 15 cm. Assume temperature differential during day to be 0.6°C per cm slab thickness (for warping stress at interior and edge) and maximum temperature differential of 0.4°C per cm slab thickness during the night (for warping stress at the corner). Assume e = 10 x 10^{-6} per °C, E = 3 x 10^5 kg/cm^2, $\mu = 0.15$. Use Bradbury chart given in Figure-1.

c) Define Radius of Relative stiffness. Find out radius of relative stiffness of 15cm thickness cement concrete slab from following data

E = 210000 Kg/cm^2, poisons ratio = 013, K = 3 Kg/cm^2

Q.5 Solve Any Two. **14**

a) What is highway drainage? How it is achieved? State its effects.

b) State method of tunnel in soft rock. Explain with sketch any one method in details.

c) What is tunnel lining? How and why, it is done?

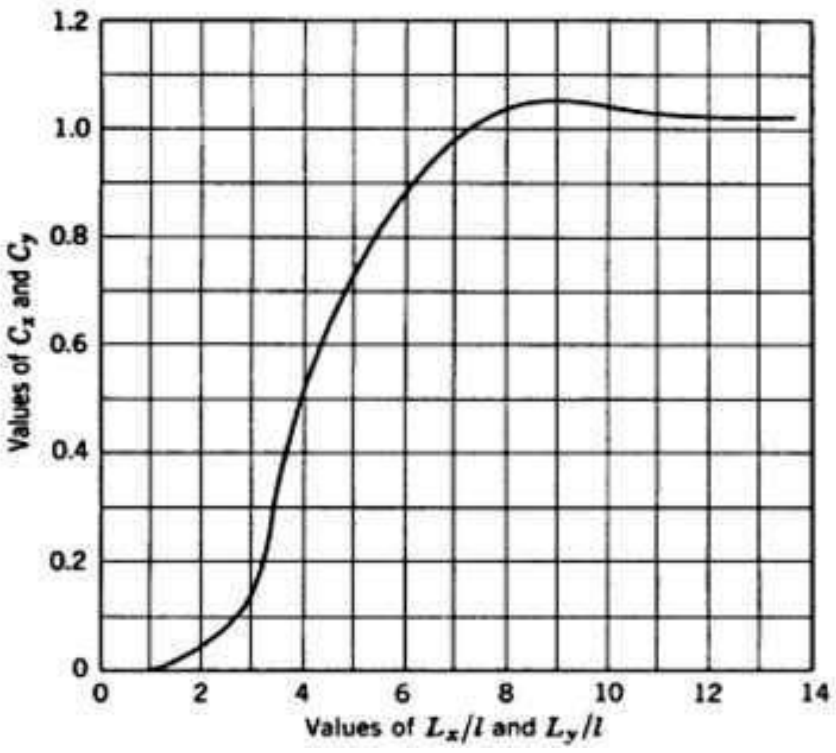

Fig. 1

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Highway and Tunnel Engineering (BTN01503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The study on weathering action on road aggregate, which one of the following tests is carried out _____.
a) Abrasion test b) Crushing Test
c) Impact Test d) Soundness Test

2) The thickness of road surface depends upon the _____.
a) type of traffic b) type of the material
c) intensity of traffic d) all of the above

3) Failure in flexible pavement are due to failure of
I) Sub grade
II) Base course
III) Wearing course
a) (I) and (II) b) (I) and (III)
c) (II) and (III) d) (I), (II) and (III)

4) The maximum spacing of contraction joint in rigid pavement is _____.
a) 2.5 m b) 3.5 m
c) 4.5 m d) 5.5 m

5) In which one of the following joint, dowel bars are provided in cement concrete pavement?
a) Expansion joint b) Longitudinal joint
c) Construction Joint d) None of the above

6) In order to maintain desired shape of the tunnel the cross section of the tunnel must be checked at a regular interval of _____.
a) 2 m to 3 m b) 4 m to 6 m
c) 5 m to 7 m d) 8 m to 15 m

7) The process of removal rock protrusions by hammering immediately after the blasting is known as _____.
a) Mucking b) Skimming
c) Trimming d) Scaling

8) The maximum utility system is based on the concept of _____.
a) Maximum utility per cost of the road
b) Maximum utility per unit length of the road
c) Maximum Utility per unit population
d) None of the above

9) Third Road developed plan was prepared for the period of _____.
a) 1921-1941 b) 1941-1961
c) 1961-1981 d) 1981-2001

10) Which one of the following factors control the highway alignment?
a) Obligatory point b) Traffic and economic
c) Geometric Design d) All of the above

11) Width of the shoulder carriage way is generally kept _____.
a) 100cm b) 125cm
c) 150cm d) 250cm

12) Which one of the following equipment is used to assure the pavement unevenness index?
a) Bump Integrator b) Odometer
c) Network survey vehicles d) None of the above

13) For the calculation of stopping sight distance the reaction time of the driver may be taken as _____.
a) 2.5 second b) 5 second
c) 7.5 second d) 10 second

14) In CBR test the value of CBR is calculated at _____.
a) 2.5 mm penetration
b) 5.0 mm penetration
c) 7.5 mm penetration
d) Both 2.5 mm and 5.0 mm penetration

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Highway and Tunnel Engineering (BTN01503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Two. **14**

a) The Highway is designed for a design speed of 80 kmph. There is a horizontal curve of radius 200 m on a certain locality. Safe limit of transverse coefficient of friction is 0.15.
i) calculate the super elevation required to maintain this speed,
ii) If the maximum super elevation of 0.07 is not to be exceeded, calculate the maximum allowable speed on this horizontal curve as it is not possible to increase the radius.

b) What is highway alignment? Discuss different factors affecting the highway alignment.

c) What is SSD? Explain PIVE theory in SSD.

Q.3 Solve Any Two. **14**

a) Write a Detailed note on “Significance of CBR & plate load test on subgrade soil”.

b) Define camber. State its importance. Explain different type of camber.

c) Write a short note on.
i) Geosynthetic material in highway construction
ii) Softening point and ductility test on bitumen

Section – II

Q.4 Solve Any Two. **14**

a) What are the factors to be consider in the design of the flexible pavement? Discuss significance of each.

b) Determine the warping stresses at interior, edge and corner of a 25 cm thick cement concrete pavement with transverse joints at 5.0 m interval and longitudinal joints at 3.6 m intervals. The modulus of subgrade reaction K is 6.9 kg/cm^3 and radius of loaded area is 15 cm. Assume temperature differential during day to be 0.6°C per cm slab thickness (for warping stress at interior and edge) and maximum temperature differential of 0.4°C per cm slab thickness during the night (for warping stress at the corner). Assume e = 10 x 10^{-6} per °C, E = 3 x 10^5 kg/cm^2, $\mu = 0.15$. Use Bradbury chart given in Figure-1.

c) Define Radius of Relative stiffness. Find out radius of relative stiffness of 15cm thickness cement concrete slab from following data

E = 210000 Kg/cm^2, poisons ratio = 013, K = 3 Kg/cm^2

Q.5 Solve Any Two. **14**

a) What is highway drainage? How it is achieved? State its effects.

b) State method of tunnel in soft rock. Explain with sketch any one method in details.

c) What is tunnel lining? How and why, it is done?

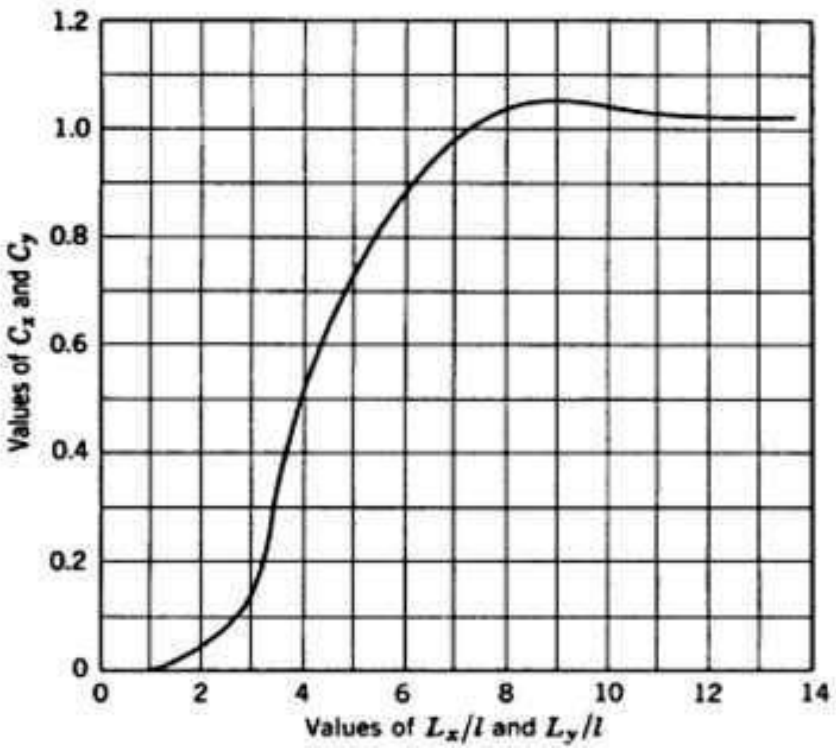

Fig. 1

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Highway and Tunnel Engineering (BTN01503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The maximum spacing of contraction joint in rigid pavement is _____.
a) 2.5 m b) 3.5 m
c) 4.5 m d) 5.5 m

2) In which one of the following joint, dowel bars are provided in cement concrete pavement?
a) Expansion joint b) Longitudinal joint
c) Construction Joint d) None of the above

3) In order to maintain desired shape of the tunnel the cross section of the tunnel must be checked at a regular interval of _____.
a) 2 m to 3 m b) 4 m to 6 m
c) 5 m to 7 m d) 8 m to 15 m

4) The process of removal rock protrusions by hammering immediately after the blasting is known as _____.
a) Mucking b) Skimming
c) Trimming d) Scaling

5) The maximum utility system is based on the concept of _____.
a) Maximum utility per cost of the road
b) Maximum utility per unit length of the road
c) Maximum Utility per unit population
d) None of the above

6) Third Road developed plan was prepared for the period of _____.
a) 1921-1941 b) 1941-1961
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7) Which one of the following factors control the highway alignment?
a) Obligatory point b) Traffic and economic
c) Geometric Design d) All of the above

8) Width of the shoulder carriage way is generally kept _____.
a) 100cm b) 125cm
c) 150cm d) 250cm

9) Which one of the following equipment is used to assure the pavement unevenness index?
a) Bump Integrator b) Odometer
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10) For the calculation of stopping sight distance the reaction time of the driver may be taken as _____.
a) 2.5 second b) 5 second
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11) In CBR test the value of CBR is calculated at _____.
a) 2.5 mm penetration
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d) Both 2.5 mm and 5.0 mm penetration

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13) The thickness of road surface depends upon the _____.
a) type of traffic b) type of the material
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14) Failure in flexible pavement are due to failure of
I) Sub grade
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III) Wearing course
a) (I) and (II) b) (I) and (III)
c) (II) and (III) d) (I), (II) and (III)

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Highway and Tunnel Engineering (BTN01503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Two. **14**

a) The Highway is designed for a design speed of 80 kmph. There is a horizontal curve of radius 200 m on a certain locality. Safe limit of transverse coefficient of friction is 0.15.
i) calculate the super elevation required to maintain this speed,
ii) If the maximum super elevation of 0.07 is not to be exceeded, calculate the maximum allowable speed on this horizontal curve as it is not possible to increase the radius.

b) What is highway alignment? Discuss different factors affecting the highway alignment.

c) What is SSD? Explain PIVE theory in SSD.

Q.3 Solve Any Two. **14**

a) Write a Detailed note on “Significance of CBR & plate load test on subgrade soil”.

b) Define camber. State its importance. Explain different type of camber.

c) Write a short note on.
i) Geosynthetic material in highway construction
ii) Softening point and ductility test on bitumen

Section – II

Q.4 Solve Any Two. **14**

a) What are the factors to be consider in the design of the flexible pavement? Discuss significance of each.

b) Determine the warping stresses at interior, edge and corner of a 25 cm thick cement concrete pavement with transverse joints at 5.0 m interval and longitudinal joints at 3.6 m intervals. The modulus of subgrade reaction K is 6.9 kg/cm^3 and radius of loaded area is 15 cm. Assume temperature differential during day to be 0.6°C per cm slab thickness (for warping stress at interior and edge) and maximum temperature differential of 0.4°C per cm slab thickness during the night (for warping stress at the corner). Assume e = 10 x 10^{-6} per °C, E = 3 x 10^5 kg/cm^2, $\mu = 0.15$. Use Bradbury chart given in Figure-1.

c) Define Radius of Relative stiffness. Find out radius of relative stiffness of 15cm thickness cement concrete slab from following data

E = 210000 Kg/cm^2, poisons ratio = 013, K = 3 Kg/cm^2

Q.5 Solve Any Two. **14**

a) What is highway drainage? How it is achieved? State its effects.

b) State method of tunnel in soft rock. Explain with sketch any one method in details.

c) What is tunnel lining? How and why, it is done?

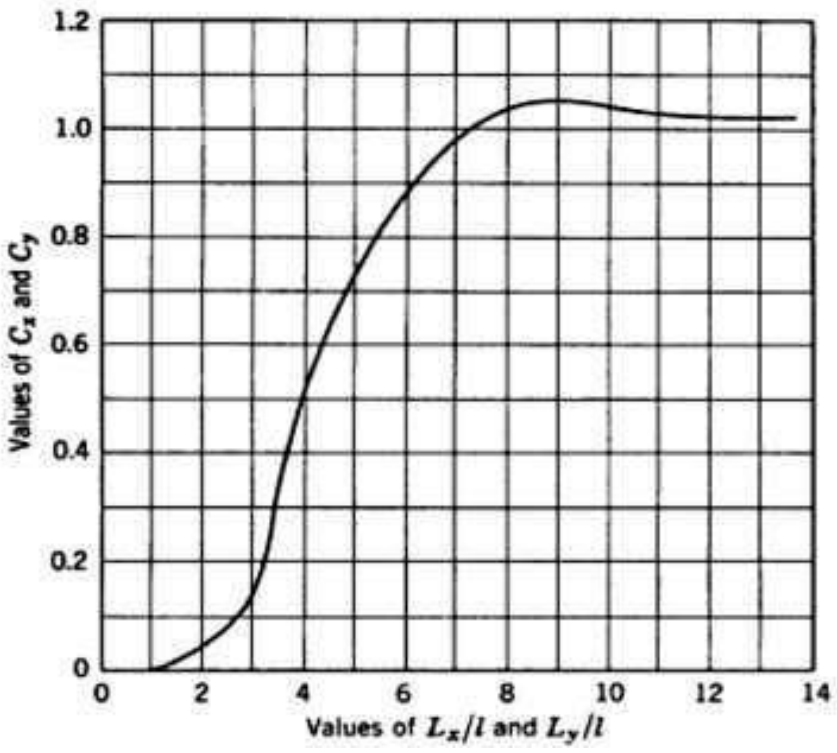

Fig. 1

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Highway and Tunnel Engineering (BTN01503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) For the calculation of stopping sight distance the reaction time of the driver may be taken as _____.
a) 2.5 second b) 5 second
c) 7.5 second d) 10 second

2) In CBR test the value of CBR is calculated at _____.
a) 2.5 mm penetration
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3) The study on weathering action on road aggregate, which one of the following tests is carried out _____.
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14) Which one of the following equipment is used to assure the pavement unevenness index?

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c) Network survey vehicles
d) None of the above

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Highway and Tunnel Engineering (BTN01503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Two. **14**

a) The Highway is designed for a design speed of 80 kmph. There is a horizontal curve of radius 200 m on a certain locality. Safe limit of transverse coefficient of friction is 0.15.
i) calculate the super elevation required to maintain this speed,
ii) If the maximum super elevation of 0.07 is not to be exceeded, calculate the maximum allowable speed on this horizontal curve as it is not possible to increase the radius.

b) What is highway alignment? Discuss different factors affecting the highway alignment.

c) What is SSD? Explain PIVE theory in SSD.

Q.3 Solve Any Two. **14**

a) Write a Detailed note on “Significance of CBR & plate load test on subgrade soil”.

b) Define camber. State its importance. Explain different type of camber.

c) Write a short note on.
i) Geosynthetic material in highway construction
ii) Softening point and ductility test on bitumen

Section – II

Q.4 Solve Any Two. **14**

a) What are the factors to be consider in the design of the flexible pavement? Discuss significance of each.

b) Determine the warping stresses at interior, edge and corner of a 25 cm thick cement concrete pavement with transverse joints at 5.0 m interval and longitudinal joints at 3.6 m intervals. The modulus of subgrade reaction K is 6.9 kg/cm^3 and radius of loaded area is 15 cm. Assume temperature differential during day to be 0.6°C per cm slab thickness (for warping stress at interior and edge) and maximum temperature differential of 0.4°C per cm slab thickness during the night (for warping stress at the corner). Assume e = 10 x 10^{-6} per °C, E = 3 x 10^5 kg/cm^2, $\mu = 0.15$. Use Bradbury chart given in Figure-1.

c) Define Radius of Relative stiffness. Find out radius of relative stiffness of 15cm thickness cement concrete slab from following data

E = 210000 Kg/cm^2, poisons ratio = 013, K = 3 Kg/cm^2

Q.5 Solve Any Two. **14**

a) What is highway drainage? How it is achieved? State its effects.

b) State method of tunnel in soft rock. Explain with sketch any one method in details.

c) What is tunnel lining? How and why, it is done?

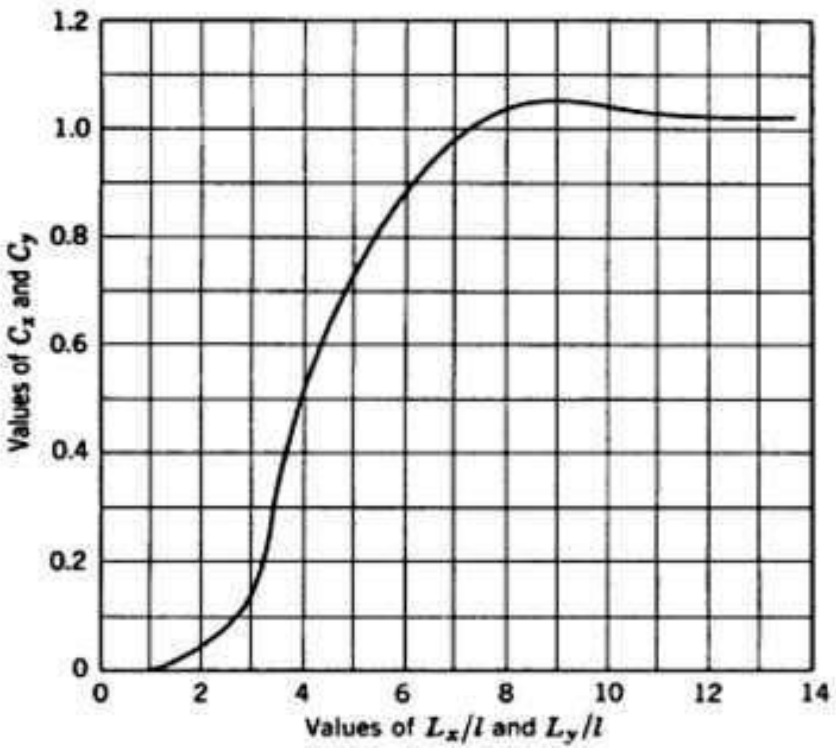

Fig. 1

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Seat No.	

Set P

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Hydrology and Water Resources Engineering (BTN01504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) When annual precipitation of index stations have a difference or variation less than 10% of the annual precipitation of given station then for estimation of missing precipitation of given station following method is used _____.

a) Arithmetic mean b) Weighted mean
c) both a and b d) None of these

2) Pinpoint the incorrect statement.

a) evaporation is a cooling process
b) other factors remaining the same, an increase in atmospheric vapour pressure over a water surface, decreases evaporation.
c) when a solute is dissolved in water, there is an increase in the rate of Evaporation
d) seasonal evaporation rates depend upon the size of the water bodies

3) The lag time of a basin is the time interval between _____.

a) the beginning and end of the direct runoff
b) the centroid of the rainfall excess and the peak of the runoff hydrograph
c) the beginning of rainfall and the peak of runoff hydrograph
d) the end of rainfall and end of runoff.

4) The inflection point on the recession side of the hydrograph indicates the end of _____.

a) The base flow b) The direct rainfall
c) The overland flow d) Rainfall

5) Slope area method of stream gauging is _____.
a) indirect method b) direct method
c) both a and b d) can't say

6) A flood with a return period of 100 years which occurs _____.
a) every hundredth year
b) the maximum observed flood in the past hundred years
c) once in every hundred years on the average
d) only after hundred years in the immediate future

7) In the case of a flowing well, the piezometric surface is always: _____.
a) below the ground level b) above the ground level
c) all the ground level d) none of the above

8) The surface obtained by joining the water levels in several observation wells penetrating confined aquifer represents _____
a) piezometric surface b) water table surface
c) capillary fringe d) cone of depression

9) The interlinking of river can help in _____.
a) Increase in irrigation area b) Control of flood
c) both a and b d) None of these

10) The highest efficiency of water use is achieved in _____method.
a) drip b) sprinkler
c) furrow d) border strip

11) Minor irrigation scheme is limited up to _____.
a) 150 hectare b) 200 hectare
c) 5000 hectare d) 2000 hectare

12) The role of intake well is to _____.
a) accommodating pumping unit
b) to collect water form river
c) both a and b
d) none of these

13) The relationship between the duty D in ha/cumecs, the water depth Δ in cm, and base period B in days, is given by _____.
a) $\mathrm{D} = 864\mathrm{B}/\Delta$ b) $\mathrm{D} = 8.64\mathrm{B}/\Delta$
c) $\mathrm{D} = 864\Delta/\mathrm{B}$ d) $\mathrm{D} = 8.64\Delta/\mathrm{B}$

14) Cooperative water users organizations help in _____.
a) soil management b) water management
c) soil conservation d) none of these

Seat No.	

Set P

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Hydrology and Water Resources Engineering (BTN01504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions from the remaining questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions from the remaining questions.
3) Figures to the right indicate full marks.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

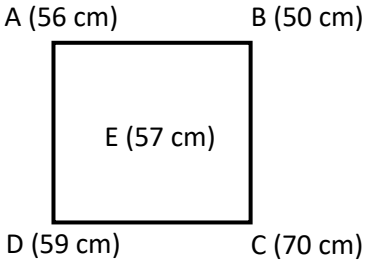
Q.2 **a)** Enlist different methods of measurement of rainfall and explain any one with neat sketch with its advantages and disadvantages. **04**

b) The following data were collected during stream gauging operations in a river. Compute the discharge. **06**

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

Q.3 **a)** Define term design flood. List the methods of estimation of flood. Explain any one in detail. **04**

b) The area as shown below is a square of sides 10 km. the annual precipitation at those stations is as shown in figure. Determine the average precipitation by the Thiessen polygon method. Stations A, B, C and D are at corners and E is at centre. **05**



Q.4 **a)** Enlist the assumptions made in the steady flow condition to a well penetrating in confined aquifers and derive expression of it. **04**

b) Given the ordinates of runoff hydrograph from a catchment area of 100 km^2 having constant base flow of 2 cumec. Derive the ordinates of UH. **05**

Duration (h)	2	4	6	8	10	12	14
Ordinate of runoff hydrograph (m^3/s)	2	3	4	6	5	3	2

Q.5 **a)** What is mean by runoff? Enlist and explain different methods of estimation of runoff. **04**

b) In an artesian aquifer of 8 m thick, a 10 cm diameter well is pumped at a constant rate of 100 1pm. The steady state drawdown observed in two wells located at 10 m and 50 m distance from the centre of the well are 3 m and 0.05 m respectively. Compute the transmissivity and the hydraulic conductivity of the aquifer. **05**

Section – II

Q.6 **a)** Explain the problems in water resources developments in country and Maharashtra state. **05**

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

Q.7 **a)** Define irrigation and explain its necessity. **03**

b) Table below gives a necessary data about the crops, their duty and area under each crop, commanded by a canal, taking off from a storage reservoir. Taking a time factor for a canal to be 13/20, calculate the discharge required at the head of the canal. Also, determine design discharge, if capacity factor of a canal is 0.8. **06**

Crop	**Base period**	**Area (hectares)**	**Duty at the head of canal (ha/cumec)**
Wheat	320	850	580
Sugarcane	90	120	580
Cotton	120	600	1600
Rice	120	500	2000
Vegetables	120	260	600

Q.8 **a)** Define the terms field capacity, wilting point and optimum water content. **03**

b) Write a short note on: **06**

i) Percolation Tank

ii) Warabahdi System

Q.9 **a)** What it is mean by water shed management? Why it is essential. **03**

b) After how many days will you supply water to soil in order to ensure irrigation of given crop if, field capacity of soil is 26%, permanent wilting-point 14%, dry density of soil 1.3 g/cc. assume daily consumptive use of water for the given crop 10 mm and effective root zone depth 70cm and readily available moisture to crop is 80% of available moisture. **06**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Hydrology and Water Resources Engineering (BTN01504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The surface obtained by joining the water levels in several observation wells penetrating confined aquifer represents _____
a) piezometric surface b) water table surface
c) capillary fringe d) cone of depression

2) The interlinking of river can help in _____.
a) Increase in irrigation area b) Control of flood
c) both a and b d) None of these

3) The highest efficiency of water use is achieved in _____method.
a) drip b) sprinkler
c) furrow d) border strip

4) Minor irrigation scheme is limited up to _____.
a) 150 hectare b) 200 hectare
c) 5000 hectare d) 2000 hectare

5) The role of intake well is to _____.
a) accommodating pumping unit
b) to collect water form river
c) both a and b
d) none of these

6) The relationship between the duty D in ha/cumecs, the water depth Δ in cm, and base period B in days, is given by _____.
a) $D = 864B/\Delta$ b) $D = 8.64B/\Delta$
c) $D = 864\Delta/B$ d) $D = 8.64\Delta/B$

7) Cooperative water users organizations help in _____.
a) soil management b) water management
c) soil conservation d) none of these

8) When annual precipitation of index stations have a difference or variation less than 10% of the annual precipitation of given station then for estimation of missing precipitation of given station following method is used _____.

a) Arithmetic mean
b) Weighted mean
c) both a and b
d) None of these

9) Pinpoint the incorrect statement.

a) evaporation is a cooling process
b) other factors remaining the same, an increase in atmospheric vapour pressure over a water surface, decreases evaporation.
c) when a solute is dissolved in water, there is an increase in the rate of Evaporation
d) seasonal evaporation rates depend upon the size of the water bodies

10) The lag time of a basin is the time interval between _____.

a) the beginning and end of the direct runoff
b) the centroid of the rainfall excess and the peak of the runoff hydrograph
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11) The inflection point on the recession side of the hydrograph indicates the end of _____.

a) The base flow
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12) Slope area method of stream gauging is _____.

a) indirect method
b) direct method
c) both a and b
d) can't say

13) A flood with a return period of 100 years which occurs _____.

a) every hundredth year
b) the maximum observed flood in the past hundred years
c) once in every hundred years on the average
d) only after hundred years in the immediate future

14) In the case of a flowing well, the piezometric surface is always: _____.

a) below the ground level
b) above the ground level
c) all the ground level
d) none of the above

Seat No.	

Set Q

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Hydrology and Water Resources Engineering (BTN01504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions from the remaining questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions from the remaining questions.
3) Figures to the right indicate full marks.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

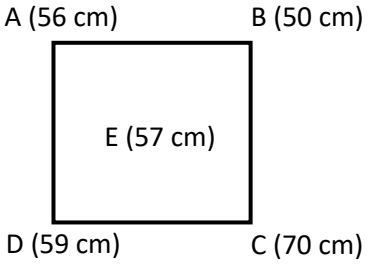
Q.2 **a)** Enlist different methods of measurement of rainfall and explain any one with neat sketch with its advantages and disadvantages. **04**

b) The following data were collected during stream gauging operations in a river. Compute the discharge. **06**

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

Q.3 **a)** Define term design flood. List the methods of estimation of flood. Explain any one in detail. **04**

b) The area as shown below is a square of sides 10 km. the annual precipitation at those stations is as shown in figure. Determine the average precipitation by the Thiessen polygon method. Stations A, B, C and D are at corners and E is at centre. **05**



Q.4 **a)** Enlist the assumptions made in the steady flow condition to a well penetrating in confined aquifers and derive expression of it. **04**

b) Given the ordinates of runoff hydrograph from a catchment area of 100 km^2 having constant base flow of 2 cumec. Derive the ordinates of UH. **05**

Duration (h)	2	4	6	8	10	12	14
Ordinate of runoff hydrograph (m^3/s)	2	3	4	6	5	3	2

Q.5 **a)** What is mean by runoff? Enlist and explain different methods of estimation of runoff. **04**

b) In an artesian aquifer of 8 m thick, a 10 cm diameter well is pumped at a constant rate of 100 1pm. The steady state drawdown observed in two wells located at 10 m and 50 m distance from the centre of the well are 3 m and 0.05 m respectively. Compute the transmissivity and the hydraulic conductivity of the aquifer. **05**

Section – II

Q.6 **a)** Explain the problems in water resources developments in country and Maharashtra state. **05**

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

Q.7 **a)** Define irrigation and explain its necessity. **03**

b) Table below gives a necessary data about the crops, their duty and area under each crop, commanded by a canal, taking off from a storage reservoir. Taking a time factor for a canal to be 13/20, calculate the discharge required at the head of the canal. Also, determine design discharge, if capacity factor of a canal is 0.8. **06**

Crop	**Base period**	**Area (hectares)**	**Duty at the head of canal (ha/cumec)**
Wheat	320	850	580
Sugarcane	90	120	580
Cotton	120	600	1600
Rice	120	500	2000
Vegetables	120	260	600

Q.8	**a)**	Define the terms field capacity, wilting point and optimum water content.	**03**
	b)	Write a short note on: i) Percolation Tank ii) Warabahdi System	**06**
Q.9	**a)**	What it is mean by water shed management? Why it is essential.	**03**
	b)	After how many days will you supply water to soil in order to ensure irrigation of given crop if, field capacity of soil is 26%, permanent wilting-point 14%, dry density of soil 1.3 g/cc. assume daily consumptive use of water for the given crop 10 mm and effective root zone depth 70cm and readily available moisture to crop is 80% of available moisture.	**06**

Seat No.	

Set R

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Hydrology and Water Resources Engineering (BTN01504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Minor irrigation scheme is limited up to _____.
a) 150 hectare b) 200 hectare
c) 5000 hectare d) 2000 hectare

2) The role of intake well is to _____.
a) accommodating pumping unit
b) to collect water form river
c) both a and b
d) none of these

3) The relationship between the duty D in ha/cumecs, the water depth Δ in cm, and base period B in days, is given by _____.
a) $D = 864B/\Delta$ b) $D = 8.64B/\Delta$
c) $D = 864\Delta/B$ d) $D = 8.64\Delta/B$

4) Cooperative water users organizations help in _____.
a) soil management b) water management
c) soil conservation d) none of these

5) When annual precipitation of index stations have a difference or variation less than 10% of the annual precipitation of given station then for estimation of missing precipitation of given station following method is used _____.
a) Arithmetic mean b) Weighted mean
c) both a and b d) None of these

6) Pinpoint the incorrect statement.
a) evaporation is a cooling process
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a) the beginning and end of the direct runoff
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9) Slope area method of stream gauging is _____.
a) indirect method b) direct method
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10) A flood with a return period of 100 years which occurs _____.
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11) In the case of a flowing well, the piezometric surface is always: _____.
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Seat No.	

Set R

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Hydrology and Water Resources Engineering (BTN01504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions from the remaining questions.
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Section – I

Q.2 **a)** Enlist different methods of measurement of rainfall and explain any one with neat sketch with its advantages and disadvantages. **04**

b) The following data were collected during stream gauging operations in a river. Compute the discharge. **06**

Distance from left water edge (m)	0	1.5	3.0	4.5	6.0	7.5	9.0	0
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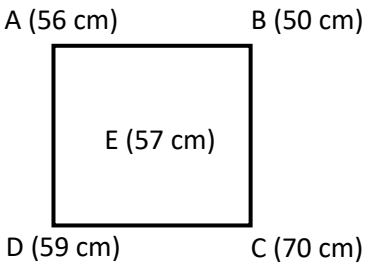
Q.3 **a)** Define term design flood. List the methods of estimation of flood. Explain any one in detail. **04**

b) The area as shown below is a square of sides 10 km. the annual precipitation at those stations is as shown in figure. Determine the average precipitation by the Thiessen polygon method. Stations A, B, C and D are at corners and E is at centre. **05**



Q.4 **a)** Enlist the assumptions made in the steady flow condition to a well penetrating in confined aquifers and derive expression of it. **04**

b) Given the ordinates of runoff hydrograph from a catchment area of 100 km^2 having constant base flow of 2 cumec. Derive the ordinates of UH. **05**

Duration (h)	2	4	6	8	10	12	14
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b) In an artesian aquifer of 8 m thick, a 10 cm diameter well is pumped at a constant rate of 100 1pm. The steady state drawdown observed in two wells located at 10 m and 50 m distance from the centre of the well are 3 m and 0.05 m respectively. Compute the transmissivity and the hydraulic conductivity of the aquifer. **05**

Section – II

Q.6 **a)** Explain the problems in water resources developments in country and Maharashtra state. **05**

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

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Seat No.		Set	S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Hydrology and Water Resources Engineering (BTN01504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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Duration: 30 Minutes Marks:14

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Seat No.	

Set S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Hydrology and Water Resources Engineering (BTN01504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions from the remaining questions.
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Section – I

Q.2 **a)** Enlist different methods of measurement of rainfall and explain any one with neat sketch with its advantages and disadvantages. **04**

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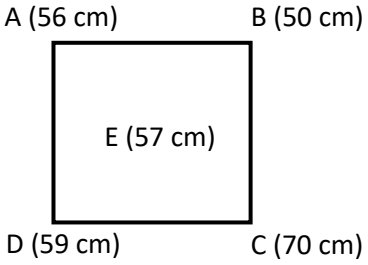

Q.4 **a)** Enlist the assumptions made in the steady flow condition to a well penetrating in confined aquifers and derive expression of it. **04**

b) Given the ordinates of runoff hydrograph from a catchment area of 100 km^2 having constant base flow of 2 cumec. Derive the ordinates of UH. **05**

Duration (h)	2	4	6	8	10	12	14
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Q.5 **a)** What is mean by runoff? Enlist and explain different methods of estimation of runoff. **04**

b) In an artesian aquifer of 8 m thick, a 10 cm diameter well is pumped at a constant rate of 100 1pm. The steady state drawdown observed in two wells located at 10 m and 50 m distance from the centre of the well are 3 m and 0.05 m respectively. Compute the transmissivity and the hydraulic conductivity of the aquifer. **05**

Section – II

Q.6 **a)** Explain the problems in water resources developments in country and Maharashtra state. **05**

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

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	b)	Write a short note on: i) Percolation Tank ii) Warabahdi System	**06**
Q.9	**a)**	What it is mean by water shed management? Why it is essential.	**03**
	b)	After how many days will you supply water to soil in order to ensure irrigation of given crop if, field capacity of soil is 26%, permanent wilting-point 14%, dry density of soil 1.3 g/cc. assume daily consumptive use of water for the given crop 10 mm and effective root zone depth 70cm and readily available moisture to crop is 80% of available moisture.	**06**

SLR-BD-293

Seat No.	

Set P

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Concrete Structures I (BTN01505)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) While solving MCQ IS 456-2000 is not allowed.
4) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) In two way restrained slab torsion steel is provided at _____. **01**
a) Top b) Bottom
c) Top & Bottom d) None of the above

2) Spacing of stirrups in a rectangular beam, is _____. **01**
a) Kept constant throughout the length
b) Decreased towards the center of the beam
c) Increased at the ends
d) Increased at the center of the beam

3) A rectangular slab 4m X 6m supported on two opposite shorter edge should be designed as _____. **01**
a) One way slab spanning along longer edge
b) Two way slab
c) One way slab spanning along shorter edge
d) None of above

4) The effective cover of beam depends o n _____. **01**
a) Diameter of main reinforcement
b) Grade of reinforcing steel
c) Width of beam
d) All of these

5) In a simply supported slab, alternate bars are curtailed at _____. **01**
a) $1/4^{th}$ of the span b) $1/5^{th}$ of the span
c) $1/6^{th}$ of the span d) $1/7^{th}$ of the span

6) A short column of size 250mmx350mm is provided with longitudinal reinforcement of diameter 20mm and the diameter of tie is 8mm. According to IS456:2000, the maximum spacing between two ties is _____. **01**

a) 200 mm b) 350 mm
c) 300 mm d) 250 mm

7) The length of torsion reinforcement in two way slab is provided as _____. **01**

a) Shorter span/4 b) Shorter span/5
c) Shorter span/8 d) Shorter span/10

8) If the diameter of the longitudinal bars of a square column is 16 mm, the diameter of the lateral ties should not be less than ____. **01**

a) 4 mm b) 5 mm
c) 6 mm d) 8 mm

9) The minimum tension reinforcement for 250 mm x 400 mm effective deep beam of Fe500 grade steel is _____. **02**

a) 150 mm^2 b) 170 mm^2
c) 180 N/mm^2 d) 220 N/mm^2

10) The factored load carrying capacity of column of 300mm x600mm size with minimum percentage of steel for M20 and Fe415 grade is _____. **02**

a) 1840 KN b) 1900 KN
c) 1829 KN d) 1800 KN

11) A axially loaded column is of 300 mm x 300 mm size. Effective length of column is 3 m. What is the minimum eccentricity of the axial load of the column. **02**

a) 0 b) 10 mm
c) 16 mm d) 20 mm

Seat No.	

Set **P**

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Concrete Structures I (BTN01505)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions from the remaining questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions from the remaining questions.
3) Figures to the right indicate full marks.
4) Draw neat sketch's where required and assume suitable data if required and state it clearly.
5) Use of IS 456-2000 and non-programmable calculate are allowed.

Section – I

Q.2 A roof of clear dimensions 4m x 5m supported on walls of 230mm thickness, with corners are held down. All the four edges of the slab are discontinuous. Design the slab, if the beam is carrying a live load of 3 kN/m^2. Use M 20 & Fe 415 steel. **10**

Q.3 Design a simply supported beam of clear span of 5m has to carry a superimposed load of 45 kN/m at service. The beam has bearing of 400 mm of each end. Use M 20 & Fe 415 steel. **09**

Q.4 A doubly reinforced beam 250 mm x 450 mm deep to centre of tensile reinforcement is provided with 2 bars of 16 mm diameter as compression steel with an effective cover of 50 mm and 4 bars of 25 mm diameter as tensile steel. Determine flexural strength & safe UDL on the simply supported beam of span 6 m. if M20 and Fe 250 grade steel. **09**

Q.5 Calculate the limiting moment of resistance & reinforcement required for T beam section having following sectional properties: **09**
Width of flange=1400 mm
Flange thickness =100 mm
Width of rib=250 mm
Effective depth =500 mm
Materials: M20 ,Fe 250

Section – II

Q.6 Design a rectangular beam, continuous over four column supports with effective span 6m each. The beam is subjected to an imposed load of 10 kN/m and live load of 15 kN/m. Use M25 concrete and Fe500 steel. **10**

Q.7 Determine reinforcement required for a beam size 230 mm x 600 mm subjected to shear force of 60 kN, torsional moment of 35 kN.m and bending moment of 80 kN.m. Use M 20 concrete and Fe 500 steel. **09**

Q.8 A short column 420 mm x 420 mm is provided with 8-16 mm diameter. The length of column is 2.25 m. It is effectively held in position at both the ends & restrained against rotation at other end. Find ultimate load of the column. Use M20 & Fe 415. **09**

Q.9 Design a circular column of diameter 400 mm with helical reinforcement subjected to a load of 1400 kN. Use M25 concrete and Fe415 steel. The column has unsupported length of 3 m and is effectively held in position at both ends but not restrained against rotation. **09**

Seat No.	

Set **Q**

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Concrete Structures I (BTN01505)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) While solving MCQ IS 456-2000 is not allowed.
4) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) In a simply supported slab, alternate bars are curtailed at _____. **01**
a) $1/4^{th}$ of the span b) $1/5^{th}$ of the span
c) $1/6^{th}$ of the span d) $1/7^{th}$ of the span

2) A short column of size 250mmx350mm is provided with longitudinal reinforcement of diameter 20mm and the diameter of tie is 8mm. According to IS456:2000, the maximum spacing between two ties is _____. **01**
a) 200 mm b) 350 mm
c) 300 mm d) 250 mm

3) The length of torsion reinforcement in two way slab is provided as _____. **01**
a) Shorter span/4 b) Shorter span/5
c) Shorter span/8 d) Shorter span/10

4) If the diameter of the longitudinal bars of a square column is 16 mm, the diameter of the lateral ties should not be less than ____. **01**
a) 4 mm b) 5 mm
c) 6 mm d) 8 mm

5) In two way restrained slab torsion steel is provided at _____. **01**
a) Top b) Bottom
c) Top & Bottom d) None of the above

6) Spacing of stirrups in a rectangular beam, is _____. **01**

a) Kept constant throughout the length
b) Decreased towards the center of the beam
c) Increased at the ends
d) Increased at the center of the beam

7) A rectangular slab 4m X 6m supported on two opposite shorter edge should be designed as _____. **01**

a) One way slab spanning along longer edge
b) Two way slab
c) One way slab spanning along shorter edge
d) None of above

8) The effective cover of beam depends o n _____. **01**

a) Diameter of main reinforcement
b) Grade of reinforcing steel
c) Width of beam
d) All of these

9) The minimum tension reinforcement for 250 mm x 400 mm effective deep beam of Fe500 grade steel is _____. **02**

a) 150 mm^2 b) 170 mm^2
c) 180 N/mm^2 d) 220 N/mm^2

10) The factored load carrying capacity of column of 300mm x600mm size with minimum percentage of steel for M20 and Fe415 grade is _____. **02**

a) 1840 KN b) 1900 KN
c) 1829 KN d) 1800 KN

11) A axially loaded column is of 300 mm x 300 mm size. Effective length of column is 3 m. What is the minimum eccentricity of the axial load of the column. **02**

a) 0 b) 10 mm
c) 16 mm d) 20 mm

Seat No.	

Set **Q**

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Concrete Structures I (BTN01505)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions from the remaining questions.
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4) Draw neat sketch's where required and assume suitable data if required and state it clearly.
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Section – I

Q.2 A roof of clear dimensions 4m x 5m supported on walls of 230mm thickness, with corners are held down. All the four edges of the slab are discontinuous. Design the slab, if the beam is carrying a live load of 3 kN/m^2. Use M 20 & Fe 415 steel. **10**

Q.3 Design a simply supported beam of clear span of 5m has to carry a superimposed load of 45 kN/m at service. The beam has bearing of 400 mm of each end. Use M 20 & Fe 415 steel. **09**

Q.4 A doubly reinforced beam 250 mm x 450 mm deep to centre of tensile reinforcement is provided with 2 bars of 16 mm diameter as compression steel with an effective cover of 50 mm and 4 bars of 25 mm diameter as tensile steel. Determine flexural strength & safe UDL on the simply supported beam of span 6 m. if M20 and Fe 250 grade steel. **09**

Q.5 Calculate the limiting moment of resistance & reinforcement required for T beam section having following sectional properties: **09**
Width of flange=1400 mm
Flange thickness =100 mm
Width of rib=250 mm
Effective depth =500 mm
Materials: M20 ,Fe 250

Section – II

Q.6 Design a rectangular beam, continuous over four column supports with effective span 6m each. The beam is subjected to an imposed load of 10 kN/m and live load of 15 kN/m. Use M25 concrete and Fe500 steel. **10**

Q.7 Determine reinforcement required for a beam size 230 mm x 600 mm subjected to shear force of 60 kN, torsional moment of 35 kN.m and bending moment of 80 kN.m. Use M 20 concrete and Fe 500 steel. **09**

Q.8 A short column 420 mm x 420 mm is provided with 8-16 mm diameter. The length of column is 2.25 m. It is effectively held in position at both the ends & restrained against rotation at other end. Find ultimate load of the column. Use M20 & Fe 415. **09**

Q.9 Design a circular column of diameter 400 mm with helical reinforcement subjected to a load of 1400 kN. Use M25 concrete and Fe415 steel. The column has unsupported length of 3 m and is effectively held in position at both ends but not restrained against rotation. **09**

Seat No.	

Set **R**

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Concrete Structures I (BTN01505)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) A rectangular slab 4m X 6m supported on two opposite shorter edge should be designed as _____. **01**
a) One way slab spanning along longer edge
b) Two way slab
c) One way slab spanning along shorter edge
d) None of above

2) The effective cover of beam depends o n _____. **01**
a) Diameter of main reinforcement
b) Grade of reinforcing steel
c) Width of beam
d) All of these

3) In a simply supported slab, alternate bars are curtailed at _____. **01**
a) $1/4^{th}$ of the span b) $1/5^{th}$ of the span
c) $1/6^{th}$ of the span d) $1/7^{th}$ of the span

4) A short column of size 250mmx350mm is provided with longitudinal reinforcement of diameter 20mm and the diameter of tie is 8mm. According to IS456:2000, the maximum spacing between two ties is _____. **01**
a) 200 mm b) 350 mm
c) 300 mm d) 250 mm

5) The length of torsion reinforcement in two way slab is provided as _____. **01**
a) Shorter span/4 b) Shorter span/5
c) Shorter span/8 d) Shorter span/10

6) If the diameter of the longitudinal bars of a square column is 16 mm, the diameter of the lateral ties should not be less than ____. **01**

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a) 1840 KN b) 1900 KN
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11) A axially loaded column is of 300 mm x 300 mm size. Effective length of column is 3 m. What is the minimum eccentricity of the axial load of the column. **02**

a) 0 b) 10 mm
c) 16 mm d) 20 mm

SLR-BD-293

Seat No.	

Set R

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Concrete Structures I (BTN01505)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 A roof of clear dimensions 4m x 5m supported on walls of 230mm thickness, with corners are held down. All the four edges of the slab are discontinuous. Design the slab, if the beam is carrying a live load of 3 kN/m^2. Use M 20 & Fe 415 steel. **10**

Q.3 Design a simply supported beam of clear span of 5m has to carry a superimposed load of 45 kN/m at service. The beam has bearing of 400 mm of each end. Use M 20 & Fe 415 steel. **09**

Q.4 A doubly reinforced beam 250 mm x 450 mm deep to centre of tensile reinforcement is provided with 2 bars of 16 mm diameter as compression steel with an effective cover of 50 mm and 4 bars of 25 mm diameter as tensile steel. Determine flexural strength & safe UDL on the simply supported beam of span 6 m. if M20 and Fe 250 grade steel. **09**

Q.5 Calculate the limiting moment of resistance & reinforcement required for T beam section having following sectional properties: **09**
Width of flange=1400 mm
Flange thickness =100 mm
Width of rib=250 mm
Effective depth =500 mm
Materials: M20 ,Fe 250

Section – II

Q.6 Design a rectangular beam, continuous over four column supports with effective span 6m each. The beam is subjected to an imposed load of 10 kN/m and live load of 15 kN/m. Use M25 concrete and Fe500 steel. **10**

Q.7 Determine reinforcement required for a beam size 230 mm x 600 mm subjected to shear force of 60 kN, torsional moment of 35 kN.m and bending moment of 80 kN.m. Use M 20 concrete and Fe 500 steel. **09**

Q.8 A short column 420 mm x 420 mm is provided with 8-16 mm diameter. The length of column is 2.25 m. It is effectively held in position at both the ends & restrained against rotation at other end. Find ultimate load of the column. Use M20 & Fe 415. **09**

Q.9 Design a circular column of diameter 400 mm with helical reinforcement subjected to a load of 1400 kN. Use M25 concrete and Fe415 steel. The column has unsupported length of 3 m and is effectively held in position at both ends but not restrained against rotation. **09**

Seat No.	

Set **S**

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Concrete Structures I (BTN01505)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) The length of torsion reinforcement in two way slab is provided as _____. **01**

a) Shorter span/4 b) Shorter span/5
c) Shorter span/8 d) Shorter span/10

2) If the diameter of the longitudinal bars of a square column is 16 mm, the diameter of the lateral ties should not be less than ____. **01**

a) 4 mm b) 5 mm
c) 6 mm d) 8 mm

3) In two way restrained slab torsion steel is provided at _____. **01**

a) Top b) Bottom
c) Top & Bottom d) None of the above

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c) One way slab spanning along shorter edge
d) None of above

6) The effective cover of beam depends o n _____. **01**

a) Diameter of main reinforcement
b) Grade of reinforcing steel
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8) A short column of size 250mmx350mm is provided with longitudinal reinforcement of diameter 20mm and the diameter of tie is 8mm. According to IS456:2000, the maximum spacing between two ties is _____. **01**

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a) 1840 KN b) 1900 KN
c) 1829 KN d) 1800 KN

11) A axially loaded column is of 300 mm x 300 mm size. Effective length of column is 3 m. What is the minimum eccentricity of the axial load of the column. **02**

a) 0 b) 10 mm
c) 16 mm d) 20 mm

SLR-BD-293

Seat No.	

Set S

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Concrete Structures I (BTN01505)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions from the remaining questions.
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Section – I

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Q.3 Design a simply supported beam of clear span of 5m has to carry a superimposed load of 45 kN/m at service. The beam has bearing of 400 mm of each end. Use M 20 & Fe 415 steel. **09**

Q.4 A doubly reinforced beam 250 mm x 450 mm deep to centre of tensile reinforcement is provided with 2 bars of 16 mm diameter as compression steel with an effective cover of 50 mm and 4 bars of 25 mm diameter as tensile steel. Determine flexural strength & safe UDL on the simply supported beam of span 6 m. if M20 and Fe 250 grade steel. **09**

Q.5 Calculate the limiting moment of resistance & reinforcement required for T beam section having following sectional properties: **09**
Width of flange=1400 mm
Flange thickness =100 mm
Width of rib=250 mm
Effective depth =500 mm
Materials: M20 ,Fe 250

Section – II

Q.6 Design a rectangular beam, continuous over four column supports with effective span 6m each. The beam is subjected to an imposed load of 10 kN/m and live load of 15 kN/m. Use M25 concrete and Fe500 steel. **10**

Q.7 Determine reinforcement required for a beam size 230 mm x 600 mm subjected to shear force of 60 kN, torsional moment of 35 kN.m and bending moment of 80 kN.m. Use M 20 concrete and Fe 500 steel. **09**

Q.8 A short column 420 mm x 420 mm is provided with 8-16 mm diameter. The length of column is 2.25 m. It is effectively held in position at both the ends & restrained against rotation at other end. Find ultimate load of the column. Use M20 & Fe 415. **09**

Q.9 Design a circular column of diameter 400 mm with helical reinforcement subjected to a load of 1400 kN. Use M25 concrete and Fe415 steel. The column has unsupported length of 3 m and is effectively held in position at both ends but not restrained against rotation. **09**

SLR-BD-294

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Environmental Engineering - II (BTN01506)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions **14**

1) What is the quantity of wastewater required if water supply is 200 lpcd?
a) 160 lpcd b) 140 lpcd
c) 135 lpcd d) 150 lpcd

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

3) Which of the following is/are not source of wastewater?
a) Chimney b) Kitchen
c) Bathroom d) All of the above

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

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

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

7) The coning plume from the stacks is observed in _____ type of atmosphere.

a) Stable b) Unstable
c) Inversion d) Neutral

8) As per CPCB, the COD limit is _____

a) 1000 mg/lt b) 800 mg/lt
c) 250 mg/lt d) 300 mg/lt

9) Which of the standards govern the discharge of wastewater into streams?

a) IS 10500:2016
b) Schedule IV of Environmental (Protection) Rules,1986
c) Schedule I of IUCN
d) Schedule II of WHO

10) Which of the following is/are the source/s of Air pollution?

a) Burning of wood for cooking
b) Vehicular Emission
c) Chimney Smoke from Industries
d) All of the above

11) _____ sewer collects sewage directly from house.

a) Trunk b) Lateral
c) Submain d) None of the above

12) The wastewater from bathrooms, kitchens places & wash basins is known as _____

a) Sullage b) Sewage
c) Red water d) None of the above

13) What is the sequence for Solid waste treatment & Disposal?

a) Segregation > Collection > Waste to energy > Landfill
b) Waste of energy > Landfill > Segregation > Collection
c) Landfill > Segregation > Collection > Waste to energy
d) None of the above

14) Which of the following is correct regarding BOD?

a) It is used to analyse the inorganic content of wastewater.
b) It is used to analyse the organic content of wastewater.
c) It is measure of [OH^-] ions.
d) None of the above

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Environmental Engineering - II (BTN01506)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions remaining of the questions.
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4) Use of non-programmable calculator is allowed.
5) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Attempt the following

a) Draw complete and neat sketch of wastewater treatment plant and discuss each part. **07**

b) Define the following with equations **03**
1) HRT
2) F/M ratio

Q.3 Attempt the following

a) Design a completely mixed Asp for following data: **06**
1) Wastewater flow = 20MLd
2) Influent BOD = 200 mg/Lit
3) Effluent BOD = 25 mg/Lit
4) MLSS = 2000 mg/Lit
5) F/M = 0.2
6) SVI = 80 ml/gm
7) Sludge age = 10 days

Assume any missing data appropriately.

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

Q.4 Attempt the following

a) Determine Ultimate BOD & BOD_3. If the BOD_5 is 200mg/lt at 20^0C assuming the deoxygenation constant as 0.25/day. **06**

b) Explain Sequential Batch Reactor with a neat diagram. **03**

Q.5 Attempt the following

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

b) Differentiate between Aerobic and Anaerobic treatment **03**

Section – II

Q.6 Attempt the following

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

b) A stream, saturated with DO has flow of 1.3 m^3/s, BOD of 4 mg/L and rate constant of 0.25 per day. It receives an effluent discharge of 0.35 m^3/s. Having BOD 20 mg/L, DO 5 mg/L and rate constant 0.13 per day. The average velocity of flow of the stream is 0.15 m/s. Calculate the DO deficit at point 20 km & 40 km downstream. Assume that the temperature is 20^0C throughout and BOD is measured at 5 days. Take saturation Do at 20^0 C as 9.17 mg/L. **06**

Q.7 Attempt the following

a) Illustrate the functioning of Indore method of composting with the help of a diagram. **05**

b) Explain the conveyance system of solid waste. **04**

Q.8 Attempt the following

a) With the help of a diagram, explain Cyclonic Precipitator. **05**

b) Discuss the source of Air pollution. With the help of a diagram. **04**

Q.9 Discuss the following **09**

a) Electrostatic Precipitator

b) Sludge drying Bed

c) MBBR

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Environmental Engineering - II (BTN01506)

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Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Environmental Engineering - II (BTN01506)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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b) Explain Sequential Batch Reactor with a neat diagram. **03**

Q.5 Attempt the following

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

b) Differentiate between Aerobic and Anaerobic treatment **03**

Section – II

Q.6 Attempt the following

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

b) A stream, saturated with DO has flow of 1.3 m^3/s, BOD of 4 mg/L and rate constant of 0.25 per day. It receives an effluent discharge of 0.35 m^3/s. Having BOD 20 mg/L, DO 5 mg/L and rate constant 0.13 per day. The average velocity of flow of the stream is 0.15 m/s. Calculate the DO deficit at point 20 km & 40 km downstream. Assume that the temperature is 20^0C throughout and BOD is measured at 5 days. Take saturation Do at 20^0 C as 9.17 mg/L. **06**

Q.7 Attempt the following

a) Illustrate the functioning of Indore method of composting with the help of a diagram. **05**

b) Explain the conveyance system of solid waste. **04**

Q.8 Attempt the following

a) With the help of a diagram, explain Cyclonic Precipitator. **05**

b) Discuss the source of Air pollution. With the help of a diagram. **04**

Q.9 Discuss the following **09**

a) Electrostatic Precipitator

b) Sludge drying Bed

c) MBBR

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Environmental Engineering - II (BTN01506)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions **14**

1) _____ sewer collects sewage directly from house.
a) Trunk b) Lateral
c) Submain d) None of the above

2) The wastewater from bathrooms, kitchens places & wash basins is known as _____
a) Sullage b) Sewage
c) Red water d) None of the above

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

4) Which of the following is correct regarding BOD?
a) It is used to analyse the inorganic content of wastewater.
b) It is used to analyse the organic content of wastewater.
c) It is measure of [OH^-] ions.
d) None of the above

5) What is the quantity of wastewater required if water supply is 200 lpcd?
a) 160 lpcd b) 140 lpcd
c) 135 lpcd d) 150 lpcd

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

7) Which of the following is/are not source of wastewater?
a) Chimney b) Kitchen
c) Bathroom d) All of the above

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

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

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

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

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

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

14) Which of the following is/are the source/s of Air pollution?
a) Burning of wood for cooking
b) Vehicular Emission
c) Chimney Smoke from Industries
d) All of the above

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Environmental Engineering - II (BTN01506)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions remaining of the questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions.
3) Figures to the right indicate full marks.
4) Use of non-programmable calculator is allowed.
5) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Attempt the following

a) Draw complete and neat sketch of wastewater treatment plant and discuss each part. **07**

b) Define the following with equations **03**
1) HRT
2) F/M ratio

Q.3 Attempt the following

a) Design a completely mixed Asp for following data: **06**
1) Wastewater flow = 20MLd
2) Influent BOD = 200 mg/Lit
3) Effluent BOD = 25 mg/Lit
4) MLSS = 2000 mg/Lit
5) F/M = 0.2
6) SVI = 80 ml/gm
7) Sludge age = 10 days

Assume any missing data appropriately.

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

Q.4 Attempt the following

a) Determine Ultimate BOD & BOD_3. If the BOD_5 is 200mg/lt at 20^0C assuming the deoxygenation constant as 0.25/day. **06**

b) Explain Sequential Batch Reactor with a neat diagram. **03**

Q.5 Attempt the following

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

b) Differentiate between Aerobic and Anaerobic treatment **03**

Section – II

Q.6 Attempt the following

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

b) A stream, saturated with DO has flow of 1.3 m^3/s, BOD of 4 mg/L and rate constant of 0.25 per day. It receives an effluent discharge of 0.35 m^3/s. Having BOD 20 mg/L, DO 5 mg/L and rate constant 0.13 per day. The average velocity of flow of the stream is 0.15 m/s. Calculate the DO deficit at point 20 km & 40 km downstream. Assume that the temperature is 20^0C throughout and BOD is measured at 5 days. Take saturation Do at 20^0 C as 9.17 mg/L. **06**

Q.7 Attempt the following

a) Illustrate the functioning of Indore method of composting with the help of a diagram. **05**

b) Explain the conveyance system of solid waste. **04**

Q.8 Attempt the following

a) With the help of a diagram, explain Cyclonic Precipitator. **05**

b) Discuss the source of Air pollution. With the help of a diagram. **04**

Q.9 Discuss the following **09**

a) Electrostatic Precipitator

b) Sludge drying Bed

c) MBBR

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Environmental Engineering - II (BTN01506)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions **14**

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

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

3) As per CPCB, the COD limit is _____
a) 1000 mg/lt b) 800 mg/lt
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4) Which of the standards govern the discharge of wastewater into streams?
a) IS 10500:2016
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c) Schedule I of IUCN
d) Schedule II of WHO

5) Which of the following is/are the source/s of Air pollution?
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c) Chimney Smoke from Industries
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7) The wastewater from bathrooms, kitchens places & wash basins is known as _____

a) Sullage
b) Sewage
c) Red water
d) None of the above

8) What is the sequence for Solid waste treatment & Disposal?

a) Segregation > Collection > Waste to energy > Landfill
b) Waste of energy > Landfill > Segregation > Collection
c) Landfill > Segregation > Collection > Waste to energy
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10) What is the quantity of wastewater required if water supply is 200 lpcd?

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b) 140 lpcd
c) 135 lpcd
d) 150 lpcd

11) Which of the following is correct sequence?

a) Screening > Distribution > Aeration > Landfill
b) Screening > Sedimentation > Aeration > Landfill
c) Sedimentation > Aeration > Screening > Landfill
d) Aeration > Sedimentation > Landfill > Distribution

12) Which of the following is/are not source of wastewater?

a) Chimney
b) Kitchen
c) Bathroom
d) All of the above

13) In composting method of trenching, trenches of _____ m length are excavated.

a) 4 – 10
b) 7 – 12
c) 10 – 20
d) Above 20

14) Controlled tipping method of disposal of refuse requires an area of _____ m^2/capita/yr.

a) 0.1 – 0.3
b) 0.3 – 0.5
c) 0.5 – 1.0
d) 1.0 – 1.2

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Environmental Engineering - II (BTN01506)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions remaining of the questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions.
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4) Use of non-programmable calculator is allowed.
5) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Attempt the following

a) Draw complete and neat sketch of wastewater treatment plant and discuss each part. **07**

b) Define the following with equations **03**
1) HRT
2) F/M ratio

Q.3 Attempt the following

a) Design a completely mixed Asp for following data: **06**
1) Wastewater flow = 20MLd
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4) MLSS = 2000 mg/Lit
5) F/M = 0.2
6) SVI = 80 ml/gm
7) Sludge age = 10 days

Assume any missing data appropriately.

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

Q.4 Attempt the following

a) Determine Ultimate BOD & BOD_3. If the BOD_5 is 200mg/lt at 20^0C assuming the deoxygenation constant as 0.25/day. **06**

b) Explain Sequential Batch Reactor with a neat diagram. **03**

Q.5 Attempt the following

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

b) Differentiate between Aerobic and Anaerobic treatment **03**

Section – II

Q.6 Attempt the following

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

b) A stream, saturated with DO has flow of 1.3 m^3/s, BOD of 4 mg/L and rate constant of 0.25 per day. It receives an effluent discharge of 0.35 m^3/s. Having BOD 20 mg/L, DO 5 mg/L and rate constant 0.13 per day. The average velocity of flow of the stream is 0.15 m/s. Calculate the DO deficit at point 20 km & 40 km downstream. Assume that the temperature is 20^0C throughout and BOD is measured at 5 days. Take saturation Do at 20^0 C as 9.17 mg/L. **06**

Q.7 Attempt the following

a) Illustrate the functioning of Indore method of composting with the help of a diagram. **05**

b) Explain the conveyance system of solid waste. **04**

Q.8 Attempt the following

a) With the help of a diagram, explain Cyclonic Precipitator. **05**

b) Discuss the source of Air pollution. With the help of a diagram. **04**

Q.9 Discuss the following **09**

a) Electrostatic Precipitator

b) Sludge drying Bed

c) MBBR

SLR-BD-295

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Risk Assessment and Vulnerability Analysis (BTN01514)

Day & Date: Saturday 24-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the primary purpose of risk assessment?
a) To eliminate all risks
b) To identify, assess, and prioritize risks
c) To transfer all risks to third parties
d) To ignore risks until they become issues

2) Which of the following is NOT a step in the risk assessment process?
a) Risk identification b) Risk elimination
c) Risk analysis d) Risk evaluation

3) Vulnerability analysis primarily focuses on: _____.
a) Identifying potential threats
b) Assessing the likelihood of risks
c) Identifying weaknesses in systems or processes
d) Quantifying potential impacts

4) Which of the following is an example of a vulnerability?
a) Lack of insurance coverage
b) Regular system backups
c) Strong encryption protocols
d) Employee training programs

5) What does the term "likelihood" refer to in risk assessment?
a) The potential impact of a risk
b) The probability of a risk occurring
c) The timeframe within which a risk may occur
d) The severity of consequences

6) Which of the following is NOT a common risk assessment method?
a) SWOT analysis
b) Failure mode and effects analysis (FMEA)
c) Fault tree analysis (FTA)
d) Delphi technique

7) In risk management, what does the acronym “FMEA” stand for?
a) Failure Management and Evaluation Analysis
b) Fault mode and Effects Analysis
c) Failure Mode and Effects Analysis
d) Fault Management and Evaluation Assessment

8) What is the purpose of a risk matrix?
a) To visualize and prioritize risks based on their likelihood and impact
b) To eliminate all risks from consideration
c) To ignore risks until they manifest
d) To transfer all risks to third parties

9) Which of the following is NOT a component of risk assessment?
a) Risk identification
b) Risk acceptance
c) Risk control
d) Risk elimination

10) In vulnerability analysis, what does the term "exploit" refer to?
a) Taking advantage of identified weaknesses
b) Eliminating vulnerabilities entirely
c) Ignoring vulnerabilities
d) Transferring vulnerabilities to third parties

11) Which of the following is NOT a type of risk control measure?
a) Avoidance
b) Acceptance
c) Denial
d) Mitigation

12) What is the purpose of risk mitigation?
a) To eliminate all risks
b) To transfer all risks to third parties
c) To reduce the likelihood or impact of identified risks
d) To ignore risks until they manifest

13) What is the difference between qualitative and quantitative risk assessment?
a) Qualitative assesses likelihood, while quantitative assesses impact
b) Qualitative uses numerical data, while quantitative relies on subjective judgment
c) Qualitative assigns numeric values to risks, while quantitative uses descriptive scales
d) There is no difference between them

14) Which of the following is NOT a benefit of conducting risk assessment and vulnerability analysis?

a) Improved decision-making
b) Reduced uncertainty
c) Increased likelihood of risk occurrence
d) Better resource allocation

Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Risk Assessment and Vulnerability Analysis (BTN01514)

Day & Date: Saturday 24-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory; answer any one from remaining questions from Section - I.
2) Q.6 is compulsory; answer any one from remaining questions from Section - II.
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2	**a)**	Explain the difference between risk assessment and vulnerability analysis.	**07**
	b)	Explain different strategies used for risk reduction.	**07**
Q.3	**a)**	What role does data analysis play in risk assessment and vulnerability analysis?	**07**
	b)	Explain participatory risk assessment methods.	**07**
Q.4	**a)**	Explain vulnerability identification process.	**07**
	b)	Explain the different issues involved in urban planning.	**07**

Section – II

Q.5	**a)**	What are common methods or approaches used in risk assessment and vulnerability analysis?	**07**
	b)	Write a note on systematic management and strategic planning for vulnerability reduction.	**07**
Q.6	**a)**	Explain the concept of disaster epidemiology with its necessity and constraints.	**07**
	b)	Explain the role of information and communication technology in health response	**07**
Q.7	**a)**	What are some challenges or limitations associated with conducting risk assessment and Vulnerability analysis?	**07**
	b)	Explain policies applied for disaster management and development plan for disaster mitigation.	**07**

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Risk Assessment and Vulnerability Analysis (BTN01514)

Day & Date: Saturday 24-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the purpose of a risk matrix?
a) To visualize and prioritize risks based on their likelihood and impact
b) To eliminate all risks from consideration
c) To ignore risks until they manifest
d) To transfer all risks to third parties

2) Which of the following is NOT a component of risk assessment?
a) Risk identification b) Risk acceptance
c) Risk control d) Risk elimination

3) In vulnerability analysis, what does the term "exploit" refer to?
a) Taking advantage of identified weaknesses
b) Eliminating vulnerabilities entirely
c) Ignoring vulnerabilities
d) Transferring vulnerabilities to third parties

4) Which of the following is NOT a type of risk control measure?
a) Avoidance b) Acceptance
c) Denial d) Mitigation

5) What is the purpose of risk mitigation?
a) To eliminate all risks
b) To transfer all risks to third parties
c) To reduce the likelihood or impact of identified risks
d) To ignore risks until they manifest

6) What is the difference between qualitative and quantitative risk assessment?
   a) Qualitative assesses likelihood, while quantitative assesses impact
   b) Qualitative uses numerical data, while quantitative relies on subjective judgment
   c) Qualitative assigns numeric values to risks, while quantitative uses descriptive scales
   d) There is no difference between them

7) Which of the following is NOT a benefit of conducting risk assessment and vulnerability analysis?
   a) Improved decision-making
   b) Reduced uncertainty
   c) Increased likelihood of risk occurrence
   d) Better resource allocation

8) What is the primary purpose of risk assessment?
   a) To eliminate all risks
   b) To identify, assess, and prioritize risks
   c) To transfer all risks to third parties
   d) To ignore risks until they become issues

9) Which of the following is NOT a step in the risk assessment process?
   a) Risk identification
   b) Risk elimination
   c) Risk analysis
   d) Risk evaluation

10) Vulnerability analysis primarily focuses on: _____.
   a) Identifying potential threats
   b) Assessing the likelihood of risks
   c) Identifying weaknesses in systems or processes
   d) Quantifying potential impacts

11) Which of the following is an example of a vulnerability?
   a) Lack of insurance coverage
   b) Regular system backups
   c) Strong encryption protocols
   d) Employee training programs

12) What does the term "likelihood" refer to in risk assessment?
   a) The potential impact of a risk
   b) The probability of a risk occurring
   c) The timeframe within which a risk may occur
   d) The severity of consequences

13) Which of the following is NOT a common risk assessment method?
a) SWOT analysis
b) Failure mode and effects analysis (FMEA)
c) Fault tree analysis (FTA)
d) Delphi technique

14) In risk management, what does the acronym “FMEA” stand for?
a) Failure Management and Evaluation Analysis
b) Fault mode and Effects Analysis
c) Failure Mode and Effects Analysis
d) Fault Management and Evaluation Assessment

SLR-BD-295

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Risk Assessment and Vulnerability Analysis (BTN01514)

Day & Date: Saturday 24-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory; answer any one from remaining questions from Section - I.
2) Q.6 is compulsory; answer any one from remaining questions from Section - II.
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2	**a)**	Explain the difference between risk assessment and vulnerability analysis.	**07**
	b)	Explain different strategies used for risk reduction.	**07**
Q.3	**a)**	What role does data analysis play in risk assessment and vulnerability analysis?	**07**
	b)	Explain participatory risk assessment methods.	**07**
Q.4	**a)**	Explain vulnerability identification process.	**07**
	b)	Explain the different issues involved in urban planning.	**07**

Section – II

Q.5	**a)**	What are common methods or approaches used in risk assessment and vulnerability analysis?	**07**
	b)	Write a note on systematic management and strategic planning for vulnerability reduction.	**07**
Q.6	**a)**	Explain the concept of disaster epidemiology with its necessity and constraints.	**07**
	b)	Explain the role of information and communication technology in health response	**07**
Q.7	**a)**	What are some challenges or limitations associated with conducting risk assessment and Vulnerability analysis?	**07**
	b)	Explain policies applied for disaster management and development plan for disaster mitigation.	**07**

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Risk Assessment and Vulnerability Analysis (BTN01514)

Day & Date: Saturday 24-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume additional data if required and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following is NOT a type of risk control measure?
a) Avoidance b) Acceptance
c) Denial d) Mitigation

2) What is the purpose of risk mitigation?
a) To eliminate all risks
b) To transfer all risks to third parties
c) To reduce the likelihood or impact of identified risks
d) To ignore risks until they manifest

3) What is the difference between qualitative and quantitative risk assessment?
a) Qualitative assesses likelihood, while quantitative assesses impact
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4) Which of the following is NOT a benefit of conducting risk assessment and vulnerability analysis?
a) Improved decision-making
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c) Increased likelihood of risk occurrence
d) Better resource allocation

5) What is the primary purpose of risk assessment?
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6) Which of the following is NOT a step in the risk assessment process?
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b) Risk elimination
c) Risk analysis
d) Risk evaluation

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a) To visualize and prioritize risks based on their likelihood and impact
b) To eliminate all risks from consideration
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d) To transfer all risks to third parties

13) Which of the following is NOT a component of risk assessment?
a) Risk identification
b) Risk acceptance
c) Risk control
d) Risk elimination

14) In vulnerability analysis, what does the term "exploit" refer to?

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b) Eliminating vulnerabilities entirely
c) Ignoring vulnerabilities
d) Transferring vulnerabilities to third parties

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Risk Assessment and Vulnerability Analysis (BTN01514)

Day & Date: Saturday 24-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory; answer any one from remaining questions from Section - I.
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3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2	**a)**	Explain the difference between risk assessment and vulnerability analysis.	**07**
	b)	Explain different strategies used for risk reduction.	**07**
Q.3	**a)**	What role does data analysis play in risk assessment and vulnerability analysis?	**07**
	b)	Explain participatory risk assessment methods.	**07**
Q.4	**a)**	Explain vulnerability identification process.	**07**
	b)	Explain the different issues involved in urban planning.	**07**

Section – II

Q.5	**a)**	What are common methods or approaches used in risk assessment and vulnerability analysis?	**07**
	b)	Write a note on systematic management and strategic planning for vulnerability reduction.	**07**
Q.6	**a)**	Explain the concept of disaster epidemiology with its necessity and constraints.	**07**
	b)	Explain the role of information and communication technology in health response	**07**
Q.7	**a)**	What are some challenges or limitations associated with conducting risk assessment and Vulnerability analysis?	**07**
	b)	Explain policies applied for disaster management and development plan for disaster mitigation.	**07**

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Risk Assessment and Vulnerability Analysis (BTN01514)

Day & Date: Saturday 24-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) Which of the following is NOT a common risk assessment method?
a) SWOT analysis
b) Failure mode and effects analysis (FMEA)
c) Fault tree analysis (FTA)
d) Delphi technique

2) In risk management, what does the acronym "FMEA" stand for?
a) Failure Management and Evaluation Analysis
b) Fault mode and Effects Analysis
c) Failure Mode and Effects Analysis
d) Fault Management and Evaluation Assessment

3) What is the purpose of a risk matrix?
a) To visualize and prioritize risks based on their likelihood and impact
b) To eliminate all risks from consideration
c) To ignore risks until they manifest
d) To transfer all risks to third parties

4) Which of the following is NOT a component of risk assessment?
a) Risk identification b) Risk acceptance
c) Risk control d) Risk elimination

5) In vulnerability analysis, what does the term "exploit" refer to?
a) Taking advantage of identified weaknesses
b) Eliminating vulnerabilities entirely
c) Ignoring vulnerabilities
d) Transferring vulnerabilities to third parties

6) Which of the following is NOT a type of risk control measure?
a) Avoidance b) Acceptance
c) Denial d) Mitigation

7) What is the purpose of risk mitigation?
a) To eliminate all risks
b) To transfer all risks to third parties
c) To reduce the likelihood or impact of identified risks
d) To ignore risks until they manifest

8) What is the difference between qualitative and quantitative risk assessment?
a) Qualitative assesses likelihood, while quantitative assesses impact
b) Qualitative uses numerical data, while quantitative relies on subjective judgment
c) Qualitative assigns numeric values to risks, while quantitative uses descriptive scales
d) There is no difference between them

9) Which of the following is NOT a benefit of conducting risk assessment and vulnerability analysis?
a) Improved decision-making
b) Reduced uncertainty
c) Increased likelihood of risk occurrence
d) Better resource allocation

10) What is the primary purpose of risk assessment?
a) To eliminate all risks
b) To identify, assess, and prioritize risks
c) To transfer all risks to third parties
d) To ignore risks until they become issues

11) Which of the following is NOT a step in the risk assessment process?
a) Risk identification b) Risk elimination
c) Risk analysis d) Risk evaluation

12) Vulnerability analysis primarily focuses on: _____.
a) Identifying potential threats
b) Assessing the likelihood of risks
c) Identifying weaknesses in systems or processes
d) Quantifying potential impacts

13) Which of the following is an example of a vulnerability?
a) Lack of insurance coverage
b) Regular system backups
c) Strong encryption protocols
d) Employee training programs

14) What does the term "likelihood" refer to in risk assessment?

a) The potential impact of a risk
b) The probability of a risk occurring
c) The timeframe within which a risk may occur
d) The severity of consequences

SLR-BD-295

Seat No.	

Set S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Risk Assessment and Vulnerability Analysis (BTN01514)

Day & Date: Saturday 24-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory; answer any one from remaining questions from Section - I.
2) Q.6 is compulsory; answer any one from remaining questions from Section - II.
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2	**a)**	Explain the difference between risk assessment and vulnerability analysis.	**07**
	b)	Explain different strategies used for risk reduction.	**07**
Q.3	**a)**	What role does data analysis play in risk assessment and vulnerability analysis?	**07**
	b)	Explain participatory risk assessment methods.	**07**
Q.4	**a)**	Explain vulnerability identification process.	**07**
	b)	Explain the different issues involved in urban planning.	**07**

Section – II

Q.5	**a)**	What are common methods or approaches used in risk assessment and vulnerability analysis?	**07**
	b)	Write a note on systematic management and strategic planning for vulnerability reduction.	**07**
Q.6	**a)**	Explain the concept of disaster epidemiology with its necessity and constraints.	**07**
	b)	Explain the role of information and communication technology in health response	**07**
Q.7	**a)**	What are some challenges or limitations associated with conducting risk assessment and Vulnerability analysis?	**07**
	b)	Explain policies applied for disaster management and development plan for disaster mitigation.	**07**

SLR-BD-296

Seat No.		Set	P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Planning and Design of Rural Roads (BTN01515)

Day & Date: Saturday 24-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Steps involves in planning database are _____.
a) Data Requirement b) Data Model
c) Data Security d) All of these

2) Network Planning for rural roads involves _____.
a) Road classification b) Network modelling
c) Trip Generation d) Modal Split

3) Key points related to the PMGSY road alignment _____.
a) Planning b) Surveying
c) Connectivity d) All of these

4) Factors affecting geometric design are _____.
a) Road user characteristics b) Vehicular characteristics
c) Safety Requirement d) All of these

5) Normal reaction time as per IRC code is given by for complex situation is _____.
a) 0.5-1 sec b) 1-2 sec
c) 3-4 sec d) 2.5-3 sec

6) Which of the following is not Urban roads?
a) Arterial roads b) Major district roads
c) Collector streets d) Local streets

7) For concrete and bituminous pavement value of camber is given by _____.
a) 0.5 % b) 2 %
c) 3 % d) 4 %

8) The design of horizontal and vertical alignments, super elevation, gradient is worst affected by _____.

a) Length of vehicle b) Width of vehicle
c) Speed of vehicle d) Height of vehicle

9) The Type of transition Curve that is generally provided on hill road is _____.

a) Circular b) Cubic parabola
c) Lemniscate spiral d) Spiral

10) The rate of rise or fall along the length of road is known as _____.

a) Cambe b) super elevation
c) side slope d) Gradient

11) The sight distance is measured along the middle of the _____.

a) Inner lane b) Outer lane
c) Middle lane d) None of these

12) Minimum thickness of the base of a flexible pavement is _____.

a) 15 cm b) 20 cm
c) 10 cm d) 5 cm

13) Which of the following it NOT a critical parameter to control cracking and rutting in a flexible pavement?

a) Tensile strain near the surface close to the edge of the wheel
b) Vertical sub-base strain
c) Vertical subgrade strain
d) Tensile strain at the bottom of bituminous layer

14) Which is bottom most portion of pavement in case of rural roads?

a) Sub-base b) Subgrade
c) Base course d) Surface course

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Planning and Design of Rural Roads (BTN01515)

Day & Date: Saturday 24-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed & mention it clearly.
4) Draw neat sketches wherever necessary.

Section – I

Q.2 Attempt the following (Any Two). **14**

a) Explain 'Governing Factors for Route Selection' in rural roads.

b) Explain the concept of 'Network Planning in Rural Roads'.

c) Enlist and explain various factors affecting geometric design of roads.

Q.3 Attempt the following (Any Two). **14**

a) Calculate length of Summit curve required to move the vehicle with design speed of 80 kmph and reaction time of 2.5 seconds. Vehicle is moving with acceding gradient of 3% and then descending gradient of 5%. Coefficient of longitudinal friction is 0.35. Calculate length of summit curve for cases:
1) L > SSD
2) L< SSD

b) Explain procedure for the design of flexible pavement in Rural Roads.

c) CBR test is performed on flexible pavement and load verses penetration table is shown below, an initial traffic of 30 CVPD, with a growth rate of 6 per cent per annum for a location having annual rainfall of 1200 mm. The design life is 10 years. Determine the pavement thickness.
VDF = 2.5 Design CBR value for subgrade = 5.0%

Penetration	0	0.5	1	1.5	2	2.5	3	4	5	7.5	10	12.5
Load (kg)	0	8	26	43	63	75	84	105	114	135	151	165

Section – II

Q.4 Attempt the following (Any Two). **14**

a) Explain Cross drains; types, requirements, choice of different types of cross drains.

b) Explain Standard design of small bridges.

c) Explain Construction of roller compacted concrete.

Q.5 Attempt the following (Any Two). **14**

a) Explain quality control in construction.

b) Explain maintenance of paved roads.

c) Explain the concept of ‘Rehabilitation’.

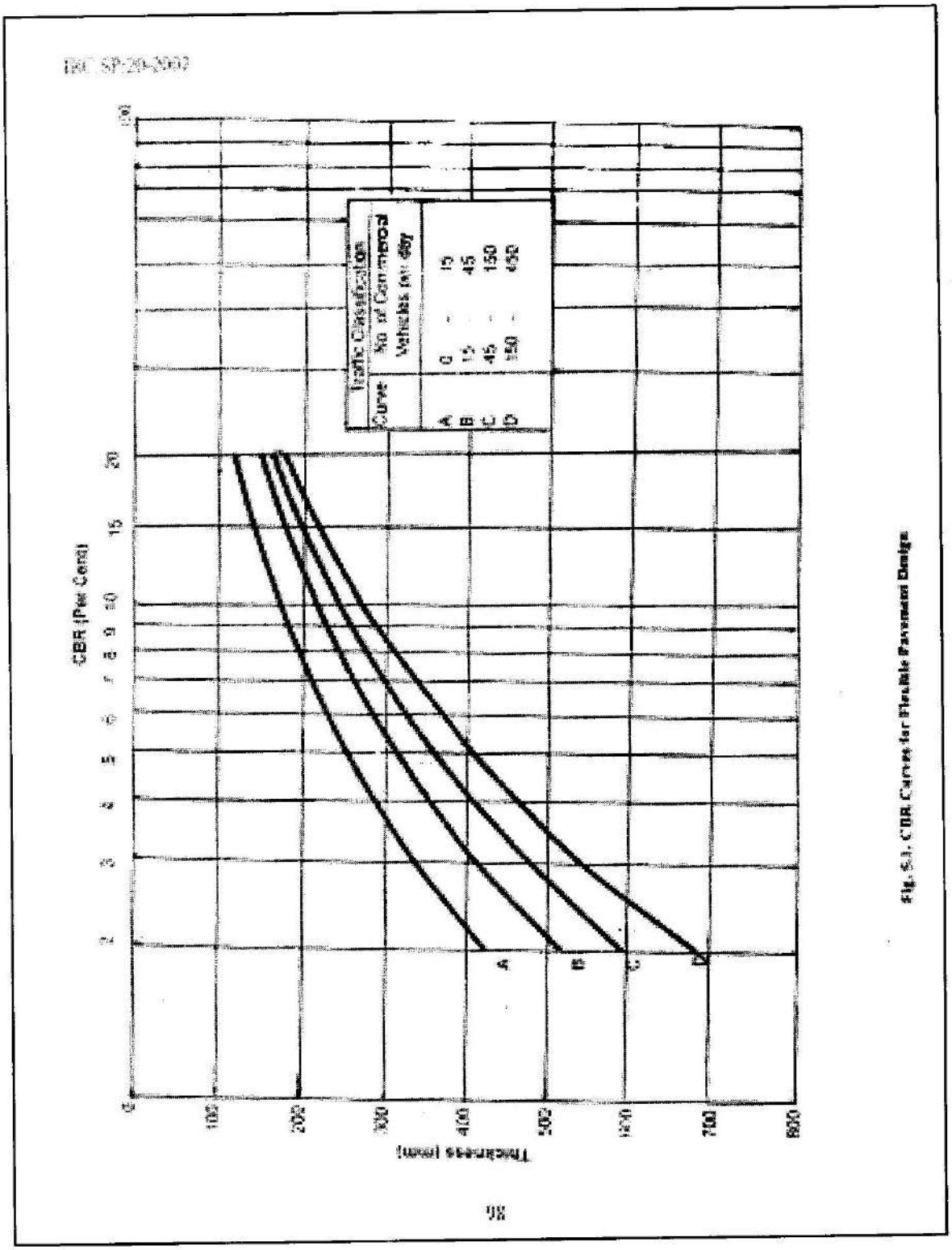
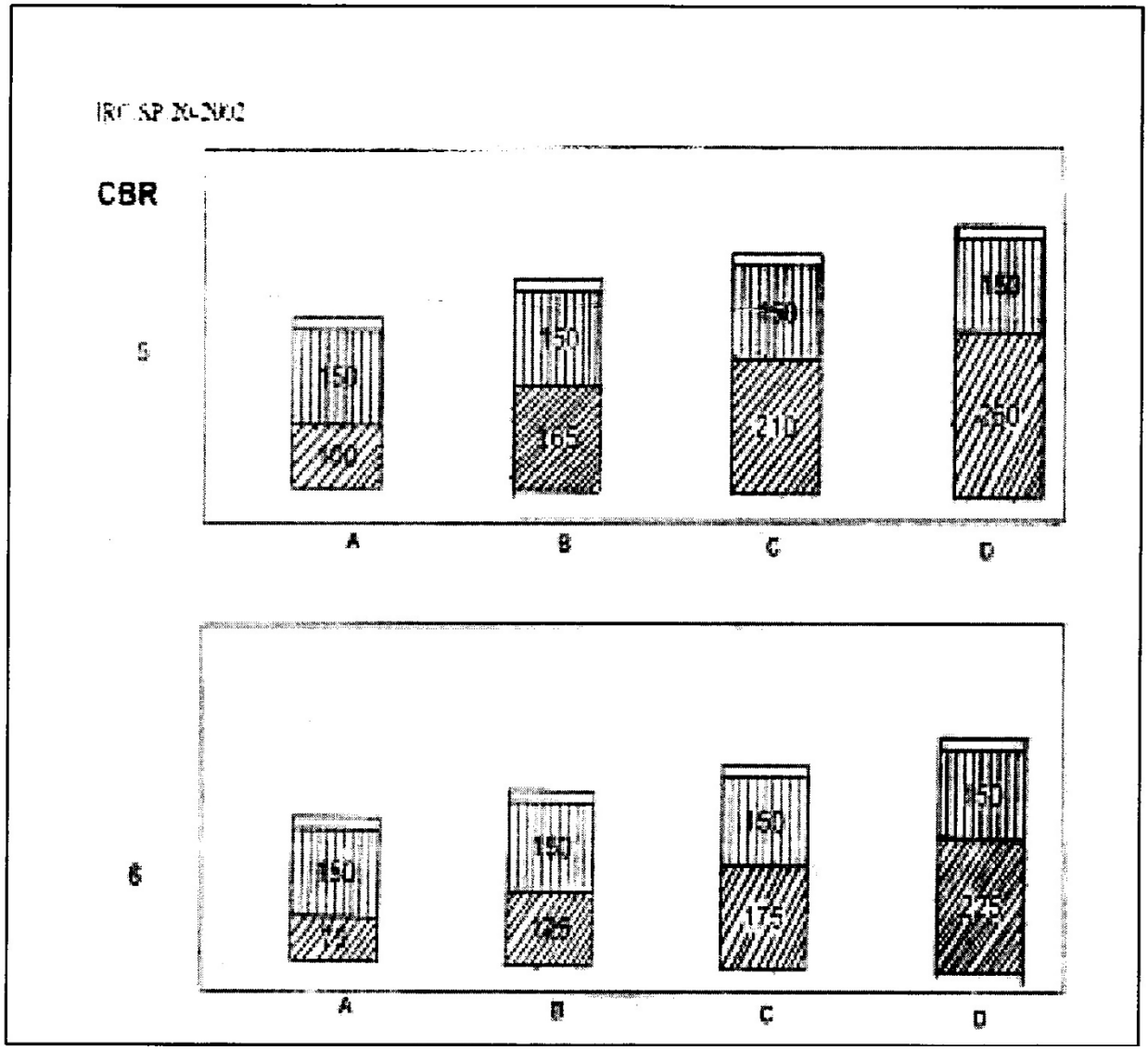


Fig. 5.1 CBR Curves for Flexible Pavement Design

IRC SP 20-2002



Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Planning and Design of Rural Roads (BTN01515)

Day & Date: Saturday 24-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The design of horizontal and vertical alignments, super elevation, gradient is worst affected by _____.
a) Length of vehicle b) Width of vehicle
c) Speed of vehicle d) Height of vehicle

2) The Type of transition Curve that is generally provided on hill road is _____.
a) Circular b) Cubic parabola
c) Lemniscate spiral d) Spiral

3) The rate of rise or fall along the length of road is known as _____.
a) Cambe b) super elevation
c) side slope d) Gradient

4) The sight distance is measured along the middle of the _____.
a) Inner lane b) Outer lane
c) Middle lane d) None of these

5) Minimum thickness of the base of a flexible pavement is _____.
a) 15 cm b) 20 cm
c) 10 cm d) 5 cm

6) Which of the following it NOT a critical parameter to control cracking and rutting in a flexible pavement?
a) Tensile strain near the surface close to the edge of the wheel
b) Vertical sub-base strain
c) Vertical subgrade strain
d) Tensile strain at the bottom of bituminous layer

7) Which is bottom most portion of pavement in case of rural roads?
a) Sub-base b) Subgrade
c) Base course d) Surface course

8) Steps involves in planning database are _____.
a) Data Requirement b) Data Model
c) Data Security d) All of these

9) Network Planning for rural roads involves _____.
a) Road classification b) Network modelling
c) Trip Generation d) Modal Split

10) Key points related to the PMGSY road alignment _____.
a) Planning b) Surveying
c) Connectivity d) All of these

11) Factors affecting geometric design are _____.
a) Road user characteristics b) Vehicular characteristics
c) Safety Requirement d) All of these

12) Normal reaction time as per IRC code is given by for complex situation is _____.
a) 0.5-1 sec b) 1-2 sec
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13) Which of the following is not Urban roads?
a) Arterial roads b) Major district roads
c) Collector streets d) Local streets

14) For concrete and bituminous pavement value of camber is given by _____.
a) 0.5 % b) 2 %
c) 3 % d) 4 %

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Planning and Design of Rural Roads (BTN01515)

Day & Date: Saturday 24-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed & mention it clearly.
4) Draw neat sketches wherever necessary.

Section – I

Q.2 Attempt the following (Any Two). **14**

a) Explain 'Governing Factors for Route Selection' in rural roads.

b) Explain the concept of 'Network Planning in Rural Roads'.

c) Enlist and explain various factors affecting geometric design of roads.

Q.3 Attempt the following (Any Two). **14**

a) Calculate length of Summit curve required to move the vehicle with design speed of 80 kmph and reaction time of 2.5 seconds. Vehicle is moving with acceding gradient of 3% and then descending gradient of 5%. Coefficient of longitudinal friction is 0.35. Calculate length of summit curve for cases:
1) L > SSD
2) L< SSD

b) Explain procedure for the design of flexible pavement in Rural Roads.

c) CBR test is performed on flexible pavement and load verses penetration table is shown below, an initial traffic of 30 CVPD, with a growth rate of 6 per cent per annum for a location having annual rainfall of 1200 mm. The design life is 10 years. Determine the pavement thickness.
VDF = 2.5 Design CBR value for subgrade = 5.0%

Penetration	0	0.5	1	1.5	2	2.5	3	4	5	7.5	10	12.5
Load (kg)	0	8	26	43	63	75	84	105	114	135	151	165

Section – II

Q.4 Attempt the following (Any Two). **14**

a) Explain Cross drains; types, requirements, choice of different types of cross drains.

b) Explain Standard design of small bridges.

c) Explain Construction of roller compacted concrete.

Q.5 Attempt the following (Any Two). **14**

a) Explain quality control in construction.

b) Explain maintenance of paved roads.

c) Explain the concept of ‘Rehabilitation’.

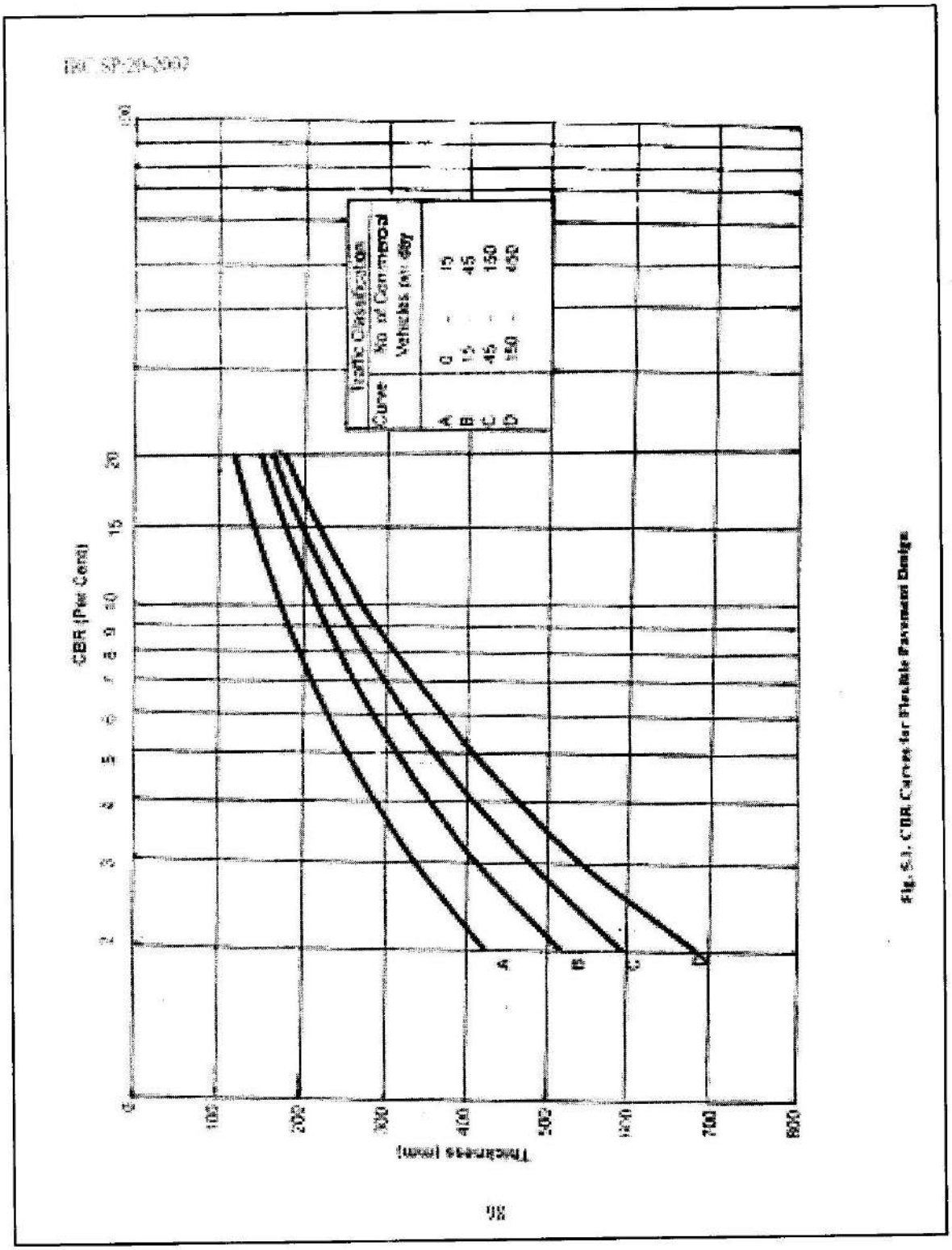
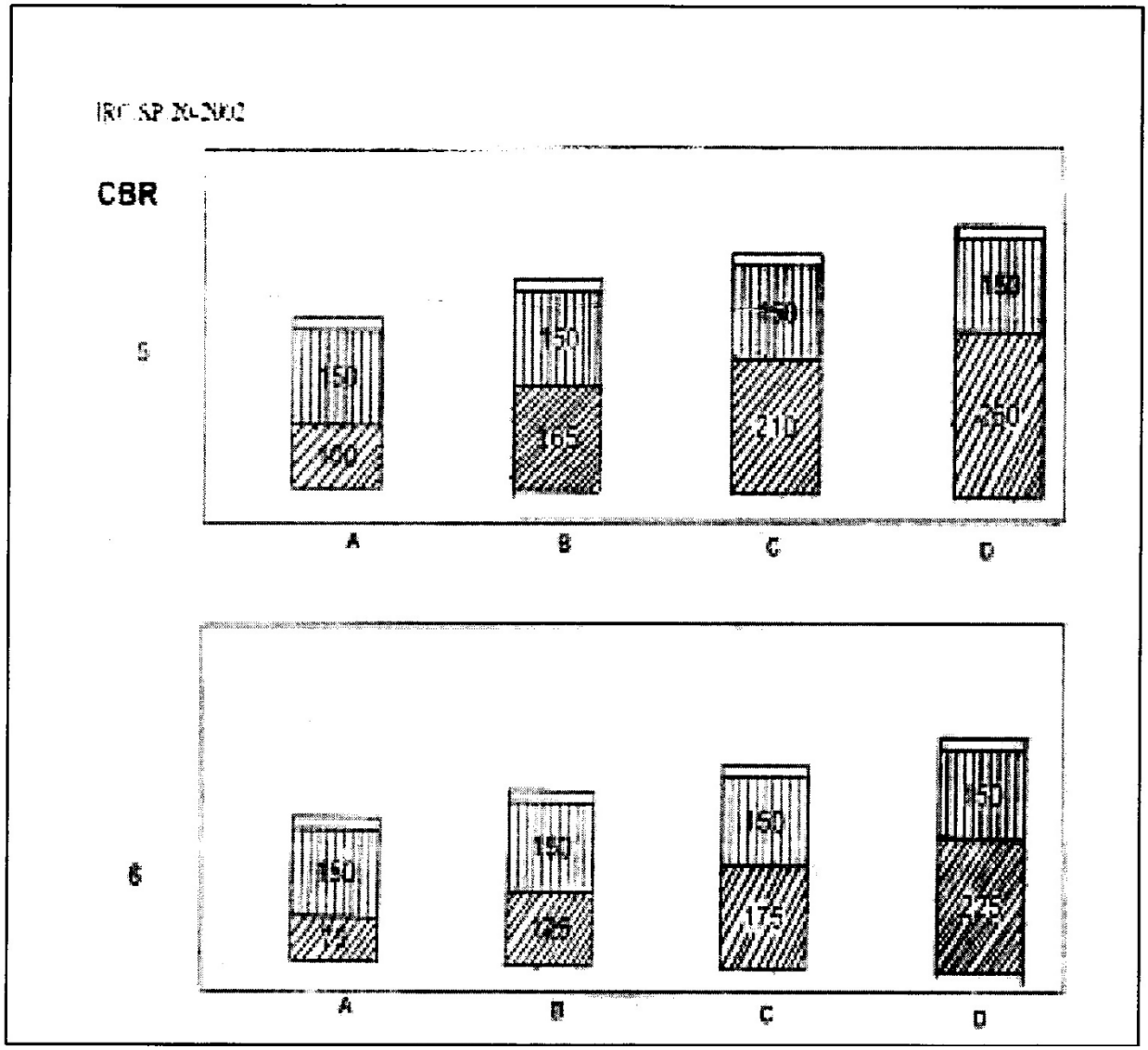


Fig. 5.1 CBR Curves for Flexible Pavement Design

IRC SP 20-2002



Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Planning and Design of Rural Roads (BTN01515)

Day & Date: Saturday 24-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The sight distance is measured along the middle of the _____.
a) Inner lane b) Outer lane
c) Middle lane d) None of these

2) Minimum thickness of the base of a flexible pavement is _____.
a) 15 cm b) 20 cm
c) 10 cm d) 5 cm

3) Which of the following it NOT a critical parameter to control cracking and rutting in a flexible pavement?
a) Tensile strain near the surface close to the edge of the wheel
b) Vertical sub-base strain
c) Vertical subgrade strain
d) Tensile strain at the bottom of bituminous layer

4) Which is bottom most portion of pavement in case of rural roads?
a) Sub-base b) Subgrade
c) Base course d) Surface course

5) Steps involves in planning database are _____.
a) Data Requirement b) Data Model
c) Data Security d) All of these

6) Network Planning for rural roads involves _____.
a) Road classification b) Network modelling
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7) Key points related to the PMGSY road alignment _____.
a) Planning b) Surveying
c) Connectivity d) All of these

8) Factors affecting geometric design are _____.
a) Road user characteristics b) Vehicular characteristics
c) Safety Requirement d) All of these

9) Normal reaction time as per IRC code is given by for complex situation is _____.
a) 0.5-1 sec b) 1-2 sec
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10) Which of the following is not Urban roads?
a) Arterial roads b) Major district roads
c) Collector streets d) Local streets

11) For concrete and bituminous pavement value of camber is given by _____.
a) 0.5 % b) 2 %
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12) The design of horizontal and vertical alignments, super elevation, gradient is worst affected by _____.
a) Length of vehicle b) Width of vehicle
c) Speed of vehicle d) Height of vehicle

13) The Type of transition Curve that is generally provided on hill road is _____.
a) Circular b) Cubic parabola
c) Lemniscate spiral d) Spiral

14) The rate of rise or fall along the length of road is known as _____.
a) Cambe b) super elevation
c) side slope d) Gradient

Seat No.	

Set R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Planning and Design of Rural Roads (BTN01515)

Day & Date: Saturday 24-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed & mention it clearly.
4) Draw neat sketches wherever necessary.

Section – I

Q.2 Attempt the following (Any Two). **14**

a) Explain 'Governing Factors for Route Selection' in rural roads.

b) Explain the concept of 'Network Planning in Rural Roads'.

c) Enlist and explain various factors affecting geometric design of roads.

Q.3 Attempt the following (Any Two). **14**

a) Calculate length of Summit curve required to move the vehicle with design speed of 80 kmph and reaction time of 2.5 seconds. Vehicle is moving with acceding gradient of 3% and then descending gradient of 5%. Coefficient of longitudinal friction is 0.35. Calculate length of summit curve for cases:
1) L > SSD
2) L< SSD

b) Explain procedure for the design of flexible pavement in Rural Roads.

c) CBR test is performed on flexible pavement and load verses penetration table is shown below, an initial traffic of 30 CVPD, with a growth rate of 6 per cent per annum for a location having annual rainfall of 1200 mm. The design life is 10 years. Determine the pavement thickness.
VDF = 2.5 Design CBR value for subgrade = 5.0%

Penetration	0	0.5	1	1.5	2	2.5	3	4	5	7.5	10	12.5
Load (kg)	0	8	26	43	63	75	84	105	114	135	151	165

Section – II

Q.4 Attempt the following (Any Two). **14**

a) Explain Cross drains; types, requirements, choice of different types of cross drains.

b) Explain Standard design of small bridges.

c) Explain Construction of roller compacted concrete.

Q.5 Attempt the following (Any Two). **14**

a) Explain quality control in construction.

b) Explain maintenance of paved roads.

c) Explain the concept of ‘Rehabilitation’.

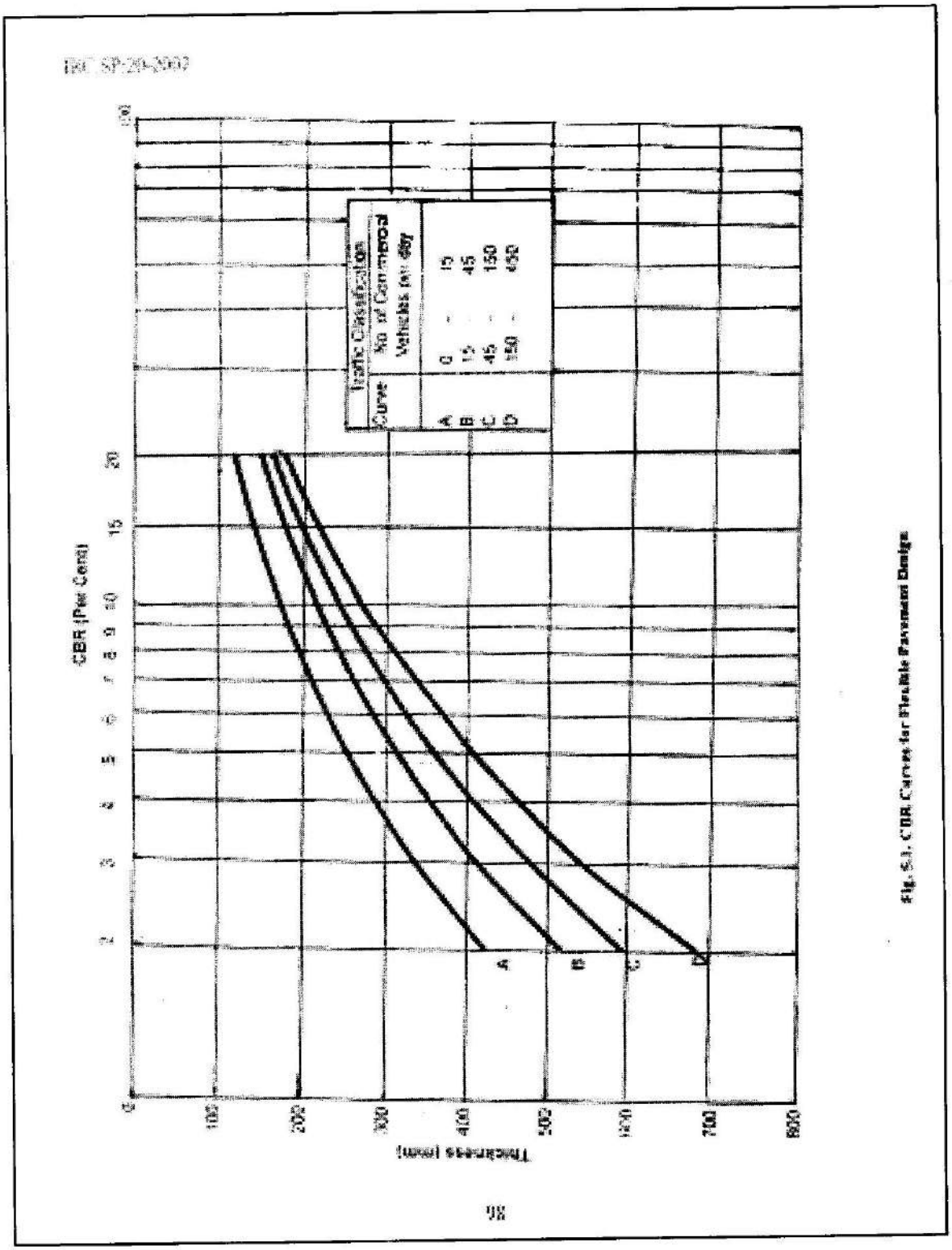
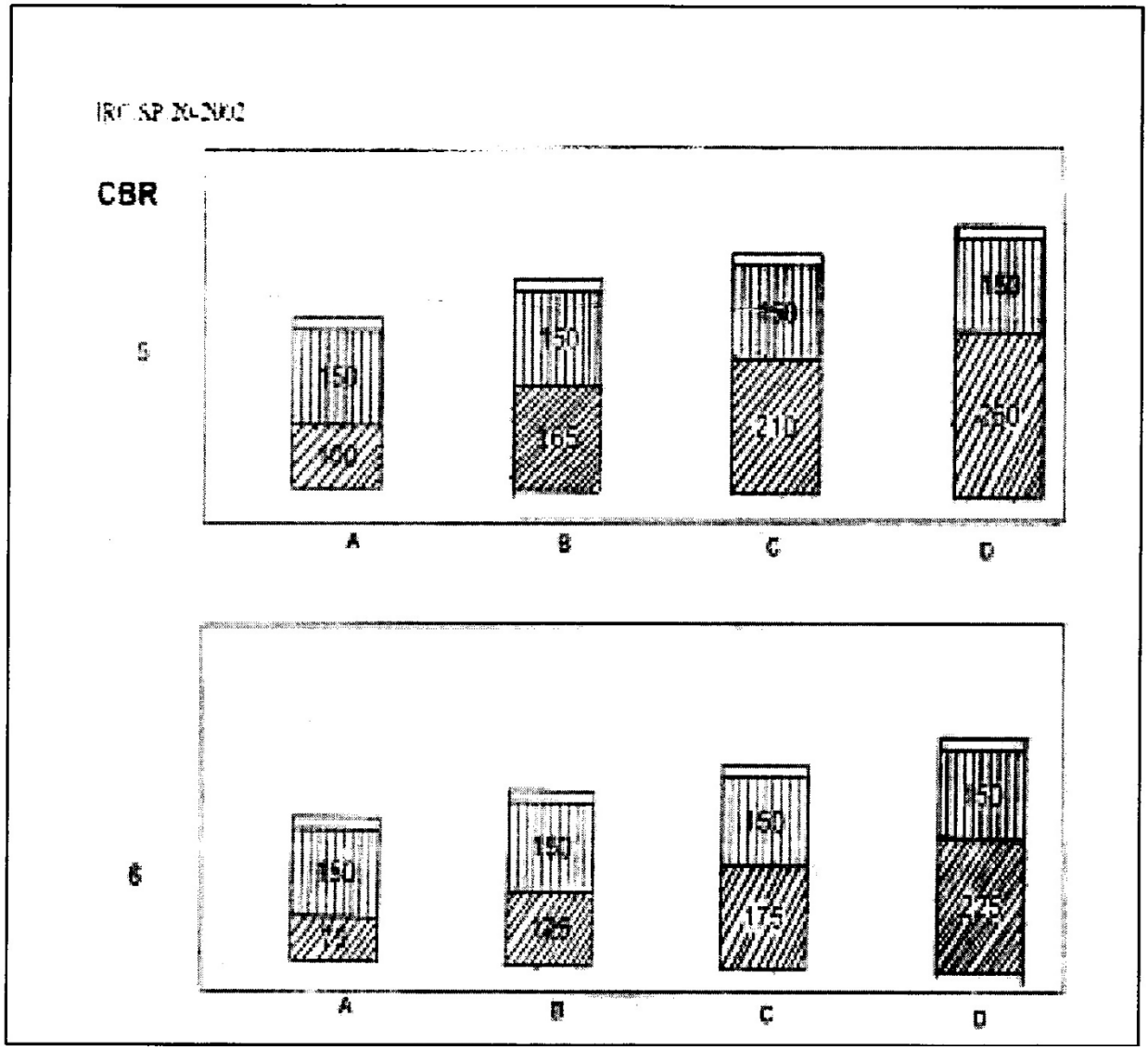


Fig. 5.1 CBR Curves for Flexible Pavement Design

IRC SP 20-2002



Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Planning and Design of Rural Roads (BTN01515)

Day & Date: Saturday 24-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following is not Urban roads?
a) Arterial roads b) Major district roads
c) Collector streets d) Local streets

2) For concrete and bituminous pavement value of camber is given by _____.
a) 0.5 % b) 2 %
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3) The design of horizontal and vertical alignments, super elevation, gradient is worst affected by _____.
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4) The Type of transition Curve that is generally provided on hill road is _____.
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5) The rate of rise or fall along the length of road is known as _____.
a) Cambe b) super elevation
c) side slope d) Gradient

6) The sight distance is measured along the middle of the _____.
a) Inner lane b) Outer lane
c) Middle lane d) None of these

7) Minimum thickness of the base of a flexible pavement is _____.
a) 15 cm b) 20 cm
c) 10 cm d) 5 cm

8) Which of the following it NOT a critical parameter to control cracking and rutting in a flexible pavement?
a) Tensile strain near the surface close to the edge of the wheel
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c) Vertical subgrade strain
d) Tensile strain at the bottom of bituminous layer

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11) Network Planning for rural roads involves _____.
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12) Key points related to the PMGSY road alignment _____.
a) Planning b) Surveying
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13) Factors affecting geometric design are _____.
a) Road user characteristics b) Vehicular characteristics
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14) Normal reaction time as per IRC code is given by for complex situation is _____.
a) 0.5-1 sec b) 1-2 sec
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Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Planning and Design of Rural Roads (BTN01515)

Day & Date: Saturday 24-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed & mention it clearly.
4) Draw neat sketches wherever necessary.

Section – I

Q.2 Attempt the following (Any Two). **14**

a) Explain 'Governing Factors for Route Selection' in rural roads.

b) Explain the concept of 'Network Planning in Rural Roads'.

c) Enlist and explain various factors affecting geometric design of roads.

Q.3 Attempt the following (Any Two). **14**

a) Calculate length of Summit curve required to move the vehicle with design speed of 80 kmph and reaction time of 2.5 seconds. Vehicle is moving with acceding gradient of 3% and then descending gradient of 5%. Coefficient of longitudinal friction is 0.35. Calculate length of summit curve for cases:
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b) Explain procedure for the design of flexible pavement in Rural Roads.

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Penetration	0	0.5	1	1.5	2	2.5	3	4	5	7.5	10	12.5
Load (kg)	0	8	26	43	63	75	84	105	114	135	151	165

Section – II

Q.4 Attempt the following (Any Two). **14**

a) Explain Cross drains; types, requirements, choice of different types of cross drains.

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c) Explain Construction of roller compacted concrete.

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a) Explain quality control in construction.

b) Explain maintenance of paved roads.

c) Explain the concept of ‘Rehabilitation’.

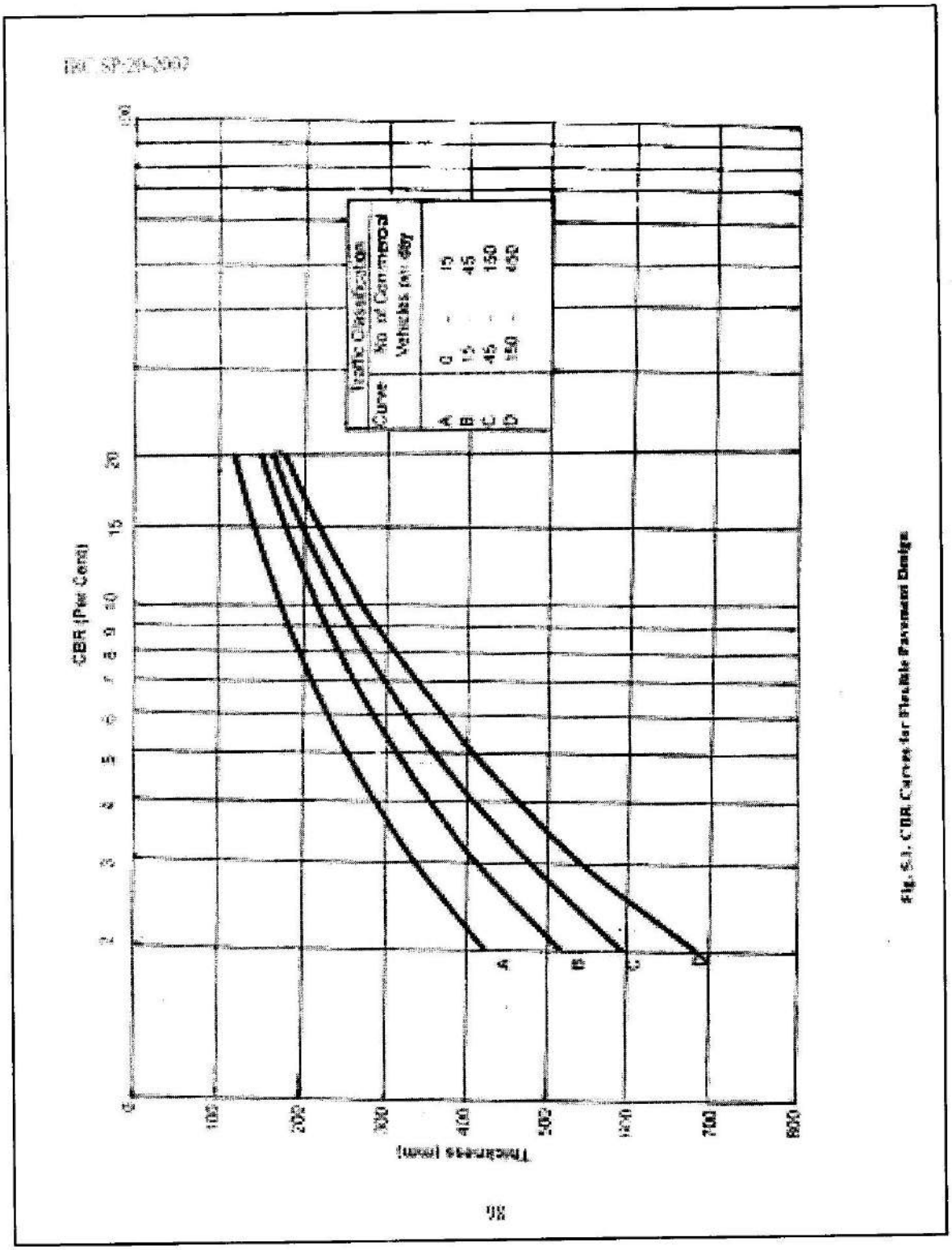
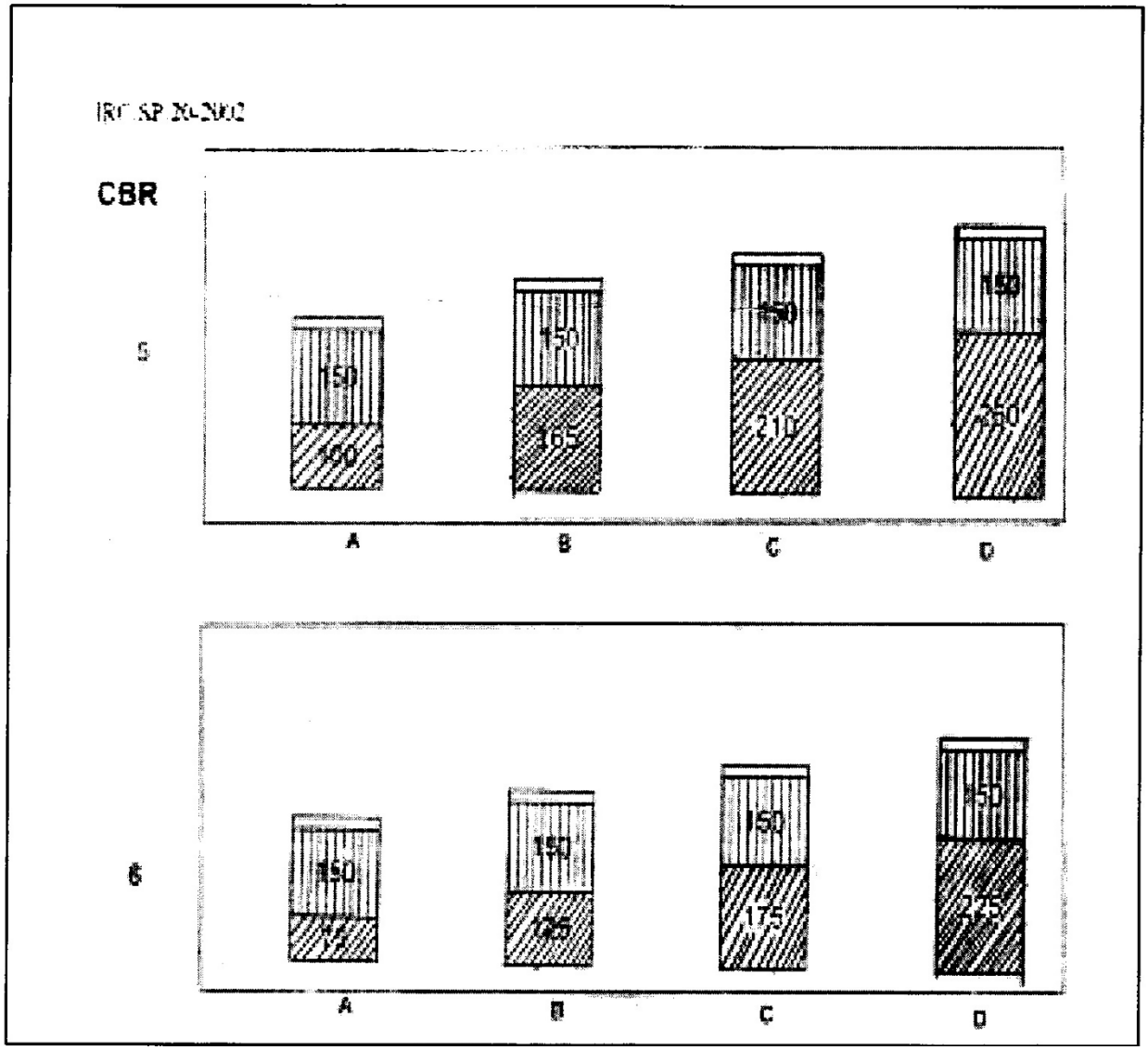


Fig. 5.1 CBR Curves for Flexible Pavement Design

IRC SP 20-2002



SLR-BD-297

Seat No.		Set	P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Materials: Sustainability and Usability (BTN01516)

Day & Date: Saturday 24-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Factors affecting the performance of green material/product is/are _____.
a) Surrounding buildings b) Population
c) Vehicles d) All of the above

2) Centralized wastewater treatment plant (WWTP) can be converted to green infrastructure by _____.
a) Reusing sludge as fertilizer.
b) Reusing treated waste water in curing of roads
c) Providing imported solar panels in the WWTP
d) Construction of WTP using flyash bricks

3) Recycling of old glass uses _____ less energy than manufacturing for new glass.
a) 20% b) 30%
c) 40% d) 50%

4) SMB is a building material made primarily from _____ compressed at high pressure to form blocks.
a) Damp soil b) Cement
c) Lime d) None of the above

5) Which of the following is not the purpose of a green building?
a) To reduce use of water
b) To minimize damage of the environment
c) Re-use of waste materials
d) None of the above

6) Which of the following is not correct constituent in ideal CSEB?
a) Silt- 15% b) Gravel- 20%
c) Clay- 20% d) Sand- 50%

7) Embodied energy is the energy consumed by _____ associated with the production of a product.

a) Construction b) Transportation
c) Manufacturing d) All of the above

8) Which of the following is not the factor while selecting the car?

a) CO_2 rating b) Fuel type
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9) _____ undergo chemical change in their composition when heated.

a) Thermoplastics b) Thermoset plastics
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a) Wooden table b) Plastic bottle
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13) Resource efficiency can be achieved by utilizing materials to _____.

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SLR-BD-297

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
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Section – I

Q.2	**a)**	What is embodied energy? Explain initial recurring embodied energy of building.	**05**
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Section – II

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Seat No.	

Set **Q**

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SLR-BD-297

Seat No.	

Set Q

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Section – II

Q.6	**a)**	Differentiate Recycle and Reuse of solid waste.	**05**
	b)	Explain initial & recurring application in life cycle of concrete in detail. What are eco audits & eco tools? Explain with examples.	**05**
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Construction Materials: Sustainability and Usability (BTN01516)

Day & Date: Saturday 24-05-2025 Max. Marks: 70
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Duration: 30 Minutes Marks:14

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SLR-BD-297

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Set R

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Seat No.		Set	S

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-BD-297

Seat No.	

Set S

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Construction Materials: Sustainability and Usability (BTN01516)

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Q.2	**a)**	What is embodied energy? Explain initial recurring embodied energy of building.	**05**
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SLR-BD-298

Seat No.	

Set P

T.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Managing Innovation and Entrepreneurship (BTN01517)

Day & Date: Saturday 24-05-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the primary focus of a Red Ocean strategy?
a) Creating a new market space
b) Competing in an existing market space
c) Ignoring competitors entirely
d) Reducing production costs by outsourcing

2) What is the main characteristic of competition in a Red Ocean?
a) Non-existent b) Highly intense
c) Low d) None of the above

3) The first step of innovation management is _____.
a) Selection of ideas b) Collection of ideas
c) Experiments on ideas d) Developing business model

4) What is the primary goal of social entrepreneurship?
a) Maximizing profit for shareholders
b) Solving social problems through innovative business models
c) Expanding business into global markets
d) Increasing employee satisfaction

5) What is meant by the term 'scaling-up'?
a) The business can be franchised
b) The business can run on its own
c) Increasing the sales
d) None of the above

6) What does the term "Shifting Composition of the Economy" refer to in innovation?
a) The transition from agriculture to industrial and service-based economies
b) The focus on rural over urban economic activities
c) The diminishing role of technology in the economy
d) A stagnant economic structure

7) Which economic theory considers entrepreneurs as coordinators of scarce resources?
a) Innovation Theory
b) Classical Theory
c) Risk-Bearing Theory
d) Resource-Based Theory

8) Why is planning considered incompatible with innovation in entrepreneurship?
a) It discourages flexibility and risk-taking
b) It prioritizes creativity over execution
c) It lacks a financial focus.
d) It only applies to large enterprises

9) What is the primary role of continuous learning for entrepreneurs?
a) To achieve financial stability
b) To stay relevant in dynamic environments and adopt new technologies
c) To do incremental development rather than radical development
d) To specialize in a dual-skill areas

10) Future market and innovation should be looked upon with a perspective of _____.
a) Needs
b) Available resources
c) Multi-dimensionality
d) All of the above

11) What is a strategic issue often faced by international entrepreneurs?
a) Balancing centralized decision-making with the need for local responsiveness
b) Avoiding partnerships with foreign stakeholders
c) Developing identical marketing strategics across all international markets
d) Limiting innovation to comply with host country regulations

12) What is a key limitation of expanding into international markets?
a) Increased market size
b) Access to diversified resources
c) Complex regulatory environments
d) Enhanced brand recognition

13) Which is the first step in Problem Identification?

a) Problem prioritization
b) Data collection
c) Demographics
d) Problem definition & statement

14) The company 'Apple' is an example of which of the following?

a) International Business
b) Blue ocean strategy company
c) Horizontal diversification
d) All of the above

SLR-BD-298

Seat No.		Set	P

T.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
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Section – I

Q.2	**a)**	Enlist all the theories of entrepreneurship and explain economic theory in detail.	**06**
	b)	What are the competencies of an entrepreneur? Explain any two competencies in detail.	**04**
Q.3	**a)**	Explain the innovation process in detail.	**05**
	b)	Give the difference between Blue Ocean & Red Ocean Strategies with examples.	**04**
Q.4	**a)**	What are the types of grants and supports? Explain the accelerator and incubator.	**05**
	b)	Give the difference between types of innovative strategies with examples.	**04**
Q.5	**a)**	Define the term 'shifting economy' and explain the concept in detail with a sketch.	**05**
	b)	List 7 sources and explain the incongruity, the unexpected in detail.	**04**

Section – II

Q.6	**a)**	Give the procedure of 'acquiring innovative technology' in detail.	**06**
	b)	Enlist the needs of continuous learning. Explain scalability & legal study.	**04**
Q.7		**Write a note on any three of the following:**	**09**
	a)	Ethics in International Entrepreneurship	
	b)	Strategies in International Entrepreneurship	
	c)	Benefits of learning and relearning process in entrepreneurship	
	d)	Four main elements of the International business environment	

Q.8 Write a note on any three of the following: **09**

a) Methods in Problem Identification
b) Steps in problem identification
c) Methods of Problem Solving
d) Innovation and diversification

Seat No.	

Set **Q**

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3) Future market and innovation should be looked upon with a perspective of _____.
a) Needs b) Available resources
c) Multi-dimensionality d) All of the above

4) What is a strategic issue often faced by international entrepreneurs?
a) Balancing centralized decision-making with the need for local responsiveness
b) Avoiding partnerships with foreign stakeholders
c) Developing identical marketing strategics across all international markets
d) Limiting innovation to comply with host country regulations

5) What is a key limitation of expanding into international markets?
a) Increased market size
b) Access to diversified resources
c) Complex regulatory environments
d) Enhanced brand recognition

6) Which is the first step in Problem Identification?
a) Problem prioritization
b) Data collection
c) Demographics
d) Problem definition & statement

7) The company 'Apple' is an example of which of the following?
a) International Business
b) Blue ocean strategy company
c) Horizontal diversification
d) All of the above

8) What is the primary focus of a Red Ocean strategy?
a) Creating a new market space
b) Competing in an existing market space
c) Ignoring competitors entirely
d) Reducing production costs by outsourcing

9) What is the main characteristic of competition in a Red Ocean?
a) Non-existent
b) Highly intense
c) Low
d) None of the above

10) The first step of innovation management is _____.
a) Selection of ideas
b) Collection of ideas
c) Experiments on ideas
d) Developing business model

11) What is the primary goal of social entrepreneurship?
a) Maximizing profit for shareholders
b) Solving social problems through innovative business models
c) Expanding business into global markets
d) Increasing employee satisfaction

12) What is meant by the term 'scaling-up'?
a) The business can be franchised
b) The business can run on its own
c) Increasing the sales
d) None of the above

13) What does the term "Shifting Composition of the Economy" refer to in innovation?

a) The transition from agriculture to industrial and service-based economies
b) The focus on rural over urban economic activities
c) The diminishing role of technology in the economy
d) A stagnant economic structure

14) Which economic theory considers entrepreneurs as coordinators of scarce resources?

a) Innovation Theory
b) Classical Theory
c) Risk-Bearing Theory
d) Resource-Based Theory

SLR-BD-298

Seat No.	

Set Q

T.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Managing Innovation and Entrepreneurship (BTN01517)

Day & Date: Saturday 24-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory; answer any two from remaining questions from Section - I.
2) Section - II is compulsory.
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Enlist all the theories of entrepreneurship and explain economic theory in detail.	**06**
	b)	What are the competencies of an entrepreneur? Explain any two competencies in detail.	**04**
Q.3	**a)**	Explain the innovation process in detail.	**05**
	b)	Give the difference between Blue Ocean & Red Ocean Strategies with examples.	**04**
Q.4	**a)**	What are the types of grants and supports? Explain the accelerator and incubator.	**05**
	b)	Give the difference between types of innovative strategies with examples.	**04**
Q.5	**a)**	Define the term 'shifting economy' and explain the concept in detail with a sketch.	**05**
	b)	List 7 sources and explain the incongruity, the unexpected in detail.	**04**

Section – II

Q.6	**a)**	Give the procedure of 'acquiring innovative technology' in detail.	**06**
	b)	Enlist the needs of continuous learning. Explain scalability & legal study.	**04**
Q.7		**Write a note on any three of the following:**	**09**
	a)	Ethics in International Entrepreneurship	
	b)	Strategies in International Entrepreneurship	
	c)	Benefits of learning and relearning process in entrepreneurship	
	d)	Four main elements of the International business environment	

Q.8 Write a note on any three of the following: **09**

a) Methods in Problem Identification
b) Steps in problem identification
c) Methods of Problem Solving
d) Innovation and diversification

Seat No.	

Set R

T.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Managing Innovation and Entrepreneurship (BTN01517)

Day & Date: Saturday 24-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) What is a strategic issue often faced by international entrepreneurs?
a) Balancing centralized decision-making with the need for local responsiveness
b) Avoiding partnerships with foreign stakeholders
c) Developing identical marketing strategics across all international markets
d) Limiting innovation to comply with host country regulations

2) What is a key limitation of expanding into international markets?
a) Increased market size
b) Access to diversified resources
c) Complex regulatory environments
d) Enhanced brand recognition

3) Which is the first step in Problem Identification?
a) Problem prioritization b) Data collection
c) Demographics d) Problem definition & statement

4) The company 'Apple' is an example of which of the following?
a) International Business
b) Blue ocean strategy company
c) Horizontal diversification
d) All of the above

5) What is the primary focus of a Red Ocean strategy?
a) Creating a new market space
b) Competing in an existing market space
c) Ignoring competitors entirely
d) Reducing production costs by outsourcing

6) What is the main characteristic of competition in a Red Ocean?
a) Non-existent b) Highly intense
c) Low d) None of the above

7) The first step of innovation management is _____.
a) Selection of ideas b) Collection of ideas
c) Experiments on ideas d) Developing business model

8) What is the primary goal of social entrepreneurship?
a) Maximizing profit for shareholders
b) Solving social problems through innovative business models
c) Expanding business into global markets
d) Increasing employee satisfaction

9) What is meant by the term ‘scaling-up’?
a) The business can be franchised
b) The business can run on its own
c) Increasing the sales
d) None of the above

10) What does the term "Shifting Composition of the Economy" refer to in innovation?
a) The transition from agriculture to industrial and service-based economies
b) The focus on rural over urban economic activities
c) The diminishing role of technology in the economy
d) A stagnant economic structure

11) Which economic theory considers entrepreneurs as coordinators of scarce resources?
a) Innovation Theory b) Classical Theory
c) Risk-Bearing Theory d) Resource-Based Theory

12) Why is planning considered incompatible with innovation in entrepreneurship?
a) It discourages flexibility and risk-taking
b) It prioritizes creativity over execution
c) It lacks a financial focus.
d) It only applies to large enterprises

13) What is the primary role of continuous learning for entrepreneurs?
a) To achieve financial stability
b) To stay relevant in dynamic environments and adopt new technologies
c) To do incremental development rather than radical development
d) To specialize in a dual-skill areas

14) Future market and innovation should be looked upon with a perspective of _____.

a) Needs
b) Available resources
c) Multi-dimensionality
d) All of the above

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Managing Innovation and Entrepreneurship (BTN01517)

Day & Date: Saturday 24-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory; answer any two from remaining questions from Section - I.
2) Section - II is compulsory.
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Enlist all the theories of entrepreneurship and explain economic theory in detail.	**06**
	b)	What are the competencies of an entrepreneur? Explain any two competencies in detail.	**04**
Q.3	**a)**	Explain the innovation process in detail.	**05**
	b)	Give the difference between Blue Ocean & Red Ocean Strategies with examples.	**04**
Q.4	**a)**	What are the types of grants and supports? Explain the accelerator and incubator.	**05**
	b)	Give the difference between types of innovative strategies with examples.	**04**
Q.5	**a)**	Define the term 'shifting economy' and explain the concept in detail with a sketch.	**05**
	b)	List 7 sources and explain the incongruity, the unexpected in detail.	**04**

Section – II

Q.6	**a)**	Give the procedure of 'acquiring innovative technology' in detail.	**06**
	b)	Enlist the needs of continuous learning. Explain scalability & legal study.	**04**
Q.7		**Write a note on any three of the following:**	**09**
	a)	Ethics in International Entrepreneurship	
	b)	Strategies in International Entrepreneurship	
	c)	Benefits of learning and relearning process in entrepreneurship	
	d)	Four main elements of the International business environment	

Q.8 Write a note on any three of the following: **09**

a) Methods in Problem Identification
b) Steps in problem identification
c) Methods of Problem Solving
d) Innovation and diversification

Seat No.		Set	S

T.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Managing Innovation and Entrepreneurship (BTN01517)

Day & Date: Saturday 24-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What does the term "Shifting Composition of the Economy" refer to in innovation?
a) The transition from agriculture to industrial and service-based economies
b) The focus on rural over urban economic activities
c) The diminishing role of technology in the economy
d) A stagnant economic structure

2) Which economic theory considers entrepreneurs as coordinators of scarce resources?
a) Innovation Theory b) Classical Theory
c) Risk-Bearing Theory d) Resource-Based Theory

3) Why is planning considered incompatible with innovation in entrepreneurship?
a) It discourages flexibility and risk-taking
b) It prioritizes creativity over execution
c) It lacks a financial focus.
d) It only applies to large enterprises

4) What is the primary role of continuous learning for entrepreneurs?
a) To achieve financial stability
b) To stay relevant in dynamic environments and adopt new technologies
c) To do incremental development rather than radical development
d) To specialize in a dual-skill areas

5) Future market and innovation should be looked upon with a perspective of _____.
a) Needs
b) Available resources
c) Multi-dimensionality
d) All of the above

6) What is a strategic issue often faced by international entrepreneurs?
a) Balancing centralized decision-making with the need for local responsiveness
b) Avoiding partnerships with foreign stakeholders
c) Developing identical marketing strategics across all international markets
d) Limiting innovation to comply with host country regulations

7) What is a key limitation of expanding into international markets?
a) Increased market size
b) Access to diversified resources
c) Complex regulatory environments
d) Enhanced brand recognition

8) Which is the first step in Problem Identification?
a) Problem prioritization
b) Data collection
c) Demographics
d) Problem definition & statement

9) The company 'Apple' is an example of which of the following?
a) International Business
b) Blue ocean strategy company
c) Horizontal diversification
d) All of the above

10) What is the primary focus of a Red Ocean strategy?
a) Creating a new market space
b) Competing in an existing market space
c) Ignoring competitors entirely
d) Reducing production costs by outsourcing

11) What is the main characteristic of competition in a Red Ocean?
a) Non-existent
b) Highly intense
c) Low
d) None of the above

12) The first step of innovation management is _____.
a) Selection of ideas
b) Collection of ideas
c) Experiments on ideas
d) Developing business model

13) What is the primary goal of social entrepreneurship?
a) Maximizing profit for shareholders
b) Solving social problems through innovative business models
c) Expanding business into global markets
d) Increasing employee satisfaction

14) What is meant by the term ‘scaling-up’?

a) The business can be franchised
b) The business can run on its own
c) Increasing the sales
d) None of the above

Seat No.		Set	S

T.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Managing Innovation and Entrepreneurship (BTN01517)

Day & Date: Saturday 24-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory; answer any two from remaining questions from Section - I.
2) Section - II is compulsory.
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Enlist all the theories of entrepreneurship and explain economic theory in detail.	**06**
	b)	What are the competencies of an entrepreneur? Explain any two competencies in detail.	**04**
Q.3	**a)**	Explain the innovation process in detail.	**05**
	b)	Give the difference between Blue Ocean & Red Ocean Strategies with examples.	**04**
Q.4	**a)**	What are the types of grants and supports? Explain the accelerator and incubator.	**05**
	b)	Give the difference between types of innovative strategies with examples.	**04**
Q.5	**a)**	Define the term 'shifting economy' and explain the concept in detail with a sketch.	**05**
	b)	List 7 sources and explain the incongruity, the unexpected in detail.	**04**

Section – II

Q.6	**a)**	Give the procedure of 'acquiring innovative technology' in detail.	**06**
	b)	Enlist the needs of continuous learning. Explain scalability & legal study.	**04**
Q.7		**Write a note on any three of the following:**	**09**
	a)	Ethics in International Entrepreneurship	
	b)	Strategies in International Entrepreneurship	
	c)	Benefits of learning and relearning process in entrepreneurship	
	d)	Four main elements of the International business environment	

Q.8 Write a note on any three of the following: **09**

a) Methods in Problem Identification
b) Steps in problem identification
c) Methods of Problem Solving
d) Innovation and diversification

SLR-BD-299

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Economics (BTN01508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive b) Monopoly
c) Oligopoly d) Monopolistic

2) Average revenue is _____
a) Total revenue divided by the number of units sold
b) Revenue earned by all the units of the output
c) Revenue earned by the average sized firm in the industry
d) Net addition made to the total revenue by selling one more unit of a commodity

3) Which of these is an economic activity?
a) Father teaching his son at home instead of spending on coaching
b) A housewife making food for the family on her own
c) A hair dresser doing hair cut designing on payment
d) A singer giving a show on his son's wedding anniversary

4) Which of the following is NOT an account in the Balance of Payments?
a) Current Account b) Capital Account
c) Financial Account d) Future Account

5) Which of the following is not a regulatory institution in Indian financial system?
a) RBI b) CIBIL
c) SEBI d) IRDA

6) In a mixed economy which sector (s) is 1 are found _____

a) Private only
b) Public only
c) None
d) Both (a) Private and (b)Public

7) Who is known as father of economics?

a) Adam Smith
b) Prof. A. Samulson
c) Alfred Marshall
d) J. R. Hicks

8) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False
b) True
c) Partly true
d) Partly False

9) Which one of the following is not the function of money?

a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

10) Which one of the following cost can never become zero?

a) Average cost
b) Fixed cost
c) Marginal cost
d) Variable cost

SLR-BD-299

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Economics (BTN01508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Economics (BTN01508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) In a mixed economy which sector (s) is 1 are found _____
a) Private only b) Public only
c) None d) Both (a) Private and (b)Public

1) Who is known as father of economics?
a) Adam Smith b) Prof. A. Samulson
c) Alfred Marshall d) J. R. Hicks

3) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

4) Which one of the following is not the function of money?
a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

5) Which one of the following cost can never become zero?
a) Average cost b) Fixed cost
c) Marginal cost d) Variable cost

6) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive b) Monopoly
c) Oligopoly d) Monopolistic

7) Average revenue is _____
   a) Total revenue divided by the number of units sold
   b) Revenue earned by all the units of the output
   c) Revenue earned by the average sized firm in the industry
   d) Net addition made to the total revenue by selling one more unit of a commodity

8) Which of these is an economic activity?
   a) Father teaching his son at home instead of spending on coaching
   b) A housewife making food for the family on her own
   c) A hair dresser doing hair cut designing on payment
   d) A singer giving a show on his son's wedding anniversary

9) Which of the following is NOT an account in the Balance of Payments?
   a) Current Account
   b) Capital Account
   c) Financial Account
   d) Future Account

10) Which of the following is not a regulatory institution in Indian financial system?
   a) RBI
   b) CIBIL
   c) SEBI
   d) IRDA

SLR-BD-299

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Economics (BTN01508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Economics (BTN01508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which one of the following is not the function of money?
a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

2) Which one of the following cost can never become zero?
a) Average cost b) Fixed cost
c) Marginal cost d) Variable cost

3) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive b) Monopoly
c) Oligopoly d) Monopolistic

4) Average revenue is _____
a) Total revenue divided by the number of units sold
b) Revenue earned by all the units of the output
c) Revenue earned by the average sized firm in the industry
d) Net addition made to the total revenue by selling one more unit of a commodity

5) Which of these is an economic activity?
a) Father teaching his son at home instead of spending on coaching
b) A housewife making food for the family on her own
c) A hair dresser doing hair cut designing on payment
d) A singer giving a show on his son's wedding anniversary

6) Which of the following is NOT an account in the Balance of Payments?

a) Current Account b) Capital Account
c) Financial Account d) Future Account

7) Which of the following is not a regulatory institution in Indian financial system?

a) RBI b) CIBIL
c) SEBI d) IRDA

8) In a mixed economy which sector (s) is 1 are found _____

a) Private only b) Public only
c) None d) Both (a) Private and (b)Public

9) Who is known as father of economics?

a) Adam Smith b) Prof. A. Samulson
c) Alfred Marshall d) J. R. Hicks

10) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False b) True
c) Partly true d) Partly False

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Economics (BTN01508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Economics (BTN01508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which of these is an economic activity?
a) Father teaching his son at home instead of spending on coaching
b) A housewife making food for the family on her own
c) A hair dresser doing hair cut designing on payment
d) A singer giving a show on his son's wedding anniversary

2) Which of the following is NOT an account in the Balance of Payments?
a) Current Account b) Capital Account
c) Financial Account d) Future Account

3) Which of the following is not a regulatory institution in Indian financial system?
a) RBI b) CIBIL
c) SEBI d) IRDA

4) In a mixed economy which sector (s) is 1 are found _____
a) Private only b) Public only
c) None d) Both (a) Private and (b)Public

5) Who is known as father of economics?
a) Adam Smith b) Prof. A. Samulson
c) Alfred Marshall d) J. R. Hicks

6) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

7) Which one of the following is not the function of money?
a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

8) Which one of the following cost can never become zero?
a) Average cost
b) Fixed cost
c) Marginal cost
d) Variable cost

9) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive
b) Monopoly
c) Oligopoly
d) Monopolistic

10) Average revenue is _____
a) Total revenue divided by the number of units sold
b) Revenue earned by all the units of the output
c) Revenue earned by the average sized firm in the industry
d) Net addition made to the total revenue by selling one more unit of a commodity

SLR-BD-299

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Economics (BTN01508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

SLR-BD-300

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN01509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) What protects the intellectual property created by artists?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

2) If a company develops a new technology that improves its main product, what type of intellectual property can they use to stop others from copying their invention?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

3) All of the following are examples of intellectual property protections except _____.
a) Copyrights b) Patents
c) Contracts d) Trademarks

4) The first Patent Law was enacted in India in the year _____
a) 1856 b) 1880
c) 1905 d) 1850

5) How long does intellectual property last? (after the death of the author)
a) 10 yrs b) 30 yrs
c) 60 yrs d) 70 yrs

6) Which of the following can you copyright?
a) Literary work b) Ideas
c) Choreographic work d) Fashion

7) Which of the following identifies as a trademark?

a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

8) What is the subject matter of a patent?

a) Art b) Invention
c) Goods d) Ideas

9) What is copyright meant for?

a) Film work b) Books
c) Essay d) All of these

10) In which article is intellectual property rights outlined?

a) Article 15 b) Article 27
c) Article 13 d) Article 20

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN01509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?
b) Explain Outlines concepts of confidentiality and information security.
c) Explain the Comparison of the Indian IPR system with international IPR frameworks.

Q.3 Solve any Four: **20**

a) Explain the role of Engineers and Managers in technology development in project commercialization.
b) Write a short note on the shifting paradigms of R&D and their linkage to IPR.
c) Explain Copyright issues in creative works.
d) Discuss the importance of Law on Industrial designs.
e) Explain commercial exploitation and infringement.
f) Write a short note on IPR and Electronic Commerce.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN01509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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1) Which of the following can you copyright?
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c) Choreographic work d) Fashion

2) Which of the following identifies as a trademark?
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a) 1856 b) 1880
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a) 10 yrs b) 30 yrs
c) 60 yrs d) 70 yrs

SLR-BD-300

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN01509)

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SLR-BD-300

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN01509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

2) In which article is intellectual property rights outlined?
a) Article 15 b) Article 27
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SLR-BD-300

Seat No.	

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CIVIL ENGINEERING
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Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN01509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

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4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) All of the following are examples of intellectual property protections except _____.
a) Copyrights b) Patents
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2) The first Patent Law was enacted in India in the year _____
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SLR-BD-300

Seat No.	

Set S

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SLR-BD-301

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Introduction to Sociology (BTN01510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) Name of state having highest percentage of literacy level.
a) West Bengal b) Punjab
c) Kerala d) Maharashtra

2) Functions of Social Institutes is ____.
a) To meet fundamental needs of society
b) To improve the Society
c) To meet the needs of Family
d) None of above

3) Social change is change in ____.
a) Society b) Community
c) Individual d) Education

4) Which is recognized as one of the first environmental movements in country?
a) Chipko Movement
b) Kisan Movement
c) Lok satta Movement
d) Naramada Bachao Andolan

5) Science that deals with the relationship between living organism with their physical environment and each other is called ____.
a) Ecosystem b) Biodiversity
c) Environment d) Ecology

6) In which year the term sociology was coined?

a) 1798 b) 1815
c) 1839 d) 1857

7) The word sociology is made up of two words. These are ____.

a) Societies and logy b) Societia and logistia
c) Socious and logos d) Socia and logos

8) Who is the father of Sociology?

a) Karl Max b) Herbert Spencer
c) Auguste Comte d) Charles Darwin

9) The major component of demography are:

a) Mortality b) Fertility
c) Migration d) All of these

10) India occupies _____ rank among the population of the different countries of world.

a) Third b) First
c) Forth d) Second

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Introduction to Sociology (BTN01510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a)	What is Sociology? And explain with concept like social structure, role, norms, values etc.	**10**
b)	Explain with detail trends of Urbanization in developing countries and world.	**10**
c)	Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development.	**10**
d)	Explain with detail social movements like protest, reformist, radical in India.	**10**
e)	Explain in detail demographic change in India & world along with Human Ecology.	**10**
f)	Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization.	**10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
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Day & Date: Sunday, 25-05-2025 Max. Marks: 50
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MCQ/Objective Type Questions

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a) Chipko Movement
b) Kisan Movement
c) Lok satta Movement
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c) Environment d) Ecology

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Introduction to Sociology (BTN01510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

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d)	Explain with detail social movements like protest, reformist, radical in India.	**10**
e)	Explain in detail demographic change in India & world along with Human Ecology.	**10**
f)	Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization.	**10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Introduction to Sociology (BTN01510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Introduction to Sociology (BTN01510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a) What is Sociology? And explain with concept like social structure, role, norms, values etc. **10**

b) Explain with detail trends of Urbanization in developing countries and world. **10**

c) Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development. **10**

d) Explain with detail social movements like protest, reformist, radical in India. **10**

e) Explain in detail demographic change in India & world along with Human Ecology. **10**

f) Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization. **10**

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Introduction to Sociology (BTN01510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

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3) Figures to the right indicates full marks.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Social change is change in ____.
a) Society b) Community
c) Individual d) Education

2) Which is recognized as one of the first environmental movements in country?
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SLR-BD-301

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Introduction to Sociology (BTN01510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a) What is Sociology? And explain with concept like social structure, role, norms, values etc. **10**

b) Explain with detail trends of Urbanization in developing countries and world. **10**

c) Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development. **10**

d) Explain with detail social movements like protest, reformist, radical in India. **10**

e) Explain in detail demographic change in India & world along with Human Ecology. **10**

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SLR-BD-302

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Stress and Coping (BTN01511)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) What is stress?
a) A state of physical tiredness
b) The body's response to a demand or challenge
c) A type of exercise
d) A form of relaxation

2) Which of the following is a healthy way to cope with stress?
a) Concentrating the stressor
b) Engaging in regular physical activity
c) Investing time on social media
d) Consuming excessive amounts of caffeine

3) Which of the following is a relaxation technique often used for stress management?
a) Procrastination b) Meditation
c) Caffeine consumption d) Multitasking

4) What is the purpose of time management in stress reduction?
a) To increase stress by overloading schedules
b) To create a sense of urgency
c) To prioritize tasks and reduce overwhelm
d) To eliminate breaks and relaxation time

5) Which of the following is a potential source of social support?
a) Isolation from friends and family
b) Engaging in negative self-talk
c) Seeking help from friends, family, or support groups
d) Avoiding all forms of communication

6) When a task appears overwhelming, it is best to _____
a) Put it aside till later
b) Drink alcohol to relax
c) Break it down into smaller task
d) Avoid the task

7) Anxiety can cause the following moods _____
a) Irritable
b) Nervous
c) Anxious
d) All of the above

8) The following are the characteristics of Positive Stress.
a) It improves performance
b) It feels exciting
c) It motivates
d) All of the above

9) A good way to prevent stress is _____
a) Drinking beverages high in caffeine
b) Sitting ideal doing nothing
c) Overeating
d) Taking time out for relaxation

10) Absenteeism, turnover and less productivity are _____ symptoms of stress.
a) Medical
b) Psychological
c) Behavioral
d) None of these

SLR-BD-302

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Stress and Coping (BTN01511)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Stress and Coping (BTN01511)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) When a task appears overwhelming, it is best to _____
a) Put it aside till later
b) Drink alcohol to relax
c) Break it down into smaller task
d) Avoid the task

2) Anxiety can cause the following moods _____
a) Irritable b) Nervous
c) Anxious d) All of the above

3) The following are the characteristics of Positive Stress.
a) It improves performance
b) It feels exciting
c) It motivates
d) All of the above

4) A good way to prevent stress is _____
a) Drinking beverages high in caffeine
b) Sitting ideal doing nothing
c) Overeating
d) Taking time out for relaxation

5) Absenteeism, turnover and less productivity are _____ symptoms of stress.
a) Medical b) Psychological
c) Behavioral d) None of these

6) What is stress?
a) A state of physical tiredness
b) The body's response to a demand or challenge
c) A type of exercise
d) A form of relaxation

7) Which of the following is a healthy way to cope with stress?
a) Concentrating the stressor
b) Engaging in regular physical activity
c) Investing time on social media
d) Consuming excessive amounts of caffeine

8) Which of the following is a relaxation technique often used for stress management?
a) Procrastination
b) Meditation
c) Caffeine consumption
d) Multitasking

9) What is the purpose of time management in stress reduction?
a) To increase stress by overloading schedules
b) To create a sense of urgency
c) To prioritize tasks and reduce overwhelm
d) To eliminate breaks and relaxation time

10) Which of the following is a potential source of social support?
a) Isolation from friends and family
b) Engaging in negative self-talk
c) Seeking help from friends, family, or support groups
d) Avoiding all forms of communication

SLR-BD-302

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Stress and Coping (BTN01511)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

Seat No.	

Set | R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Stress and Coping (BTN01511)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
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4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) A good way to prevent stress is _____
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b) It feels exciting
c) It motivates
d) All of the above

SLR-BD-302

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Stress and Coping (BTN01511)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Stress and Coping (BTN01511)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) Which of the following is a relaxation technique often used for stress management?
a) Procrastination b) Meditation
c) Caffeine consumption d) Multitasking

2) What is the purpose of time management in stress reduction?
a) To increase stress by overloading schedules
b) To create a sense of urgency
c) To prioritize tasks and reduce overwhelm
d) To eliminate breaks and relaxation time

3) Which of the following is a potential source of social support?
a) Isolation from friends and family
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6) The following are the characteristics of Positive Stress.
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8) Absenteeism, turnover and less productivity are _____ symptoms of stress.
a) Medical
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9) What is stress?
a) A state of physical tiredness
b) The body's response to a demand or challenge
c) A type of exercise
d) A form of relaxation

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a) Concentrating the stressor
b) Engaging in regular physical activity
c) Investing time on social media
d) Consuming excessive amounts of caffeine

SLR-BD-302

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Stress and Coping (BTN01511)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

SLR-BD-303

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Professional Ethics and Human Value (BTN01512)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values, and beliefs
c) Only Values d) Psychology

2) Word ethichs is definded as a _____
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

3) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) Authority

4) The study on ethics helps to know the people's _____.
a) Learn good or bad things
b) Copyright
c) Morality
d) Beliefs, values, and morals

5) The objectives of professional ethics in engineering are _____.
a) To understand the moral values that ought to guide the Engineering profession
b) To resolve the moral issues in the profession, and
c) To justify the moral judgment concerning the profession
d) All the above

6) The main core human values are _____.

a) Right conduct b) Peace
c) Both a & b d) None of these

7) Preconditioning is ____.

a) Assuming without knowing b) Knowing without assuming
c) Only assuming d) Only knowing

8) Value education deals with ____.

a) What is universally valuable to all of us
b) What is conductive to our individual and collective of us
c) Enables to be in harmony with ourselves, other and rest of nature
d) All of the above

9) Courage is the tendency to accept and face ____.

a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

10) Human life is lived at four levels individuals, family, society and ____.

a) Nature b) Nurture
c) World d) Universe

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Professional Ethics and Human Value (BTN01512)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

SLR-BD-303

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Professional Ethics and Human Value (BTN01512)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) The main core human values are _____.
a) Right conduct b) Peace
c) Both a & b d) None of these

2) Preconditioning is ____.
a) Assuming without knowing b) Knowing without assuming
c) Only assuming d) Only knowing

3) Value education deals with ____.
a) What is universally valuable to all of us
b) What is conductive to our individual and collective of us
c) Enables to be in harmony with ourselves, other and rest of nature
d) All of the above

4) Courage is the tendency to accept and face ____.
a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

5) Human life is lived at four levels individuals, family, society and ____.
a) Nature b) Nurture
c) World d) Universe

6) Ethics is the word that refers to _____.
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   d) Values

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   b) Copyright
   c) Morality
   d) Beliefs, values, and morals

10) The objectives of professional ethics in engineering are _____.
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   b) To resolve the moral issues in the profession, and
   c) To justify the moral judgment concerning the profession
   d) All the above

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Professional Ethics and Human Value (BTN01512)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

SLR-BD-303

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Professional Ethics and Human Value (BTN01512)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) Courage is the tendency to accept and face ____.
a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

2) Human life is lived at four levels individuals, family, society and ____.
a) Nature b) Nurture
c) World d) Universe

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d) Values

5) _____ is defined as the duty, obligation or even authority.
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c) Democracy d) Authority

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c) Morality
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   a) To understand the moral values that ought to guide the Engineering profession
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8) The main core human values are _____.
   a) Right conduct b) Peace
   c) Both a & b d) None of these

9) Preconditioning is ____.
   a) Assuming without knowing b) Knowing without assuming
   c) Only assuming d) Only knowing

10) Value education deals with ____.
   a) What is universally valuable to all of us
   b) What is conductive to our individual and collective of us
   c) Enables to be in harmony with ourselves, other and rest of nature
   d) All of the above

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Professional Ethics and Human Value (BTN01512)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

SLR-BD-303

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Professional Ethics and Human Value (BTN01512)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) Authority

2) The study on ethics helps to know the people's _____.
a) Learn good or bad things
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10) Word ethichs is definded as a _____
   a) Motivation
   b) Set of attitudes concerned with the value of work
   c) Attitude
   d) Values

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
CIVIL ENGINEERING
Professional Ethics and Human Value (BTN01512)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

SLR-BD-304

Seat No.		Set	P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Foundation Engineering (BTN01601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) RQD is the ratio of ____.
a) Sum of lengths of rock core pieces greater than 15 cm to the total length of core run
b) Sum of lengths of rock core pieces greater than 10 cm to the total length of core run
c) Sum of lengths of rock core pieces to the total length of core run
d) Sum of lengths of unbroken rock core pieces to the total length of core run

2) One of the purposes of Soil exploration is ____.
a) To understand the behaviour of the structure
b) To estimate the load coming on the soil
c) To find the quantity and quality of water
d) To determine basic properties of soil

3) Which one of the following is not the assumption made in Terzaghi's bearing capacity analysis?
a) The strip footing has rough base
b) Failure zone does not extend above the horizontal plane through the base of the footing
c) Plastic zone is not fully developed
d) The elastic zone has straight boundaries

4) According to IS: 1904 - 1966, maximum safe bearing capacity for coarse sand, medium sand and fine sand are respectively (in kg/cm^2)
a) 4.5, 2.5, 1.5 b) 33, 16.5, 9
c) 16.5, 9.0, 4.5 d) None of these

5) Which one of the following is the correct Terzaghi general bearing capacity equation?

a) $q_u = C N_c + \gamma D N_q + 0.5 B \gamma N \gamma$

b) $q_u = C N_c - \gamma D N_q + 0.5 B \gamma N \gamma$

c) $q_u = C N_c + 0.5 \gamma D N_q + B \gamma N \gamma$

d) None of above

6) In case of sandy soil, which settlement is predominant?

a) Immediate settlement
b) Consolidation settlement
c) Secondary consolidation settlement
d) None

7) In a plate-load test, the load is applied in one of the following increments of load:

a) 1/3th b) 1/20th
c) 1/10th d) 1/5th

8) Swedish circle method of slope stability analysis is used in case of ____.

a) Silty soil b) Sandy soil
c) Clayey soil d) None

9) These types of soil deposits are often found near the mouths of rivers, along the perimeters of bays and beneath swamps or lagoons ____

a) Weak/compressible soil b) Collapsible soil
c) Expansive soil d) Corrosive soil

10) The negative skin friction on a pile develops when____ .

a) The soil in which it is driven is sandy soil
b) The soil surrounding it settles more than the pile
c) The ground water table rises
d) The soil near the tip is clay

11) Pile driven at some inclination with vertical is called ____.

a) Batter pile b) Raker pile
c) both a and b d) neither a nor b

12) In stability analysis, the term mobilized shear strength is referred to as ___.

a) Shear strength b) Maximum shear stress
c) Applied shear stress d) None

13) A soil sample has external diameter as 8 cm and wall thickness of 2 mm. The area ratio in percentage will be ____.

a) 12.88 b) 18.22
c) 15.97 d) 10.80

14) Under reamed pile is most suitable to resist ____.

a) Compressive load b) Lateral load
c) Uplift d) None

Seat No.		Set	P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Foundation Engineering (BTN01601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory; answer any two from remaining question from Section - I.
2) Q.6 is compulsory; answer any two from remaining question from Section - II.
3) Figures to the right indicate full marks.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 **a)** With a neat sketch explain bore log chart. **04**

b) During exploration following pieces of rock cores were collected from a borehole the length of the cores was as follows 240 mm, 156 mm, 347 mm, 84 mm, 123 mm, 75 mm, 94 mm, 524 mm, what is the RQD for this rock and how is the quality of this rock? **06**

Q.3 **a)** Enlist the difference between general shear failure and Local shear failure with suitable sketch. **04**

b) Determine the allowable gross load and net allowable load of square footing of 2m side and with a depth of foundation 1.0 m. use Terzaghi's bearing capacity theory and assume local Shear failure, take factor of safety 3.0, the soil at the site has γ = 18 kN/m^3, c = 15 kN/m^2 and ϕ = 25°, Take Nc = 14.8, Nq = 5.6, and Nγ = 3.2. **05**

Q.4 **a)** Explain the test procedure for standard penetration test. Also mention the corrections to be done for the observed N. **04**

b) Immediate settlement of a square footing of dimensions 1.2 m x 1.2 m carrying a load intensity of 220 kN/m^2 is 30 mm. What would be the immediate settlement of a footing measuring 3 m x 3 m carrying a load intensity of 160 kN/m^2. The subsoil conditions are identical in both the footing. **05**

Q.5 **a)** What is expansive soil? What precautions need to be taken while designing foundation in expansive soil? **04**

b) Enlist the ground improvement techniques. Explain any one in detail with its suitability. **05**

Section – II

Q.6	**a)**	Write short note on Negative skin friction.	**04**
	b)	Design a strap footing for two columns using following data. Load carried by external column is 2800 kN and that by internal column is 4250 kN c/c Spacing between the columns is 6.8 m, size of each column is 450 mm x 450 mm and External column is at 280 mm from the boundary. Assume allowable soil pressure is 325 kN/m^2.	**06**
Q.7	**a)**	Calculate capacity of rectangular pile 0.3 m x 0.4 m of length 12 m embedded in clayey soil having $C = 45\ \text{kPa}, \phi = 0, \alpha = 0.64$ (Assume suitable data if required).	**05**
	b)	Write a short note on design and construction of under reamed pile with neat sketch.	**04**
Q.8	**a)**	Explain any 4 types of cofferdams with neat sketches.	**04**
	b)	Write a brief critical note on 'Taylor's Stability Number.'	**05**
Q.9	**a)**	Draw a neat labelled sketch of a slope and enlist causes of failure of slope.	**04**
	b)	What are different types of slopes failure? Explain briefly finite and infinite slopes.	**05**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Foundation Engineering (BTN01601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) Swedish circle method of slope stability analysis is used in case of ____.
a) Silty soil b) Sandy soil
c) Clayey soil d) None

2) These types of soil deposits are often found near the mouths of rivers, along the perimeters of bays and beneath swamps or lagoons ____
a) Weak/compressible soil b) Collapsible soil
c) Expansive soil d) Corrosive soil

3) The negative skin friction on a pile develops when____ .
a) The soil in which it is driven is sandy soil
b) The soil surrounding it settles more than the pile
c) The ground water table rises
d) The soil near the tip is clay

4) Pile driven at some inclination with vertical is called ____.
a) Batter pile b) Raker pile
c) both a and b d) neither a nor b

5) In stability analysis, the term mobilized shear strength is referred to as ___.
a) Shear strength b) Maximum shear stress
c) Applied shear stress d) None

6) A soil sample has external diameter as 8 cm and wall thickness of 2 mm. The area ratio in percentage will be ____.
a) 12.88 b) 18.22
c) 15.97 d) 10.80

7) Under reamed pile is most suitable to resist ____.
a) Compressive load b) Lateral load
c) Uplift d) None

8) RQD is the ratio of ____.
   a) Sum of lengths of rock core pieces greater than 15 cm to the total length of core run
   b) Sum of lengths of rock core pieces greater than 10 cm to the total length of core run
   c) Sum of lengths of rock core pieces to the total length of core run
   d) Sum of lengths of unbroken rock core pieces to the total length of core run

9) One of the purposes of Soil exploration is ____.
   a) To understand the behaviour of the structure
   b) To estimate the load coming on the soil
   c) To find the quantity and quality of water
   d) To determine basic properties of soil

10) Which one of the following is not the assumption made in Terzaghi's bearing capacity analysis?
   a) The strip footing has rough base
   b) Failure zone does not extend above the horizontal plane through the base of the footing
   c) Plastic zone is not fully developed
   d) The elastic zone has straight boundaries

11) According to IS: 1904 - 1966, maximum safe bearing capacity for coarse sand, medium sand and fine sand are respectively (in kg/cm^2)
   a) 4.5, 2.5, 1.5
   b) 33, 16.5, 9
   c) 16.5, 9.0, 4.5
   d) None of these

12) Which one of the following is the correct Terzaghi general bearing capacity equation?
   a) $q_u = C N_c + \gamma D N_q + 0.5 B \gamma N \gamma$
   b) $q_u = C N_c - \gamma D N_q + 0.5 B \gamma N \gamma$
   c) $q_u = C N_c + 0.5 \gamma D N_q + B \gamma N \gamma$
   d) None of above

13) In case of sandy soil, which settlement is predominant?
   a) Immediate settlement
   b) Consolidation settlement
   c) Secondary consolidation settlement
   d) None

14) In a plate-load test, the load is applied in one of the following increments of load:
   a) 1/3th
   b) 1/20th
   c) 1/10th
   d) 1/5th

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Foundation Engineering (BTN01601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory; answer any two from remaining question from Section - I.
2) Q.6 is compulsory; answer any two from remaining question from Section - II.
3) Figures to the right indicate full marks.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 **a)** With a neat sketch explain bore log chart. **04**

b) During exploration following pieces of rock cores were collected from a borehole the length of the cores was as follows 240 mm, 156 mm, 347 mm, 84 mm, 123 mm, 75 mm, 94 mm, 524 mm, what is the RQD for this rock and how is the quality of this rock? **06**

Q.3 **a)** Enlist the difference between general shear failure and Local shear failure with suitable sketch. **04**

b) Determine the allowable gross load and net allowable load of square footing of 2m side and with a depth of foundation 1.0 m. use Terzaghi's bearing capacity theory and assume local Shear failure, take factor of safety 3.0, the soil at the site has γ = 18 kN/m^3, c = 15 kN/m^2 and ϕ = 25°, Take Nc = 14.8, Nq = 5.6, and Nγ = 3.2. **05**

Q.4 **a)** Explain the test procedure for standard penetration test. Also mention the corrections to be done for the observed N. **04**

b) Immediate settlement of a square footing of dimensions 1.2 m x 1.2 m carrying a load intensity of 220 kN/m^2 is 30 mm. What would be the immediate settlement of a footing measuring 3 m x 3 m carrying a load intensity of 160 kN/m^2. The subsoil conditions are identical in both the footing. **05**

Q.5 **a)** What is expansive soil? What precautions need to be taken while designing foundation in expansive soil? **04**

b) Enlist the ground improvement techniques. Explain any one in detail with its suitability. **05**

Section – II

Q.6 **a)** Write short note on Negative skin friction. **04**

b) Design a strap footing for two columns using following data. Load carried by external column is 2800 kN and that by internal column is 4250 kN c/c Spacing between the columns is 6.8 m, size of each column is 450 mm x 450 mm and External column is at 280 mm from the boundary. Assume allowable soil pressure is 325 kN/m^2. **06**

Q.7 **a)** Calculate capacity of rectangular pile 0.3 m x 0.4 m of length 12 m embedded in clayey soil having $C = 45\ \text{kPa}, \phi = 0, \alpha = 0.64$ (Assume suitable data if required). **05**

b) Write a short note on design and construction of under reamed pile with neat sketch. **04**

Q.8 **a)** Explain any 4 types of cofferdams with neat sketches. **04**

b) Write a brief critical note on 'Taylor's Stability Number.' **05**

Q.9 **a)** Draw a neat labelled sketch of a slope and enlist causes of failure of slope. **04**

b) What are different types of slopes failure? Explain briefly finite and infinite slopes. **05**

Seat No.	

Set R

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Foundation Engineering (BTN01601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Pile driven at some inclination with vertical is called ____.
a) Batter pile b) Raker pile
c) both a and b d) neither a nor b

2) In stability analysis, the term mobilized shear strength is referred to as ___.
a) Shear strength b) Maximum shear stress
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3) A soil sample has external diameter as 8 cm and wall thickness of 2 mm. The area ratio in percentage will be ____.
a) 12.88 b) 18.22
c) 15.97 d) 10.80

4) Under reamed pile is most suitable to resist ____.
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c) Uplift d) None

5) RQD is the ratio of ____.
a) Sum of lengths of rock core pieces greater than 15 cm to the total length of core run
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c) Sum of lengths of rock core pieces to the total length of core run
d) Sum of lengths of unbroken rock core pieces to the total length of core run

6) One of the purposes of Soil exploration is ____.
- a) To understand the behaviour of the structure
- b) To estimate the load coming on the soil
- c) To find the quantity and quality of water
- d) To determine basic properties of soil

7) Which one of the following is not the assumption made in Terzaghi's bearing capacity analysis?
- a) The strip footing has rough base
- b) Failure zone does not extend above the horizontal plane through the base of the footing
- c) Plastic zone is not fully developed
- d) The elastic zone has straight boundaries

8) According to IS: 1904 - 1966, maximum safe bearing capacity for coarse sand, medium sand and fine sand are respectively (in kg/cm^2)
- a) 4.5, 2.5, 1.5
- b) 33, 16.5, 9
- c) 16.5, 9.0, 4.5
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9) Which one of the following is the correct Terzaghi general bearing capacity equation?
- a) $q_u = C N_c + \gamma D N_q + 0.5 B \gamma N \gamma$
- b) $q_u = C N_c - \gamma D N_q + 0.5 B \gamma N \gamma$
- c) $q_u = C N_c + 0.5 \gamma D N_q + B \gamma N \gamma$
- d) None of above

10) In case of sandy soil, which settlement is predominant?
- a) Immediate settlement
- b) Consolidation settlement
- c) Secondary consolidation settlement
- d) None

11) In a plate-load test, the load is applied in one of the following increments of load:
- a) 1/3th
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- c) 1/10th
- d) 1/5th

12) Swedish circle method of slope stability analysis is used in case of ____.
- a) Silty soil
- b) Sandy soil
- c) Clayey soil
- d) None

13) These types of soil deposits are often found near the mouths of rivers, along the perimeters of bays and beneath swamps or lagoons ____
- a) Weak/compressible soil
- b) Collapsible soil
- c) Expansive soil
- d) Corrosive soil

14) The negative skin friction on a pile develops when____ .

a) The soil in which it is driven is sandy soil
b) The soil surrounding it settles more than the pile
c) The ground water table rises
d) The soil near the tip is clay

Seat No.		Set	R

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Foundation Engineering (BTN01601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory; answer any two from remaining question from Section - I.
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Section – I

Q.2 **a)** With a neat sketch explain bore log chart. **04**

b) During exploration following pieces of rock cores were collected from a borehole the length of the cores was as follows 240 mm, 156 mm, 347 mm, 84 mm, 123 mm, 75 mm, 94 mm, 524 mm, what is the RQD for this rock and how is the quality of this rock? **06**

Q.3 **a)** Enlist the difference between general shear failure and Local shear failure with suitable sketch. **04**

b) Determine the allowable gross load and net allowable load of square footing of 2m side and with a depth of foundation 1.0 m. use Terzaghi's bearing capacity theory and assume local Shear failure, take factor of safety 3.0, the soil at the site has γ = 18 kN/m^3, c = 15 kN/m^2 and ϕ = 25°, Take Nc = 14.8, Nq = 5.6, and Nγ = 3.2. **05**

Q.4 **a)** Explain the test procedure for standard penetration test. Also mention the corrections to be done for the observed N. **04**

b) Immediate settlement of a square footing of dimensions 1.2 m x 1.2 m carrying a load intensity of 220 kN/m^2 is 30 mm. What would be the immediate settlement of a footing measuring 3 m x 3 m carrying a load intensity of 160 kN/m^2. The subsoil conditions are identical in both the footing. **05**

Q.5 **a)** What is expansive soil? What precautions need to be taken while designing foundation in expansive soil? **04**

b) Enlist the ground improvement techniques. Explain any one in detail with its suitability. **05**

Section – II

Q.6 **a)** Write short note on Negative skin friction. **04**

b) Design a strap footing for two columns using following data. Load carried by external column is 2800 kN and that by internal column is 4250 kN c/c Spacing between the columns is 6.8 m, size of each column is 450 mm x 450 mm and External column is at 280 mm from the boundary. Assume allowable soil pressure is 325 kN/m^2. **06**

Q.7 **a)** Calculate capacity of rectangular pile 0.3 m x 0.4 m of length 12 m embedded in clayey soil having **05**
$C = 45\ \text{kPa}, \phi = 0, \alpha = 0.64$ (Assume suitable data if required).

b) Write a short note on design and construction of under reamed pile with neat sketch. **04**

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b) Write a brief critical note on 'Taylor's Stability Number.' **05**

Q.9 **a)** Draw a neat labelled sketch of a slope and enlist causes of failure of slope. **04**

b) What are different types of slopes failure? Explain briefly finite and infinite slopes. **05**

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Foundation Engineering (BTN01601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In case of sandy soil, which settlement is predominant?
a) Immediate settlement
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d) None

2) In a plate-load test, the load is applied in one of the following increments of load:
a) 1/3th b) 1/20th
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4) These types of soil deposits are often found near the mouths of rivers, along the perimeters of bays and beneath swamps or lagoons ____
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6) Pile driven at some inclination with vertical is called ____.
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7) In stability analysis, the term mobilized shear strength is referred to as ___.
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8) A soil sample has external diameter as 8 cm and wall thickness of 2 mm. The area ratio in percentage will be ____.
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10) RQD is the ratio of ____.
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14) Which one of the following is the correct Terzaghi general bearing capacity equation?
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b) $q_u = C N_c - \gamma D N_q + 0.5 B \gamma N \gamma$
c) $q_u = C N_c + 0.5 \gamma D N_q + B \gamma N \gamma$
d) None of above

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Foundation Engineering (BTN01601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory; answer any two from remaining question from Section - I.
2) Q.6 is compulsory; answer any two from remaining question from Section - II.
3) Figures to the right indicate full marks.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 **a)** With a neat sketch explain bore log chart. **04**

b) During exploration following pieces of rock cores were collected from a borehole the length of the cores was as follows 240 mm, 156 mm, 347 mm, 84 mm, 123 mm, 75 mm, 94 mm, 524 mm, what is the RQD for this rock and how is the quality of this rock? **06**

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b) Determine the allowable gross load and net allowable load of square footing of 2m side and with a depth of foundation 1.0 m. use Terzaghi's bearing capacity theory and assume local Shear failure, take factor of safety 3.0, the soil at the site has γ = 18 kN/m^3, c = 15 kN/m^2 and ϕ = 25°, Take Nc = 14.8, Nq = 5.6, and Nγ = 3.2. **05**

Q.4 **a)** Explain the test procedure for standard penetration test. Also mention the corrections to be done for the observed N. **04**

b) Immediate settlement of a square footing of dimensions 1.2 m x 1.2 m carrying a load intensity of 220 kN/m^2 is 30 mm. What would be the immediate settlement of a footing measuring 3 m x 3 m carrying a load intensity of 160 kN/m^2. The subsoil conditions are identical in both the footing. **05**

Q.5 **a)** What is expansive soil? What precautions need to be taken while designing foundation in expansive soil? **04**

b) Enlist the ground improvement techniques. Explain any one in detail with its suitability. **05**

Section – II

Q.6 **a)** Write short note on Negative skin friction. **04**

b) Design a strap footing for two columns using following data. Load carried by external column is 2800 kN and that by internal column is 4250 kN c/c Spacing between the columns is 6.8 m, size of each column is 450 mm x 450 mm and External column is at 280 mm from the boundary. Assume allowable soil pressure is 325 kN/m^2. **06**

Q.7 **a)** Calculate capacity of rectangular pile 0.3 m x 0.4 m of length 12 m embedded in clayey soil having **05**
$C = 45\ \text{kPa}, \phi = 0, \alpha = 0.64$ (Assume suitable data if required).

b) Write a short note on design and construction of under reamed pile with neat sketch. **04**

Q.8 **a)** Explain any 4 types of cofferdams with neat sketches. **04**

b) Write a brief critical note on 'Taylor's Stability Number.' **05**

Q.9 **a)** Draw a neat labelled sketch of a slope and enlist causes of failure of slope. **04**

b) What are different types of slopes failure? Explain briefly finite and infinite slopes. **05**

Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (BTN01602)

Day & Date: Thursday, 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The yield of a given reservoir is dependent upon _____.
a) the catchment yield b) the reservoir evaporation
c) the reservoir leakage d) all of the above

2) Capacity inflow ratio for a storage reservoir is defined as _____.
a) reservoir capacity / average annual flood inflow
b) reservoir capacity / average annual sediment inflow
c) dead storage capacity of the reservoir / average annual sediment deposited
d) none of the above

3) The maximum permissible eccentricity for no tension at the base of a gravity dam is _____.
a) B/2 b) B/3
c) B/4 d) B/6

4) The horizontal destabilizing force caused by the formation of waves in a storage reservoir having a fetch of 40 km, due to high wind of 160 km/h, is about _____
a) 30 kN b) 60 kN
c) 90 kN d) 130 kN

5) The most economical type of arch dam in general is of _____
a) constant radius type b) variable radius type
c) constant angle type d) none of these

6) The highest concrete gravity dam of the world is Grand Dixence dam is Switzerland, whose height is _____
a) 325 m b) 317 m
c) 285 m d) 272 m

7) A shaft spillway is located _____
a) inside the body of a gravity dam
b) inside the upstream reservoir
c) Inside the downstream reservoir
d) on side flanks of the main dam

8) The value of Khosla's safe exit gradient for usually met alluvial river soils of our country, is _____.
a) 0 b) 1
c) ∞ d) ¼ to $1/6$

9) The channel constructed to bypass the excess water entering a canal, is called a _____.
a) canal module b) canal siphon
c) canal escape d) canal regulator

10) Which among the following is not true about Asphaltic concrete lining?
a) it is fairly cheap
b) it is flexible and readily confirms to subgrade
c) it permits certain type of weed growth
d) it decreases the rugosity coefficient to increase channel efficiency.

11) Permeable spurs are best suitable for rivers, which _____.
a) carry heavy suspended load
b) carry large bed load, but light suspended load
c) need permanent protection to dikes
d) need attracting the river current, for providing deeper channel
e) flow in upper hilly reaches.

12) For a meandering alluvial river in flood plain, the meander length is about _____
a) 6 W b) 18 W
c) 17W d) W
where W is the normal river width

13) The main function of a surge tank is to _____
a) produce surge in the pipeline
b) relieve water hammer pressure in the penstock
c) supply water at constant pressure
d) none of above

14) Gross head of a hydroelectric power station is _____
a) the height of water level in the river where the storage is provided
b) the difference of water level between the level in storage and tail race
c) the height of water level in the river where the tail race is provided
d) all of above

Seat No.		Set	P

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (BTN01602)

Day & Date: Thursday, 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section – I, Q. No. 3 is compulsory and attempt any two questions from the remaining questions.
2) In Section – II, Q. No. 9 is compulsory and attempt any two questions from the remaining questions.
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2 **a)** Enlist the factors governing choice of dam with respect to dam site **04**

b) What is the necessity of dam instrumentation? Briefly explain the function seismograph. **05**

Q.3 **a)** Write a short note on galleries in gravity dam with respect to location, size, shape and function **04**

b) Determine the maximum and minimum vertical stresses on the base of the foundation of a concrete gravity dam assuming that there is no tail water. Also calculate the major principle stress at the toe of the dam. Use the following data, **06**

i) Base width of dam = 60 m
ii) Slope of D/S face = 0.8H: 1V
iii) Total vertical force on the base = 60000 kN
iv) Total overturning moment about toe = 1.5×10^6 kN.m
v) Total restoring moment about toe = 3×10^6kN.m

Q.4 **a)** Draw a labelled section of zoned type earthen dam. **04**

b) Determine the phreatic line for an earthen dam, homogeneous in section from the following data: **05**

i) Height of dam = 20m
ii) Free board = 2m
iii) Coefficient of permeability of material of the dam = 4×10^{-4} cm/sec
iv) Top width = 4m
v) U/S slope = 3:1
v) D/S slope = 3:1

Q.5 **a)** What is meant by ‘hydraulic jump’ and how does it helps in designing irrigation structures? **04**

b) What is meant by spillways? State its purposes. Explain any one spillway with sketch. **05**

Section – II

Q.6	**a)**	Discuss briefly the causes of failure of hydraulic structures, founded on previous foundations.	**04**
	b)	Explain and discuss different type of alignments of irrigation canals suitable for particular topography & the command area.	**05**
Q.7	**a)**	What are the different cross drainage works? Explain aqueduct with neat sketch by mentioning its suitability for the proper condition.	**04**
	b)	Write short note on high water, low water and mean water river training.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants	**04**
	b)	What are the two principal types of drainage systems necessary for draining irrigated tracts to avoid their water logging? Explain them with neat sketches	**05**
Q.9	**a)**	Explain the term weir and enlist the criterions of site selection for K.T Weir.	**04**
	b)	Three generators each of capacity 15000 kW have been installed at a power station. During a certain period of load, the load on the plant varies from 17000 kW to 27000 kW. Determine: i) Total installed capacity ii) Load factor iii) Plant factor iv) Utilization factor	**06**

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (BTN01602)

Day & Date: Thursday, 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The value of Khosla's safe exit gradient for usually met alluvial river soils of our country, is _____.
a) 0 b) 1
c) ∞ d) ¼ to $1/6$

2) The channel constructed to bypass the excess water entering a canal, is called a _____.
a) canal module b) canal siphon
c) canal escape d) canal regulator

3) Which among the following is not true about Asphaltic concrete lining?
a) it is fairly cheap
b) it is flexible and readily confirms to subgrade
c) it permits certain type of weed growth
d) it decreases the rugosity coefficient to increase channel efficiency.

4) Permeable spurs are best suitable for rivers, which _____.
a) carry heavy suspended load
b) carry large bed load, but light suspended load
c) need permanent protection to dikes
d) need attracting the river current, for providing deeper channel
e) flow in upper hilly reaches.

5) For a meandering alluvial river in flood plain, the meander length is about _____
a) 6 W b) 18 W
c) 17W d) W
where W is the normal river width

6) The main function of a surge tank is to _____
a) produce surge in the pipeline
b) relieve water hammer pressure in the penstock
c) supply water at constant pressure
d) none of above

7) Gross head of a hydroelectric power station is _____
a) the height of water level in the river where the storage is provided
b) the difference of water level between the level in storage and tail race
c) the height of water level in the river where the tail race is provided
d) all of above

8) The yield of a given reservoir is dependent upon _____.
a) the catchment yield
b) the reservoir evaporation
c) the reservoir leakage
d) all of the above

9) Capacity inflow ratio for a storage reservoir is defined as _____.
a) reservoir capacity / average annual flood inflow
b) reservoir capacity / average annual sediment inflow
c) dead storage capacity of the reservoir / average annual sediment deposited
d) none of the above

10) The maximum permissible eccentricity for no tension at the base of a gravity dam is _____.
a) B/2
b) B/3
c) B/4
d) B/6

11) The horizontal destabilizing force caused by the formation of waves in a storage reservoir having a fetch of 40 km, due to high wind of 160 km/h, is about _____
a) 30 kN
b) 60 kN
c) 90 kN
d) 130 kN

12) The most economical type of arch dam in general is of _____
a) constant radius type
b) variable radius type
c) constant angle type
d) none of these

13) The highest concrete gravity dam of the world is Grand Dixence dam is Switzerland, whose height is _____
a) 325 m
b) 317 m
c) 285 m
d) 272 m

14) A shaft spillway is located _____
a) inside the body of a gravity dam
b) inside the upstream reservoir
c) Inside the downstream reservoir
d) on side flanks of the main dam

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (BTN01602)

Day & Date: Thursday, 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section – I, Q. No. 3 is compulsory and attempt any two questions from the remaining questions.
2) In Section – II, Q. No. 9 is compulsory and attempt any two questions from the remaining questions.
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2 **a)** Enlist the factors governing choice of dam with respect to dam site **04**
b) What is the necessity of dam instrumentation? Briefly explain the function seismograph. **05**

Q.3 **a)** Write a short note on galleries in gravity dam with respect to location, size, shape and function **04**
b) Determine the maximum and minimum vertical stresses on the base of the foundation of a concrete gravity dam assuming that there is no tail water. Also calculate the major principle stress at the toe of the dam. Use the following data, **06**
i) Base width of dam = 60 m
ii) Slope of D/S face = 0.8H: 1V
iii) Total vertical force on the base = 60000 kN
iv) Total overturning moment about toe = 1.5×10^6 kN.m
v) Total restoring moment about toe = 3×10^6kN.m

Q.4 **a)** Draw a labelled section of zoned type earthen dam. **04**
b) Determine the phreatic line for an earthen dam, homogeneous in section from the following data: **05**
i) Height of dam = 20m
ii) Free board = 2m
iii) Coefficient of permeability of material of the dam = 4×10^{-4} cm/sec
iv) Top width = 4m
v) U/S slope = 3:1
v) D/S slope = 3:1

Q.5 **a)** What is meant by ‘hydraulic jump’ and how does it helps in designing irrigation structures? **04**
b) What is meant by spillways? State its purposes. Explain any one spillway with sketch. **05**

Section – II

Q.6	**a)**	Discuss briefly the causes of failure of hydraulic structures, founded on previous foundations.	**04**
	b)	Explain and discuss different type of alignments of irrigation canals suitable for particular topography & the command area.	**05**
Q.7	**a)**	What are the different cross drainage works? Explain aqueduct with neat sketch by mentioning its suitability for the proper condition.	**04**
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	b)	Three generators each of capacity 15000 kW have been installed at a power station. During a certain period of load, the load on the plant varies from 17000 kW to 27000 kW. Determine: i) Total installed capacity ii) Load factor iii) Plant factor iv) Utilization factor	**06**

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (BTN01602)

Day & Date: Thursday, 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Permeable spurs are best suitable for rivers, which _____.
a) carry heavy suspended load
b) carry large bed load, but light suspended load
c) need permanent protection to dikes
d) need attracting the river current, for providing deeper channel
e) flow in upper hilly reaches.

2) For a meandering alluvial river in flood plain, the meander length is about _____
a) 6 W b) 18 W
c) 17W d) W
where W is the normal river width

3) The main function of a surge tank is to _____
a) produce surge in the pipeline
b) relieve water hammer pressure in the penstock
c) supply water at constant pressure
d) none of above

4) Gross head of a hydroelectric power station is _____
a) the height of water level in the river where the storage is provided
b) the difference of water level between the level in storage and tail race
c) the height of water level in the river where the tail race is provided
d) all of above

5) The yield of a given reservoir is dependent upon _____.
a) the catchment yield b) the reservoir evaporation
c) the reservoir leakage d) all of the above

6) Capacity inflow ratio for a storage reservoir is defined as _____.
a) reservoir capacity / average annual flood inflow
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d) none of the above

7) The maximum permissible eccentricity for no tension at the base of a gravity dam is _____.
a) B/2 b) B/3
c) B/4 d) B/6

8) The horizontal destabilizing force caused by the formation of waves in a storage reservoir having a fetch of 40 km, due to high wind of 160 km/h, is about _____
a) 30 kN b) 60 kN
c) 90 kN d) 130 kN

9) The most economical type of arch dam in general is of _____
a) constant radius type b) variable radius type
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10) The highest concrete gravity dam of the world is Grand Dixence dam is Switzerland, whose height is _____
a) 325 m b) 317 m
c) 285 m d) 272 m

11) A shaft spillway is located _____
a) inside the body of a gravity dam
b) inside the upstream reservoir
c) Inside the downstream reservoir
d) on side flanks of the main dam

12) The value of Khosla's safe exit gradient for usually met alluvial river soils of our country, is _____.
a) 0 b) 1
c) ∞ d) ¼ to 1/6

13) The channel constructed to bypass the excess water entering a canal, is called a _____.
a) canal module b) canal siphon
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14) Which among the following is not true about Asphaltic concrete lining?
a) it is fairly cheap
b) it is flexible and readily confirms to subgrade
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Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (BTN01602)

Day & Date: Thursday, 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section – I, Q. No. 3 is compulsory and attempt any two questions from the remaining questions.
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Section – I

Q.2 **a)** Enlist the factors governing choice of dam with respect to dam site **04**
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b) Determine the maximum and minimum vertical stresses on the base of the foundation of a concrete gravity dam assuming that there is no tail water. Also calculate the major principle stress at the toe of the dam. Use the following data, **06**
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Q.4 **a)** Draw a labelled section of zoned type earthen dam. **04**
b) Determine the phreatic line for an earthen dam, homogeneous in section from the following data: **05**
i) Height of dam = 20m
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Q.5 **a)** What is meant by ‘hydraulic jump’ and how does it helps in designing irrigation structures? **04**
b) What is meant by spillways? State its purposes. Explain any one spillway with sketch. **05**

Section – II

Q.6	**a)**	Discuss briefly the causes of failure of hydraulic structures, founded on previous foundations.	**04**
	b)	Explain and discuss different type of alignments of irrigation canals suitable for particular topography & the command area.	**05**
Q.7	**a)**	What are the different cross drainage works? Explain aqueduct with neat sketch by mentioning its suitability for the proper condition.	**04**
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Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (BTN01602)

Day & Date: Thursday, 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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12) The maximum permissible eccentricity for no tension at the base of a gravity dam is _____.
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b) variable radius type
c) constant angle type
d) none of these

Seat No.	

Set | S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (BTN01602)

Day & Date: Thursday, 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section – I, Q. No. 3 is compulsory and attempt any two questions from the remaining questions.
2) In Section – II, Q. No. 9 is compulsory and attempt any two questions from the remaining questions.
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4) Assume additional data if required and mention it clearly.

Section – I

Q.2 **a)** Enlist the factors governing choice of dam with respect to dam site **04**
b) What is the necessity of dam instrumentation? Briefly explain the function seismograph. **05**

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b) Determine the maximum and minimum vertical stresses on the base of the foundation of a concrete gravity dam assuming that there is no tail water. Also calculate the major principle stress at the toe of the dam. Use the following data, **06**
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Q.4 **a)** Draw a labelled section of zoned type earthen dam. **04**
b) Determine the phreatic line for an earthen dam, homogeneous in section from the following data: **05**
i) Height of dam = 20m
ii) Free board = 2m
iii) Coefficient of permeability of material of the dam = 4×10^{-4} cm/sec
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v) U/S slope = 3:1
v) D/S slope = 3:1

Q.5 **a)** What is meant by ‘hydraulic jump’ and how does it helps in designing irrigation structures? **04**
b) What is meant by spillways? State its purposes. Explain any one spillway with sketch. **05**

Section – II

Q.6	**a)**	Discuss briefly the causes of failure of hydraulic structures, founded on previous foundations.	**04**
	b)	Explain and discuss different type of alignments of irrigation canals suitable for particular topography & the command area.	**05**
Q.7	**a)**	What are the different cross drainage works? Explain aqueduct with neat sketch by mentioning its suitability for the proper condition.	**04**
	b)	Write short note on high water, low water and mean water river training.	**05**
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	b)	Three generators each of capacity 15000 kW have been installed at a power station. During a certain period of load, the load on the plant varies from 17000 kW to 27000 kW. Determine: i) Total installed capacity ii) Load factor iii) Plant factor iv) Utilization factor	**06**

SLR-BD-308

Seat No.	

Set P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Bridges (BTN01610)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Give the correct option for the following questions. 14

1) Culvert is the type of bridge whose span is _____.
a) Between 6m-60m b) Above 60m
c) Less than 6m d) None of these

2) The ground contact length of the track of IRC class AA loading is _____.
a) 3.6m b) 4.57m
c) 3.5m d) None of these

3) Impact force for IRC class A & B is given by _____.
a) $I_f = \frac{AB}{B+L}$ b) $I_f = \frac{B+L}{A}$
c) $I_f = \frac{A}{B+L}$ d) None of these

4) For spans below 5m, impact factor for tracked vehicle is _____.
a) 10% b) 20%
c) 25% d) 15%

5) Total load of class AA tracked is _____.
a) 700kN b) 400kN
c) 554kN d) 332kN

6) Total load in case of IRC 70R tracked loading is _____.
a) 700kN b) 710kN
c) 1000kN d) 554kN

7) Solid deck slab is adopted for spans _____.
a) More than 8m b) More than 20m
c) Less than 8m d) Between 10-25m

8) Braking force is assumed to act along the line parallel to roadway & above it _____.

a) 1.2m b) 1.5m
c) 1.8m d) 2.0m

9) As per IRC-21, minimum clear cover to any reinforcement bar is _____.

a) 40mm b) 25mm
c) 50mm d) 30mm

10) The pier cap or abutment cap should be of minimum _____ concrete.

a) M20 grade b) M25 grade
c) M30 grade d) Any one of these

11) Following is not the function of the pier cap or abutment cap _____.

a) Provides immediate bearing surface for the support of the super structure at pier and abutment location.
b) Disperses the strip load from bearing to the substructure evenly.
c) Prevent rain water from dripping down the sides and ends of the pier.
d) Resist all horizontal forces acting on bridges.

12) In case of urban site, suitable pier is _____.

a) Cellular pier b) Trestle pier
c) Inboard pier d) Hammerhead pier

13) Fixed bearing allow _____.

a) Rotation only
b) Translation only
c) Both rotational as well as translation
d) Restrict rotation as well as translation

14) In case of curved bridges, suitable bearing is _____.

a) Fixed bearing b) Expansion bearing
c) Rocker bearing d) Steel hinge

Seat No.	

Set | P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Bridges (BTN01610)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
Question no. 6 is compulsory in section II, and solve any two questions from the remaining
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Design the solid deck slab of Two lane bridge for following data: **10**
a) Effective span - 6 m
b) Carriage way width - 7.5 m
c) Kerb - 600 x 275 on both side
d) Live load - IRC Class A (Two lane)
e) Wearing coat - 100 mm thick
f) Use M-25 concrete and Fe-415 steel
g) Use α = 2.82

Q.3 Answer the following.
a) What is impact factor? How it is calculated? **05**
b) What is economical span? Derive the equation for the same. **04**

Q.4 A RCC T beam type bridge having deck slab of 225 mm thick, wearing coat of 90 mm thick, three longitudinal girders and five cross girders. Determine the Design bending moment for all the longitudinal girders. Use following additional data, **09**
a) Carriage way width - 7.5 m
b) Span of bridge - 12 m
c) Live Load - IRC class AA Tracked
d) Kerb - 600 mm wide, 400 mm deep
e) Web thickness for Longitudinal and cross girder - 300 mm
f) Longitudinal Girder spacing - 2.5 m
g) Use M-30 concrete and Fe-415 steel

Q.5 Design a slab panel having size of 3 m x 4 m. Consider IRC class AA tracked loading. Use Pigeaud's chart. Consider thickness of slab as 220 mm and wearing coat thickness as 80 mm. Use M-25 concrete and Fe-415 steel. Pigeaud's coefficient for DL are, m_1 = 0.040, m_2 = 0.016 and for Pigeaud's coefficient for LL are, m_1 = 0.095, m_2 = 0.024 **09**

Section – II

Q.6 Verify the adequacy of pier for the following data: **10**
Top width of pier - 1.6 m, Height of pier up to springing level - 5 m, C/C distance of bearing - 1.2 m, Side batter 1:12, HFL - 1.5 m below the bearing level, Span of bridge - 12 m, carriage way width - 7.5 m, Reaction due to D.L. from each span = 2800 kN, Reaction due to L.L. from each span = 700 kN, Braking force - 140 kN, wind pressure on pier - 2.0 kN/m^2. Material of pier = M20 concrete. Estimate the maximum and minimum stress developed at the base of the pier due to critical combination of various loads for dry condition and Flood condition.

Q.7 Verify the suitability of abutment as shown in the fig 7.1 Use following data. **09**
Density of soil - 18 kN/m^3, Friction angle of soil (∅) = 30°, Coefficient of friction - 0.6, Live load reaction at bearing - 350 kN., DL reaction from super structure - 2500 kN

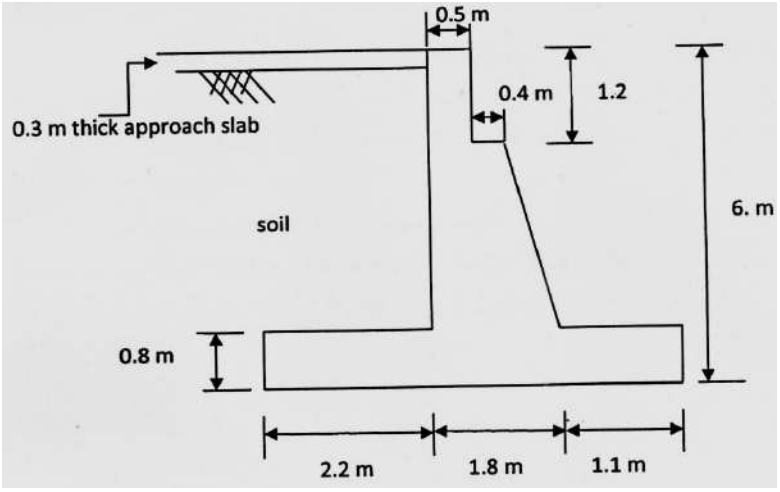

Fig. 7.1

Q.8 **a)** Design a elastomeric unreinforced bearing pad for following data **05**
Vertical load (sustained) = 225 kN,
Vertical load (dynamic) = 160 kN,
Horizontal force = 85 kN
Modulus of rigidity of elastomer - 1 N/mm^2
coefficient of friction = 0.35

b) Write a note on types of expansion joints. **04**

Q.9 **Write a note on following. (Any three)** **09**

a) Types of bridge inspection
b) Stability requirement of Abutment
c) Functions of bearing
d) Reinforced earth retaining wall

Seat No.	

Set **Q**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Bridges (BTN01610)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Give the correct option for the following questions. 14

1) Braking force is assumed to act along the line parallel to roadway & above it _____.
a) 1.2m b) 1.5m
c) 1.8m d) 2.0m

2) As per IRC-21, minimum clear cover to any reinforcement bar is _____.
a) 40mm b) 25mm
c) 50mm d) 30mm

3) The pier cap or abutment cap should be of minimum _____ concrete.
a) M20 grade b) M25 grade
c) M30 grade d) Any one of these

4) Following is not the function of the pier cap or abutment cap _____.
a) Provides immediate bearing surface for the support of the super structure at pier and abutment location.
b) Disperses the strip load from bearing to the substructure evenly.
c) Prevent rain water from dripping down the sides and ends of the pier.
d) Resist all horizontal forces acting on bridges.

5) In case of urban site, suitable pier is _____.
a) Cellular pier b) Trestle pier
c) Inboard pier d) Hammerhead pier

6) Fixed bearing allow _____.
a) Rotation only
b) Translation only
c) Both rotational as well as translation
d) Restrict rotation as well as translation

7) In case of curved bridges, suitable bearing is _____.
a) Fixed bearing
b) Expansion bearing
c) Rocker bearing
d) Steel hinge

8) Culvert is the type of bridge whose span is _____.
a) Between 6m-60m
b) Above 60m
c) Less than 6m
d) None of these

9) The ground contact length of the track of IRC class AA loading is _____.
a) 3.6m
b) 4.57m
c) 3.5m
d) None of these

10) Impact force for IRC class A & B is given by _____.
a) $I_f = \frac{AB}{B+L}$
b) $I_f = \frac{B+L}{A}$
c) $I_f = \frac{A}{B+L}$
d) None of these

11) For spans below 5m, impact factor for tracked vehicle is _____.
a) 10%
b) 20%
c) 25%
d) 15%

12) Total load of class AA tracked is _____.
a) 700kN
b) 400kN
c) 554kN
d) 332kN

13) Total load in case of IRC 70R tracked loading is _____.
a) 700kN
b) 710kN
c) 1000kN
d) 554kN

14) Solid deck slab is adopted for spans _____.
a) More than 8m
b) More than 20m
c) Less than 8m
d) Between 10-25m

SLR-BD-308

Seat No.		Set	Q

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Bridges (BTN01610)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
Question no. 6 is compulsory in section II, and solve any two questions from the remaining
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Design the solid deck slab of Two lane bridge for following data: **10**
a) Effective span - 6 m
b) Carriage way width - 7.5 m
c) Kerb - 600 x 275 on both side
d) Live load - IRC Class A (Two lane)
e) Wearing coat - 100 mm thick
f) Use M-25 concrete and Fe-415 steel
g) Use α = 2.82

Q.3 Answer the following.
a) What is impact factor? How it is calculated? **05**
b) What is economical span? Derive the equation for the same. **04**

Q.4 A RCC T beam type bridge having deck slab of 225 mm thick, wearing coat of 90 mm thick, three longitudinal girders and five cross girders. Determine the Design bending moment for all the longitudinal girders. Use following additional data, **09**
a) Carriage way width - 7.5 m
b) Span of bridge - 12 m
c) Live Load - IRC class AA Tracked
d) Kerb - 600 mm wide, 400 mm deep
e) Web thickness for Longitudinal and cross girder - 300 mm
f) Longitudinal Girder spacing - 2.5 m
g) Use M-30 concrete and Fe-415 steel

Q.5 Design a slab panel having size of 3 m x 4 m. Consider IRC class AA tracked loading. Use Pigeaud's chart. Consider thickness of slab as 220 mm and wearing coat thickness as 80 mm. Use M-25 concrete and Fe-415 steel. Pigeaud's coefficient for DL are, m_1 = 0.040, m_2 = 0.016 and for Pigeaud's coefficient for LL are, m_1 = 0.095, m_2 = 0.024 **09**

Section – II

Q.6 Verify the adequacy of pier for the following data: **10**
Top width of pier - 1.6 m, Height of pier up to springing level - 5 m, C/C distance of bearing - 1.2 m, Side batter 1:12, HFL - 1.5 m below the bearing level, Span of bridge - 12 m, carriage way width - 7.5 m, Reaction due to D.L. from each span = 2800 kN, Reaction due to L.L. from each span = 700 kN, Braking force - 140 kN, wind pressure on pier - 2.0 kN/m^2. Material of pier = M20 concrete. Estimate the maximum and minimum stress developed at the base of the pier due to critical combination of various loads for dry condition and Flood condition.

Q.7 Verify the suitability of abutment as shown in the fig 7.1 Use following data. **09**
Density of soil - 18 kN/m^3, Friction angle of soil (∅) = 30°, Coefficient of friction - 0.6, Live load reaction at bearing - 350 kN., DL reaction from super structure - 2500 kN

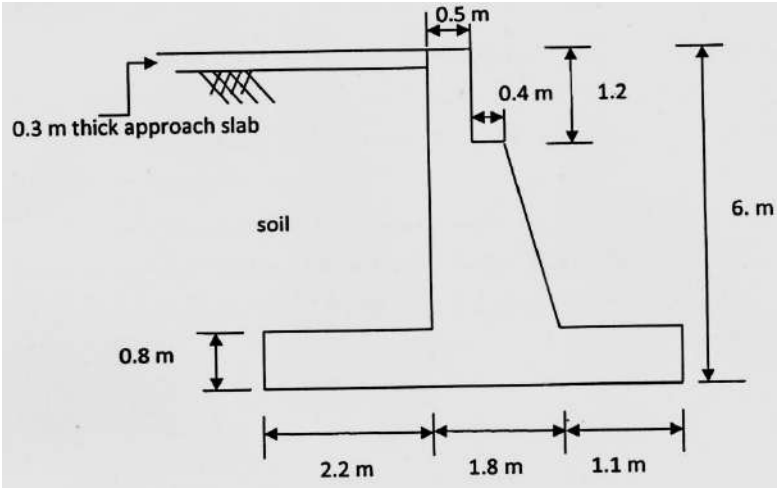

Fig. 7.1

Q.8 **a)** Design a elastomeric unreinforced bearing pad for following data **05**
Vertical load (sustained) = 225 kN,
Vertical load (dynamic) = 160 kN,
Horizontal force = 85 kN
Modulus of rigidity of elastomer - 1 N/mm^2
coefficient of friction = 0.35

b) Write a note on types of expansion joints. **04**

Q.9 **Write a note on following. (Any three)** **09**

a) Types of bridge inspection
b) Stability requirement of Abutment
c) Functions of bearing
d) Reinforced earth retaining wall

Seat No.	

Set **R**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Bridges (BTN01610)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Give the correct option for the following questions. 14

1) Following is not the function of the pier cap or abutment cap _____.
a) Provides immediate bearing surface for the support of the super structure at pier and abutment location.
b) Disperses the strip load from bearing to the substructure evenly.
c) Prevent rain water from dripping down the sides and ends of the pier.
d) Resist all horizontal forces acting on bridges.

2) In case of urban site, suitable pier is _____.
a) Cellular pier b) Trestle pier
c) Inboard pier d) Hammerhead pier

3) Fixed bearing allow _____.
a) Rotation only
b) Translation only
c) Both rotational as well as translation
d) Restrict rotation as well as translation

4) In case of curved bridges, suitable bearing is _____.
a) Fixed bearing b) Expansion bearing
c) Rocker bearing d) Steel hinge

5) Culvert is the type of bridge whose span is _____.
a) Between 6m-60m b) Above 60m
c) Less than 6m d) None of these

6) The ground contact length of the track of IRC class AA loading is _____.
a) 3.6m b) 4.57m
c) 3.5m d) None of these

7) Impact force for IRC class A & B is given by _____.

a) $I_f = \frac{AB}{B+L}$ b) $I_f = \frac{B+L}{A}$

c) $I_f = \frac{A}{B+L}$ d) None of these

8) For spans below 5m, impact factor for tracked vehicle is _____.

a) 10% b) 20%

c) 25% d) 15%

9) Total load of class AA tracked is _____.

a) 700kN b) 400kN

c) 554kN d) 332kN

10) Total load in case of IRC 70R tracked loading is _____.

a) 700kN b) 710kN

c) 1000kN d) 554kN

11) Solid deck slab is adopted for spans _____.

a) More than 8m b) More than 20m

c) Less than 8m d) Between 10-25m

12) Braking force is assumed to act along the line parallel to roadway & above it _____.

a) 1.2m b) 1.5m

c) 1.8m d) 2.0m

13) As per IRC-21, minimum clear cover to any reinforcement bar is _____.

a) 40mm b) 25mm

c) 50mm d) 30mm

14) The pier cap or abutment cap should be of minimum _____ concrete.

a) M20 grade b) M25 grade

c) M30 grade d) Any one of these

Seat No.		Set	R

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Bridges (BTN01610)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
Question no. 6 is compulsory in section II, and solve any two questions from the remaining
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Design the solid deck slab of Two lane bridge for following data: **10**
a) Effective span - 6 m
b) Carriage way width - 7.5 m
c) Kerb - 600 x 275 on both side
d) Live load - IRC Class A (Two lane)
e) Wearing coat - 100 mm thick
f) Use M-25 concrete and Fe-415 steel
g) Use α = 2.82

Q.3 Answer the following.
a) What is impact factor? How it is calculated? **05**
b) What is economical span? Derive the equation for the same. **04**

Q.4 A RCC T beam type bridge having deck slab of 225 mm thick, wearing coat of 90 mm thick, three longitudinal girders and five cross girders. Determine the Design bending moment for all the longitudinal girders. Use following additional data, **09**
a) Carriage way width - 7.5 m
b) Span of bridge - 12 m
c) Live Load - IRC class AA Tracked
d) Kerb - 600 mm wide, 400 mm deep
e) Web thickness for Longitudinal and cross girder - 300 mm
f) Longitudinal Girder spacing - 2.5 m
g) Use M-30 concrete and Fe-415 steel

Q.5 Design a slab panel having size of 3 m x 4 m. Consider IRC class AA tracked loading. Use Pigeaud's chart. Consider thickness of slab as 220 mm and wearing coat thickness as 80 mm. Use M-25 concrete and Fe-415 steel. Pigeaud's coefficient for DL are, $m_1 = 0.040$, $m_2 = 0.016$ and for Pigeaud's coefficient for LL are, $m_1 = 0.095$, $m_2 = 0.024$ **09**

Section – II

Q.6 Verify the adequacy of pier for the following data: **10**
Top width of pier - 1.6 m, Height of pier up to springing level - 5 m, C/C distance of bearing - 1.2 m, Side batter 1:12, HFL - 1.5 m below the bearing level, Span of bridge - 12 m, carriage way width - 7.5 m, Reaction due to D.L. from each span = 2800 kN, Reaction due to L.L. from each span = 700 kN, Braking force - 140 kN, wind pressure on pier - 2.0 kN/m^2. Material of pier = M20 concrete. Estimate the maximum and minimum stress developed at the base of the pier due to critical combination of various loads for dry condition and Flood condition.

Q.7 Verify the suitability of abutment as shown in the fig 7.1 Use following data. **09**
Density of soil - 18 kN/m^3, Friction angle of soil (∅) = 30°, Coefficient of friction - 0.6, Live load reaction at bearing - 350 kN., DL reaction from super structure - 2500 kN

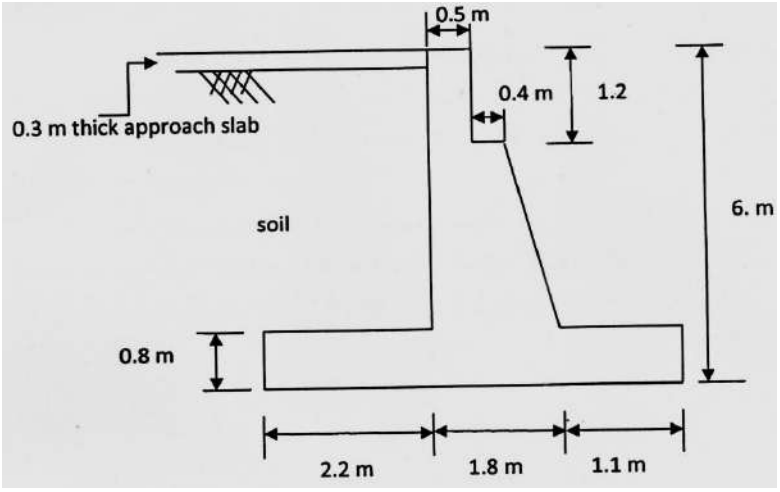

Fig. 7.1

Q.8 **a)** Design a elastomeric unreinforced bearing pad for following data **05**
Vertical load (sustained) = 225 kN,
Vertical load (dynamic) = 160 kN,
Horizontal force = 85 kN
Modulus of rigidity of elastomer - 1 N/mm^2
coefficient of friction = 0.35

b) Write a note on types of expansion joints. **04**

Q.9 **Write a note on following. (Any three)** **09**

a) Types of bridge inspection
b) Stability requirement of Abutment
c) Functions of bearing
d) Reinforced earth retaining wall

Seat No.	

Set **S**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Bridges (BTN01610)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Give the correct option for the following questions. 14

1) Total load in case of IRC 70R tracked loading is _____.
a) 700kN b) 710kN
c) 1000kN d) 554kN

2) Solid deck slab is adopted for spans _____.
a) More than 8m b) More than 20m
c) Less than 8m d) Between 10-25m

3) Braking force is assumed to act along the line parallel to roadway & above it _____.
a) 1.2m b) 1.5m
c) 1.8m d) 2.0m

4) As per IRC-21, minimum clear cover to any reinforcement bar is _____.
a) 40mm b) 25mm
c) 50mm d) 30mm

5) The pier cap or abutment cap should be of minimum _____ concrete.
a) M20 grade b) M25 grade
c) M30 grade d) Any one of these

6) Following is not the function of the pier cap or abutment cap _____.
a) Provides immediate bearing surface for the support of the super structure at pier and abutment location.
b) Disperses the strip load from bearing to the substructure evenly.
c) Prevent rain water from dripping down the sides and ends of the pier.
d) Resist all horizontal forces acting on bridges.

7) In case of urban site, suitable pier is _____.
a) Cellular pier
b) Trestle pier
c) Inboard pier
d) Hammerhead pier

8) Fixed bearing allow _____.
a) Rotation only
b) Translation only
c) Both rotational as well as translation
d) Restrict rotation as well as translation

9) In case of curved bridges, suitable bearing is _____.
a) Fixed bearing
b) Expansion bearing
c) Rocker bearing
d) Steel hinge

10) Culvert is the type of bridge whose span is _____.
a) Between 6m-60m
b) Above 60m
c) Less than 6m
d) None of these

11) The ground contact length of the track of IRC class AA loading is _____.
a) 3.6m
b) 4.57m
c) 3.5m
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12) Impact force for IRC class A & B is given by _____.
a) $I_f = \frac{AB}{B+L}$
b) $I_f = \frac{B+L}{A}$
c) $I_f = \frac{A}{B+L}$
d) None of these

13) For spans below 5m, impact factor for tracked vehicle is _____.
a) 10%
b) 20%
c) 25%
d) 15%

14) Total load of class AA tracked is _____.
a) 700kN
b) 400kN
c) 554kN
d) 332kN

Seat No.		Set	S

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Bridges (BTN01610)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
Question no. 6 is compulsory in section II, and solve any two questions from the remaining
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Design the solid deck slab of Two lane bridge for following data: **10**
a) Effective span - 6 m
b) Carriage way width - 7.5 m
c) Kerb - 600 x 275 on both side
d) Live load - IRC Class A (Two lane)
e) Wearing coat - 100 mm thick
f) Use M-25 concrete and Fe-415 steel
g) Use α = 2.82

Q.3 Answer the following.
a) What is impact factor? How it is calculated? **05**
b) What is economical span? Derive the equation for the same. **04**

Q.4 A RCC T beam type bridge having deck slab of 225 mm thick, wearing coat of 90 mm thick, three longitudinal girders and five cross girders. Determine the Design bending moment for all the longitudinal girders. Use following additional data, **09**
a) Carriage way width - 7.5 m
b) Span of bridge - 12 m
c) Live Load - IRC class AA Tracked
d) Kerb - 600 mm wide, 400 mm deep
e) Web thickness for Longitudinal and cross girder - 300 mm
f) Longitudinal Girder spacing - 2.5 m
g) Use M-30 concrete and Fe-415 steel

Q.5 Design a slab panel having size of 3 m x 4 m. Consider IRC class AA tracked loading. Use Pigeaud's chart. Consider thickness of slab as 220 mm and wearing coat thickness as 80 mm. Use M-25 concrete and Fe-415 steel. Pigeaud's coefficient for DL are, m_1 = 0.040, m_2 = 0.016 and for Pigeaud's coefficient for LL are, m_1 = 0.095, m_2 = 0.024 **09**

Section – II

Q.6 Verify the adequacy of pier for the following data: **10**
Top width of pier - 1.6 m, Height of pier up to springing level - 5 m, C/C distance of bearing - 1.2 m, Side batter 1:12, HFL - 1.5 m below the bearing level, Span of bridge - 12 m, carriage way width - 7.5 m, Reaction due to D.L. from each span = 2800 kN, Reaction due to L.L. from each span = 700 kN, Braking force - 140 kN, wind pressure on pier - 2.0 kN/m^2. Material of pier = M20 concrete. Estimate the maximum and minimum stress developed at the base of the pier due to critical combination of various loads for dry condition and Flood condition.

Q.7 Verify the suitability of abutment as shown in the fig 7.1 Use following data. **09**
Density of soil - 18 kN/m^3, Friction angle of soil (∅) = 30°, Coefficient of friction - 0.6, Live load reaction at bearing - 350 kN., DL reaction from super structure - 2500 kN

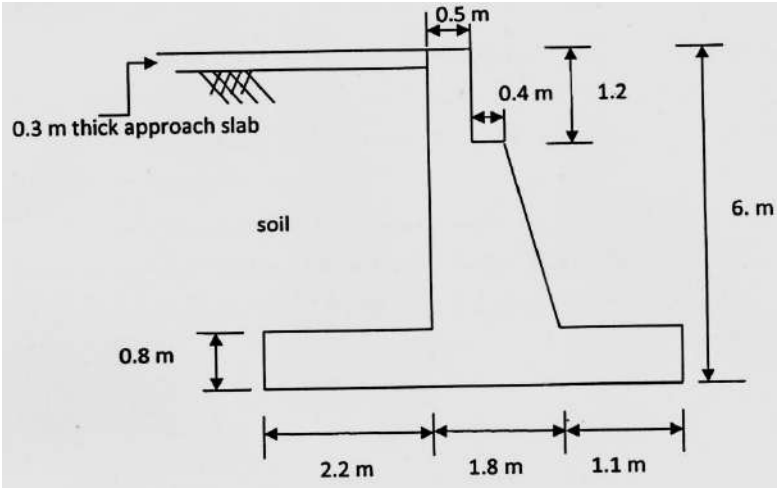

Fig. 7.1

Q.8 **a)** Design a elastomeric unreinforced bearing pad for following data **05**
Vertical load (sustained) = 225 kN,
Vertical load (dynamic) = 160 kN,
Horizontal force = 85 kN
Modulus of rigidity of elastomer - 1 N/mm^2
coefficient of friction = 0.35

b) Write a note on types of expansion joints. **04**

Q.9 **Write a note on following. (Any three)** **09**

a) Types of bridge inspection
b) Stability requirement of Abutment
c) Functions of bearing
d) Reinforced earth retaining wall

SLR-BD-310

Seat No.	

Set P

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Airport Planning and Design (BTN01612)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) As per ICAO recommendation, minimum width of safety area for instrumental runway should be _____.
a) 78 m b) 150 m
c) 300 m d) 450 m

2) As per ICAO, for A, B, and C type of airports, maximum effective, transverse and longitudinal grades in percentage respectively are _____.
a) 1.0, 1.5 and 1.5 b) 1.0, 1.5 and 2.0
c) 1.5, 1.5 and 2.0 d) 2.0, 2.0 and 2.0

3) As per ICAO recommendation, the rate of change of longitudinal gradient per 30 m length of vertical curve for A and B type of airports is limited to a maximum of _____.
a) 0.1% b) 0.2%
c) 0.3% d) 0.4%

4) Assertion A: The ratio of arriving and departing aircrafts influences the airport capacity:
Reason R: Landing operation is generally given priority over the taking off operation.
Select your answer based on the coding system given below _____.
a) Both A and R are true and R is the correct explanation of A
b) Both A and R are true and R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true

5) An airport has 4 gates. If the weighted average gate occupancy time is 30 minutes and gate utilization factor is 0.5, then the capacity of the gate will be _____.

a) 1 aircraft per hour
b) 2 aircrafts per hour
c) 4 aircrafts per hour
d) 16 aircrafts per hour

6) The capacity of parallel runway pattern depends upon _____.

a) weather conditions and navigational aids available
b) lateral spacing between two runways and weather conditions
c) lateral spacing between two runways and navigational aids available
d) lateral spacing between two runways, weather conditions and navigational aids available.

7) The engine failure case for determining the basic runway length may require _____.

a) only clearway
b) only stop way
c) either a clearway or a stopway
d) either a clearway or a stopway or both

8) The minimum width of clearway is _____.

a) 50 m
b) 100 m
c) 150m
d) 250 m

9) If the monthly mean of average daily temperature for the hottest month of the year is 25° C and the monthly mean of Design of Mas the maximum daily temperature of the same month of the year is 46° C, the airport reference temperature is _____.

a) 32°C
b) 35.5°C
c) 48°C
d) 25°C

10) Consider the following statements regarding ICAO recommendation for correction to basic runway length.

I) The basic runway length should be increased at the rate of 7 percent per 300 m rise in elevation above the mean sea level.
II) The basic runway length after having been corrected for elevation should be further increased at the rate of 1 percent for every 1°C rise in airport reference temperature above the standard atmospheric temperature at that elevation.
III) The runway length after having been corrected for elevation and temperature should be further increased at the rate of 20% for every 1 percent of effective gradient. Of these statements _____.

a) I and II are correct
d) II and III are correct
c) I and III are correct
d) I, II and III are correct

11) The total length of a runway is 1000 m. The elevation at distance 0,200 m, 400 m, 600 m, 800 m and 1000 m are 100.0 m, 99.2 m, 101.0 m, 101.8 m, 101.4 m and 101.0 m respectively. The effective gradient of runway will be _____.

a) 0.10% b) 0.26%
c) 0.43% d) 0.65%

12) The length of runway under standard conditions is 2000 m. The elevation of airport site is 300 m. Its reference temperature is 33.05°C. If the runway is to be constructed with an effective gradient of 0.25 percent, the corrected runway length will be _____.

a) 2500 m b) 2600 m
c) 2700 m d) 2800 m

13) As per ICAO, the minimum basic runway length for A and E type of airport will be _____.

a) 1500 m and 600 m b) 2100 m and 750 m
c) 1500 m and 750 m d) 2100 m and 600 m

14) Zero fuel weight of an aircraft is _____.

a) Equal to empty operating weight
b) Equal to maximum landing weight
c) Less than empty operating weight
d) Equal to sum of empty operating weight and the maximum pay load

SLR-BD-310

Seat No.	

Set P

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Airport Planning and Design (BTN01612)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figure on fight indicates full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve any two questions. **08**

a) Discuss the role of International Airport Authority of India for functioning of airports in India.
b) Discuss design requirements of present day aircraft types.
c) Explain in brief the growth of domestic air traffic in India.

Q.3 Solve any one questions. **10**

a) Explain the various surveys to be conducted and the data to be collected for airport site selection.
b) Explain with neat sketches the limiting heights of objects in the approach and turning zone of an instrumental runway.

Q.4 Solve any two questions. **10**

a) What do you understand by the term basic runway length? Explain the procedure of determining the actual runway length required at a particular site.
b) Explain the necessity of airport classification. Give different systems of classification of airports.
c) What do you understand by the term airport capacity? What are the factors which affect the airport capacity?

Section – II

Q.5 Solve any two questions. **08**

a) A taxiway is to be designed for operating an aircraft which has following characteristics. Determine turning radius of taxiway.
- i) Wheel base - 17.70 m
- ii) Tread of main loading gear - 6.62 m
- iii) Turning speed - 40 kmph
- iv) Coefficient of friction between tyre and pavement surface - 0.13 and width of taxiway - 22.5m.

b) Explain briefly the various factors which affect the layout of taxiway.

c) Discuss the principles of the design of runway intersection area. Draw a typical sketch showing the gradation of the intersection area.

Q.6 Solve any two questions. **10**

a) Calculate the actual length of the runway from the following data Airport elevation: R.L. 100 Airport reference temperature : 28°C, Basic length of runway 600 m, Highest point along the length: R.L. 98.2 Lowest point along the length R.L. 95.2. Check the total correction for elevation plus temperature as per ICAO.

b) Draw cross-section of Airport showing all component parts and explain it in detail.

c) Name and discuss in brief the various methods used for designing flexible airport pavements.

Q.7 Solve any two questions. **10**

a) Discuss the importance for maintenance and rehabilitation of airfield pavements.

b) Discuss the importance of evolution of airfield pavement.

c) What is the requirement of a good hanger site? Draw a neat sketch showing shape and size of hanger suitable for servicing of small aircrafts.

Seat No.	

Set **Q**

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Airport Planning and Design (BTN01612)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The minimum width of clearway is _____.
a) 50 m b) 100 m
c) 150m d) 250 m

2) If the monthly mean of average daily temperature for the hottest month of the year is 25° C and the monthly mean of Design of Mas the maximum daily temperature of the same month of the year is 46° C, the airport reference temperature is _____.
a) 32°C b) 35.5°C
c) 48°C d) 25°C

3) Consider the following statements regarding ICAO recommendation for correction to basic runway length.
I) The basic runway length should be increased at the rate of 7 percent per 300 m rise in elevation above the mean sea level.
II) The basic runway length after having been corrected for elevation should be further increased at the rate of 1 percent for every 1°C rise in airport reference temperature above the standard atmospheric temperature at that elevation.
III) The runway length after having been corrected for elevation and temperature should be further increased at the rate of 20% for every 1 percent of effective gradient. Of these statements _____.
a) I and II are correct d) II and III are correct
c) I and III are correct d) I, II and III are correct

4) The total length of a runway is 1000 m. The elevation at distance 0,200 m, 400 m, 600 m, 800 m and 1000 m are 100.0 m, 99.2 m, 101.0 m, 101.8 m, 101.4 m and 101.0 m respectively. The effective gradient of runway will be _____.

a) 0.10% b) 0.26%
c) 0.43% d) 0.65%

5) The length of runway under standard conditions is 2000 m. The elevation of airport site is 300 m. Its reference temperature is 33.05°C. If the runway is to be constructed with an effective gradient of 0.25 percent, the corrected runway length will be _____.

a) 2500 m b) 2600 m
c) 2700 m d) 2800 m

6) As per ICAO, the minimum basic runway length for A and E type of airport will be _____.

a) 1500 m and 600 m b) 2100 m and 750 m
c) 1500 m and 750 m d) 2100 m and 600 m

7) Zero fuel weight of an aircraft is _____.

a) Equal to empty operating weight
b) Equal to maximum landing weight
c) Less than empty operating weight
d) Equal to sum of empty operating weight and the maximum pay load

8) As per ICAO recommendation, minimum width of safety area for instrumental runway should be _____.

a) 78 m b) 150 m
c) 300 m d) 450 m

9) As per ICAO, for A, B, and C type of airports, maximum effective, transverse and longitudinal grades in percentage respectively are _____.

a) 1.0, 1.5 and 1.5 b) 1.0, 1.5 and 2.0
c) 1.5, 1.5 and 2.0 d) 2.0, 2.0 and 2.0

10) As per ICAO recommendation, the rate of change of longitudinal gradient per 30 m length of vertical curve for A and B type of airports is limited to a maximum of _____.

a) 0.1% b) 0.2%
c) 0.3% d) 0.4%

11) Assertion A: The ratio of arriving and departing aircrafts influences the airport capacity:
Reason R: Landing operation is generally given priority over the taking off operation.
Select your answer based on the coding system given below _____.
a) Both A and R are true and R is the correct explanation of A
b) Both A and R are true and R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true

12) An airport has 4 gates. If the weighted average gate occupancy time is 30 minutes and gate utilization factor is 0.5, then the capacity of the gate will be _____.
a) 1 aircraft per hour
b) 2 aircrafts per hour
c) 4 aircrafts per hour
d) 16 aircrafts per hour

13) The capacity of parallel runway pattern depends upon _____.
a) weather conditions and navigational aids available
b) lateral spacing between two runways and weather conditions
c) lateral spacing between two runways and navigational aids available
d) lateral spacing between two runways, weather conditions and navigational aids available.

14) The engine failure case for determining the basic runway length may require _____.
a) only clearway
b) only stop way
c) either a clearway or a stopway
d) either a clearway or a stopway or both

Seat No.	

Set **Q**

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Airport Planning and Design (BTN01612)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figure on fight indicates full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve any two questions. **08**

a) Discuss the role of International Airport Authority of India for functioning of airports in India.
b) Discuss design requirements of present day aircraft types.
c) Explain in brief the growth of domestic air traffic in India.

Q.3 Solve any one questions. **10**

a) Explain the various surveys to be conducted and the data to be collected for airport site selection.
b) Explain with neat sketches the limiting heights of objects in the approach and turning zone of an instrumental runway.

Q.4 Solve any two questions. **10**

a) What do you understand by the term basic runway length? Explain the procedure of determining the actual runway length required at a particular site.
b) Explain the necessity of airport classification. Give different systems of classification of airports.
c) What do you understand by the term airport capacity? What are the factors which affect the airport capacity?

Section – II

Q.5 Solve any two questions. **08**

a) A taxiway is to be designed for operating an aircraft which has following characteristics. Determine turning radius of taxiway.
- i) Wheel base - 17.70 m
- ii) Tread of main loading gear - 6.62 m
- iii) Turning speed - 40 kmph
- iv) Coefficient of friction between tyre and pavement surface - 0.13 and width of taxiway - 22.5m.

b) Explain briefly the various factors which affect the layout of taxiway.

c) Discuss the principles of the design of runway intersection area. Draw a typical sketch showing the gradation of the intersection area.

Q.6 Solve any two questions. **10**

a) Calculate the actual length of the runway from the following data Airport elevation: R.L. 100 Airport reference temperature : 28°C, Basic length of runway 600 m, Highest point along the length: R.L. 98.2 Lowest point along the length R.L. 95.2. Check the total correction for elevation plus temperature as per ICAO.

b) Draw cross-section of Airport showing all component parts and explain it in detail.

c) Name and discuss in brief the various methods used for designing flexible airport pavements.

Q.7 Solve any two questions. **10**

a) Discuss the importance for maintenance and rehabilitation of airfield pavements.

b) Discuss the importance of evolution of airfield pavement.

c) What is the requirement of a good hanger site? Draw a neat sketch showing shape and size of hanger suitable for servicing of small aircrafts.

Seat No.	

Set R

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Airport Planning and Design (BTN01612)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The total length of a runway is 1000 m. The elevation at distance 0,200 m, 400 m, 600 m, 800 m and 1000 m are 100.0 m, 99.2 m, 101.0 m, 101.8 m, 101.4 m and 101.0 m respectively. The effective gradient of runway will be _____.
a) 0.10% b) 0.26%
c) 0.43% d) 0.65%

2) The length of runway under standard conditions is 2000 m. The elevation of airport site is 300 m. Its reference temperature is 33.05°C. If the runway is to be constructed with an effective gradient of 0.25 percent, the corrected runway length will be _____.
a) 2500 m b) 2600 m
c) 2700 m d) 2800 m

3) As per ICAO, the minimum basic runway length for A and E type of airport will be _____.
a) 1500 m and 600 m b) 2100 m and 750 m
c) 1500 m and 750 m d) 2100 m and 600 m

4) Zero fuel weight of an aircraft is _____.
a) Equal to empty operating weight
b) Equal to maximum landing weight
c) Less than empty operating weight
d) Equal to sum of empty operating weight and the maximum pay load

5) As per ICAO recommendation, minimum width of safety area for instrumental runway should be _____.
a) 78 m b) 150 m
c) 300 m d) 450 m

6) As per ICAO, for A, B, and C type of airports, maximum effective, transverse and longitudinal grades in percentage respectively are _____.

a) 1.0, 1.5 and 1.5 b) 1.0, 1.5 and 2.0
c) 1.5, 1.5 and 2.0 d) 2.0, 2.0 and 2.0

7) As per ICAO recommendation, the rate of change of longitudinal gradient per 30 m length of vertical curve for A and B type of airports is limited to a maximum of _____.

a) 0.1% b) 0.2%
c) 0.3% d) 0.4%

8) Assertion A: The ratio of arriving and departing aircrafts influences the airport capacity:
Reason R: Landing operation is generally given priority over the taking off operation.
Select your answer based on the coding system given below _____.

a) Both A and R are true and R is the correct explanation of A
b) Both A and R are true and R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true

9) An airport has 4 gates. If the weighted average gate occupancy time is 30 minutes and gate utilization factor is 0.5, then the capacity of the gate will be _____.

a) 1 aircraft per hour b) 2 aircrafts per hour
c) 4 aircrafts per hour d) 16 aircrafts per hour

10) The capacity of parallel runway pattern depends upon _____.

a) weather conditions and navigational aids available
b) lateral spacing between two runways and weather conditions
c) lateral spacing between two runways and navigational aids available
d) lateral spacing between two runways, weather conditions and navigational aids available.

11) The engine failure case for determining the basic runway length may require _____.

a) only clearway
b) only stop way
c) either a clearway or a stopway
d) either a clearway or a stopway or both

12) The minimum width of clearway is _____.

a) 50 m b) 100 m
c) 150m d) 250 m

13) If the monthly mean of average daily temperature for the hottest month of the year is 25° C and the monthly mean of Design of Mas the maximum daily temperature of the same month of the year is 46° C, the airport reference temperature is _____.

a) 32°C
b) 35.5°C
c) 48°C
d) 25°C

14) Consider the following statements regarding ICAO recommendation for correction to basic runway length.

I) The basic runway length should be increased at the rate of 7 percent per 300 m rise in elevation above the mean sea level.
II) The basic runway length after having been corrected for elevation should be further increased at the rate of 1 percent for every 1°C rise in airport reference temperature above the standard atmospheric temperature at that elevation.
III) The runway length after having been corrected for elevation and temperature should be further increased at the rate of 20% for every 1 percent of effective gradient. Of these statements _____.

a) I and II are correct
d) II and III are correct
c) I and III are correct
d) I, II and III are correct

Seat No.	

Set **R**

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Airport Planning and Design (BTN01612)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figure on fight indicates full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve any two questions. **08**

a) Discuss the role of International Airport Authority of India for functioning of airports in India.
b) Discuss design requirements of present day aircraft types.
c) Explain in brief the growth of domestic air traffic in India.

Q.3 Solve any one questions. **10**

a) Explain the various surveys to be conducted and the data to be collected for airport site selection.
b) Explain with neat sketches the limiting heights of objects in the approach and turning zone of an instrumental runway.

Q.4 Solve any two questions. **10**

a) What do you understand by the term basic runway length? Explain the procedure of determining the actual runway length required at a particular site.
b) Explain the necessity of airport classification. Give different systems of classification of airports.
c) What do you understand by the term airport capacity? What are the factors which affect the airport capacity?

Section – II

Q.5 Solve any two questions. **08**

a) A taxiway is to be designed for operating an aircraft which has following characteristics. Determine turning radius of taxiway.
- i) Wheel base - 17.70 m
- ii) Tread of main loading gear - 6.62 m
- iii) Turning speed - 40 kmph
- iv) Coefficient of friction between tyre and pavement surface - 0.13 and width of taxiway - 22.5m.

b) Explain briefly the various factors which affect the layout of taxiway.

c) Discuss the principles of the design of runway intersection area. Draw a typical sketch showing the gradation of the intersection area.

Q.6 Solve any two questions. **10**

a) Calculate the actual length of the runway from the following data Airport elevation: R.L. 100 Airport reference temperature : 28°C, Basic length of runway 600 m, Highest point along the length: R.L. 98.2 Lowest point along the length R.L. 95.2. Check the total correction for elevation plus temperature as per ICAO.

b) Draw cross-section of Airport showing all component parts and explain it in detail.

c) Name and discuss in brief the various methods used for designing flexible airport pavements.

Q.7 Solve any two questions. **10**

a) Discuss the importance for maintenance and rehabilitation of airfield pavements.

b) Discuss the importance of evolution of airfield pavement.

c) What is the requirement of a good hanger site? Draw a neat sketch showing shape and size of hanger suitable for servicing of small aircrafts.

Seat No.	

Set **S**

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Airport Planning and Design (BTN01612)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The capacity of parallel runway pattern depends upon _____.
a) weather conditions and navigational aids available
b) lateral spacing between two runways and weather conditions
c) lateral spacing between two runways and navigational aids available
d) lateral spacing between two runways, weather conditions and navigational aids available.

2) The engine failure case for determining the basic runway length may require _____.
a) only clearway
b) only stop way
c) either a clearway or a stopway
d) either a clearway or a stopway or both

3) The minimum width of clearway is _____.
a) 50 m b) 100 m
c) 150m d) 250 m

4) If the monthly mean of average daily temperature for the hottest month of the year is 25° C and the monthly mean of Design of Mas the maximum daily temperature of the same month of the year is 46° C, the airport reference temperature is _____.
a) 32°C b) 35.5°C
c) 48°C d) 25°C

5) Consider the following statements regarding ICAO recommendation for correction to basic runway length.

I) The basic runway length should be increased at the rate of 7 percent per 300 m rise in elevation above the mean sea level.

II) The basic runway length after having been corrected for elevation should be further increased at the rate of 1 percent for every 1°C rise in airport reference temperature above the standard atmospheric temperature at that elevation.

III) The runway length after having been corrected for elevation and temperature should be further increased at the rate of 20% for every 1 percent of effective gradient. Of these statements _____.

a) I and II are correct
d) II and III are correct
c) I and III are correct
d) I, II and III are correct

6) The total length of a runway is 1000 m. The elevation at distance 0,200 m, 400 m, 600 m, 800 m and 1000 m are 100.0 m, 99.2 m, 101.0 m, 101.8 m, 101.4 m and 101.0 m respectively. The effective gradient of runway will be _____.

a) 0.10%
b) 0.26%
c) 0.43%
d) 0.65%

7) The length of runway under standard conditions is 2000 m. The elevation of airport site is 300 m. Its reference temperature is 33.05°C. If the runway is to be constructed with an effective gradient of 0.25 percent, the corrected runway length will be _____.

a) 2500 m
b) 2600 m
c) 2700 m
d) 2800 m

8) As per ICAO, the minimum basic runway length for A and E type of airport will be _____.

a) 1500 m and 600 m
b) 2100 m and 750 m
c) 1500 m and 750 m
d) 2100 m and 600 m

9) Zero fuel weight of an aircraft is _____.

a) Equal to empty operating weight
b) Equal to maximum landing weight
c) Less than empty operating weight
d) Equal to sum of empty operating weight and the maximum pay load

10) As per ICAO recommendation, minimum width of safety area for instrumental runway should be _____.

a) 78 m
b) 150 m
c) 300 m
d) 450 m

11) As per ICAO, for A, B, and C type of airports, maximum effective, transverse and longitudinal grades in percentage respectively are _____.

a) 1.0, 1.5 and 1.5
b) 1.0, 1.5 and 2.0
c) 1.5, 1.5 and 2.0
d) 2.0, 2.0 and 2.0

12) As per ICAO recommendation, the rate of change of longitudinal gradient per 30 m length of vertical curve for A and B type of airports is limited to a maximum of _____.

a) 0.1%
b) 0.2%
c) 0.3%
d) 0.4%

13) Assertion A: The ratio of arriving and departing aircrafts influences the airport capacity:
Reason R: Landing operation is generally given priority over the taking off operation.
Select your answer based on the coding system given below _____.

a) Both A and R are true and R is the correct explanation of A
b) Both A and R are true and R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true

14) An airport has 4 gates. If the weighted average gate occupancy time is 30 minutes and gate utilization factor is 0.5, then the capacity of the gate will be _____.

a) 1 aircraft per hour
b) 2 aircrafts per hour
c) 4 aircrafts per hour
d) 16 aircrafts per hour

SLR-BD-310

Seat No.	

Set S

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Airport Planning and Design (BTN01612)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figure on fight indicates full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve any two questions. **08**

a) Discuss the role of International Airport Authority of India for functioning of airports in India.
b) Discuss design requirements of present day aircraft types.
c) Explain in brief the growth of domestic air traffic in India.

Q.3 Solve any one questions. **10**

a) Explain the various surveys to be conducted and the data to be collected for airport site selection.
b) Explain with neat sketches the limiting heights of objects in the approach and turning zone of an instrumental runway.

Q.4 Solve any two questions. **10**

a) What do you understand by the term basic runway length? Explain the procedure of determining the actual runway length required at a particular site.
b) Explain the necessity of airport classification. Give different systems of classification of airports.
c) What do you understand by the term airport capacity? What are the factors which affect the airport capacity?

Section – II

Q.5 Solve any two questions. **08**

a) A taxiway is to be designed for operating an aircraft which has following characteristics. Determine turning radius of taxiway.
- i) Wheel base - 17.70 m
- ii) Tread of main loading gear - 6.62 m
- iii) Turning speed - 40 kmph
- iv) Coefficient of friction between tyre and pavement surface - 0.13 and width of taxiway - 22.5m.

b) Explain briefly the various factors which affect the layout of taxiway.

c) Discuss the principles of the design of runway intersection area. Draw a typical sketch showing the gradation of the intersection area.

Q.6 Solve any two questions. **10**

a) Calculate the actual length of the runway from the following data Airport elevation: R.L. 100 Airport reference temperature : 28°C, Basic length of runway 600 m, Highest point along the length: R.L. 98.2 Lowest point along the length R.L. 95.2. Check the total correction for elevation plus temperature as per ICAO.

b) Draw cross-section of Airport showing all component parts and explain it in detail.

c) Name and discuss in brief the various methods used for designing flexible airport pavements.

Q.7 Solve any two questions. **10**

a) Discuss the importance for maintenance and rehabilitation of airfield pavements.

b) Discuss the importance of evolution of airfield pavement.

c) What is the requirement of a good hanger site? Draw a neat sketch showing shape and size of hanger suitable for servicing of small aircrafts.

SLR-BD-314

Seat No.	

Set P

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Advanced Concrete Technology (BTN01616)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Blended cements are commonly made by mixing Ordinary Portland Cement (OPC) with which of the following materials?
a) Lime b) Fly ash
c) Gypsum d) Silica fume

2) Coarse aggregates are typically defined as particles that are larger than _____.
a) 2 mm b) 4.75 mm
c) 5 mm d) 10 mm

3) Pulverized Fuel Ash (PFA) is a by product of which industry?
a) Steel industry b) Cement industry
c) Power generation industry d) Paper industry

4) What is the primary factor that determines the workability of fresh concrete?
a) Compressive strength b) Water-cement ratio
c) Aggregate type d) Curing time

5) Which of the following factors can contribute to the segregation of fresh concrete?
a) High water-cement ratio b) Proper mixing
c) Low water-cement ratio d) Adequate compaction

6) The main ingredient that is often added to High-Strength Concrete (HSC) to reduce its water-cement ratio is _____.
a) Super plasticizer b) Fly ash
c) Silica fume d) Air-entraining agent

7) What is the primary advantage of using steel fibers in concrete?
a) Improved ductility and control of cracking
b) Lower cost of concrete
c) Reduced workability
d) Increased permeability

8) Self-Compacting Concrete (SCC) is characterized by _____.
a) High strength and low workability
b) High workability and ability to flow without vibration
c) Low water-cement ratio
d) Reduced permeability due to excess water

9) One of the main challenges of using Recycled Concrete Aggregate (RCA) in new concrete is _____.
a) Increased workability
b) Increased porosity and reduced strength
c) Improved durability
d) Decreased water absorption

10) Mass concrete is defined as concrete with a large volume, typically used in _____.
a) Thin structural elements like beams and slabs
b) Large structural elements like dams and foundations
c) Decorative concrete elements
d) High-rise building facades

11) Which of the following is NOT an advantage of sprayed concrete?
a) Ability to apply to complex shapes
b) Faster application than traditional casting
c) Lower cost of materials
d) Can be applied in thin layers with high strength

12) The primary types of sprayed concrete are _____.
a) Wet mix and dry mix
b) Low strength and high strength
c) Cement-based and polymer-based
d) Precast and cast-in-situ

13) In ferro-cement, the reinforcement is usually made of _____.
a) Large steel bars
b) Wire mesh or small diameter bars
c) Concrete fibers
d) Stainless steel plates

14) Which type of pump is typically used for pumping concrete?
a) Hydraulic piston pump
b) Centrifugal pump
c) Gear pump
d) Concrete pump with twin cylinders or a peristaltic pump

Seat No.	

Set | P

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Advanced Concrete Technology (BTN01616)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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

Section – I

Q.2 Solve any two. **08**
- **a)** What are plasticizers, and how do they improve the workability of concrete?
- **b)** Write history of cement in detail.
- **c)** Explain in detail blended cement.

Q.3 Solve any two questions. **10**
- **a)** Explain in detail fly ash, rise husk ash, silica fume.
- **b)** Define Admixture and explain the different types of admixture in detail.
- **c)** Explain the effect using admixture in the concrete.

Q.4 Solve any two questions. **10**
- **a)** Define workability and factors affecting workability.
- **b)** Explain the term segregation, bleeding, cohesion of concrete, hardness of concrete.
- **c)** Explain the effect of impermeability and particle size on concrete.

Q.5 Solve any one questions. **10**
- **a)** Write a short note on special concrete explain each in details.
  - i) High performance concrete
  - ii) High strength concrete
  - iii) Fibre reinforced concrete
  - iv) Light weight concrete
- **b)** Write a short note on:
  - i) High volume fly ash concrete
  - ii) Self-compacting concrete
  - iii) Recycled concrete
  - iv) High density concrete
  - v) Radiation shielding concrete

Section – II

Q.6 Solve any two. **08**

a) Short note on Ferro cement Concrete.
b) Short note on Sprayed Concrete.
c) Explain in detail Mass Concrete.

Q.7 Solve any two questions. **10**

a) Draw a neat schematic diagram of RMC Plant.
b) Short note on Ready Mix Concrete and its applications to the construction industries.
c) Explain in details different type of RMC Plants.

Q.8 Solve any two questions. **10**

a) Short note on Quality assurance.
b) Write short note on a repair technique of concrete.
c) Why and when NDT Test are performed, explain with its application.

Q.9 Solve any one question. **10**

a) Explain types of concrete vibrators. Also state the advantages and disadvantages of revibration of Concrete.
b) What is mix design? Write down design steps of concrete mix design using IS 10262:2009 methods.

Seat No.	

Set **Q**

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Advanced Concrete Technology (BTN01616)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
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4) Make suitable data wherever needed and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Self-Compacting Concrete (SCC) is characterized by _____.
a) High strength and low workability
b) High workability and ability to flow without vibration
c) Low water-cement ratio
d) Reduced permeability due to excess water

2) One of the main challenges of using Recycled Concrete Aggregate (RCA) in new concrete is _____.
a) Increased workability
b) Increased porosity and reduced strength
c) Improved durability
d) Decreased water absorption

3) Mass concrete is defined as concrete with a large volume, typically used in _____.
a) Thin structural elements like beams and slabs
b) Large structural elements like dams and foundations
c) Decorative concrete elements
d) High-rise building facades

4) Which of the following is NOT an advantage of sprayed concrete?
a) Ability to apply to complex shapes
b) Faster application than traditional casting
c) Lower cost of materials
d) Can be applied in thin layers with high strength

5) The primary types of sprayed concrete are _____.
a) Wet mix and dry mix
b) Low strength and high strength
c) Cement-based and polymer-based
d) Precast and cast-in-situ

6) In ferro-cement, the reinforcement is usually made of _____.
a) Large steel bars
b) Wire mesh or small diameter bars
c) Concrete fibers
d) Stainless steel plates

7) Which type of pump is typically used for pumping concrete?
a) Hydraulic piston pump
b) Centrifugal pump
c) Gear pump
d) Concrete pump with twin cylinders or a peristaltic pump

8) Blended cements are commonly made by mixing Ordinary Portland Cement (OPC) with which of the following materials?
a) Lime
b) Fly ash
c) Gypsum
d) Silica fume

9) Coarse aggregates are typically defined as particles that are larger than _____.
a) 2 mm
b) 4.75 mm
c) 5 mm
d) 10 mm

10) Pulverized Fuel Ash (PFA) is a by product of which industry?
a) Steel industry
b) Cement industry
c) Power generation industry
d) Paper industry

11) What is the primary factor that determines the workability of fresh concrete?
a) Compressive strength
b) Water-cement ratio
c) Aggregate type
d) Curing time

12) Which of the following factors can contribute to the segregation of fresh concrete?
a) High water-cement ratio
b) Proper mixing
c) Low water-cement ratio
d) Adequate compaction

13) The main ingredient that is often added to High-Strength Concrete (HSC) to reduce its water-cement ratio is _____.
a) Super plasticizer
b) Fly ash
c) Silica fume
d) Air-entraining agent

14) What is the primary advantage of using steel fibers in concrete?

a) Improved ductility and control of cracking
b) Lower cost of concrete
c) Reduced workability
d) Increased permeability

Seat No.	

Set **Q**

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Advanced Concrete Technology (BTN01616)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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

Section – I

Q.2 Solve any two. **08**
- **a)** What are plasticizers, and how do they improve the workability of concrete?
- **b)** Write history of cement in detail.
- **c)** Explain in detail blended cement.

Q.3 Solve any two questions. **10**
- **a)** Explain in detail fly ash, rise husk ash, silica fume.
- **b)** Define Admixture and explain the different types of admixture in detail.
- **c)** Explain the effect using admixture in the concrete.

Q.4 Solve any two questions. **10**
- **a)** Define workability and factors affecting workability.
- **b)** Explain the term segregation, bleeding, cohesion of concrete, hardness of concrete.
- **c)** Explain the effect of impermeability and particle size on concrete.

Q.5 Solve any one questions. **10**
- **a)** Write a short note on special concrete explain each in details.
  - i) High performance concrete
  - ii) High strength concrete
  - iii) Fibre reinforced concrete
  - iv) Light weight concrete
- **b)** Write a short note on:
  - i) High volume fly ash concrete
  - ii) Self-compacting concrete
  - iii) Recycled concrete
  - iv) High density concrete
  - v) Radiation shielding concrete

Section – II

Q.6 Solve any two. **08**

a) Short note on Ferro cement Concrete.
b) Short note on Sprayed Concrete.
c) Explain in detail Mass Concrete.

Q.7 Solve any two questions. **10**

a) Draw a neat schematic diagram of RMC Plant.
b) Short note on Ready Mix Concrete and its applications to the construction industries.
c) Explain in details different type of RMC Plants.

Q.8 Solve any two questions. **10**

a) Short note on Quality assurance.
b) Write short note on a repair technique of concrete.
c) Why and when NDT Test are performed, explain with its application.

Q.9 Solve any one question. **10**

a) Explain types of concrete vibrators. Also state the advantages and disadvantages of revibration of Concrete.
b) What is mix design? Write down design steps of concrete mix design using IS 10262:2009 methods.

Seat No.	

Set R

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Advanced Concrete Technology (BTN01616)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Which of the following is NOT an advantage of sprayed concrete?
a) Ability to apply to complex shapes
b) Faster application than traditional casting
c) Lower cost of materials
d) Can be applied in thin layers with high strength

2) The primary types of sprayed concrete are _____.
a) Wet mix and dry mix
b) Low strength and high strength
c) Cement-based and polymer-based
d) Precast and cast-in-situ

3) In ferro-cement, the reinforcement is usually made of _____.
a) Large steel bars
b) Wire mesh or small diameter bars
c) Concrete fibers
d) Stainless steel plates

4) Which type of pump is typically used for pumping concrete?
a) Hydraulic piston pump
b) Centrifugal pump
c) Gear pump
d) Concrete pump with twin cylinders or a peristaltic pump

5) Blended cements are commonly made by mixing Ordinary Portland Cement (OPC) with which of the following materials?
a) Lime b) Fly ash
c) Gypsum d) Silica fume

6) Coarse aggregates are typically defined as particles that are larger than _____.
a) 2 mm b) 4.75 mm
c) 5 mm d) 10 mm

7) Pulverized Fuel Ash (PFA) is a by product of which industry?
a) Steel industry b) Cement industry
c) Power generation industry d) Paper industry

8) What is the primary factor that determines the workability of fresh concrete?
a) Compressive strength b) Water-cement ratio
c) Aggregate type d) Curing time

9) Which of the following factors can contribute to the segregation of fresh concrete?
a) High water-cement ratio b) Proper mixing
c) Low water-cement ratio d) Adequate compaction

10) The main ingredient that is often added to High-Strength Concrete (HSC) to reduce its water-cement ratio is _____.
a) Super plasticizer b) Fly ash
c) Silica fume d) Air-entraining agent

11) What is the primary advantage of using steel fibers in concrete?
a) Improved ductility and control of cracking
b) Lower cost of concrete
c) Reduced workability
d) Increased permeability

12) Self-Compacting Concrete (SCC) is characterized by _____.
a) High strength and low workability
b) High workability and ability to flow without vibration
c) Low water-cement ratio
d) Reduced permeability due to excess water

13) One of the main challenges of using Recycled Concrete Aggregate (RCA) in new concrete is _____.
a) Increased workability
b) Increased porosity and reduced strength
c) Improved durability
d) Decreased water absorption

14) Mass concrete is defined as concrete with a large volume, typically used in _____.
a) Thin structural elements like beams and slabs
b) Large structural elements like dams and foundations
c) Decorative concrete elements
d) High-rise building facades

Seat No.	

Set **R**

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Advanced Concrete Technology (BTN01616)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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

Section – I

Q.2 Solve any two. **08**
- **a)** What are plasticizers, and how do they improve the workability of concrete?
- **b)** Write history of cement in detail.
- **c)** Explain in detail blended cement.

Q.3 Solve any two questions. **10**
- **a)** Explain in detail fly ash, rise husk ash, silica fume.
- **b)** Define Admixture and explain the different types of admixture in detail.
- **c)** Explain the effect using admixture in the concrete.

Q.4 Solve any two questions. **10**
- **a)** Define workability and factors affecting workability.
- **b)** Explain the term segregation, bleeding, cohesion of concrete, hardness of concrete.
- **c)** Explain the effect of impermeability and particle size on concrete.

Q.5 Solve any one questions. **10**
- **a)** Write a short note on special concrete explain each in details.
  - i) High performance concrete
  - ii) High strength concrete
  - iii) Fibre reinforced concrete
  - iv) Light weight concrete
- **b)** Write a short note on:
  - i) High volume fly ash concrete
  - ii) Self-compacting concrete
  - iii) Recycled concrete
  - iv) High density concrete
  - v) Radiation shielding concrete

Section – II

Q.6 Solve any two. **08**

a) Short note on Ferro cement Concrete.
b) Short note on Sprayed Concrete.
c) Explain in detail Mass Concrete.

Q.7 Solve any two questions. **10**

a) Draw a neat schematic diagram of RMC Plant.
b) Short note on Ready Mix Concrete and its applications to the construction industries.
c) Explain in details different type of RMC Plants.

Q.8 Solve any two questions. **10**

a) Short note on Quality assurance.
b) Write short note on a repair technique of concrete.
c) Why and when NDT Test are performed, explain with its application.

Q.9 Solve any one question. **10**

a) Explain types of concrete vibrators. Also state the advantages and disadvantages of revibration of Concrete.
b) What is mix design? Write down design steps of concrete mix design using IS 10262:2009 methods.

Seat No.	

Set **S**

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Advanced Concrete Technology (BTN01616)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The main ingredient that is often added to High-Strength Concrete (HSC) to reduce its water-cement ratio is _____.
a) Super plasticizer b) Fly ash
c) Silica fume d) Air-entraining agent

2) What is the primary advantage of using steel fibers in concrete?
a) Improved ductility and control of cracking
b) Lower cost of concrete
c) Reduced workability
d) Increased permeability

3) Self-Compacting Concrete (SCC) is characterized by _____.
a) High strength and low workability
b) High workability and ability to flow without vibration
c) Low water-cement ratio
d) Reduced permeability due to excess water

4) One of the main challenges of using Recycled Concrete Aggregate (RCA) in new concrete is _____.
a) Increased workability
b) Increased porosity and reduced strength
c) Improved durability
d) Decreased water absorption

5) Mass concrete is defined as concrete with a large volume, typically used in _____.
a) Thin structural elements like beams and slabs
b) Large structural elements like dams and foundations
c) Decorative concrete elements
d) High-rise building facades

6) Which of the following is NOT an advantage of sprayed concrete?
a) Ability to apply to complex shapes
b) Faster application than traditional casting
c) Lower cost of materials
d) Can be applied in thin layers with high strength

7) The primary types of sprayed concrete are _____.
a) Wet mix and dry mix
b) Low strength and high strength
c) Cement-based and polymer-based
d) Precast and cast-in-situ

8) In ferro-cement, the reinforcement is usually made of _____.
a) Large steel bars
b) Wire mesh or small diameter bars
c) Concrete fibers
d) Stainless steel plates

9) Which type of pump is typically used for pumping concrete?
a) Hydraulic piston pump
b) Centrifugal pump
c) Gear pump
d) Concrete pump with twin cylinders or a peristaltic pump

10) Blended cements are commonly made by mixing Ordinary Portland Cement (OPC) with which of the following materials?
a) Lime b) Fly ash
c) Gypsum d) Silica fume

11) Coarse aggregates are typically defined as particles that are larger than _____.
a) 2 mm b) 4.75 mm
c) 5 mm d) 10 mm

12) Pulverized Fuel Ash (PFA) is a by product of which industry?
a) Steel industry b) Cement industry
c) Power generation industry d) Paper industry

13) What is the primary factor that determines the workability of fresh concrete?
a) Compressive strength b) Water-cement ratio
c) Aggregate type d) Curing time

14) Which of the following factors can contribute to the segregation of fresh concrete?
a) High water-cement ratio b) Proper mixing
c) Low water-cement ratio d) Adequate compaction

Seat No.	

Set **S**

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Advanced Concrete Technology (BTN01616)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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

Section – I

Q.2 Solve any two. **08**
- **a)** What are plasticizers, and how do they improve the workability of concrete?
- **b)** Write history of cement in detail.
- **c)** Explain in detail blended cement.

Q.3 Solve any two questions. **10**
- **a)** Explain in detail fly ash, rise husk ash, silica fume.
- **b)** Define Admixture and explain the different types of admixture in detail.
- **c)** Explain the effect using admixture in the concrete.

Q.4 Solve any two questions. **10**
- **a)** Define workability and factors affecting workability.
- **b)** Explain the term segregation, bleeding, cohesion of concrete, hardness of concrete.
- **c)** Explain the effect of impermeability and particle size on concrete.

Q.5 Solve any one questions. **10**
- **a)** Write a short note on special concrete explain each in details.
  - i) High performance concrete
  - ii) High strength concrete
  - iii) Fibre reinforced concrete
  - iv) Light weight concrete
- **b)** Write a short note on:
  - i) High volume fly ash concrete
  - ii) Self-compacting concrete
  - iii) Recycled concrete
  - iv) High density concrete
  - v) Radiation shielding concrete

Section – II

Q.6 Solve any two. **08**

a) Short note on Ferro cement Concrete.
b) Short note on Sprayed Concrete.
c) Explain in detail Mass Concrete.

Q.7 Solve any two questions. **10**

a) Draw a neat schematic diagram of RMC Plant.
b) Short note on Ready Mix Concrete and its applications to the construction industries.
c) Explain in details different type of RMC Plants.

Q.8 Solve any two questions. **10**

a) Short note on Quality assurance.
b) Write short note on a repair technique of concrete.
c) Why and when NDT Test are performed, explain with its application.

Q.9 Solve any one question. **10**

a) Explain types of concrete vibrators. Also state the advantages and disadvantages of revibration of Concrete.
b) What is mix design? Write down design steps of concrete mix design using IS 10262:2009 methods.

SLR-BD-315

Seat No.	

Set P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Open Channel Flow & River Hydraulics (BTN01617)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Uniform flow in open channel exists when the flow is steady and the channel is _____.
a) Friction less
b) Non prismatic
c) Prismatic
d) Prismatic and depth of flow is constant along the channel

2) Specific force represents the sum of pressure force and _____.
a) Datum head
b) Momentum flux per unit weight
c) Momentum flux and datum head
d) None

3) If the Froude's number is 8.2 then the jump is known as _____.
a) Steady b) Oscillating
c) Undular d) None

4) Hydraulic jump is observed in _____.
a) Closed channel flow b) Open channel flow
c) Flow changes d) Volumetric change

5) The Reynolds number for a flow in a channel is 1000. What type of flow is it?
a) Laminar b) Turbulent
c) Transition d) Steady

6) The flow in open channel may be characterized as laminar when _____.
a) Re < 500 b) Re > 2000
c) Re > 4000 d) 500 < Re > 2000

7) Which of the following assumptions about a GVF is false?
a) Channel is prismatic
b) Pressure distribution is hydrostatic
c) Flow characteristics change with time
d) Roughness co efficient is constant

8) The dimension of Kinematic viscosity is _____.
a) LT-2 b) L2T-1
c) L3T-1 d) LT-1

9) Hydraulic jump is an example of _____.
a) Gradually varied flow b) Rapidly varied flow
c) Spatially varied flow d) None

10) Shield's diagram is a plot of non-dimensional shear stress (τc) against _____.
a) Relative depth b) Shear Reynold's number
c) Hydraulic radius d) Reynold's number

11) Extreme condition of meanders is called as _____.
a) Leavee b) Spurs
c) Cut-off d) Island

12) Distorted models are required to be prepared for _____.
a) Rivers b) Commercial buildings
c) Railway Tracks d) None

13) In an open channel flow, shooting flow _____.
a) Occur just after a hydraulic jump
b) Be a gradually varied flow
c) Follow a tranquil flow
d) Both b and c

14) What is the wetted area for a triangular channel having depth y and the side slope being Z?
a) Zy2 b) 2Zy
c) Zy d) Z2y

Seat No.	

Set **P**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Open Channel Flow & River Hydraulics (BTN01617)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any FOUR. **16**

a) Derive the Gradually Varied Flow (GVF) equation. State the assumptions made for it.

b) Define momentum energy correction factor (β) and derive its equation.

c) The velocity distribution in rectangular channel of width 'B' and depth 'Yo' was approximated as $V = k1\sqrt{y}$
where $k1$ = constant; calculate the average velocity for the cross-section and correction coefficient 'α' and 'β'.

d) Find the rate of and conveyance for a rectangular channel 7.4 m wide for uniform flow at depth of 3.0 m. The channel is having bed slope as 1/1000. Take n=0.015.

e) What do you understand by most economical channel section? Derive most economical rectangular channel section.

Q.3 Attempt any TWO. **12**

a) Define Hydraulic jump and classify it on the basis of Froude's number.

b) A very wide rectangular channel carries a discharge of 3.5 $m^3/s/m$ width at a 2.2 m due to obstruction the water level rises by 2.0 m Locate the point up stream of the weir where the depth is 3.2 m. Assume bed slope as 0.0002 and 'c' = 50. Use step method and classify water surface profile.

c) What is specific energy curve? Draw a neat sketch and show all details.

Section – II

Q.4 Attempt any FOUR. **16**

a) What do you understand by river training works? Explain its types with examples.

b) From the following data find scale ratio of model:
For model - Velocity of water 1.0 m/s through circular pipe and
For prototype - Velocity of oil 0.12 m/sec through 50 mm diameter pipe.
Assume kinematic viscosity of water as 0.01 cm^2/sec. and for oil 0.006 cm^2/sec. Also find diameter of pipe used for model.

c) Derive 'Reynold's model law'. Where it can be used?

d) Write short notes on
i) Cut-off
ii) Spurs

e) Draw a neat sketch of current meter and explain its working in details.

Q.5 Attempt any TWO. **12**

a) Explain 'Similitude' and what are its types? and derive the equation for Froude's number.

b) Design a regime channel by using 'Lacey's theory' from the data discharge.

c) A spillway 7.0 m high and 150 m long discharges 2100 m^3/sec, under a head of 4.0 m. If 1:16 model of spill way is to be constructed, find the dimensions of model, head over the model and discharge through the model.

Seat No.	

Set Q

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Open Channel Flow & River Hydraulics (BTN01617)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

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

1) The dimension of Kinematic viscosity is _____.
a) LT-2 b) L2T-1
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6) In an open channel flow, shooting flow _____.
a) Occur just after a hydraulic jump
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7) What is the wetted area for a triangular channel having depth y and the side slope being Z?

a) Zy2 b) 2Zy
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8) Uniform flow in open channel exists when the flow is steady and the channel is _____.

a) Friction less
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9) Specific force represents the sum of pressure force and _____.

a) Datum head
b) Momentum flux per unit weight
c) Momentum flux and datum head
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13) The flow in open channel may be characterized as laminar when _____.

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c) Re > 4000 d) 500 < Re > 2000

14) Which of the following assumptions about a GVF is false?

a) Channel is prismatic
b) Pressure distribution is hydrostatic
c) Flow characteristics change with time
d) Roughness co efficient is constant

Seat No.	

Set **Q**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Open Channel Flow & River Hydraulics (BTN01617)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any FOUR. **16**

a) Derive the Gradually Varied Flow (GVF) equation. State the assumptions made for it.

b) Define momentum energy correction factor (β) and derive its equation.

c) The velocity distribution in rectangular channel of width 'B' and depth 'Yo' was approximated as $V = k1\sqrt{y}$
where $k1$ = constant; calculate the average velocity for the cross-section and correction coefficient 'α' and 'β'.

d) Find the rate of and conveyance for a rectangular channel 7.4 m wide for uniform flow at depth of 3.0 m. The channel is having bed slope as 1/1000. Take n=0.015.

e) What do you understand by most economical channel section? Derive most economical rectangular channel section.

Q.3 Attempt any TWO. **12**

a) Define Hydraulic jump and classify it on the basis of Froude's number.

b) A very wide rectangular channel carries a discharge of 3.5 $m^3/s/m$ width at a 2.2 m due to obstruction the water level rises by 2.0 m Locate the point up stream of the weir where the depth is 3.2 m. Assume bed slope as 0.0002 and 'c' = 50. Use step method and classify water surface profile.

c) What is specific energy curve? Draw a neat sketch and show all details.

Section – II

Q.4 Attempt any FOUR. **16**

a) What do you understand by river training works? Explain its types with examples.

b) From the following data find scale ratio of model:
For model - Velocity of water 1.0 m/s through circular pipe and
For prototype - Velocity of oil 0.12 m/sec through 50 mm diameter pipe.
Assume kinematic viscosity of water as 0.01 cm^2/sec. and for oil 0.006 cm^2/sec. Also find diameter of pipe used for model.

c) Derive 'Reynold's model law'. Where it can be used?

d) Write short notes on
i) Cut-off
ii) Spurs

e) Draw a neat sketch of current meter and explain its working in details.

Q.5 Attempt any TWO. **12**

a) Explain 'Similitude' and what are its types? and derive the equation for Froude's number.

b) Design a regime channel by using 'Lacey's theory' from the data discharge.

c) A spillway 7.0 m high and 150 m long discharges 2100 m^3/sec, under a head of 4.0 m. If 1:16 model of spill way is to be constructed, find the dimensions of model, head over the model and discharge through the model.

Seat No.	

Set **R**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Open Channel Flow & River Hydraulics (BTN01617)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Extreme condition of meanders is called as _____.
a) Leavee b) Spurs
c) Cut-off d) Island

2) Distorted models are required to be prepared for _____.
a) Rivers b) Commercial buildings
c) Railway Tracks d) None

3) In an open channel flow, shooting flow _____.
a) Occur just after a hydraulic jump
b) Be a gradually varied flow
c) Follow a tranquil flow
d) Both b and c

4) What is the wetted area for a triangular channel having depth y and the side slope being Z?
a) Zy2 b) 2Zy
c) Zy d) Z2y

5) Uniform flow in open channel exists when the flow is steady and the channel is _____.
a) Friction less
b) Non prismatic
c) Prismatic
d) Prismatic and depth of flow is constant along the channel

6) Specific force represents the sum of pressure force and _____.
a) Datum head
b) Momentum flux per unit weight
c) Momentum flux and datum head
d) None

7) If the Froude's number is 8.2 then the jump is known as _____.
a) Steady b) Oscillating
c) Undular d) None

8) Hydraulic jump is observed in _____.
a) Closed channel flow b) Open channel flow
c) Flow changes d) Volumetric change

9) The Reynolds number for a flow in a channel is 1000. What type of flow is it?
a) Laminar b) Turbulent
c) Transition d) Steady

10) The flow in open channel may be characterized as laminar when _____.
a) Re < 500 b) Re > 2000
c) Re > 4000 d) 500 < Re > 2000

11) Which of the following assumptions about a GVF is false?
a) Channel is prismatic
b) Pressure distribution is hydrostatic
c) Flow characteristics change with time
d) Roughness co efficient is constant

12) The dimension of Kinematic viscosity is _____.
a) LT-2 b) L2T-1
c) L3T-1 d) LT-1

13) Hydraulic jump is an example of _____.
a) Gradually varied flow b) Rapidly varied flow
c) Spatially varied flow d) None

14) Shield's diagram is a plot of non-dimensional shear stress (τc) against _____.
a) Relative depth b) Shear Reynold's number
c) Hydraulic radius d) Reynold's number

Seat No.	

Set **R**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Open Channel Flow & River Hydraulics (BTN01617)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any FOUR. **16**

a) Derive the Gradually Varied Flow (GVF) equation. State the assumptions made for it.

b) Define momentum energy correction factor (β) and derive its equation.

c) The velocity distribution in rectangular channel of width 'B' and depth 'Yo' was approximated as $V = k1\sqrt{y}$
where $k1$ = constant; calculate the average velocity for the cross-section and correction coefficient 'α' and 'β'.

d) Find the rate of and conveyance for a rectangular channel 7.4 m wide for uniform flow at depth of 3.0 m. The channel is having bed slope as 1/1000. Take n=0.015.

e) What do you understand by most economical channel section? Derive most economical rectangular channel section.

Q.3 Attempt any TWO. **12**

a) Define Hydraulic jump and classify it on the basis of Froude's number.

b) A very wide rectangular channel carries a discharge of 3.5 $m^3/s/m$ width at a 2.2 m due to obstruction the water level rises by 2.0 m Locate the point up stream of the weir where the depth is 3.2 m. Assume bed slope as 0.0002 and 'c' = 50. Use step method and classify water surface profile.

c) What is specific energy curve? Draw a neat sketch and show all details.

Section – II

Q.4 Attempt any FOUR. **16**

a) What do you understand by river training works? Explain its types with examples.

b) From the following data find scale ratio of model:
For model - Velocity of water 1.0 m/s through circular pipe and
For prototype - Velocity of oil 0.12 m/sec through 50 mm diameter pipe.
Assume kinematic viscosity of water as 0.01 cm^2/sec. and for oil 0.006 cm^2/sec. Also find diameter of pipe used for model.

c) Derive 'Reynold's model law'. Where it can be used?

d) Write short notes on
i) Cut-off
ii) Spurs

e) Draw a neat sketch of current meter and explain its working in details.

Q.5 Attempt any TWO. **12**

a) Explain 'Similitude' and what are its types? and derive the equation for Froude's number.

b) Design a regime channel by using 'Lacey's theory' from the data discharge.

c) A spillway 7.0 m high and 150 m long discharges 2100 m^3/sec, under a head of 4.0 m. If 1:16 model of spill way is to be constructed, find the dimensions of model, head over the model and discharge through the model.

Seat No.	

Set S

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Open Channel Flow & River Hydraulics (BTN01617)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The flow in open channel may be characterized as laminar when _____.
a) Re < 500 b) Re > 2000
c) Re > 4000 d) 500 < Re > 2000

2) Which of the following assumptions about a GVF is false?
a) Channel is prismatic
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d) Roughness co efficient is constant

3) The dimension of Kinematic viscosity is _____.
a) LT-2 b) L2T-1
c) L3T-1 d) LT-1

4) Hydraulic jump is an example of _____.
a) Gradually varied flow b) Rapidly varied flow
c) Spatially varied flow d) None

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a) Relative depth b) Shear Reynold's number
c) Hydraulic radius d) Reynold's number

6) Extreme condition of meanders is called as _____.
a) Leavee b) Spurs
c) Cut-off d) Island

7) Distorted models are required to be prepared for _____.
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c) Railway Tracks d) None

8) In an open channel flow, shooting flow _____.
a) Occur just after a hydraulic jump
b) Be a gradually varied flow
c) Follow a tranquil flow
d) Both b and c

9) What is the wetted area for a triangular channel having depth y and the side slope being Z?
a) Zy2 b) 2Zy
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10) Uniform flow in open channel exists when the flow is steady and the channel is _____.
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b) Non prismatic
c) Prismatic
d) Prismatic and depth of flow is constant along the channel

11) Specific force represents the sum of pressure force and _____.
a) Datum head
b) Momentum flux per unit weight
c) Momentum flux and datum head
d) None

12) If the Froude's number is 8.2 then the jump is known as _____.
a) Steady b) Oscillating
c) Undular d) None

13) Hydraulic jump is observed in _____.
a) Closed channel flow b) Open channel flow
c) Flow changes d) Volumetric change

14) The Reynolds number for a flow in a channel is 1000. What type of flow is it?
a) Laminar b) Turbulent
c) Transition d) Steady

SLR-BD-315

Seat No.		Set	S

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Open Channel Flow & River Hydraulics (BTN01617)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any FOUR. **16**

a) Derive the Gradually Varied Flow (GVF) equation. State the assumptions made for it.

b) Define momentum energy correction factor (β) and derive its equation.

c) The velocity distribution in rectangular channel of width 'B' and depth 'Yo' was approximated as $V = k1\sqrt{y}$
where $k1$ = constant; calculate the average velocity for the cross-section and correction coefficient 'α' and 'β'.

d) Find the rate of and conveyance for a rectangular channel 7.4 m wide for uniform flow at depth of 3.0 m. The channel is having bed slope as 1/1000. Take n=0.015.

e) What do you understand by most economical channel section? Derive most economical rectangular channel section.

Q.3 Attempt any TWO. **12**

a) Define Hydraulic jump and classify it on the basis of Froude's number.

b) A very wide rectangular channel carries a discharge of 3.5 $m^3/s/m$ width at a 2.2 m due to obstruction the water level rises by 2.0 m Locate the point up stream of the weir where the depth is 3.2 m. Assume bed slope as 0.0002 and 'c' = 50. Use step method and classify water surface profile.

c) What is specific energy curve? Draw a neat sketch and show all details.

Section – II

Q.4 Attempt any FOUR. **16**

a) What do you understand by river training works? Explain its types with examples.

b) From the following data find scale ratio of model:
For model - Velocity of water 1.0 m/s through circular pipe and
For prototype - Velocity of oil 0.12 m/sec through 50 mm diameter pipe.
Assume kinematic viscosity of water as 0.01 cm^2/sec. and for oil 0.006 cm^2/sec. Also find diameter of pipe used for model.

c) Derive 'Reynold's model law'. Where it can be used?

d) Write short notes on
i) Cut-off
ii) Spurs

e) Draw a neat sketch of current meter and explain its working in details.

Q.5 Attempt any TWO. **12**

a) Explain 'Similitude' and what are its types? and derive the equation for Froude's number.

b) Design a regime channel by using 'Lacey's theory' from the data discharge.

c) A spillway 7.0 m high and 150 m long discharges 2100 m^3/sec, under a head of 4.0 m. If 1:16 model of spill way is to be constructed, find the dimensions of model, head over the model and discharge through the model.

SLR-BD-316

Seat No.	

Set P

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Solid and Hazardous Waste Management (BTN01618)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The final functional element in solid waste management system is _____.
a) Transfer & transportation b) Collection
c) Processing & Recovery d) Disposal

2) Household hazardous waste includes batteries and _____.
a) Radioactive waste b) Food waste
c) Nail polish d) Leachate

3) Composting process is affected due to _____.
a) Temperature b) Moisture Content
c) C/N Ratio d) All of above

4) Mechanical size reduction operation includes _____.
a) Shredding b) Grinding
c) Milling d) All of above

5) Recovery of energy in the form of heat is obtained from _____.
a) Combustion process b) Sanitary landfilling
c) Anaerobic process d) None of these

6) Separation, processing of solid waste are used to reduce _____.
a) Volume of S.W. b) Weight of S.W.
c) Both a & b d) None of these _____

7) M R F's term in SWM is used for _____.
a) Material Recovery facilities b) Major Relief funds
c) Minimum Raw Food d) Most Reliable facilities

8) The pyrolysis process of SWM is _____.
a) Endothermic b) Exothermic
c) Heterothermic d) Exhaust

9) The anaerobic method of mechanical composting is _____.
a) Indore Method b) Mangalore Method
c) Bangalore method d) Trench Method

10) Characteristics of hazardous waste includes _____.
a) Ignitibility & Corrosivity b) Reactivity & Toxicity
c) Both a & b d) None of above

11) The biomedical waste management act were enacted in _____.
a) 1976 b) 1980
c) 1988 d) 1998

12) Hazardous biomedical wastes are generated in _____.
a) Hospitals
b) Biological research facilities
c) Industrial biological conversion process
d) All of above

13) The _____ process determines whether exposure to a chemical can increase the incidence of adverse health effect.
a) Exposure identification b) Hazardous assessment
c) Toxicity assessment d) Risk characterization

14) The advantage of waste to energy is to _____.
a) Is economical
b) Recover useful energy
c) High degree of sophistication is required
d) Save energy

SLR-BD-316

Seat No.	

Set P

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Solid and Hazardous Waste Management (BTN01618)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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

Section – I

Q.2 a) Write advantages and disadvantages of Incineration treatment. **05**
b) Explain theory of composting in brief. **05**

Q.3 a) Explain the functional elements of municipal solid waste management with flow diagram. **05**
b) Distinguish between Indore method and Bangalore method of composting. **04**

Q.4 a) Estimate the Moisture Content of solid waste sample of 100kg using the following data. **06**

Sr. No.	Component	% by mass	% by MC (Moisture Content)
1	Food waste	16	65
2	Paper	36	08
3	Cardboards	05	05
4	Plastics	10	02
5	Grass	12	55
6	Wood	08	04
7	Metals	13	03

b) Write the use of different industrial waste. **03**

Q.5 Write Short Notes on.
a) Municipal solid waste collection method **05**
b) Pyrolysis and benefits of end products **04**

Section – II

Q.6	**a)**	Give importance of SW, also what are steps including before composting process.	**05**
	b)	Write main 5 risk assessment stages and explain objective of risk assessment.	**05**
Q.7	**a)**	Write selection criteria for site where sanitary land filling to be done w.r. to no nuisance to public.	**05**
	b)	Write a note on risk assessment w.r. to operation and control measures.	**04**
Q.8	**a)**	Explain main purpose of performing qualitative and quantitative analysis for risk management and also enlist the steps in. risk quantification.	**05**
	b)	Explain Steps to control for groundwater contamination.	**04**
Q.9	**Write Short Notes on:**		
	a)	Waste minimization	**05**
	b)	Hazard episode and controlling damage	**04**

Seat No.	

Set **Q**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Solid and Hazardous Waste Management (BTN01618)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The pyrolysis process of SWM is _____.
a) Endothermic b) Exothermic
c) Heterothermic d) Exhaust

2) The anaerobic method of mechanical composting is _____.
a) Indore Method b) Mangalore Method
c) Bangalore method d) Trench Method

3) Characteristics of hazardous waste includes _____.
a) Ignitibility & Corrosivity b) Reactivity & Toxicity
c) Both a & b d) None of above

4) The biomedical waste management act were enacted in _____.
a) 1976 b) 1980
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5) Hazardous biomedical wastes are generated in _____.
a) Hospitals
b) Biological research facilities
c) Industrial biological conversion process
d) All of above

6) The _____ process determines whether exposure to a chemical can increase the incidence of adverse health effect.
a) Exposure identification b) Hazardous assessment
c) Toxicity assessment d) Risk characterization

7) The advantage of waste to energy is to _____.
a) Is economical
b) Recover useful energy
c) High degree of sophistication is required
d) Save energy

8) The final functional element in solid waste management system is _____.
a) Transfer & transportation b) Collection
c) Processing & Recovery d) Disposal

9) Household hazardous waste includes batteries and _____.
a) Radioactive waste b) Food waste
c) Nail polish d) Leachate

10) Composting process is affected due to _____.
a) Temperature b) Moisture Content
c) C/N Ratio d) All of above

11) Mechanical size reduction operation includes _____.
a) Shredding b) Grinding
c) Milling d) All of above

12) Recovery of energy in the form of heat is obtained from _____.
a) Combustion process b) Sanitary landfilling
c) Anaerobic process d) None of these

13) Separation, processing of solid waste are used to reduce _____.
a) Volume of S.W. b) Weight of S.W.
c) Both a & b d) None of these

14) M R F's term in SWM is used for _____.
a) Material Recovery facilities b) Major Relief funds
c) Minimum Raw Food d) Most Reliable facilities

SLR-BD-316

Seat No.	

Set Q

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Solid and Hazardous Waste Management (BTN01618)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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

Section – I

Q.2 a) Write advantages and disadvantages of Incineration treatment. **05**
b) Explain theory of composting in brief. **05**

Q.3 a) Explain the functional elements of municipal solid waste management with flow diagram. **05**
b) Distinguish between Indore method and Bangalore method of composting. **04**

Q.4 a) Estimate the Moisture Content of solid waste sample of 100kg using the following data. **06**

Sr. No.	Component	% by mass	% by MC (Moisture Content)
1	Food waste	16	65
2	Paper	36	08
3	Cardboards	05	05
4	Plastics	10	02
5	Grass	12	55
6	Wood	08	04
7	Metals	13	03

b) Write the use of different industrial waste. **03**

Q.5 Write Short Notes on.
a) Municipal solid waste collection method **05**
b) Pyrolysis and benefits of end products **04**

Section – II

Q.6	**a)**	Give importance of SW, also what are steps including before composting process.	**05**
	b)	Write main 5 risk assessment stages and explain objective of risk assessment.	**05**
Q.7	**a)**	Write selection criteria for site where sanitary land filling to be done w.r. to no nuisance to public.	**05**
	b)	Write a note on risk assessment w.r. to operation and control measures.	**04**
Q.8	**a)**	Explain main purpose of performing qualitative and quantitative analysis for risk management and also enlist the steps in. risk quantification.	**05**
	b)	Explain Steps to control for groundwater contamination.	**04**
Q.9	**Write Short Notes on:**		
	a)	Waste minimization	**05**
	b)	Hazard episode and controlling damage	**04**

Seat No.	

Set **R**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Solid and Hazardous Waste Management (BTN01618)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The biomedical waste management act were enacted in _____.
a) 1976 b) 1980
c) 1988 d) 1998

2) Hazardous biomedical wastes are generated in _____.
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5) The final functional element in solid waste management system is _____.
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6) Household hazardous waste includes batteries and _____.
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7) Composting process is affected due to _____.
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8) Mechanical size reduction operation includes _____.
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9) Recovery of energy in the form of heat is obtained from _____.
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10) Separation, processing of solid waste are used to reduce _____.
a) Volume of S.W. b) Weight of S.W.
c) Both a & b d) None of these _____

11) M R F's term in SWM is used for _____.
a) Material Recovery facilities b) Major Relief funds
c) Minimum Raw Food d) Most Reliable facilities

12) The pyrolysis process of SWM is _____.
a) Endothermic b) Exothermic
c) Heterothermic d) Exhaust

13) The anaerobic method of mechanical composting is _____.
a) Indore Method b) Mangalore Method
c) Bangalore method d) Trench Method

14) Characteristics of hazardous waste includes _____.
a) Ignitibility & Corrosivity b) Reactivity & Toxicity
c) Both a & b d) None of above

Seat No.	

Set **R**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Solid and Hazardous Waste Management (BTN01618)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
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4) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Write advantages and disadvantages of Incineration treatment. **05**
b) Explain theory of composting in brief. **05**

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7	Metals	13	03

b) Write the use of different industrial waste. **03**

Q.5 **Write Short Notes on.**
a) Municipal solid waste collection method **05**
b) Pyrolysis and benefits of end products **04**

Section – II

Q.6	**a)**	Give importance of SW, also what are steps including before composting process.	**05**
	b)	Write main 5 risk assessment stages and explain objective of risk assessment.	**05**
Q.7	**a)**	Write selection criteria for site where sanitary land filling to be done w.r. to no nuisance to public.	**05**
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Q.8	**a)**	Explain main purpose of performing qualitative and quantitative analysis for risk management and also enlist the steps in. risk quantification.	**05**
	b)	Explain Steps to control for groundwater contamination.	**04**
Q.9	**Write Short Notes on:**		
	a)	Waste minimization	**05**
	b)	Hazard episode and controlling damage	**04**

Seat No.	

Set **S**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Solid and Hazardous Waste Management (BTN01618)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Separation, processing of solid waste are used to reduce _____.
a) Volume of S.W. b) Weight of S.W.
c) Both a & b d) None of these _____

2) M R F's term in SWM is used for _____.
a) Material Recovery facilities b) Major Relief funds
c) Minimum Raw Food d) Most Reliable facilities

3) The pyrolysis process of SWM is _____.
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c) Heterothermic d) Exhaust

4) The anaerobic method of mechanical composting is _____.
a) Indore Method b) Mangalore Method
c) Bangalore method d) Trench Method

5) Characteristics of hazardous waste includes _____.
a) Ignitibility & Corrosivity b) Reactivity & Toxicity
c) Both a & b d) None of above

6) The biomedical waste management act were enacted in _____.
a) 1976 b) 1980
c) 1988 d) 1998

7) Hazardous biomedical wastes are generated in _____.
a) Hospitals
b) Biological research facilities
c) Industrial biological conversion process
d) All of above

8) The _____ process determines whether exposure to a chemical can increase the incidence of adverse health effect.

a) Exposure identification b) Hazardous assessment
c) Toxicity assessment d) Risk characterization

9) The advantage of waste to energy is to _____.

a) Is economical
b) Recover useful energy
c) High degree of sophistication is required
d) Save energy

10) The final functional element in solid waste management system is _____.

a) Transfer & transportation b) Collection
c) Processing & Recovery d) Disposal

11) Household hazardous waste includes batteries and _____.

a) Radioactive waste b) Food waste
c) Nail polish d) Leachate

12) Composting process is affected due to _____.

a) Temperature b) Moisture Content
c) C/N Ratio d) All of above

13) Mechanical size reduction operation includes _____.

a) Shredding b) Grinding
c) Milling d) All of above

14) Recovery of energy in the form of heat is obtained from _____.

a) Combustion process b) Sanitary landfilling
c) Anaerobic process d) None of these

Seat No.	

Set **S**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Solid and Hazardous Waste Management (BTN01618)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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

Section – I

Q.2 **a)** Write advantages and disadvantages of Incineration treatment. **05**
b) Explain theory of composting in brief. **05**

Q.3 **a)** Explain the functional elements of municipal solid waste management with flow diagram. **05**
b) Distinguish between Indore method and Bangalore method of composting. **04**

Q.4 **a)** Estimate the Moisture Content of solid waste sample of 100kg using the following data. **06**

Sr. No.	Component	% by mass	% by MC (Moisture Content)
1	Food waste	16	65
2	Paper	36	08
3	Cardboards	05	05
4	Plastics	10	02
5	Grass	12	55
6	Wood	08	04
7	Metals	13	03

b) Write the use of different industrial waste. **03**

Q.5 **Write Short Notes on.**
a) Municipal solid waste collection method **05**
b) Pyrolysis and benefits of end products **04**

Section – II

Q.6	**a)**	Give importance of SW, also what are steps including before composting process.	**05**
	b)	Write main 5 risk assessment stages and explain objective of risk assessment.	**05**
Q.7	**a)**	Write selection criteria for site where sanitary land filling to be done w.r. to no nuisance to public.	**05**
	b)	Write a note on risk assessment w.r. to operation and control measures.	**04**
Q.8	**a)**	Explain main purpose of performing qualitative and quantitative analysis for risk management and also enlist the steps in. risk quantification.	**05**
	b)	Explain Steps to control for groundwater contamination.	**04**
Q.9	**Write Short Notes on:**		
	a)	Waste minimization	**05**
	b)	Hazard episode and controlling damage	**04**

SLR-BD-318

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Concrete Structures II (BTN01603)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book).
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) While solving MCQ IS 456-2000, IS 3370 and IS 1343 are not allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) The minimum head room over a stair must be _____ **01**

a) 2000 mm b) 2100 mm
c) 2050 mm d) 2300 mm

2) For footing the minimum cover for the reinforcement shall be _____ **01**

a) 30 mm b) 50 mm
c) 25 mm d) 40 mm

3) A column footing supports a load of 1200 kN with a soil SBC of 150 kN/m^2. The minimum area of footing required is _____ **01**

a) 6 m^2 b) 8 m^2
c) 10 m^2 d) 12 m^2

4) In design of footing, the depth considering bending moment is checked at _____ **01**

a) the free end of footing
b) face of the column
c) a distance d/2 (half of the effective depth) from the face of the column
d) a distance d (effective depth) from the face of the column

5) The stability of retaining wall is checked for which of the following condition _____ **01**

a) Overturning about toe b) Overturning about heal
c) Both of above d) None of these

6) The minimum width of stem slab at bottom is for cantilever retaining wall _____ **01**

a) H/15 b) H/12
c) H/18 d) H/20

7) Which IS code governs the design of water tanks? **01**

a) IS 456 b) IS 3370
c) IS 1893 d) IS 1343

8) As per IS 1343 the minimum grade of concrete to be used for post-tensioned and pre-tensioned structure elements are respectively. **01**

a) M20 for both b) M40 and M30
c) M15 and M20 d) M30 and M40

9) If C is creep coefficient, f is original prestress in concrete, m is modular ratio, E is Young's modulus of steel and e is shrinkage strain, the combined effect of creep and shrinkage is _____ **01**

a) $(1-C)mf-eE$ b) $(C-1)mf+eE$
c) $(C-1)mf-eE$ d) $(1-C)mf+eE$

10) A symmetrical prestressed concrete section has an eccentricity of 50 mm and prestress force of 500 kN. The bending moment due to prestressing is _____ **01**

a) 20 kNm b) 25 kNm
c) 30 kNm d) 35 kNm

11) In staircase design find weight of waist slab per meter run if thickness of slab is 280 mm, Riser of 150 mm and tread of 300 mm and unit weight of concrete is 2500 kg/m^3 **02**

a) 7.83 kN/m b) 15.65 kN/m
c) 8.57 kN/m d) 8.73 kN/m

12) A pressed concrete rectangular beam size 300 mm x 900 mm is prestressed with an initial 350 mm at midspan. Stress at top beam section due to prestress alone in N/mm^2 _____ **02**

a) -3.46(tension) b) 2.59(compression)
c) zero d) 864(compression)

Seat No.	

Set | P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Concrete Structures II (BTN01603)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions remaining of the questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions.
3) Use of IS 456, IS 1343 and IS 3370 part IV and non-programmable calculator is allowed.
4) Draw neat Sketch's where required and Assume suitable data if required and state it clearly.

Section – I

Q.2 Design the dog-legged type staircase for a residential building using following data floor to floor height = 3.3 m, No. of flight per floor = 2, size of steps = 150 mm riser and 280 mm tread, live load is 3 kN/m^2 and assume width of stair is 1.0 m. Use M20 concrete and Fe415 steel. The stair is supported at top and bottom risers by beam spanning parallel with risers at the landing slab on either side. **08**

Q.3 Design a rectangular footing for column axially loaded of size 230 mm x 500 mm carrying 1300kN load. The SBC of soil is 190 kN/m^2. Use M20 concrete and Fe415 steel. Sketch the details of reinforcement. **10**

Q.4 Design the stem slab of a cantilever retaining wall, if the overall height is 4.5m. SBC of soil is 180 kN/m^2, angle of repose of the soil is 30° and unit weight of soil 20 kN/m^3, width of the slab base is 3.2 m, toe projection is 0.6 m. Use M25 concrete and Fe500 steel. **10**

Q.5 Design a circular water tank having capacity 50000 liters, resting on firm ground is free at top and bottom is fixed. Depth of water 3.3 m, assume free board of 200 mm and solve by IS code method. Use M20 concrete and Fe415 steel. **10**

Section – II

Q.6 A prestressed concrete beam 230 mm x 750 mm is prestressed by a parabolic cable located at an eccentricity of 120mm at mid span and zero at the supports. If the beam has a span of 10 m and carries a uniformly distributed load of 5 kN/m, find the effective prestressing force necessary in the cable for zero shear stress in the beam. For this condition find the stress at mid span section. Concrete weighs at 25 kN/m^3 **08**

Q.7 A Pretensioned concrete beam 230 mm x 500 mm has a span of 12m. The beam is prestressed by steel wires of area 350mm^2 provided at a uniform eccentricity of 60 mm with an initial prestress of 1200 N/mm^2. Determine the percentage loss of stress in the wires. Take Es = 210 kN/mm^2, Ec = 35 kN/mm^2, Relaxation of steel stress = 5% of the initial stress. Ultimate creep strain = 45×10^{-6} mm/mm per N/mm^2, shrinkage of concrete = 300×10^{-6}. **10**

Q.8 Design PSC I section beam for the following span = 15m, superimposed load of 36 kN/m, cube strength of concrete at 28 days is 35kN/m^2, safe stress in concrete at transfer = 0.5 fck, allowable tensile stress in concrete is 0.129√(fck), safe stress in steel is 60 % of ultimate stress, total loss of stress 18%, ultimate stress in steel 1450 MPa. **10**

Q.9 A prestressed concrete beam 400 mm wide and 800 mm deep. Determine the horizontal, vertical and shear stresses at the point Q(600,600), with bottom of the end block is origin. Find also the principal stresses at Q, the tendons are placed at an eccentricity of 90 mm. The anchor plate is 300 mm wide and 200 mm deep. The prestressing force is 1150 kN. **10**

Seat No.	

Set | Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Concrete Structures II (BTN01603)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book).
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) While solving MCQ IS 456-2000, IS 3370 and IS 1343 are not allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) The minimum width of stem slab at bottom is for cantilever retaining wall _____ **01**
a) H/15 b) H/12
c) H/18 d) H/20

2) Which IS code governs the design of water tanks? **01**
a) IS 456 b) IS 3370
c) IS 1893 d) IS 1343

3) As per IS 1343 the minimum grade of concrete to be used for post-tensioned and pre-tensioned structure elements are respectively. **01**
a) M20 for both b) M40 and M30
c) M15 and M20 d) M30 and M40

4) If C is creep coefficient, f is original prestress in concrete, m is modular ratio, E is Young's modulus of steel and e is shrinkage strain, the combined effect of creep and shrinkage is _____ **01**
a) $(1-C)mf-eE$ b) $(C-1)mf+eE$
c) $(C-1)mf-eE$ d) $(1-C)mf+eE$

5) A symmetrical prestressed concrete section has an eccentricity of 50 mm and prestress force of 500 kN. The bending moment due to prestressing is _____ **01**
a) 20 kNm b) 25 kNm
c) 30 kNm d) 35 kNm

6) The minimum head room over a stair must be _____ **01**

a) 2000 mm b) 2100 mm
c) 2050 mm d) 2300 mm

7) For footing the minimum cover for the reinforcement shall be _____ **01**

a) 30 mm b) 50 mm
c) 25 mm d) 40 mm

8) A column footing supports a load of 1200 kN with a soil SBC of 150 kN/m^2. The minimum area of footing required is _____ **01**

a) 6 m^2 b) 8 m^2
c) 10 m^2 d) 12 m^2

9) In design of footing, the depth considering bending moment is checked at _____ **01**

a) the free end of footing
b) face of the column
c) a distance d/2 (half of the effective depth) from the face of the column
d) a distance d (effective depth) from the face of the column

10) The stability of retaining wall is checked for which of the following condition _____ **01**

a) Overturning about toe b) Overturning about heal
c) Both of above d) None of these

11) In staircase design find weight of waist slab per meter run if thickness of slab is 280 mm, Riser of 150 mm and tread of 300 mm and unit weight of concrete is 2500 kg/m^3 **02**

a) 7.83 kN/m b) 15.65 kN/m
c) 8.57 kN/m d) 8.73 kN/m

12) A pressed concrete rectangular beam size 300 mm x 900 mm is prestressed with an initial 350 mm at midspan. Stress at top beam section due to prestress alone in N/mm^2 _____ **02**

a) -3.46(tension) b) 2.59(compression)
c) zero d) 864(compression)

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Concrete Structures II (BTN01603)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions remaining of the questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions.
3) Use of IS 456, IS 1343 and IS 3370 part IV and non-programmable calculator is allowed.
4) Draw neat Sketch's where required and Assume suitable data if required and state it clearly.

Section – I

Q.2 Design the dog-legged type staircase for a residential building using following data floor to floor height = 3.3 m, No. of flight per floor = 2, size of steps = 150 mm riser and 280 mm tread, live load is 3 kN/m^2 and assume width of stair is 1.0 m. Use M20 concrete and Fe415 steel. The stair is supported at top and bottom risers by beam spanning parallel with risers at the landing slab on either side. **08**

Q.3 Design a rectangular footing for column axially loaded of size 230 mm x 500 mm carrying 1300kN load. The SBC of soil is 190 kN/m^2. Use M20 concrete and Fe415 steel. Sketch the details of reinforcement. **10**

Q.4 Design the stem slab of a cantilever retaining wall, if the overall height is 4.5m. SBC of soil is 180 kN/m^2, angle of repose of the soil is 30° and unit weight of soil 20 kN/m^3, width of the slab base is 3.2 m, toe projection is 0.6 m. Use M25 concrete and Fe500 steel. **10**

Q.5 Design a circular water tank having capacity 50000 liters, resting on firm ground is free at top and bottom is fixed. Depth of water 3.3 m, assume free board of 200 mm and solve by IS code method. Use M20 concrete and Fe415 steel. **10**

Section – II

Q.6 A prestressed concrete beam 230 mm x 750 mm is prestressed by a parabolic cable located at an eccentricity of 120mm at mid span and zero at the supports. If the beam has a span of 10 m and carries a uniformly distributed load of 5 kN/m, find the effective prestressing force necessary in the cable for zero shear stress in the beam. For this condition find the stress at mid span section. Concrete weighs at 25 kN/m^3 **08**

Q.7 A Pretensioned concrete beam 230 mm x 500 mm has a span of 12m. The beam is prestressed by steel wires of area 350mm^2 provided at a uniform eccentricity of 60 mm with an initial prestress of 1200 N/mm^2. Determine the percentage loss of stress in the wires. Take Es = 210 kN/mm^2, Ec = 35 kN/mm^2, Relaxation of steel stress = 5% of the initial stress. Ultimate creep strain = 45×10^{-6} mm/mm per N/mm^2, shrinkage of concrete = 300×10^{-6}. **10**

Q.8 Design PSC I section beam for the following span = 15m, superimposed load of 36 kN/m, cube strength of concrete at 28 days is 35kN/m^2, safe stress in concrete at transfer = 0.5 fck, allowable tensile stress in concrete is 0.129√(fck), safe stress in steel is 60 % of ultimate stress, total loss of stress 18%, ultimate stress in steel 1450 MPa. **10**

Q.9 A prestressed concrete beam 400 mm wide and 800 mm deep. Determine the horizontal, vertical and shear stresses at the point Q(600,600), with bottom of the end block is origin. Find also the principal stresses at Q, the tendons are placed at an eccentricity of 90 mm. The anchor plate is 300 mm wide and 200 mm deep. The prestressing force is 1150 kN. **10**

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Concrete Structures II (BTN01603)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) If C is creep coefficient, f is original prestress in concrete, m is modular ratio, E is Young's modulus of steel and e is shrinkage strain, the combined effect of creep and shrinkage is _____ **01**

a) $(1-C)mf-eE$ b) $(C-1)mf+eE$
c) $(C-1)mf-eE$ d) $(1-C)mf+eE$

2) A symmetrical prestressed concrete section has an eccentricity of 50 mm and prestress force of 500 kN. The bending moment due to prestressing is _____ **01**

a) 20 kNm b) 25 kNm
c) 30 kNm d) 35 kNm

3) The minimum head room over a stair must be _____ **01**

a) 2000 mm b) 2100 mm
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4) For footing the minimum cover for the reinforcement shall be _____ **01**

a) 30 mm b) 50 mm
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5) A column footing supports a load of 1200 kN with a soil SBC of 150 kN/m^2. The minimum area of footing required is _____ **01**

a) 6 m^2 b) 8 m^2
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6) In design of footing, the depth considering bending moment is checked at _____ **01**

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c) a distance d/2 (half of the effective depth) from the face of the column
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7) The stability of retaining wall is checked for which of the following condition _____ **01**

a) Overturning about toe
b) Overturning about heal
c) Both of above
d) None of these

8) The minimum width of stem slab at bottom is for cantilever retaining wall _____ **01**

a) H/15
b) H/12
c) H/18
d) H/20

9) Which IS code governs the design of water tanks? **01**

a) IS 456
b) IS 3370
c) IS 1893
d) IS 1343

10) As per IS 1343 the minimum grade of concrete to be used for post-tensioned and pre-tensioned structure elements are respectively. **01**

a) M20 for both
b) M40 and M30
c) M15 and M20
d) M30 and M40

11) In staircase design find weight of waist slab per meter run if thickness of slab is 280 mm, Riser of 150 mm and tread of 300 mm and unit weight of concrete is 2500 kg/m^3 **02**

a) 7.83 kN/m
b) 15.65 kN/m
c) 8.57 kN/m
d) 8.73 kN/m

12) A pressed concrete rectangular beam size 300 mm x 900 mm is prestressed with an initial 350 mm at midspan. Stress at top beam section due to prestress alone in N/mm^2 _____ **02**

a) -3.46(tension)
b) 2.59(compression)
c) zero
d) 864(compression)

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Concrete Structures II (BTN01603)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions remaining of the questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions.
3) Use of IS 456, IS 1343 and IS 3370 part IV and non-programmable calculator is allowed.
4) Draw neat Sketch's where required and Assume suitable data if required and state it clearly.

Section – I

Q.2 Design the dog-legged type staircase for a residential building using following data floor to floor height = 3.3 m, No. of flight per floor = 2, size of steps = 150 mm riser and 280 mm tread, live load is 3 kN/m^2 and assume width of stair is 1.0 m. Use M20 concrete and Fe415 steel. The stair is supported at top and bottom risers by beam spanning parallel with risers at the landing slab on either side. **08**

Q.3 Design a rectangular footing for column axially loaded of size 230 mm x 500 mm carrying 1300kN load. The SBC of soil is 190 kN/m^2. Use M20 concrete and Fe415 steel. Sketch the details of reinforcement. **10**

Q.4 Design the stem slab of a cantilever retaining wall, if the overall height is 4.5m. SBC of soil is 180 kN/m^2, angle of repose of the soil is 30° and unit weight of soil 20 kN/m^3, width of the slab base is 3.2 m, toe projection is 0.6 m. Use M25 concrete and Fe500 steel. **10**

Q.5 Design a circular water tank having capacity 50000 liters, resting on firm ground is free at top and bottom is fixed. Depth of water 3.3 m, assume free board of 200 mm and solve by IS code method. Use M20 concrete and Fe415 steel. **10**

Section – II

Q.6 A prestressed concrete beam 230 mm x 750 mm is prestressed by a parabolic cable located at an eccentricity of 120mm at mid span and zero at the supports. If the beam has a span of 10 m and carries a uniformly distributed load of 5 kN/m, find the effective prestressing force necessary in the cable for zero shear stress in the beam. For this condition find the stress at mid span section. Concrete weighs at 25 kN/m^3 **08**

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Q.8 Design PSC I section beam for the following span = 15m, superimposed load of 36 kN/m, cube strength of concrete at 28 days is 35kN/m^2, safe stress in concrete at transfer = 0.5 fck, allowable tensile stress in concrete is 0.129√(fck), safe stress in steel is 60 % of ultimate stress, total loss of stress 18%, ultimate stress in steel 1450 MPa. **10**

Q.9 A prestressed concrete beam 400 mm wide and 800 mm deep. Determine the horizontal, vertical and shear stresses at the point Q(600,600), with bottom of the end block is origin. Find also the principal stresses at Q, the tendons are placed at an eccentricity of 90 mm. The anchor plate is 300 mm wide and 200 mm deep. The prestressing force is 1150 kN. **10**

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Concrete Structures II (BTN01603)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

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a) H/15 b) H/12
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5) Which IS code governs the design of water tanks? **01**

a) IS 456 b) IS 3370
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6) As per IS 1343 the minimum grade of concrete to be used for post-tensioned and pre-tensioned structure elements are respectively. **01**

a) M20 for both
b) M40 and M30
c) M15 and M20
d) M30 and M40

7) If C is creep coefficient, f is original prestress in concrete, m is modular ratio, E is Young's modulus of steel and e is shrinkage strain, the combined effect of creep and shrinkage is _____ **01**

a) $(1 - C)mf - eE$
b) $(C - 1)mf + eE$
c) $(C - 1)mf - eE$
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8) A symmetrical prestressed concrete section has an eccentricity of 50 mm and prestress force of 500 kN. The bending moment due to prestressing is _____ **01**

a) 20 kNm
b) 25 kNm
c) 30 kNm
d) 35 kNm

9) The minimum head room over a stair must be _____ **01**

a) 2000 mm
b) 2100 mm
c) 2050 mm
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10) For footing the minimum cover for the reinforcement shall be _____ **01**

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b) 50 mm
c) 25 mm
d) 40 mm

11) In staircase design find weight of waist slab per meter run if thickness of slab is 280 mm, Riser of 150 mm and tread of 300 mm and unit weight of concrete is 2500 kg/m^3 **02**

a) 7.83 kN/m
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c) 8.57 kN/m
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12) A pressed concrete rectangular beam size 300 mm x 900 mm is prestressed with an initial 350 mm at midspan. Stress at top beam section due to prestress alone in N/mm^2 _____ **02**

a) -3.46(tension)
b) 2.59(compression)
c) zero
d) 864(compression)

Seat No.	

Set | S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Design of Concrete Structures II (BTN01603)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions remaining of the questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions.
3) Use of IS 456, IS 1343 and IS 3370 part IV and non-programmable calculator is allowed.
4) Draw neat Sketch's where required and Assume suitable data if required and state it clearly.

Section – I

Q.2 Design the dog-legged type staircase for a residential building using following data floor to floor height = 3.3 m, No. of flight per floor = 2, size of steps = 150 mm riser and 280 mm tread, live load is 3 kN/m^2 and assume width of stair is 1.0 m. Use M20 concrete and Fe415 steel. The stair is supported at top and bottom risers by beam spanning parallel with risers at the landing slab on either side. **08**

Q.3 Design a rectangular footing for column axially loaded of size 230 mm x 500 mm carrying 1300kN load. The SBC of soil is 190 kN/m^2. Use M20 concrete and Fe415 steel. Sketch the details of reinforcement. **10**

Q.4 Design the stem slab of a cantilever retaining wall, if the overall height is 4.5m. SBC of soil is 180 kN/m^2, angle of repose of the soil is 30° and unit weight of soil 20 kN/m^3, width of the slab base is 3.2 m, toe projection is 0.6 m. Use M25 concrete and Fe500 steel. **10**

Q.5 Design a circular water tank having capacity 50000 liters, resting on firm ground is free at top and bottom is fixed. Depth of water 3.3 m, assume free board of 200 mm and solve by IS code method. Use M20 concrete and Fe415 steel. **10**

Section – II

Q.6 A prestressed concrete beam 230 mm x 750 mm is prestressed by a parabolic cable located at an eccentricity of 120mm at mid span and zero at the supports. If the beam has a span of 10 m and carries a uniformly distributed load of 5 kN/m, find the effective prestressing force necessary in the cable for zero shear stress in the beam. For this condition find the stress at mid span section. Concrete weighs at 25 kN/m^3 **08**

Q.7 A Pretensioned concrete beam 230 mm x 500 mm has a span of 12m. The beam is prestressed by steel wires of area 350mm^2 provided at a uniform eccentricity of 60 mm with an initial prestress of 1200 N/mm^2. Determine the percentage loss of stress in the wires. Take Es = 210 kN/mm^2, Ec = 35 kN/mm^2, Relaxation of steel stress = 5% of the initial stress. Ultimate creep strain = 45×10^{-6} mm/mm per N/mm^2, shrinkage of concrete = 300×10^{-6}. **10**

Q.8 Design PSC I section beam for the following span = 15m, superimposed load of 36 kN/m, cube strength of concrete at 28 days is 35kN/m^2, safe stress in concrete at transfer = 0.5 fck, allowable tensile stress in concrete is 0.129√(fck), safe stress in steel is 60 % of ultimate stress, total loss of stress 18%, ultimate stress in steel 1450 MPa. **10**

Q.9 A prestressed concrete beam 400 mm wide and 800 mm deep. Determine the horizontal, vertical and shear stresses at the point Q(600,600), with bottom of the end block is origin. Find also the principal stresses at Q, the tendons are placed at an eccentricity of 90 mm. The anchor plate is 300 mm wide and 200 mm deep. The prestressing force is 1150 kN. **10**

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (BTN01604)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) _____ is the process of taking the necessary preventive and corrective action to ensure that organizational objectives are achieved as effectively as possible.
a) Planning b) Staffing
c) Controlling d) Directing

2) Planning is _____.
a) Setting goal b) SWOT analysis
c) Selection of best alternative d) All of these

3) In case of infeasible solution to linear programming, the infeasibility depends on _____.
a) Objective function b) Constraints
c) Both a) and b) d) None of these

4) Graphical method to solve linear programming problem is commonly used if _____.
a) no. of decision variables is two
b) no. of decision variables is three
c) no. of decision variables is four
d) no. of decision variables is one

5) A game where in the gain of one player equals to loss of other is called _____ game.
a) Zero sum b) Three persons
c) 2 x n game d) M x 2 game

6) Games without a saddle point require players to play _____.
a) Pure strategy b) Mixed strategy
c) Market strategy d) None

7) Benefits of lean production may include: _____.
a) It enables a company to deliver on demand,
b) Minimize inventory, maximize the use of multi-skilled employees
c) Flatten the management structure and focus resources where they are most effective
d) All of the above

8) Lean construction includes _____.
a) adding value added things b) removing non value added things
c) minimizing the waste d) all of the above

9) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum b) Average
c) Safety d) Standard

10) The penalty costs that are incurred as a result of running out of stocks are known as _____cost.
a) Procurement b) Stock out
c) Carrying d) Holding

11) Average chart & range chart are for _____.
a) Attributes b) Variables
c) Both d) None

12) Sampling is the process of determining the quality of a _____.
a) Large group from a small part
b) Small part from a large group
c) Small group from a small part
d) Small group at random

13) An enterprise is a group of people with _____.
a) common goal
b) separate goal for each department
c) multiple goals
d) two or more goals

14) Which of the following describes an ERP system?
a) ERP systems provide a foundation for collaboration between departments
b) ERP systems enable people in different business areas to communicate
c) ERP systems have been widely adopted in large organisations to store critical knowledge used to make the decisions that drive the organisation's performance
d) All of the above

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (BTN01604)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt any three. **24**

a) Write a short note on.
i) Explain difference between Formal organization and Informal organization
ii) Communication in management

b) Obtain the initial basic feasible solution of a transportation problem whose cost and requirement table is as below, solve by the North West corner Method.

Origin/ Destination	D1	D2	D3	Supply
O1	2	7	4	5
O2	3	3	1	8
O3	5	4	7	7
O4	1	6	2	14
Demand	**7**	**9**	**18**	

c) Solve by,
i) Hurwicz criterion Assume A=0.7
ii) Laplace Criterion

ALTERNATIVES	STATE OF NATURE (PRODUCT DEMAND)			
	HIGH	MODERATE	LOW	NIL
EXPAND	4000	-100	6000	18000
CONSTRUCT	20000	5000	400	0
SUBCONTRACT	20000	15000	-2000	1000

d) Write the answers below.
i) What is the meaning of lean Construction?
ii) Why is there a need for Productivity measurement and Improvement?

e) Solve the Assignment problem by using Assignment (Hungarian Method), Assign the jobs for different machines so as to minimize the total cost.

Job	Machine			
	A	**B**	**C**	**D**
1	8	26	17	11
2	13	28	4	26
3	38	19	18	15
4	19	26	24	10

Q.3 Attempt the following (Any One). **04**

a) Explain functions of Management that make the management process.

b) Consider payoff matrix with respect to player A & solve it optimally, Find the value of Game & strategies of player A and Player B

		Player B	
		1	2
Player A	1	6	9
	2	8	4

Section – II

Q.4 Attempt the following (Any Three) **24**

a) Write a short Note on
- i) EOQ
- ii) Safety Stock required on construction site.

b) Write a short note on Control charts $(\bar{x}, R, p, c)$ in statistical quality control.

c) Find the A Class, B Class and C Class Material, for following and draw the Graph.

Item Number	Annual Consumption in unit	Unit Price in Rs
1	700	50
2	2400	30
3	150	100
4	60	220
5	3800	15
6	4000	5
7	6000	2
8	300	35
9	30	80
10	2900	4

d) Write a short note on Construction ERP and safety measures in ERP.

e) A company manufactures screws to a nominal diameter 0.500 ± 0.030cm. Five samples were taken randomly from a manufactured lot and three measurements were taken for each sample at different lengths. The reading table is as below
Calculate the control limits on $\bar{x}$ chart and Draw $\bar{x}$ chart.
Assume n = 3, A2 = 1.02, D4 = 2.57, D3 = 0

Sample no	Measurements per sample cm (x)		
	1	2	3
1	0.488	0.489	0.505
2	0.494	0.495	0.499
3	0.498	0.515	0.487
4	0.492	0.509	0.514
5	0.490	0.508	0.499

Q.5 Write a short note on any one of following. **04**

a) Break even analysis

b) What are the advantages and disadvantages of ERP?

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (BTN01604)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Lean construction includes _____.
a) adding value added things b) removing non value added things
c) minimizing the waste d) all of the above

2) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum b) Average
c) Safety d) Standard

3) The penalty costs that are incurred as a result of running out of stocks are known as _____cost.
a) Procurement b) Stock out
c) Carrying d) Holding

4) Average chart & range chart are for _____.
a) Attributes b) Variables
c) Both d) None

5) Sampling is the process of determining the quality of a _____.
a) Large group from a small part
b) Small part from a large group
c) Small group from a small part
d) Small group at random

6) An enterprise is a group of people with _____.
a) common goal
b) separate goal for each department
c) multiple goals
d) two or more goals

7) Which of the following describes an ERP system?
a) ERP systems provide a foundation for collaboration between departments
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c) ERP systems have been widely adopted in large organisations to store critical knowledge used to make the decisions that drive the organisation's performance
d) All of the above

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10) In case of infeasible solution to linear programming, the infeasibility depends on _____.
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Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (BTN01604)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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4) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt any three. **24**

a) Write a short note on.
i) Explain difference between Formal organization and Informal organization
ii) Communication in management

b) Obtain the initial basic feasible solution of a transportation problem whose cost and requirement table is as below, solve by the North West corner Method.

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c) Solve by,
i) Hurwicz criterion Assume A=0.7
ii) Laplace Criterion

ALTERNATIVES	STATE OF NATURE (PRODUCT DEMAND)			
	HIGH	MODERATE	LOW	NIL
EXPAND	4000	-100	6000	18000
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SUBCONTRACT	20000	15000	-2000	1000

d) Write the answers below.
i) What is the meaning of lean Construction?
ii) Why is there a need for Productivity measurement and Improvement?

e) Solve the Assignment problem by using Assignment (Hungarian Method), Assign the jobs for different machines so as to minimize the total cost.

Job	Machine			
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Q.3 Attempt the following (Any One). **04**

a) Explain functions of Management that make the management process.

b) Consider payoff matrix with respect to player A & solve it optimally, Find the value of Game & strategies of player A and Player B

		Player B	
		1	2
Player A	1	6	9
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Section – II

Q.4 Attempt the following (Any Three) **24**

a) Write a short Note on
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- ii) Safety Stock required on construction site.

b) Write a short note on Control charts $(\bar{x}, R, p, c)$ in statistical quality control.

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Q.5 Write a short note on any one of following. **04**

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b) What are the advantages and disadvantages of ERP?

Seat No.	

Set R

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (BTN01604)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Average chart & range chart are for _____.
a) Attributes b) Variables
c) Both d) None

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b) Stock out
c) Carrying
d) Holding

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (BTN01604)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Attempt any three. **24**

a) Write a short note on.
i) Explain difference between Formal organization and Informal organization
ii) Communication in management

b) Obtain the initial basic feasible solution of a transportation problem whose cost and requirement table is as below, solve by the North West corner Method.

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Demand	**7**	**9**	**18**	

c) Solve by,
i) Hurwicz criterion Assume A=0.7
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ALTERNATIVES	STATE OF NATURE (PRODUCT DEMAND)			
	HIGH	MODERATE	LOW	NIL
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d) Write the answers below.
i) What is the meaning of lean Construction?
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a) Explain functions of Management that make the management process.

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		1	2
Player A	1	6	9
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Section – II

Q.4 Attempt the following (Any Three) **24**

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d) Write a short note on Construction ERP and safety measures in ERP.

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Q.5 Write a short note on any one of following. **04**

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Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (BTN01604)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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14) A game where in the gain of one player equals to loss of other is called _____ game.
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c) 2 x n game d) M x 2 game

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (BTN01604)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
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Section – I

Q.2 Attempt any three. **24**

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EXPAND	4000	-100	6000	18000
CONSTRUCT	20000	5000	400	0
SUBCONTRACT	20000	15000	-2000	1000

d) Write the answers below.
i) What is the meaning of lean Construction?
ii) Why is there a need for Productivity measurement and Improvement?

e) Solve the Assignment problem by using Assignment (Hungarian Method), Assign the jobs for different machines so as to minimize the total cost.

Job	Machine			
	A	**B**	**C**	**D**
1	8	26	17	11
2	13	28	4	26
3	38	19	18	15
4	19	26	24	10

Q.3 Attempt the following (Any One). **04**

a) Explain functions of Management that make the management process.

b) Consider payoff matrix with respect to player A & solve it optimally, Find the value of Game & strategies of player A and Player B

		Player B	
		1	2
Player A	1	6	9
	2	8	4

Section – II

Q.4 Attempt the following (Any Three) **24**

a) Write a short Note on
- i) EOQ
- ii) Safety Stock required on construction site.

b) Write a short note on Control charts $(\bar{x}, R, p, c)$ in statistical quality control.

c) Find the A Class, B Class and C Class Material, for following and draw the Graph.

Item Number	Annual Consumption in unit	Unit Price in Rs
1	700	50
2	2400	30
3	150	100
4	60	220
5	3800	15
6	4000	5
7	6000	2
8	300	35
9	30	80
10	2900	4

d) Write a short note on Construction ERP and safety measures in ERP.

e) A company manufactures screws to a nominal diameter 0.500 ± 0.030cm. Five samples were taken randomly from a manufactured lot and three measurements were taken for each sample at different lengths. The reading table is as below
Calculate the control limits on $\bar{x}$ chart and Draw $\bar{x}$ chart.
Assume n = 3, A2 = 1.02, D4 = 2.57, D3 = 0

Sample no	Measurements per sample cm (x)		
	1	2	3
1	0.488	0.489	0.505
2	0.494	0.495	0.499
3	0.498	0.515	0.487
4	0.492	0.509	0.514
5	0.490	0.508	0.499

Q.5 Write a short note on any one of following. **04**

a) Break even analysis

b) What are the advantages and disadvantages of ERP?

SLR-BD-320

Seat No.	

Set P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Railway, Airport & Harbour Engineering (BTN01605)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. 14

1) Pandrol clips or Elastic Clips are used for _____.
a) Holding the rails to the concrete sleepers
b) Fixing the Double-headed rails to the wooden sleepers
c) Fixing the Bull-headed rails to the wooden sleepers
d) Fixing the Flat-footed rails to the cast iron sleepers

2) For a sleeper density of (n+5), number of sleepers required for constructing a Broad Gauge (BG) railway track of length 650m is _____.
a) 975 b) 918
c) 900 d) 980

3) The gauge is the distance between _____.
a) Running faces of rails
b) Outer faces of the rails
c) Center to center of rails
d) Half of center to center distance of rails

4) What is the gauge of the BG (Broad Gauge) railway track considered?
a) 0.72m b) 1.676m
c) 1.0m d) 1.50m

5) Longitudinal movement of rails with respect to sleepers is called?
a) Coning of wheels b) Creep of rails
c) Wear of rails d) Tilting of rails

6) The angle between the gauge faces of the stock rail and tongue rail is called?
a) Switch angle b) Angle of crossing
c) Angle of turnout d) None of these

7) Which one of the following types of steel is used in the manufacturing of metro and mono rails?

a) Mild Steel b) Cast steel
c) Manganese Steel d) Bessemer Steel

8) The sleepers in the form of two bowls placed under each rail and connected together bar, are known as?

a) Plate sleepers b) Duplex sleepers
c) Pot sleepers d) Box Sleepers

9) The magnetic azimuth of one end of a runway is 80^0 measured clockwise from the magnetic north. The other end of the runway will be numbered as _____.

a) 16 b) 24
c) 26 d) 8

10) Total correction for elevation and temperature for a runway should not be more than?

a) 15% b) 20%
c) 25% d) 35%

11) Which of the following is used for servicing and repairs of the aircraft?

a) Apron b) Hanger
c) Terminal Building d) Holding Apron

12) The phenomenon of movement and deposition of sand in a zig-zag style due to drifting of sand in the vicinity of coast is called _____.

a) Littoral drift b) Sedimentation
c) Beach drift d) Trough action

13) _____ is a structure constructed at the tip of a breakwater near the harbour entrance.

a) Dolphin b) Wharf
c) Pier heads d) Jetties

14) Slip is the space of water area between two _____.

a) Adjacent fenders b) Adjacent piers
c) Adjacent jetties d) Adjacent dolphins

Seat No.	

Set | P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Railway, Airport & Harbour Engineering (BTN01605)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Answer any two questions. (each carry 7 marks) **14**

a) List out the various gauges prevailing in India with their gauge widths. What factors govern the selection of a suitable gauge? Discuss.

b) Discuss the necessity and effects of the coning of wheels and tilting of rails.

c) What do you understand by a. railway track or a permanent way? Mention the requirements of an ideal permanent way.

d) What are the functions of rails? Name the various types of rails in use. Which one is widely used now? How is the weight of a rail section usually determined?

Q.3 Answer any two questions. (each carry 7 marks) **14**

a) If the ruling gradient is 1 in 150 on a particular section of Broad Gauge and at the same a curve of. 4 degrees is situated on this ruling gradient, what should be the allowable ruling gradient?

b) Calculate the maximum permissible load that a BG locomotive with three pairs of driving wheels bearing an axle load of 22 tonnes each can pull on a straight level track at a speed of 80 km/h. Also, calculate the reduction in speed if the train has to run on a rising gradient of 1 in 200. Assume the coefficient of friction to be 0.2.

c) Differentiate between the following:
i) Reception signals and departure signals
ii) Semaphore signal and warner signal
iii) Repeating signal and co-acting signal

d) Illustrate the working principle of key interlocking and mechanical interlocking with merits and de-merits.

Section – II

Q.4 Answer any two questions. (each carry 7 marks) **14**

a) What are the factors which influence the location of an airport?

b) Explain the importance of Airport Planning.

c) Calculate the actual length of the runway from the following data:
Airport Elevation: R.L-100
Airport Reference Temperature-28^0C
Basic Runway Length-600m
Highest Point along the length-R. L-98.2
Lowest Point along the length. R.L-95.2

d) The longitudinal section of the runway provides the following data:

End to end of runway (m)	Gradient (%)
0 to 200	+ 1
200 to 600	-1
600 to 1200	+0.8
1200 to 1600	+0.2

Calculate the effective gradient of the runway.

Q.5 Answer any two questions. (each carry 7 marks) **14**

a) Design an exit taxiway joining a runway and a parallel main taxiway. The total angle, of turn is 35^0 and the maximum turn-off speed is 80 kmph. Assume the radius of entrance curve =731m, runway width=45m, and taxiway width=22.5m. Draw a neat sketch showing all the design elements. Assume the separation clearance as 217.75m.

b) Draw a neat sketch of the dry dock (plan and section) label all components, and explain the working principle of the dry dock.

c) What are the fenders? Why are they used? Describe various types of fenders with sketches.

d) Draw a typical layout of an artificial harbour and explain briefly, the function of the Jetty, Quay walls, and turning basin.

Seat No.	

Set **Q**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Railway, Airport & Harbour Engineering (BTN01605)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) The sleepers in the form of two bowls placed under each rail and connected together bar, are known as?
a) Plate sleepers b) Duplex sleepers
c) Pot sleepers d) Box Sleepers

2) The magnetic azimuth of one end of a runway is 80^0 measured clockwise from the magnetic north. The other end of the runway will be numbered as _____.
a) 16 b) 24
c) 26 d) 8

3) Total correction for elevation and temperature for a runway should not be more than?
a) 15% b) 20%
c) 25% d) 35%

4) Which of the following is used for servicing and repairs of the aircraft?
a) Apron b) Hanger
c) Terminal Building d) Holding Apron

5) The phenomenon of movement and deposition of sand in a zig-zag style due to drifting of sand in the vicinity of coast is called _____.
a) Littoral drift b) Sedimentation
c) Beach drift d) Trough action

6) _____ is a structure constructed at the tip of a breakwater near the harbour entrance.
a) Dolphin b) Wharf
c) Pier heads d) Jetties

7) Slip is the space of water area between two _____.
a) Adjacent fenders b) Adjacent piers
c) Adjacent jetties d) Adjacent dolphins

8) Pandrol clips or Elastic Clips are used for _____.
a) Holding the rails to the concrete sleepers
b) Fixing the Double-headed rails to the wooden sleepers
c) Fixing the Bull-headed rails to the wooden sleepers
d) Fixing the Flat-footed rails to the cast iron sleepers

9) For a sleeper density of (n+5), number of sleepers required for constructing a Broad Gauge (BG) railway track of length 650m is _____.
a) 975 b) 918
c) 900 d) 980

10) The gauge is the distance between _____.
a) Running faces of rails
b) Outer faces of the rails
c) Center to center of rails
d) Half of center to center distance of rails

11) What is the gauge of the BG (Broad Gauge) railway track considered?
a) 0.72m b) 1.676m
c) 1.0m d) 1.50m

12) Longitudinal movement of rails with respect to sleepers is called?
a) Coning of wheels b) Creep of rails
c) Wear of rails d) Tilting of rails

13) The angle between the gauge faces of the stock rail and tongue rail is called?
a) Switch angle b) Angle of crossing
c) Angle of turnout d) None of these

14) Which one of the following types of steel is used in the manufacturing of metro and mono rails?
a) Mild Steel b) Cast steel
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Seat No.	

Set **Q**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Railway, Airport & Harbour Engineering (BTN01605)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Answer any two questions. (each carry 7 marks) **14**

a) List out the various gauges prevailing in India with their gauge widths. What factors govern the selection of a suitable gauge? Discuss.

b) Discuss the necessity and effects of the coning of wheels and tilting of rails.

c) What do you understand by a. railway track or a permanent way? Mention the requirements of an ideal permanent way.

d) What are the functions of rails? Name the various types of rails in use. Which one is widely used now? How is the weight of a rail section usually determined?

Q.3 Answer any two questions. (each carry 7 marks) **14**

a) If the ruling gradient is 1 in 150 on a particular section of Broad Gauge and at the same a curve of. 4 degrees is situated on this ruling gradient, what should be the allowable ruling gradient?

b) Calculate the maximum permissible load that a BG locomotive with three pairs of driving wheels bearing an axle load of 22 tonnes each can pull on a straight level track at a speed of 80 km/h. Also, calculate the reduction in speed if the train has to run on a rising gradient of 1 in 200. Assume the coefficient of friction to be 0.2.

c) Differentiate between the following:
i) Reception signals and departure signals
ii) Semaphore signal and warner signal
iii) Repeating signal and co-acting signal

d) Illustrate the working principle of key interlocking and mechanical interlocking with merits and de-merits.

Section – II

Q.4 Answer any two questions. (each carry 7 marks) **14**

a) What are the factors which influence the location of an airport?

b) Explain the importance of Airport Planning.

c) Calculate the actual length of the runway from the following data:
Airport Elevation: R.L-100
Airport Reference Temperature-28^0C
Basic Runway Length-600m
Highest Point along the length-R. L-98.2
Lowest Point along the length. R.L-95.2

d) The longitudinal section of the runway provides the following data:

End to end of runway (m)	Gradient (%)
0 to 200	+ 1
200 to 600	-1
600 to 1200	+0.8
1200 to 1600	+0.2

Calculate the effective gradient of the runway.

Q.5 Answer any two questions. (each carry 7 marks) **14**

a) Design an exit taxiway joining a runway and a parallel main taxiway. The total angle, of turn is 35^0 and the maximum turn-off speed is 80 kmph. Assume the radius of entrance curve =731m, runway width=45m, and taxiway width=22.5m. Draw a neat sketch showing all the design elements. Assume the separation clearance as 217.75m.

b) Draw a neat sketch of the dry dock (plan and section) label all components, and explain the working principle of the dry dock.

c) What are the fenders? Why are they used? Describe various types of fenders with sketches.

d) Draw a typical layout of an artificial harbour and explain briefly, the function of the Jetty, Quay walls, and turning basin.

Seat No.	

Set **R**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Railway, Airport & Harbour Engineering (BTN01605)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) Which of the following is used for servicing and repairs of the aircraft?
a) Apron b) Hanger
c) Terminal Building d) Holding Apron

2) The phenomenon of movement and deposition of sand in a zig-zag style due to drifting of sand in the vicinity of coast is called _____.
a) Littoral drift b) Sedimentation
c) Beach drift d) Trough action

3) _____ is a structure constructed at the tip of a breakwater near the harbour entrance.
a) Dolphin b) Wharf
c) Pier heads d) Jetties

4) Slip is the space of water area between two _____.
a) Adjacent fenders b) Adjacent piers
c) Adjacent jetties d) Adjacent dolphins

5) Pandrol clips or Elastic Clips are used for _____.
a) Holding the rails to the concrete sleepers
b) Fixing the Double-headed rails to the wooden sleepers
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d) Fixing the Flat-footed rails to the cast iron sleepers

6) For a sleeper density of (n+5), number of sleepers required for constructing a Broad Gauge (BG) railway track of length 650m is _____.
a) 975 b) 918
c) 900 d) 980

7) The gauge is the distance between _____.
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8) What is the gauge of the BG (Broad Gauge) railway track considered?
a) 0.72m b) 1.676m
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9) Longitudinal movement of rails with respect to sleepers is called?
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c) Wear of rails d) Tilting of rails

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a) Switch angle b) Angle of crossing
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c) Manganese Steel d) Bessemer Steel

12) The sleepers in the form of two bowls placed under each rail and connected together bar, are known as?
a) Plate sleepers b) Duplex sleepers
c) Pot sleepers d) Box Sleepers

13) The magnetic azimuth of one end of a runway is 80^0 measured clockwise from the magnetic north. The other end of the runway will be numbered as _____.
a) 16 b) 24
c) 26 d) 8

14) Total correction for elevation and temperature for a runway should not be more than?
a) 15% b) 20%
c) 25% d) 35%

SLR-BD-320

Seat No.	

Set R

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Railway, Airport & Harbour Engineering (BTN01605)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Answer any two questions. (each carry 7 marks) **14**

a) List out the various gauges prevailing in India with their gauge widths. What factors govern the selection of a suitable gauge? Discuss.

b) Discuss the necessity and effects of the coning of wheels and tilting of rails.

c) What do you understand by a. railway track or a permanent way? Mention the requirements of an ideal permanent way.

d) What are the functions of rails? Name the various types of rails in use. Which one is widely used now? How is the weight of a rail section usually determined?

Q.3 Answer any two questions. (each carry 7 marks) **14**

a) If the ruling gradient is 1 in 150 on a particular section of Broad Gauge and at the same a curve of. 4 degrees is situated on this ruling gradient, what should be the allowable ruling gradient?

b) Calculate the maximum permissible load that a BG locomotive with three pairs of driving wheels bearing an axle load of 22 tonnes each can pull on a straight level track at a speed of 80 km/h. Also, calculate the reduction in speed if the train has to run on a rising gradient of 1 in 200. Assume the coefficient of friction to be 0.2.

c) Differentiate between the following:
i) Reception signals and departure signals
ii) Semaphore signal and warner signal
iii) Repeating signal and co-acting signal

d) Illustrate the working principle of key interlocking and mechanical interlocking with merits and de-merits.

Section – II

Q.4 Answer any two questions. (each carry 7 marks) **14**

a) What are the factors which influence the location of an airport?

b) Explain the importance of Airport Planning.

c) Calculate the actual length of the runway from the following data:
Airport Elevation: R.L-100
Airport Reference Temperature-28^0C
Basic Runway Length-600m
Highest Point along the length-R. L-98.2
Lowest Point along the length. R.L-95.2

d) The longitudinal section of the runway provides the following data:

End to end of runway (m)	Gradient (%)
0 to 200	+ 1
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Calculate the effective gradient of the runway.

Q.5 Answer any two questions. (each carry 7 marks) **14**

a) Design an exit taxiway joining a runway and a parallel main taxiway. The total angle, of turn is 35^0 and the maximum turn-off speed is 80 kmph. Assume the radius of entrance curve =731m, runway width=45m, and taxiway width=22.5m. Draw a neat sketch showing all the design elements. Assume the separation clearance as 217.75m.

b) Draw a neat sketch of the dry dock (plan and section) label all components, and explain the working principle of the dry dock.

c) What are the fenders? Why are they used? Describe various types of fenders with sketches.

d) Draw a typical layout of an artificial harbour and explain briefly, the function of the Jetty, Quay walls, and turning basin.

Seat No.	

Set **S**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Railway, Airport & Harbour Engineering (BTN01605)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) The angle between the gauge faces of the stock rail and tongue rail is called?
a) Switch angle b) Angle of crossing
c) Angle of turnout d) None of these

2) Which one of the following types of steel is used in the manufacturing of metro and mono rails?
a) Mild Steel b) Cast steel
c) Manganese Steel d) Bessemer Steel

3) The sleepers in the form of two bowls placed under each rail and connected together bar, are known as?
a) Plate sleepers b) Duplex sleepers
c) Pot sleepers d) Box Sleepers

4) The magnetic azimuth of one end of a runway is 80^0 measured clockwise from the magnetic north. The other end of the runway will be numbered as _____.
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c) 26 d) 8

5) Total correction for elevation and temperature for a runway should not be more than?
a) 15% b) 20%
c) 25% d) 35%

6) Which of the following is used for servicing and repairs of the aircraft?
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c) Fixing the Bull-headed rails to the wooden sleepers
d) Fixing the Flat-footed rails to the cast iron sleepers

11) For a sleeper density of (n+5), number of sleepers required for constructing a Broad Gauge (BG) railway track of length 650m is _____.
a) 975
b) 918
c) 900
d) 980

12) The gauge is the distance between _____.
a) Running faces of rails
b) Outer faces of the rails
c) Center to center of rails
d) Half of center to center distance of rails

13) What is the gauge of the BG (Broad Gauge) railway track considered?
a) 0.72m
b) 1.676m
c) 1.0m
d) 1.50m

14) Longitudinal movement of rails with respect to sleepers is called?
a) Coning of wheels
b) Creep of rails
c) Wear of rails
d) Tilting of rails

SLR-BD-320

Seat No.		Set	S

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Railway, Airport & Harbour Engineering (BTN01605)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Answer any two questions. (each carry 7 marks) **14**

a) List out the various gauges prevailing in India with their gauge widths. What factors govern the selection of a suitable gauge? Discuss.

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c) What do you understand by a. railway track or a permanent way? Mention the requirements of an ideal permanent way.

d) What are the functions of rails? Name the various types of rails in use. Which one is widely used now? How is the weight of a rail section usually determined?

Q.3 Answer any two questions. (each carry 7 marks) **14**

a) If the ruling gradient is 1 in 150 on a particular section of Broad Gauge and at the same a curve of. 4 degrees is situated on this ruling gradient, what should be the allowable ruling gradient?

b) Calculate the maximum permissible load that a BG locomotive with three pairs of driving wheels bearing an axle load of 22 tonnes each can pull on a straight level track at a speed of 80 km/h. Also, calculate the reduction in speed if the train has to run on a rising gradient of 1 in 200. Assume the coefficient of friction to be 0.2.

c) Differentiate between the following:
i) Reception signals and departure signals
ii) Semaphore signal and warner signal
iii) Repeating signal and co-acting signal

d) Illustrate the working principle of key interlocking and mechanical interlocking with merits and de-merits.

Section – II

Q.4 Answer any two questions. (each carry 7 marks) **14**

a) What are the factors which influence the location of an airport?

b) Explain the importance of Airport Planning.

c) Calculate the actual length of the runway from the following data:
Airport Elevation: R.L-100
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Basic Runway Length-600m
Highest Point along the length-R. L-98.2
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End to end of runway (m)	Gradient (%)
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Calculate the effective gradient of the runway.

Q.5 Answer any two questions. (each carry 7 marks) **14**

a) Design an exit taxiway joining a runway and a parallel main taxiway. The total angle, of turn is 35^0 and the maximum turn-off speed is 80 kmph. Assume the radius of entrance curve =731m, runway width=45m, and taxiway width=22.5m. Draw a neat sketch showing all the design elements. Assume the separation clearance as 217.75m.

b) Draw a neat sketch of the dry dock (plan and section) label all components, and explain the working principle of the dry dock.

c) What are the fenders? Why are they used? Describe various types of fenders with sketches.

d) Draw a typical layout of an artificial harbour and explain briefly, the function of the Jetty, Quay walls, and turning basin.

Seat No.		Set	P

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Disaster Preparedness and Response (BTN01620)

Day & Date: Thursday 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) What does the "P" in "PPE" stand for in disaster management?
a) Protective b) Preparedness
c) Precautionary d) Planning

2) Which of the following is NOT a recommended item for an emergency supply kit?
a) Bottled water b) Non-perishable food items
c) Candles d) Portable radio

3) What does the "R" stand for in the "DRR" framework?
a) Recovery b) Reduction
c) Relief d) Readiness

4) Which disaster is typically associated with a sudden and violent shaking of the ground?
a) Hurricane b) Tsunami
c) Earthquake d) Tornado

5) What is the recommended method for communication during a disaster when mobile networks are down?
a) Text messaging b) Social media
c) Using landline phones d) Sending emails

6) What does the "E" stand for in the "FEMA" agency?
a) Emergency b) Evacuation
c) Environmental d) Efficiency

7) What is the primary purpose of conducting disaster drills?
   a) To evaluate the effectiveness of emergency responders
   b) To ensure that individuals know what to do in an emergency
   c) To simulate a disaster scenario for entertainment
   d) To provide an opportunity for first responders to practice

8) Which of the following is NOT a recommended action during a flood?
   a) Evacuating to higher ground
   b) Driving through flooded areas
   c) Turning off utilities if instructed
   d) Avoiding contact with floodwater

9) What is the purpose of a "safe room" in disaster preparedness?
   a) To store emergency supplies
   b) To provide shelter during a disaster
   c) To act as a communication center
   d) To serve as a meeting point for family members

10) Which organization is responsible for coordinating federal disaster response efforts in the United States?
   a) FEMA
   b) WHO
   c) Red Cross
   d) CDC

11) What should you do if you are indoors during an earthquake?
   a) Run outside immediately
   b) Stand in a doorway
   c) Take cover under a sturdy piece of furniture
   d) Hide in the bathroom

12) What is the primary purpose of a "go bag" in disaster preparedness?
   a) To carry essential items during evacuation
   b) To store emergency supplies at home
   c) To provide shelter during a disaster
   d) To communicate with emergency services

13) Which of the following is a key component of community resilience in disaster management?
   a) Isolation
   b) Dependency
   c) Preparedness
   d) Panic

14) What is the "golden hour" in disaster response?
   a) The first hour following a disaster, when emergency response is critical
   b) The hour of peak disaster impact
   c) The time when disaster recovery efforts begin
   d) The hour when most fatalities occur

SLR-BD-321

Seat No.		Set	P

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Disaster Preparedness and Response (BTN01620)

Day & Date: Thursday 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Q. No. 2,3 and 4
2) Solve any two questions from Q. No. 5,6 and 7
3) Figures to the right indicate full marks.

Section – I

Q.2	**a)**	What are the key elements of an effective disaster preparedness plan?	**07**
	b)	Write a short note on disaster preparedness with special needs.	**07**
Q.3	**a)**	Explain concept and significance of disaster preparedness plan.	**07**
	b)	What role does early warning systems play in disaster preparedness and response?	**07**
Q.4	**a)**	Explain the role of government in disaster preparedness.	**07**
	b)	Explain the role of education and communication in disaster preparedness.	**07**

Section – II

Q.5	**a)**	Explain identification, propositioning and deployment function in disaster response.	**07**
	b)	What are some best practices for coordinating and collaborating with local, national, and international agencies during disaster response efforts?	**07**
Q.6	**a)**	Explain disaster response plan.	**07**
	b)	How can government agencies and NGOs collaborate more effectively in disaster management and relief efforts?	**07**
Q,7	**a)**	Explain impact of media coverage and public communication on disaster preparedness.	**07**
	b)	Explain role of media in disaster mitigation.	**07**

Seat No.		Set	Q

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Disaster Preparedness and Response (BTN01620)

Day & Date: Thursday 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which of the following is NOT a recommended action during a flood?
a) Evacuating to higher ground
b) Driving through flooded areas
c) Turning off utilities if instructed
d) Avoiding contact with floodwater

2) What is the purpose of a "safe room" in disaster preparedness?
a) To store emergency supplies
b) To provide shelter during a disaster
c) To act as a communication center
d) To serve as a meeting point for family members

3) Which organization is responsible for coordinating federal disaster response efforts in the United States?
a) FEMA b) WHO
c) Red Cross d) CDC

4) What should you do if you are indoors during an earthquake?
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c) Take cover under a sturdy piece of furniture
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c) To provide shelter during a disaster
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b) Dependency
c) Preparedness
d) Panic

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d) The hour when most fatalities occur

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c) Candles
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b) Reduction
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d) Readiness

11) Which disaster is typically associated with a sudden and violent shaking of the ground?
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d) Tornado

12) What is the recommended method for communication during a disaster when mobile networks are down?
a) Text messaging
b) Social media
c) Using landline phones
d) Sending emails

13) What does the "E" stand for in the "FEMA" agency?
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c) Environmental
d) Efficiency

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b) To ensure that individuals know what to do in an emergency
c) To simulate a disaster scenario for entertainment
d) To provide an opportunity for first responders to practice

SLR-BD-321

Seat No.	

Set Q

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Disaster Preparedness and Response (BTN01620)

Day & Date: Thursday 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Q. No. 2,3 and 4
2) Solve any two questions from Q. No. 5,6 and 7
3) Figures to the right indicate full marks.

Section – I

Q.2	**a)**	What are the key elements of an effective disaster preparedness plan?	**07**
	b)	Write a short note on disaster preparedness with special needs.	**07**
Q.3	**a)**	Explain concept and significance of disaster preparedness plan.	**07**
	b)	What role does early warning systems play in disaster preparedness and response?	**07**
Q.4	**a)**	Explain the role of government in disaster preparedness.	**07**
	b)	Explain the role of education and communication in disaster preparedness.	**07**

Section – II

Q.5	**a)**	Explain identification, propositioning and deployment function in disaster response.	**07**
	b)	What are some best practices for coordinating and collaborating with local, national, and international agencies during disaster response efforts?	**07**
Q.6	**a)**	Explain disaster response plan.	**07**
	b)	How can government agencies and NGOs collaborate more effectively in disaster management and relief efforts?	**07**
Q,7	**a)**	Explain impact of media coverage and public communication on disaster preparedness.	**07**
	b)	Explain role of media in disaster mitigation.	**07**

Seat No.		Set	R

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Disaster Preparedness and Response (BTN01620)

Day & Date: Thursday 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) What should you do if you are indoors during an earthquake?
a) Run outside immediately
b) Stand in a doorway
c) Take cover under a sturdy piece of furniture
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2) What is the primary purpose of a "go bag" in disaster preparedness?
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3) Which of the following is a key component of community resilience in disaster management?
a) Isolation b) Dependency
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4) What is the "golden hour" in disaster response?
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c) Candles
d) Portable radio

7) What does the "R" stand for in the "DRR" framework?

a) Recovery
b) Reduction
c) Relief
d) Readiness

8) Which disaster is typically associated with a sudden and violent shaking of the ground?

a) Hurricane
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c) Earthquake
d) Tornado

9) What is the recommended method for communication during a disaster when mobile networks are down?

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b) Social media
c) Using landline phones
d) Sending emails

10) What does the "E" stand for in the "FEMA" agency?

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11) What is the primary purpose of conducting disaster drills?

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d) Avoiding contact with floodwater

13) What is the purpose of a "safe room" in disaster preparedness?

a) To store emergency supplies
b) To provide shelter during a disaster
c) To act as a communication center
d) To serve as a meeting point for family members

14) Which organization is responsible for coordinating federal disaster response efforts in the United States?

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b) WHO
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d) CDC

SLR-BD-321

Seat No.		Set	R

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Disaster Preparedness and Response (BTN01620)

Day & Date: Thursday 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Q. No. 2,3 and 4
2) Solve any two questions from Q. No. 5,6 and 7
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Section – I

Q.2	**a)**	What are the key elements of an effective disaster preparedness plan?	**07**
	b)	Write a short note on disaster preparedness with special needs.	**07**
Q.3	**a)**	Explain concept and significance of disaster preparedness plan.	**07**
	b)	What role does early warning systems play in disaster preparedness and response?	**07**
Q.4	**a)**	Explain the role of government in disaster preparedness.	**07**
	b)	Explain the role of education and communication in disaster preparedness.	**07**

Section – II

Q.5	**a)**	Explain identification, propositioning and deployment function in disaster response.	**07**
	b)	What are some best practices for coordinating and collaborating with local, national, and international agencies during disaster response efforts?	**07**
Q.6	**a)**	Explain disaster response plan.	**07**
	b)	How can government agencies and NGOs collaborate more effectively in disaster management and relief efforts?	**07**
Q,7	**a)**	Explain impact of media coverage and public communication on disaster preparedness.	**07**
	b)	Explain role of media in disaster mitigation.	**07**

Seat No.		Set	S

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Disaster Preparedness and Response (BTN01620)

Day & Date: Thursday 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) What does the "E" stand for in the "FEMA" agency?
a) Emergency b) Evacuation
c) Environmental d) Efficiency

2) What is the primary purpose of conducting disaster drills?
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d) Avoiding contact with floodwater

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5) Which organization is responsible for coordinating federal disaster response efforts in the United States?
a) FEMA b) WHO
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d) Panic

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c) Precautionary
d) Planning

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c) Candles
d) Portable radio

12) What does the "R" stand for in the "DRR" framework?
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c) Relief
d) Readiness

13) Which disaster is typically associated with a sudden and violent shaking of the ground?
a) Hurricane
b) Tsunami
c) Earthquake
d) Tornado

14) What is the recommended method for communication during a disaster when mobile networks are down?
a) Text messaging
b) Social media
c) Using landline phones
d) Sending emails

SLR-BD-321

Seat No.		Set	S

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Disaster Preparedness and Response (BTN01620)

Day & Date: Thursday 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Q. No. 2,3 and 4
2) Solve any two questions from Q. No. 5,6 and 7
3) Figures to the right indicate full marks.

Section – I

Q.2	**a)**	What are the key elements of an effective disaster preparedness plan?	**07**
	b)	Write a short note on disaster preparedness with special needs.	**07**
Q.3	**a)**	Explain concept and significance of disaster preparedness plan.	**07**
	b)	What role does early warning systems play in disaster preparedness and response?	**07**
Q.4	**a)**	Explain the role of government in disaster preparedness.	**07**
	b)	Explain the role of education and communication in disaster preparedness.	**07**

Section – II

Q.5	**a)**	Explain identification, propositioning and deployment function in disaster response.	**07**
	b)	What are some best practices for coordinating and collaborating with local, national, and international agencies during disaster response efforts?	**07**
Q.6	**a)**	Explain disaster response plan.	**07**
	b)	How can government agencies and NGOs collaborate more effectively in disaster management and relief efforts?	**07**
Q,7	**a)**	Explain impact of media coverage and public communication on disaster preparedness.	**07**
	b)	Explain role of media in disaster mitigation.	**07**

SLR-BD-322

Seat No.		Set	P

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Roads and Highway Project Development (BTN01621)

Day & Date: Thursday, 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The most important factor that is required for road geometrics is _____.
a) Speed of Vehicle b) Weight of Vehicle
c) Economy of construction d) Aesthetics of Road

2) Raising the outer edge of pavement with respect to inner edge on horizontal curve is known as _____.
a) Kerb b) Camber
c) Superelevation d) SSD

3) The report that includes all the works including soil, bridges, topography, material studies and drainage studies is called as ____.
a) Feasibility report b) Detailed project report
c) Survey report d) Primary report

4) Highway should be planned for _____
a) Present requirements b) Traffic developments
c) Traffic studies d) Present and future development

5) Which of the following will come under the manual method of road survey?
a) GIS b) Windshield survey
c) Walking Survey d) Floating Car Survey

6) Which of the following is included in the road project survey report?
a) Location b) Terrain
c) Windspeed d) Slope

7) The most raised portion of the pavement is called _____.
a) Angle of Banking b) Widening
c) Crown d) Shoulder

8) The extra width of pavement is provided on _____.
a) Horizontal Curve b) Summit Curve
c) Vertical Curve d) Valley Curve

9) The main purpose of providing camber is _____.
a) To drain off rain water b) Skid resistance
c) To maintain Equilibrium d) Geometric design purpose

10) For small projects which type of method is used for the calculation of project time?
a) Milestone chart b) PERT
c) Bar chart d) CPM

11) EIA is study of probable change in socio economic and _____.
a) biophysical b) geological
c) hydrological d) potential

12) EIA is _____ and _____ environmental impacts assessment.
a) social and benefit b) social and adverse
c) beneficial and adverse d) None of above

13) In India, the type of traffic assumed to design pavements is _____.
a) Low Traffic Flow b) Heavy Traffic Flow
c) Mixed Traffic Flow d) Very Low Traffic Flow

14) Los Angeles testing machine is used to conduct _____.
a) Abrasion test b) Impact test
c) Attrition test d) Crushing strength test

Seat No.	

Set **P**

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Roads and Highway Project Development (BTN01621)

Day & Date: Thursday, 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Answer any three **24**

a) How the GIS is used for Highway Projects from planning stage to construction stage?
b) Write in detail about 'Maharashtra Samruddhi Mahamarg' with its Concept, Project Benefits & Project Details.
c) Design the rate of superelevation for a horizontal highway curve of radius 500 meter and design speed 100 kmph.
d) How the traffic surveys & Traffic forecasting are required for assessing roadway requirements?
e) What is importance of 'Highway Drainage'? Elaborate its different types.

Q.3 Write short note (Any One) **04**

a) Street Lighting
b) Origin- destination characteristics and studies

Section – II

Q.4 Answer any three. **24**

a) Write a Tender evaluation process in detail regarding Highway Projects.
b) What is EIA? Explain stepwise procedure for its assessment?
c) Explain stepwise procedure for construction of flexible pavement road.
d) Elaborate 'implementation of environment management plan'.
e) Distinguish between Flexible Pavement & Rigid Pavement.

Q.5 Write short note (Any One) **04**

a) BOQ
b) Preparation of tender documents

Seat No.		Set	Q

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Roads and Highway Project Development (BTN01621)

Day & Date: Thursday, 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The extra width of pavement is provided on _____.
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4) EIA is study of probable change in socio economic and _____.
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5) EIA is _____ and _____ environmental impacts assessment.
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6) In India, the type of traffic assumed to design pavements is _____.
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c) Economy of construction
d) Aesthetics of Road

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a) Kerb
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10) The report that includes all the works including soil, bridges, topography, material studies and drainage studies is called as ____.

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d) Shoulder

Seat No.	

Set **Q**

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Roads and Highway Project Development (BTN01621)

Day & Date: Thursday, 12-June-2025 Max. Marks: 56
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Section – I

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Section – II

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e) Distinguish between Flexible Pavement & Rigid Pavement.

Q.5 Write short note (Any One) **04**

a) BOQ
b) Preparation of tender documents

Seat No.		Set	R

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Roads and Highway Project Development (BTN01621)

Day & Date: Thursday, 12-June-2025 Max. Marks: 70
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3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) EIA is study of probable change in socio economic and _____.
a) biophysical b) geological
c) hydrological d) potential

2) EIA is _____ and _____ environmental impacts assessment.
a) social and benefit b) social and adverse
c) beneficial and adverse d) None of above

3) In India, the type of traffic assumed to design pavements is _____.
a) Low Traffic Flow b) Heavy Traffic Flow
c) Mixed Traffic Flow d) Very Low Traffic Flow

4) Los Angeles testing machine is used to conduct _____.
a) Abrasion test b) Impact test
c) Attrition test d) Crushing strength test

5) The most important factor that is required for road geometrics is _____.
a) Speed of Vehicle b) Weight of Vehicle
c) Economy of construction d) Aesthetics of Road

6) Raising the outer edge of pavement with respect to inner edge on horizontal curve is known as _____.
a) Kerb b) Camber
c) Superelevation d) SSD

7) The report that includes all the works including soil, bridges, topography, material studies and drainage studies is called as ____.
a) Feasibility report b) Detailed project report
c) Survey report d) Primary report

8) Highway should be planned for _____
a) Present requirements b) Traffic developments
c) Traffic studies d) Present and future development

9) Which of the following will come under the manual method of road survey?
a) GIS b) Windshield survey
c) Walking Survey d) Floating Car Survey

10) Which of the following is included in the road project survey report?
a) Location b) Terrain
c) Windspeed d) Slope

11) The most raised portion of the pavement is called _____.
a) Angle of Banking b) Widening
c) Crown d) Shoulder

12) The extra width of pavement is provided on _____.
a) Horizontal Curve b) Summit Curve
c) Vertical Curve d) Valley Curve

13) The main purpose of providing camber is _____.
a) To drain off rain water b) Skid resistance
c) To maintain Equilibrium d) Geometric design purpose

14) For small projects which type of method is used for the calculation of project time?
a) Milestone chart b) PERT
c) Bar chart d) CPM

Seat No.	

Set **R**

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Roads and Highway Project Development (BTN01621)

Day & Date: Thursday, 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Answer any three **24**

a) How the GIS is used for Highway Projects from planning stage to construction stage?
b) Write in detail about 'Maharashtra Samruddhi Mahamarg' with its Concept, Project Benefits & Project Details.
c) Design the rate of superelevation for a horizontal highway curve of radius 500 meter and design speed 100 kmph.
d) How the traffic surveys & Traffic forecasting are required for assessing roadway requirements?
e) What is importance of 'Highway Drainage'? Elaborate its different types.

Q.3 Write short note (Any One) **04**

a) Street Lighting
b) Origin- destination characteristics and studies

Section – II

Q.4 Answer any three. **24**

a) Write a Tender evaluation process in detail regarding Highway Projects.
b) What is EIA? Explain stepwise procedure for its assessment?
c) Explain stepwise procedure for construction of flexible pavement road.
d) Elaborate 'implementation of environment management plan'.
e) Distinguish between Flexible Pavement & Rigid Pavement.

Q.5 Write short note (Any One) **04**

a) BOQ
b) Preparation of tender documents

Seat No.		Set	S

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Roads and Highway Project Development (BTN01621)

Day & Date: Thursday, 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which of the following is included in the road project survey report?
a) Location b) Terrain
c) Windspeed d) Slope

2) The most raised portion of the pavement is called _____.
a) Angle of Banking b) Widening
c) Crown d) Shoulder

3) The extra width of pavement is provided on _____.
a) Horizontal Curve b) Summit Curve
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a) To drain off rain water b) Skid resistance
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7) EIA is _____ and _____ environmental impacts assessment.
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c) beneficial and adverse d) None of above

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a) Low Traffic Flow b) Heavy Traffic Flow
c) Mixed Traffic Flow d) Very Low Traffic Flow

9) Los Angeles testing machine is used to conduct _____.
a) Abrasion test b) Impact test
c) Attrition test d) Crushing strength test

10) The most important factor that is required for road geometrics is _____.
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c) Economy of construction d) Aesthetics of Road

11) Raising the outer edge of pavement with respect to inner edge on horizontal curve is known as _____.
a) Kerb b) Camber
c) Superelevation d) SSD

12) The report that includes all the works including soil, bridges, topography, material studies and drainage studies is called as ____.
a) Feasibility report b) Detailed project report
c) Survey report d) Primary report

13) Highway should be planned for _____
a) Present requirements b) Traffic developments
c) Traffic studies d) Present and future development

14) Which of the following will come under the manual method of road survey?
a) GIS b) Windshield survey
c) Walking Survey d) Floating Car Survey

SLR-BD-322

Seat No.		Set	S

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Roads and Highway Project Development (BTN01621)

Day & Date: Thursday, 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Answer any three **24**

a) How the GIS is used for Highway Projects from planning stage to construction stage?
b) Write in detail about 'Maharashtra Samruddhi Mahamarg' with its Concept, Project Benefits & Project Details.
c) Design the rate of superelevation for a horizontal highway curve of radius 500 meter and design speed 100 kmph.
d) How the traffic surveys & Traffic forecasting are required for assessing roadway requirements?
e) What is importance of 'Highway Drainage'? Elaborate its different types.

Q.3 Write short note (Any One) **04**

a) Street Lighting
b) Origin- destination characteristics and studies

Section – II

Q.4 Answer any three. **24**

a) Write a Tender evaluation process in detail regarding Highway Projects.
b) What is EIA? Explain stepwise procedure for its assessment?
c) Explain stepwise procedure for construction of flexible pavement road.
d) Elaborate 'implementation of environment management plan'.
e) Distinguish between Flexible Pavement & Rigid Pavement.

Q.5 Write short note (Any One) **04**

a) BOQ
b) Preparation of tender documents

SLR-BD-323

Seat No.		Set	P

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Sustainable Materials and Green Buildings (BTN01622)

Day & Date: Thursday, 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which of the following is not the pillar of sustainability.
a) Economy b) Environment
c) Ecology d) Society

2) Which of the following elements should be used optimum to make a green building?
a) Agni b) Jal
c) Prithvi d) All of the above

3) Principles of sustainability doesn't include _____.
a) Balance & equity b) System thinking
c) Spiritual values d) None of these

4) Which of the following is not an economic benefit for a green building?
a) 20-30 % energy used b) 20-30 % less water used
c) Enhance asset value d) None of these

5) Sustainability can't be achieved if _____.
a) Different societies work with unique mindset
b) Different societies work with different mindsets
c) Similar societies work with singular mindset
d) Similar societies work with different mindsets

6) Which of the following is not the purpose of a green building?
a) To reduce use of water
b) To minimize damage of the environment
c) Re-use of waste materials
d) None of the above

7) How can sustainable engineering contribute to a circular economy?
a) By promoting linear production and consumption practices
b) By designing products for reuse, recycling and resource recovery
c) By disregarding environmental considerations in engineering decisions
d) By prioritizing short term economic gains

8) Which of the following is not considered in an LCA?
a) Energy consumption
b) Water usage
c) Greenhouse gas emissions
d) Aesthetics

9) Which of the following green rating systems are currently working in India?
a) LEED
b) GRIHA
c) Both a) and b)
d) None of the above

10) GRIHA has been prepared by _____.
a) USGBC
b) TERI
c) LEED
d) By own self

11) LEED gives rating in form of _____.
a) 1 star, 2 star, 3 star, 4 star, 5 star
b) Platinum, Gold, Silver
c) Both a) and b)
d) None of the above

12) The principle of radiator of an engine cooling system is to _____.
a) Increase the air speed as it flows over the hot surface
b) Spread out the hot water over a large area
c) Acts as a reservoir for the water
d) Causes a heat flow by convection currents

13) Which of the following accounts for T in the IPAT equation?
a) Time
b) Threshold population
c) Technology
d) None of the above

14) Which of the following is the least energy efficient system?
a) Internal combustion engine
b) Fuel cell
c) Incandescent light
d) Human body

SLR-BD-323

Seat No.		Set	P

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Sustainable Materials and Green Buildings (BTN01622)

Day & Date: Thursday, 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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

Section – I

Q.2	**a)**	Discuss reuse of any five construction materials in detail.	**05**
	b)	Explain principles of Sustainability while planning the city of 1 lakh population.	**05**
Q.3	**a)**	Explain AAC blocks along with merits and demerits in detail.	**05**
	b)	Elucidate applications of cement fibre board in green building.	**04**
Q.4	**a)**	What is sustainability? Explain pillars of sustainability with a neat diagram. Discuss interaction between pillars in the sustainability.	**05**
	b)	Define self-weight concrete? Provide minimum three advantages of self-weight concrete in construction of green building.	**04**
Q.5	**a)**	Explain benefits of Nano technology in cement concrete used in conventional RCC building.	**05**
	b)	Define ferrocement Technology? Provide minimum three applications of ferrocement technology in Civil Engineering.	**04**

Section – II

Q.6	**a)**	What is GRIHA? Explain various sections allocated in the GRIHA in detail.	**05**
	b)	Explain effects of changing seasons on functioning of green buildings.	**05**
Q.7	**a)**	Explain certification procedure of LEED in detail.	**05**
	b)	Discuss numerous applications of sustainable technology in 'Building Stock Management'	**04**

Q.8 **a)** Explain various methods of effective cooling and heating systems in Green Buildings. **05**

b) Provide minimum four decentralized water conservation systems in green building. **04**

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

a) 5R's of Green Building

b) Low energy materials

c) Structure of green building

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Sustainable Materials and Green Buildings (BTN01622)

Day & Date: Thursday, 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which of the following is not considered in an LCA?
a) Energy consumption b) Water usage
c) Greenhouse gas emissions d) Aesthetics

2) Which of the following green rating systems are currently working in India?
a) LEED b) GRIHA
c) Both a) and b) d) None of the above

3) GRIHA has been prepared by _____.
a) USGBC b) TERI
c) LEED d) By own self

4) LEED gives rating in form of _____.
a) 1 star, 2 star, 3 star, 4 star, 5 star
b) Platinum, Gold, Silver
c) Both a) and b)
d) None of the above

5) The principle of radiator of an engine cooling system is to _____.
a) Increase the air speed as it flows over the hot surface
b) Spread out the hot water over a large area
c) Acts as a reservoir for the water
d) Causes a heat flow by convection currents

6) Which of the following accounts for T in the IPAT equation?
a) Time b) Threshold population
c) Technology d) None of the above

7) Which of the following is the least energy efficient system?
a) Internal combustion engine b) Fuel cell
c) Incandescent light d) Human body

8) Which of the following is not the pillar of sustainability.
a) Economy b) Environment
c) Ecology d) Society

9) Which of the following elements should be used optimum to make a green building?
a) Agni b) Jal
c) Prithvi d) All of the above

10) Principles of sustainability doesn't include _____.
a) Balance & equity b) System thinking
c) Spiritual values d) None of these

11) Which of the following is not an economic benefit for a green building?
a) 20-30 % energy used b) 20-30 % less water used
c) Enhance asset value d) None of these

12) Sustainability can't be achieved if _____.
a) Different societies work with unique mindset
b) Different societies work with different mindsets
c) Similar societies work with singular mindset
d) Similar societies work with different mindsets

13) Which of the following is not the purpose of a green building?
a) To reduce use of water
b) To minimize damage of the environment
c) Re-use of waste materials
d) None of the above

14) How can sustainable engineering contribute to a circular economy?
a) By promoting linear production and consumption practices
b) By designing products for reuse, recycling and resource recovery
c) By disregarding environmental considerations in engineering decisions
d) By prioritizing short term economic gains

SLR-BD-323

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Sustainable Materials and Green Buildings (BTN01622)

Day & Date: Thursday, 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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

Section – I

Q.2	**a)**	Discuss reuse of any five construction materials in detail.	**05**
	b)	Explain principles of Sustainability while planning the city of 1 lakh population.	**05**
Q.3	**a)**	Explain AAC blocks along with merits and demerits in detail.	**05**
	b)	Elucidate applications of cement fibre board in green building.	**04**
Q.4	**a)**	What is sustainability? Explain pillars of sustainability with a neat diagram. Discuss interaction between pillars in the sustainability.	**05**
	b)	Define self-weight concrete? Provide minimum three advantages of self-weight concrete in construction of green building.	**04**
Q.5	**a)**	Explain benefits of Nano technology in cement concrete used in conventional RCC building.	**05**
	b)	Define ferrocement Technology? Provide minimum three applications of ferrocement technology in Civil Engineering.	**04**

Section – II

Q.6	**a)**	What is GRIHA? Explain various sections allocated in the GRIHA in detail.	**05**
	b)	Explain effects of changing seasons on functioning of green buildings.	**05**
Q.7	**a)**	Explain certification procedure of LEED in detail.	**05**
	b)	Discuss numerous applications of sustainable technology in 'Building Stock Management'	**04**

Q.8 **a)** Explain various methods of effective cooling and heating systems in Green Buildings. **05**

b) Provide minimum four decentralized water conservation systems in green building. **04**

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

a) 5R's of Green Building

b) Low energy materials

c) Structure of green building

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Sustainable Materials and Green Buildings (BTN01622)

Day & Date: Thursday, 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) LEED gives rating in form of _____.
a) 1 star, 2 star, 3 star, 4 star, 5 star
b) Platinum, Gold, Silver
c) Both a) and b)
d) None of the above

2) The principle of radiator of an engine cooling system is to _____.
a) Increase the air speed as it flows over the hot surface
b) Spread out the hot water over a large area
c) Acts as a reservoir for the water
d) Causes a heat flow by convection currents

3) Which of the following accounts for T in the IPAT equation?
a) Time b) Threshold population
c) Technology d) None of the above

4) Which of the following is the least energy efficient system?
a) Internal combustion engine b) Fuel cell
c) Incandescent light d) Human body

5) Which of the following is not the pillar of sustainability.
a) Economy b) Environment
c) Ecology d) Society

6) Which of the following elements should be used optimum to make a green building?
a) Agni b) Jal
c) Prithvi d) All of the above

7) Principles of sustainability doesn't include _____.
a) Balance & equity b) System thinking
c) Spiritual values d) None of these

8) Which of the following is not an economic benefit for a green building?
a) 20-30 % energy used b) 20-30 % less water used
c) Enhance asset value d) None of these

9) Sustainability can't be achieved if _____.
a) Different societies work with unique mindset
b) Different societies work with different mindsets
c) Similar societies work with singular mindset
d) Similar societies work with different mindsets

10) Which of the following is not the purpose of a green building?
a) To reduce use of water
b) To minimize damage of the environment
c) Re-use of waste materials
d) None of the above

11) How can sustainable engineering contribute to a circular economy?
a) By promoting linear production and consumption practices
b) By designing products for reuse, recycling and resource recovery
c) By disregarding environmental considerations in engineering decisions
d) By prioritizing short term economic gains

12) Which of the following is not considered in an LCA?
a) Energy consumption b) Water usage
c) Greenhouse gas emissions d) Aesthetics

13) Which of the following green rating systems are currently working in India?
a) LEED b) GRIHA
c) Both a) and b) d) None of the above

14) GRIHA has been prepared by _____.
a) USGBC b) TERI
c) LEED d) By own self

SLR-BD-323

Seat No.		Set	R

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Sustainable Materials and Green Buildings (BTN01622)

Day & Date: Thursday, 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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

Section – I

Q.2	**a)**	Discuss reuse of any five construction materials in detail.	**05**
	b)	Explain principles of Sustainability while planning the city of 1 lakh population.	**05**
Q.3	**a)**	Explain AAC blocks along with merits and demerits in detail.	**05**
	b)	Elucidate applications of cement fibre board in green building.	**04**
Q.4	**a)**	What is sustainability? Explain pillars of sustainability with a neat diagram. Discuss interaction between pillars in the sustainability.	**05**
	b)	Define self-weight concrete? Provide minimum three advantages of self-weight concrete in construction of green building.	**04**
Q.5	**a)**	Explain benefits of Nano technology in cement concrete used in conventional RCC building.	**05**
	b)	Define ferrocement Technology? Provide minimum three applications of ferrocement technology in Civil Engineering.	**04**

Section – II

Q.6	**a)**	What is GRIHA? Explain various sections allocated in the GRIHA in detail.	**05**
	b)	Explain effects of changing seasons on functioning of green buildings.	**05**
Q.7	**a)**	Explain certification procedure of LEED in detail.	**05**
	b)	Discuss numerous applications of sustainable technology in 'Building Stock Management'	**04**

Q.8 **a)** Explain various methods of effective cooling and heating systems in Green Buildings. **05**

b) Provide minimum four decentralized water conservation systems in green building. **04**

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

a) 5R's of Green Building

b) Low energy materials

c) Structure of green building

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Sustainable Materials and Green Buildings (BTN01622)

Day & Date: Thursday, 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which of the following is not the purpose of a green building?
a) To reduce use of water
b) To minimize damage of the environment
c) Re-use of waste materials
d) None of the above

2) How can sustainable engineering contribute to a circular economy?
a) By promoting linear production and consumption practices
b) By designing products for reuse, recycling and resource recovery
c) By disregarding environmental considerations in engineering decisions
d) By prioritizing short term economic gains

3) Which of the following is not considered in an LCA?
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4) Which of the following green rating systems are currently working in India?
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5) GRIHA has been prepared by _____.
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c) Ecology
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d) None of these

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a) Different societies work with unique mindset
b) Different societies work with different mindsets
c) Similar societies work with singular mindset
d) Similar societies work with different mindsets

SLR-BD-323

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Sustainable Materials and Green Buildings (BTN01622)

Day & Date: Thursday, 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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

Section – I

Q.2	**a)**	Discuss reuse of any five construction materials in detail.	**05**
	b)	Explain principles of Sustainability while planning the city of 1 lakh population.	**05**
Q.3	**a)**	Explain AAC blocks along with merits and demerits in detail.	**05**
	b)	Elucidate applications of cement fibre board in green building.	**04**
Q.4	**a)**	What is sustainability? Explain pillars of sustainability with a neat diagram. Discuss interaction between pillars in the sustainability.	**05**
	b)	Define self-weight concrete? Provide minimum three advantages of self-weight concrete in construction of green building.	**04**
Q.5	**a)**	Explain benefits of Nano technology in cement concrete used in conventional RCC building.	**05**
	b)	Define ferrocement Technology? Provide minimum three applications of ferrocement technology in Civil Engineering.	**04**

Section – II

Q.6	**a)**	What is GRIHA? Explain various sections allocated in the GRIHA in detail.	**05**
	b)	Explain effects of changing seasons on functioning of green buildings.	**05**
Q.7	**a)**	Explain certification procedure of LEED in detail.	**05**
	b)	Discuss numerous applications of sustainable technology in 'Building Stock Management'	**04**

Q.8 **a)** Explain various methods of effective cooling and heating systems in Green Buildings. **05**

b) Provide minimum four decentralized water conservation systems in green building. **04**

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

a) 5R's of Green Building

b) Low energy materials

c) Structure of green building

SLR-BD-324

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Engineering System Design Optimization (BTN01623)

Day & Date: Thursday 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) While solving a linear problem graphically, the area bounded by the constraints is called _____.
a) The feasible region b) The unfeasible region
c) The unbounded solution d) The basic variables

2) The Iterative formula for Newton Raphson Method is given by _____.
a) $x_1 = x_0 - \frac{f(x_0)}{f'(x_0)}$ b) $x_1 = x_0 - \frac{f(x_0)}{f"(x_0)}$
c) $x_1 = x_0 + \frac{f(x_0)}{f'(x_0)}$ d) $x_1 = x_0 + \frac{f(x_0)}{f"(x_0)}$

3) The Newton Raphson Method fails if _____.
a) $f'(x_0) = 0$ b) $f''(x_0) = 0$
c) $f(x_0) = 0$ d) $f'''(x_0) = 0$

4) Which of the following is not a Fibonacci number?
a) 4 b) 21
c) 55 d) 14

5) The value of $\nabla^2 f(x, y)$ at $x = 7\ y = 0$ is _____
a) $\begin{bmatrix} 1 & 0 \\ 0 & 4 \end{bmatrix}$ b) $\begin{bmatrix} 1 & 1 \\ 1 & 4 \end{bmatrix}$
c) $\begin{bmatrix} 1 & 1 \\ 1 & 7 \end{bmatrix}$ d) $\begin{bmatrix} 1 & 1 \\ 1 & 5 \end{bmatrix}$

6) Gradient based methods are _____.
a) Newton Raphson Method b) Bisection Method
c) Both 'a' and 'b' d) None of these

7) Which of the following is specialized method for optimization?
a) Integer Programming b) Geometric Programming
c) Simulated Annealing d) All of these

8) Which of the following is not involved in the single variable optimization?
a) Fibonacci Search Method b) Newton Raphson Method
c) Bisection Method d) Unidirectional Search Method

9) Bracketing Methods are _____.
a) Extensive Search Method b) Bound Phase Method
c) Both ‘a’ and ‘b’ d) None of these

10) Which of the following field in which optimization is used?
a) Finance b) Demand and Supply
c) Airline d) All of these

11) Unidirectional search is _____.
a) Converting multivariable problem to single variable problem
b) Finding optimized solution
c) Both ‘a’ and ‘b’
d) None of these

12) Genetic algorithm involves which of the following phenomena?
a) Mutation b) Cross over
c) Selection d) All of the above

13) The primary search operations in Genetic Algorithms are _____.
a) Crossover and Mutation b) Crossover and Selection
c) Selection and Mutation d) Selection and Elitism

14) Linear Programming problem is a technique of finding the _____.
a) Optimal value b) Approximate value
c) Initial value d) infeasible value

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Engineering System Design Optimization (BTN01623)

Day & Date: Thursday 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any two of the following. **12**

a) Write a detailed note on Application of optimization.
b) Explain different types of optimization methods.
c) Explain step by step, how the optimization problem is formulated?

Q.3 Solve any two of the followings. **08**

a) Minimize the given function $f(x) = x^2 + \frac{16}{x}$ with $(0.1, 5.1)$ and 10 equal division by Exhaustive Search Method.
b) Minimize the function $f(x) = x^2 + \frac{54}{x}$ $x^{(k)} = 1$ and $\in = 10^{-3}$ by Newton Raphson Method.
c) Solve an optimization problem using Fibonacci Search Method with the function $f(x) = x^2 + \frac{20}{x}, n = 3, k = 2, a = 0.4, b = 6.5$ by Fibonacci Search Method.

Q.4 Solve any two of the following. **08**

a) Optimize the function $f(x) = x_1^2 - 2x_1x_2 - x_2^2$ where $x^{(0)} = (2,1)$ $s = (1,1)$ and $\in = 10^{-3}$ by Unidirectional Search Method.
b) Optimize the given function using Powel's Conjugate direction method where $f(x) = x_1^2 - 2x_2^2 + 2$
$x^{(0)} = (2,1)\ s_1 = (1,0)\ s_2 = (0,1)\ \in = 10^{-3}$
c) Perform an optimization search using Steepest Descent Method for the function $f(x) = x_1^2 + x_2^2 - x_1x_2$ $x^{(0)} = (1,0) \in = 10^{-3}$

Section – II

Q.5 Solve any two of the following. **12**

a) Explain
- i) Feasible solution
- ii) Optimum solution
- iii) Unbounded solution

b) Solve

$$Z = 5x_1 + 7x_2$$

subject to $3x_1 + 2x_2 \leq 12$

$2x_1 + 3x_2 \leq 13$

$x_1, x_2 \geq 0$ by graphical method.

c) Optimize the given function $f(x) = x_1 - x_1x_2 + x_2^2$ using Geometric Programming.

Q.6 Solve any two of the followings. **08**

a) What is Genetic Algorithm? Write its advantages & applications.

b) Explain the concepts of Genetic algorithm.

c) Write the differences between Genetic Algorithm and Traditional techniques.

Q.7 Solve any two of the followings. **08**

a) Write a computer programme for Simulated Annealing Method.

b) Explain various approaches of reduction by size of optimization problem.

c) Explain limitations of Linear Programming.

Seat No.		Set	Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Engineering System Design Optimization (BTN01623)

Day & Date: Thursday 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following is not involved in the single variable optimization?
a) Fibonacci Search Method b) Newton Raphson Method
c) Bisection Method d) Unidirectional Search Method

2) Bracketing Methods are _____.
a) Extensive Search Method b) Bound Phase Method
c) Both 'a' and 'b' d) None of these

3) Which of the following field in which optimization is used?
a) Finance b) Demand and Supply
c) Airline d) All of these

4) Unidirectional search is _____.
a) Converting multivariable problem to single variable problem
b) Finding optimized solution
c) Both 'a' and 'b'
d) None of these

5) Genetic algorithm involves which of the following phenomena?
a) Mutation b) Cross over
c) Selection d) All of the above

6) The primary search operations in Genetic Algorithms are _____.
a) Crossover and Mutation b) Crossover and Selection
c) Selection and Mutation d) Selection and Elitism

7) Linear Programming problem is a technique of finding the _____.
a) Optimal value b) Approximate value
c) Initial value d) infeasible value

8) While solving a linear problem graphically, the area bounded by the constraints is called _____.

a) The feasible region
b) The unfeasible region
c) The unbounded solution
d) The basic variables

9) The Iterative formula for Newton Raphson Method is given by _____.

a) $x_1 = x_0 - \frac{f(x_0)}{f'(x_0)}$
b) $x_1 = x_0 - \frac{f(x_0)}{f"(x_0)}$
c) $x_1 = x_0 + \frac{f(x_0)}{f'(x_0)}$
d) $x_1 = x_0 + \frac{f(x_0)}{f"(x_0)}$

10) The Newton Raphson Method fails if _____.

a) $f'(x_0) = 0$
b) $f''(x_0) = 0$
c) $f(x_0) = 0$
d) $f'''(x_0) = 0$

11) Which of the following is not a Fibonacci number?

a) 4
b) 21
c) 55
d) 14

12) The value of $\nabla^2 f(x, y)$ at $x = 7\ y = 0$ is _____

a) $\begin{bmatrix} 1 & 0 \\ 0 & 4 \end{bmatrix}$
b) $\begin{bmatrix} 1 & 1 \\ 1 & 4 \end{bmatrix}$
c) $\begin{bmatrix} 1 & 1 \\ 1 & 7 \end{bmatrix}$
d) $\begin{bmatrix} 1 & 1 \\ 1 & 5 \end{bmatrix}$

13) Gradient based methods are _____.

a) Newton Raphson Method
b) Bisection Method
c) Both ‘a’ and ‘b’
d) None of these

14) Which of the following is specialized method for optimization?

a) Integer Programming
b) Geometric Programming
c) Simulated Annealing
d) All of these

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Engineering System Design Optimization (BTN01623)

Day & Date: Thursday 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any two of the following. **12**

a) Write a detailed note on Application of optimization.
b) Explain different types of optimization methods.
c) Explain step by step, how the optimization problem is formulated?

Q.3 Solve any two of the followings. **08**

a) Minimize the given function $f(x) = x^2 + \frac{16}{x}$ with $(0.1, 5.1)$ and 10 equal division by Exhaustive Search Method.
b) Minimize the function $f(x) = x^2 + \frac{54}{x}$ $x^{(k)} = 1$ and $\in = 10^{-3}$ by Newton Raphson Method.
c) Solve an optimization problem using Fibonacci Search Method with the function $f(x) = x^2 + \frac{20}{x}, n = 3, k = 2, a = 0.4, b = 6.5$ by Fibonacci Search Method.

Q.4 Solve any two of the following. **08**

a) Optimize the function $f(x) = x_1^2 - 2x_1x_2 - x_2^2$ where $x^{(0)} = (2,1)$ $s = (1,1)$ and $\in = 10^{-3}$ by Unidirectional Search Method.
b) Optimize the given function using Powel's Conjugate direction method where $f(x) = x_1^2 - 2x_2^2 + 2$
$x^{(0)} = (2,1)\ s_1 = (1,0)\ s_2 = (0,1)\ \in = 10^{-3}$
c) Perform an optimization search using Steepest Descent Method for the function $f(x) = x_1^2 + x_2^2 - x_1x_2$ $x^{(0)} = (1,0) \in = 10^{-3}$

Section – II

Q.5 Solve any two of the following. **12**

a) Explain
- i) Feasible solution
- ii) Optimum solution
- iii) Unbounded solution

b) Solve

$$Z = 5x_1 + 7x_2$$

subject to $3x_1 + 2x_2 \leq 12$

$2x_1 + 3x_2 \leq 13$

$x_1, x_2 \geq 0$ by graphical method.

c) Optimize the given function $f(x) = x_1 - x_1x_2 + x_2^2$ using Geometric Programming.

Q.6 Solve any two of the followings. **08**

a) What is Genetic Algorithm? Write its advantages & applications.

b) Explain the concepts of Genetic algorithm.

c) Write the differences between Genetic Algorithm and Traditional techniques.

Q.7 Solve any two of the followings. **08**

a) Write a computer programme for Simulated Annealing Method.

b) Explain various approaches of reduction by size of optimization problem.

c) Explain limitations of Linear Programming.

Seat No.		Set	R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Engineering System Design Optimization (BTN01623)

Day & Date: Thursday 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Unidirectional search is _____.
a) Converting multivariable problem to single variable problem
b) Finding optimized solution
c) Both 'a' and 'b'
d) None of these

2) Genetic algorithm involves which of the following phenomena?
a) Mutation b) Cross over
c) Selection d) All of the above

3) The primary search operations in Genetic Algorithms are _____.
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4) Linear Programming problem is a technique of finding the _____.
a) Optimal value b) Approximate value
c) Initial value d) infeasible value

5) While solving a linear problem graphically, the area bounded by the constraints is called _____.
a) The feasible region b) The unfeasible region
c) The unbounded solution d) The basic variables

6) The Iterative formula for Newton Raphson Method is given by _____.
a) $x_1 = x_0 - \frac{f(x_0)}{f'(x_0)}$ b) $x_1 = x_0 - \frac{f(x_0)}{f"(x_0)}$
c) $x_1 = x_0 + \frac{f(x_0)}{f'(x_0)}$ d) $x_1 = x_0 + \frac{f(x_0)}{f"(x_0)}$

7) The Newton Raphson Method fails if _____.

a) $f'(x_0) = 0$ b) $f''(x_0) = 0$

c) $f(x_0) = 0$ d) $f'''(x_0) = 0$

8) Which of the following is not a Fibonacci number?

a) 4 b) 21

c) 55 d) 14

9) The value of $\nabla^2 f(x, y)$ at $x = 7\ y = 0$ is _____

a) $\begin{bmatrix} 1 & 0 \\ 0 & 4 \end{bmatrix}$ b) $\begin{bmatrix} 1 & 1 \\ 1 & 4 \end{bmatrix}$

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10) Gradient based methods are _____.

a) Newton Raphson Method b) Bisection Method

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11) Which of the following is specialized method for optimization?

a) Integer Programming b) Geometric Programming

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12) Which of the following is not involved in the single variable optimization?

a) Fibonacci Search Method b) Newton Raphson Method

c) Bisection Method d) Unidirectional Search Method

13) Bracketing Methods are _____.

a) Extensive Search Method b) Bound Phase Method

c) Both 'a' and 'b' d) None of these

14) Which of the following field in which optimization is used?

a) Finance b) Demand and Supply

c) Airline d) All of these

SLR-BD-324

Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Engineering System Design Optimization (BTN01623)

Day & Date: Thursday 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any two of the following. **12**

a) Write a detailed note on Application of optimization.
b) Explain different types of optimization methods.
c) Explain step by step, how the optimization problem is formulated?

Q.3 Solve any two of the followings. **08**

a) Minimize the given function $f(x) = x^2 + \frac{16}{x}$ with $(0.1, 5.1)$ and 10 equal division by Exhaustive Search Method.
b) Minimize the function $f(x) = x^2 + \frac{54}{x}$ $x^{(k)} = 1$ and $\in = 10^{-3}$ by Newton Raphson Method.
c) Solve an optimization problem using Fibonacci Search Method with the function $f(x) = x^2 + \frac{20}{x}, n = 3, k = 2, a = 0.4, b = 6.5$ by Fibonacci Search Method.

Q.4 Solve any two of the following. **08**

a) Optimize the function $f(x) = x_1^2 - 2x_1x_2 - x_2^2$ where $x^{(0)} = (2,1)$ $s = (1,1)$ and $\in = 10^{-3}$ by Unidirectional Search Method.
b) Optimize the given function using Powel's Conjugate direction method where $f(x) = x_1^2 - 2x_2^2 + 2$
$x^{(0)} = (2,1)\ s_1 = (1,0)\ s_2 = (0,1)\ \in = 10^{-3}$
c) Perform an optimization search using Steepest Descent Method for the function $f(x) = x_1^2 + x_2^2 - x_1x_2$ $x^{(0)} = (1,0) \in = 10^{-3}$

Section – II

Q.5 Solve any two of the following. **12**

a) Explain
- i) Feasible solution
- ii) Optimum solution
- iii) Unbounded solution

b) Solve

$$Z = 5x_1 + 7x_2$$

subject to $3x_1 + 2x_2 \leq 12$

$2x_1 + 3x_2 \leq 13$

$x_1, x_2 \geq 0$ by graphical method.

c) Optimize the given function $f(x) = x_1 - x_1x_2 + x_2^2$ using Geometric Programming.

Q.6 Solve any two of the followings. **08**

a) What is Genetic Algorithm? Write its advantages & applications.

b) Explain the concepts of Genetic algorithm.

c) Write the differences between Genetic Algorithm and Traditional techniques.

Q.7 Solve any two of the followings. **08**

a) Write a computer programme for Simulated Annealing Method.

b) Explain various approaches of reduction by size of optimization problem.

c) Explain limitations of Linear Programming.

SLR-BD-324

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Engineering System Design Optimization (BTN01623)

Day & Date: Thursday 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Gradient based methods are _____.
a) Newton Raphson Method b) Bisection Method
c) Both 'a' and 'b' d) None of these

2) Which of the following is specialized method for optimization?
a) Integer Programming b) Geometric Programming
c) Simulated Annealing d) All of these

3) Which of the following is not involved in the single variable optimization?
a) Fibonacci Search Method b) Newton Raphson Method
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4) Bracketing Methods are _____.
a) Extensive Search Method b) Bound Phase Method
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9) Linear Programming problem is a technique of finding the _____.

a) Optimal value b) Approximate value

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a) The feasible region b) The unfeasible region

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11) The Iterative formula for Newton Raphson Method is given by _____.

a) $x_1 = x_0 - \frac{f(x_0)}{f'(x_0)}$ b) $x_1 = x_0 - \frac{f(x_0)}{f"(x_0)}$

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12) The Newton Raphson Method fails if _____.

a) $f'(x_0) = 0$ b) $f''(x_0) = 0$

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13) Which of the following is not a Fibonacci number?

a) 4 b) 21

c) 55 d) 14

14) The value of $\nabla^2 f(x, y)$ at $x = 7\ y = 0$ is _____

a) $\begin{bmatrix} 1 & 0 \\ 0 & 4 \end{bmatrix}$ b) $\begin{bmatrix} 1 & 1 \\ 1 & 4 \end{bmatrix}$

c) $\begin{bmatrix} 1 & 1 \\ 1 & 7 \end{bmatrix}$ d) $\begin{bmatrix} 1 & 1 \\ 1 & 5 \end{bmatrix}$

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Engineering System Design Optimization (BTN01623)

Day & Date: Thursday 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any two of the following. **12**

a) Write a detailed note on Application of optimization.
b) Explain different types of optimization methods.
c) Explain step by step, how the optimization problem is formulated?

Q.3 Solve any two of the followings. **08**

a) Minimize the given function $f(x) = x^2 + \frac{16}{x}$ with $(0.1, 5.1)$ and 10 equal division by Exhaustive Search Method.
b) Minimize the function $f(x) = x^2 + \frac{54}{x}$ $x^{(k)} = 1$ and $\in = 10^{-3}$ by Newton Raphson Method.
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$x^{(0)} = (2,1)\ s_1 = (1,0)\ s_2 = (0,1)\ \in = 10^{-3}$
c) Perform an optimization search using Steepest Descent Method for the function $f(x) = x_1^2 + x_2^2 - x_1x_2$ $x^{(0)} = (1,0) \in = 10^{-3}$

Section – II

Q.5 Solve any two of the following. **12**

a) Explain
- i) Feasible solution
- ii) Optimum solution
- iii) Unbounded solution

b) Solve

$$Z = 5x_1 + 7x_2$$

subject to $3x_1 + 2x_2 \leq 12$

$2x_1 + 3x_2 \leq 13$

$x_1, x_2 \geq 0$ by graphical method.

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a) What is Genetic Algorithm? Write its advantages & applications.

b) Explain the concepts of Genetic algorithm.

c) Write the differences between Genetic Algorithm and Traditional techniques.

Q.7 Solve any two of the followings. **08**

a) Write a computer programme for Simulated Annealing Method.

b) Explain various approaches of reduction by size of optimization problem.

c) Explain limitations of Linear Programming.

SLR-BD-325

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Estimating, Costing and Valuation (BTN01701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Do not forget to Mention question paper Set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) If rise and tread of a step is 0.15m and 0.25m respectively, then the volume (in cubic meter) of 9 number of steps of 1 m length be recorded in measurement sheet shall be _____.
a) 0.3375 b) 0.337
c) 0.34 d) 0.33

2) If thickness of concreting is less than 100mm, the concreting in RCC slab is measured in _____.
a) Running m b) Sq.m
c) Cu.m d) None of the above

3) In long and short wall method of estimation, length of short wall is centre to centre distance between extreme opposite walls in shorter directions of ground floor plan _____.
a) Minus one breadth of item on each side
b) Plus one breadth of item on each side
c) Minus half breadth of item on each side
d) Plus half breadth of item on each side

4) The Damp Proof Course (D.P.C.) is measured in _____.
a) Cub.m. b) Sq.m.
c) Meters d) None of these

5) The excavation exceeding 1.5 m in width and 10 sq.m., in plan area with a depth not exceeding 30 cm, is termed as _____.
a) Excavation b) Surface dressing
c) Cutting d) Surface excavation

6) 'Money received today is more worth than money received in future' is based on which of the following term _____.

a) Time Value of money
b) Storage Value of Money
c) Time Machine
d) Cash Value of Machine

7) While submitting a tender, the contractor is required to deposit some amount with the department as a guarantee of the tender known as _____.

a) Earnest money
b) Bank Guarantee
c) Security Deposit
d) Caution money

8) The quantity of aggregates required for RCC (1:2:4) for 15 cubic metres of work is _____.

a) 4.76 m3
b) 10.32 m3
c) 8.57 m3
d) 6.51 m3

9) The value at the end of utility of property but without dismantling is known as _____.

a) Scrap Value
b) Salvage value
c) Market value
d) Book value

10) We prepare revised estimate against the original estimate due to change in _____.

a) the rate of material or change in specification of materials
b) structural drawing
c) additional items
d) all the above

11) In first class brick masonry, the number of bricks required per Cubic Meter area _____.

a) 650
b) 6500
c) 500
d) 5000

12) Which method considers the loss of value of an asset is directly proportional to its life period?

a) Straight line method
b) Diminishing balance method
c) Sinking fund method
d) Machine hour basis method

13) Decrease or loss in property value due to its wear and tear is called _____.

a) Depreciation
b) Capital Value
c) Annuity
d) Outgoings

14) While taking the measurements of RCC the volume of reinforcement is _____.

a) Deducted from the concrete volume
b) Added to the concrete volume
c) No deduction no addition
d) None of these

Seat No.	

Set | P

Fourth Y. (B. Tech) (Sem-I) (New) (CBCS) Examination:
March/April - 2025
CIVIL ENGINEERING
Estimating, Costing and Valuation (BTN01701)

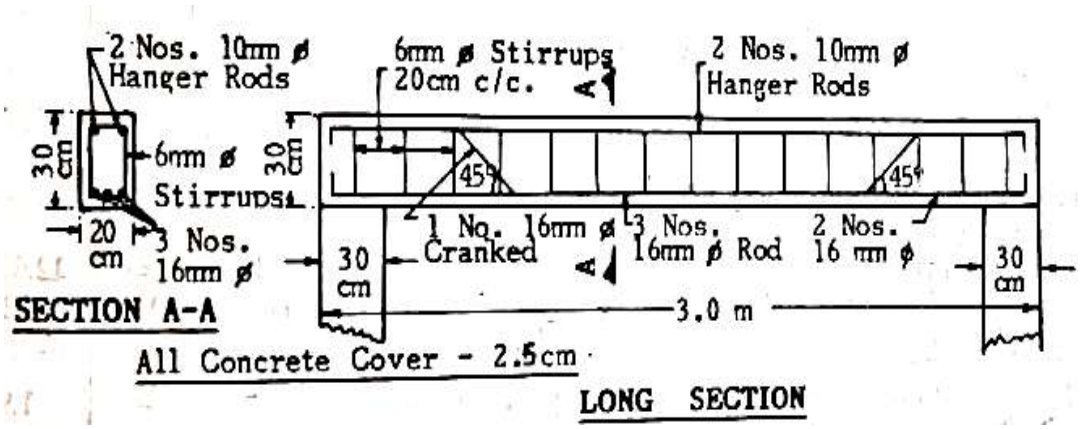
Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory; answer any two from remaining questions from Sec – I.
2) Q. 6 is compulsory; answer any two from remaining questions from Sec – II.
3) Figures to the right indicate full marks.
4) Assume suitable data if required and mention it clearly.

SECTION – I

Q.2 **a)** Calculate the quantity of reinforcement required in R.C.C. Beam as shown in attached drawing. **08**

b) Also prepare an Abstract sheet for these items by assuming suitable market rates. **04**



Q.3 **a)** Explain General and Detailed Specification. **04**

b) Write the detailed specifications for 1st class brickwork in 1:4 cement mortar. **04**

Q.4 **Carry out the rate analysis for following items.** **08**

a) Cement concrete 1:1.5:3 for RCC Column and footing.

b) 12 mm thick external plaster in 1:6.

Q.5 **a)** Explain administrative approval and technical sanction to estimates. **04**

b) Write a thumb rule for **04**

i) Number of cement bags required for construction of building.

ii) Steel reinforcement required for RCC in cement concrete.

SECTION – II

Q.6 **a)** Prepare a tender notice for the work of construction of a hospital of 150 beds capacity RCC structure of 12.000 Sq. ft built up area. Make suitable assumptions for required data. **08**

b) Write a short note on Item Rate contract and Percentage rate contract. **04**

Q.7 **Explain following Acts.** **08**

a) Minimum Wages Act

b) Workers Compensation Act

Q.8 **a)** **Define:** **04**

i) Book Value

ii) Speculation value

iii) Scrap value

iv) Potential value.

b) What is Earnest Money Deposit and Security Deposit? **04**

Q.9 What is the valuation of a property in 2024, with following details of a building? Assume 10% scrap value at the end of useful life. **08**

Sr. No	Description	Area (Sq.M)	Rate Rs/SqM	Total life (year)	Built in
1	Main Factory Building RCC skeleton used as dyeing unit and old office G+1	700.92	11000	75	1984
2	Mezzanine floor in main building	449.04	4500	75	2002

SLR-BD-325

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Estimating, Costing and Valuation (BTN01701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Do not forget to Mention question paper Set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) The quantity of aggregates required for RCC (1:2:4) for 15 cubic metres of work is _____.
a) 4.76 m3 b) 10.32 m3
c) 8.57 m3 d) 6.51 m3

2) The value at the end of utility of property but without dismantling is known as _____.
a) Scrap Value b) Salvage value
c) Market value d) Book value

3) We prepare revised estimate against the original estimate due to change in _____.
a) the rate of material or change in specification of materials
b) structural drawing
c) additional items
d) all the above

4) In first class brick masonry, the number of bricks required per Cubic Meter area _____.
a) 650 b) 6500
c) 500 d) 5000

5) Which method considers the loss of value of an asset is directly proportional to its life period?
a) Straight line method b) Diminishing balance method
c) Sinking fund method d) Machine hour basis method

6) Decrease or loss in property value due to its wear and tear is called _____.

a) Depreciation b) Capital Value
c) Annuity d) Outgoings

7) While taking the measurements of RCC the volume of reinforcement is _____.

a) Deducted from the concrete volume
b) Added to the concrete volume
c) No deduction no addition
d) None of these

8) If rise and tread of a step is 0.15m and 0.25m respectively, then the volume (in cubic meter) of 9 number of steps of 1 m length be recorded in measurement sheet shall be _____.

a) 0.3375 b) 0.337
c) 0.34 d) 0.33

9) If thickness of concreting is less than 100mm, the concreting in RCC slab is measured in _____.

a) Running m b) Sq.m
c) Cu.m d) None of the above

10) In long and short wall method of estimation, length of short wall is centre to centre distance between extreme opposite walls in shorter directions of ground floor plan _____.

a) Minus one breadth of item on each side
b) Plus one breadth of item on each side
c) Minus half breadth of item on each side
d) Plus half breadth of item on each side

11) The Damp Proof Course (D.P.C.) is measured in _____.

a) Cub.m. b) Sq.m.
c) Meters d) None of these

12) The excavation exceeding 1.5 m in width and 10 sq.m., in plan area with a depth not exceeding 30 cm, is termed as _____.

a) Excavation b) Surface dressing
c) Cutting d) Surface excavation

13) 'Money received today is more worth than money received in future' is based on which of the following term _____.

a) Time Value of money b) Storage Value of Money
c) Time Machine d) Cash Value of Machine

14) While submitting a tender, the contractor is required to deposit some amount with the department as a guarantee of the tender known as _____.

a) Earnest money b) Bank Guarantee
c) Security Deposit d) Caution money

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem-I) (New) (CBCS) Examination:
March/April - 2025
CIVIL ENGINEERING
Estimating, Costing and Valuation (BTN01701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory; answer any two from remaining questions from Sec – I.
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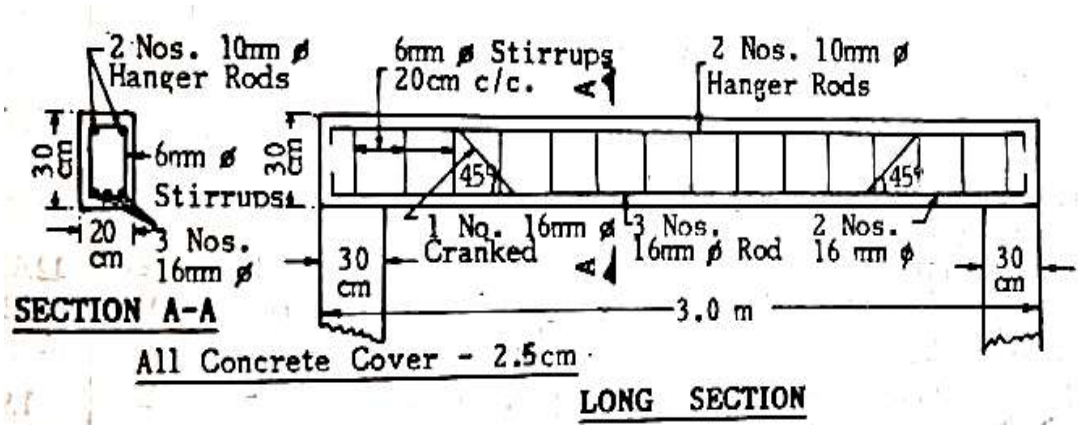
4) Assume suitable data if required and mention it clearly.

SECTION – I

Q.2 **a)** Calculate the quantity of reinforcement required in R.C.C. Beam as shown in attached drawing. **08**

b) Also prepare an Abstract sheet for these items by assuming suitable market rates. **04**



Q.3 **a)** Explain General and Detailed Specification. **04**

b) Write the detailed specifications for 1st class brickwork in 1:4 cement mortar. **04**

Q.4 **Carry out the rate analysis for following items.** **08**

a) Cement concrete 1:1.5:3 for RCC Column and footing.

b) 12 mm thick external plaster in 1:6.

Q.5 **a)** Explain administrative approval and technical sanction to estimates. **04**

b) Write a thumb rule for **04**

i) Number of cement bags required for construction of building.

ii) Steel reinforcement required for RCC in cement concrete.

SECTION – II

Q.6 **a)** Prepare a tender notice for the work of construction of a hospital of 150 beds capacity RCC structure of 12.000 Sq. ft built up area. Make suitable assumptions for required data. **08**

b) Write a short note on Item Rate contract and Percentage rate contract. **04**

Q.7 **Explain following Acts.** **08**

a) Minimum Wages Act

b) Workers Compensation Act

Q.8 **a)** **Define:** **04**

i) Book Value

ii) Speculation value

iii) Scrap value

iv) Potential value.

b) What is Earnest Money Deposit and Security Deposit? **04**

Q.9 What is the valuation of a property in 2024, with following details of a building? Assume 10% scrap value at the end of useful life. **08**

Sr. No	Description	Area (Sq.M)	Rate Rs/SqM	Total life (year)	Built in
1	Main Factory Building RCC skeleton used as dyeing unit and old office G+1	700.92	11000	75	1984
2	Mezzanine floor in main building	449.04	4500	75	2002

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Estimating, Costing and Valuation (BTN01701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) In first class brick masonry, the number of bricks required per Cubic Meter area _____.
a) 650 b) 6500
c) 500 d) 5000

2) Which method considers the loss of value of an asset is directly proportional to its life period?
a) Straight line method b) Diminishing balance method
c) Sinking fund method d) Machine hour basis method

3) Decrease or loss in property value due to its wear and tear is called _____.
a) Depreciation b) Capital Value
c) Annuity d) Outgoings

4) While taking the measurements of RCC the volume of reinforcement is _____.
a) Deducted from the concrete volume
b) Added to the concrete volume
c) No deduction no addition
d) None of these

5) If rise and tread of a step is 0.15m and 0.25m respectively, then the volume (in cubic meter) of 9 number of steps of 1 m length be recorded in measurement sheet shall be _____.
a) 0.3375 b) 0.337
c) 0.34 d) 0.33

6) If thickness of concreting is less than 100mm, the concreting in RCC slab is measured in _____.

a) Running m
b) Sq.m
c) Cu.m
d) None of the above

7) In long and short wall method of estimation, length of short wall is centre to centre distance between extreme opposite walls in shorter directions of ground floor plan _____.

a) Minus one breadth of item on each side
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c) Minus half breadth of item on each side
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8) The Damp Proof Course (D.P.C.) is measured in _____.

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b) Bank Guarantee
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d) Caution money

12) The quantity of aggregates required for RCC (1:2:4) for 15 cubic metres of work is _____.

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b) 10.32 m3
c) 8.57 m3
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13) The value at the end of utility of property but without dismantling is known as _____.

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14) We prepare revised estimate against the original estimate due to change in _____.

a) the rate of material or change in specification of materials
b) structural drawing
c) additional items
d) all the above

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem-I) (New) (CBCS) Examination:
March/April - 2025
CIVIL ENGINEERING
Estimating, Costing and Valuation (BTN01701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory; answer any two from remaining questions from Sec – I.
2) Q. 6 is compulsory; answer any two from remaining questions from Sec – II.
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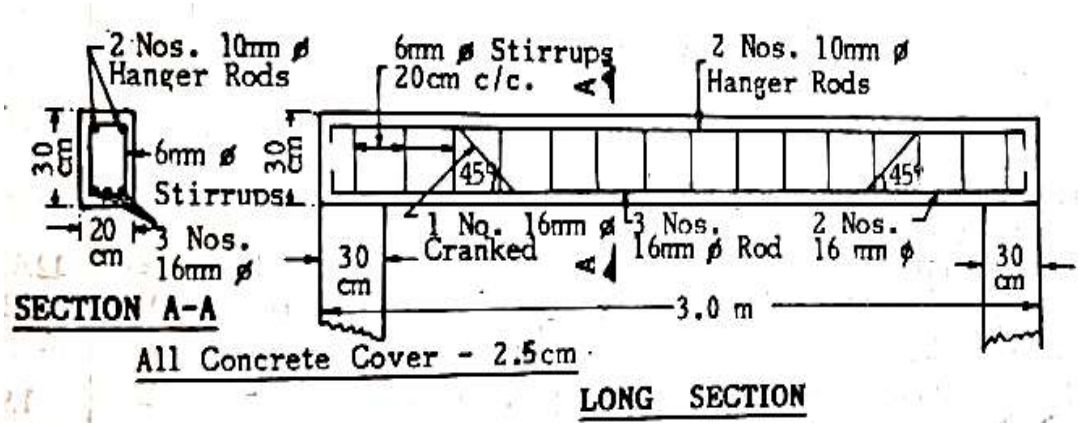
4) Assume suitable data if required and mention it clearly.

SECTION – I

Q.2 **a)** Calculate the quantity of reinforcement required in R.C.C. Beam as shown in attached drawing. **08**

b) Also prepare an Abstract sheet for these items by assuming suitable market rates. **04**



Q.3 **a)** Explain General and Detailed Specification. **04**

b) Write the detailed specifications for 1st class brickwork in 1:4 cement mortar. **04**

Q.4 **Carry out the rate analysis for following items.** **08**

a) Cement concrete 1:1.5:3 for RCC Column and footing.

b) 12 mm thick external plaster in 1:6.

Q.5 **a)** Explain administrative approval and technical sanction to estimates. **04**

b) Write a thumb rule for **04**

i) Number of cement bags required for construction of building.

ii) Steel reinforcement required for RCC in cement concrete.

SECTION – II

Q.6 **a)** Prepare a tender notice for the work of construction of a hospital of 150 beds capacity RCC structure of 12.000 Sq. ft built up area. Make suitable assumptions for required data. **08**

b) Write a short note on Item Rate contract and Percentage rate contract. **04**

Q.7 **Explain following Acts.** **08**

a) Minimum Wages Act

b) Workers Compensation Act

Q.8 **a)** **Define:** **04**

i) Book Value

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Q.9 What is the valuation of a property in 2024, with following details of a building? Assume 10% scrap value at the end of useful life. **08**

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1	Main Factory Building RCC skeleton used as dyeing unit and old office G+1	700.92	11000	75	1984
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Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Estimating, Costing and Valuation (BTN01701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

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a) Minus one breadth of item on each side
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13) The Damp Proof Course (D.P.C.) is measured in _____.

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14) The excavation exceeding 1.5 m in width and 10 sq.m., in plan area with a depth not exceeding 30 cm, is termed as _____.

a) Excavation b) Surface dressing
c) Cutting d) Surface excavation

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Estimating, Costing and Valuation (BTN01701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory; answer any two from remaining questions from Sec – I.
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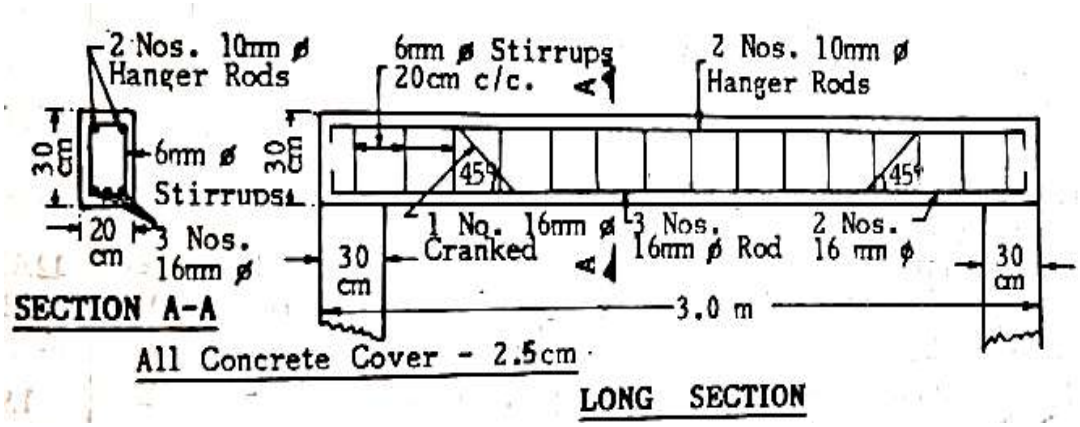
3) Figures to the right indicate full marks.
4) Assume suitable data if required and mention it clearly.

SECTION – I

Q.2 **a)** Calculate the quantity of reinforcement required in R.C.C. Beam as shown in attached drawing. **08**

b) Also prepare an Abstract sheet for these items by assuming suitable market rates. **04**



Q.3 **a)** Explain General and Detailed Specification. **04**

b) Write the detailed specifications for 1st class brickwork in 1:4 cement mortar. **04**

Q.4 **Carry out the rate analysis for following items.** **08**

a) Cement concrete 1:1.5:3 for RCC Column and footing.

b) 12 mm thick external plaster in 1:6.

Q.5 **a)** Explain administrative approval and technical sanction to estimates. **04**

b) Write a thumb rule for **04**

i) Number of cement bags required for construction of building.

ii) Steel reinforcement required for RCC in cement concrete.

SECTION – II

Q.6 **a)** Prepare a tender notice for the work of construction of a hospital of 150 beds capacity RCC structure of 12.000 Sq. ft built up area. Make suitable assumptions for required data. **08**

b) Write a short note on Item Rate contract and Percentage rate contract. **04**

Q.7 **Explain following Acts.** **08**

a) Minimum Wages Act

b) Workers Compensation Act

Q.8 **a)** **Define:** **04**

i) Book Value

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b) What is Earnest Money Deposit and Security Deposit? **04**

Q.9 What is the valuation of a property in 2024, with following details of a building? Assume 10% scrap value at the end of useful life. **08**

Sr. No	Description	Area (Sq.M)	Rate Rs/SqM	Total life (year)	Built in
1	Main Factory Building RCC skeleton used as dyeing unit and old office G+1	700.92	11000	75	1984
2	Mezzanine floor in main building	449.04	4500	75	2002

SLR-BD-326

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Earthquake Engineering (BTN01702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book).
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Each MCQ carries two marks each.
5) Assume suitable data wherever needed and mention it clearly.
6) Use of IS 1893:2016 is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: (Two marks each) **14**

1) Which of the following describes the build up and release of stress during an earthquake?
a) Modified Mercalli Scale b) Elastic rebound theory
c) Principle of superposition d) Travel time difference

2) Approximately what percentage of earthquakes occur at plate boundaries?
a) 25% b) 50%
c) 75% d) 90%

3) Storey shear is _____
a) Product of storey stiffness and floor displacement
b) Product of mass and floor displacement
c) Floor displacement
d) Storey stiffness

4) The transmissibility is zero at the frequency ratio $(\omega/\omega n)$ equal to _____
a) 0.5 b) 1.0
c) $\sqrt{2}$ d) 2^2

5) The response reduction factor with the increase in redundancy _____
a) Decreases b) Increases
c) Remains unaffected d) Remains constant

6) The response is maximum when _____
a) Damping ratio = 1 b) Mass ratio = 1
c) Stiffness ratio = 1 d) Frequency ratio = 1

7) IS 1893-2016 (Part-2) with earthquake resistant design of structures.

a) Liquid Retaining tanks
b) Bridges & Retaining walls
c) Industrial structures
d) General Provisions & Buildings

SLR-BD-326

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Earthquake Engineering (BTN01702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section I, Q. No. 3 is compulsory and attempt any two questions remaining of the questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of IS 1893:2016 is permitted.

Section – I

Q.2 Explain in detail soil liquefaction. What are the factors affecting liquefaction? **09**

Q.3 A SDOF system consists of a man with weight 1750 N and spring of stiffness 15 KN/mm. By testing the system it was found that a force of 470N produces relative velocity of 0.3 m/s. Find: **10**
1) Damping ratio
2) Damped frequency of vibration (ω_D)
3) Logarithmic decrement (δ)
4) The ratio of two successive amplitudes

Q.4 Describe the force transmissibility? Derive an expression for force transmissibility to the foundation of a SDOF system subjected to harmonic force. **09**

Q.5 Explain the concept of Duhamel's integral for damped systems. Derive its expression. **09**

Section – II

Q.6 It is proposed to construct a R.C.C. three storied commercial building having plan dimensions as shown in fig. 1 in zone III with following data. Determine the lateral forces and base shear. The all-column sizes are 300 x 450 mm & beams sizes are 230 x 450 mm. The slab thickness is 120mm & thk. of walls is 230mm. The ht. of floor is 3.2m & Live load is 4.0 kN/m^2 IS 13920 provisions will not be used. The strata are Medium. **10**

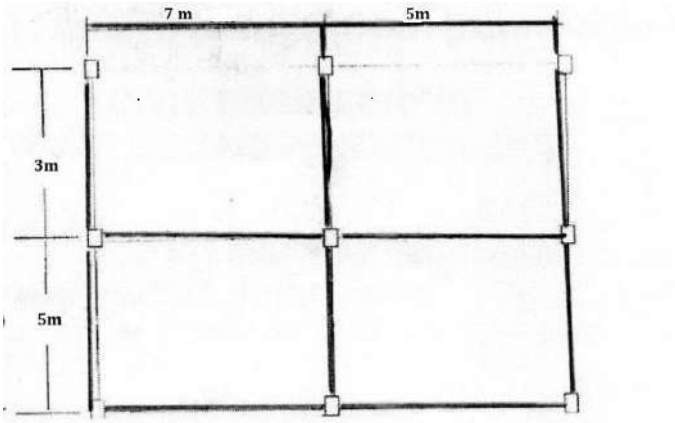

Figure 1 Q.6

Q.7 Explain the planning aspects for earthquake resistant design of building. **09**

Q.8 Describe the response reduction factor? How it is related to ductility? Explain in detail. **09**

Q.9 Describe the various earthquake resistant features that can be introduced in masonry building to make it earthquake resistant. **09**

SLR-BD-326

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Earthquake Engineering (BTN01702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book).
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4) Each MCQ carries two marks each.
5) Assume suitable data wherever needed and mention it clearly.
6) Use of IS 1893:2016 is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: (Two marks each) **14**

1) The response reduction factor with the increase in redundancy _____
a) Decreases b) Increases
c) Remains unaffected d) Remains constant

2) The response is maximum when _____
a) Damping ratio = 1 b) Mass ratio = 1
c) Stiffness ratio = 1 d) Frequency ratio = 1

3) IS 1893-2016 (Part-2) with earthquake resistant design of structures.
a) Liquid Retaining tanks b) Bridges & Retaining walls
c) Industrial structures d) General Provisions & Buildings

4) Which of the following describes the build up and release of stress during an earthquake?
a) Modified Mercalli Scale b) Elastic rebound theory
c) Principle of superposition d) Travel time difference

5) Approximately what percentage of earthquakes occur at plate boundaries?
a) 25% b) 50%
c) 75% d) 90%

6) Storey shear is _____
a) Product of storey stiffness and floor displacement
b) Product of mass and floor displacement
c) Floor displacement
d) Storey stiffness

7) The transmissibility is zero at the frequency ratio $(\omega/\omega n)$ equal to _____

a) 0.5 b) 1.0

c) $\sqrt{2}$ d) 2^2

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Earthquake Engineering (BTN01702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section I, Q. No. 3 is compulsory and attempt any two questions remaining of the questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions.
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4) Use of IS 1893:2016 is permitted.

Section – I

Q.2 Explain in detail soil liquefaction. What are the factors affecting liquefaction? **09**

Q.3 A SDOF system consists of a man with weight 1750 N and spring of stiffness 15 KN/mm. By testing the system it was found that a force of 470N produces relative velocity of 0.3 m/s. Find: **10**
1) Damping ratio
2) Damped frequency of vibration (ω_D)
3) Logarithmic decrement (δ)
4) The ratio of two successive amplitudes

Q.4 Describe the force transmissibility? Derive an expression for force transmissibility to the foundation of a SDOF system subjected to harmonic force. **09**

Q.5 Explain the concept of Duhamel's integral for damped systems. Derive its expression. **09**

Section – II

Q.6 It is proposed to construct a R.C.C. three storied commercial building having plan dimensions as shown in fig. 1 in zone III with following data. Determine the lateral forces and base shear. The all-column sizes are 300 x 450 mm & beams sizes are 230 x 450 mm. The slab thickness is 120mm & thk. of walls is 230mm. The ht. of floor is 3.2m & Live load is 4.0 kN/m^2 IS 13920 provisions will not be used. The strata are Medium. **10**

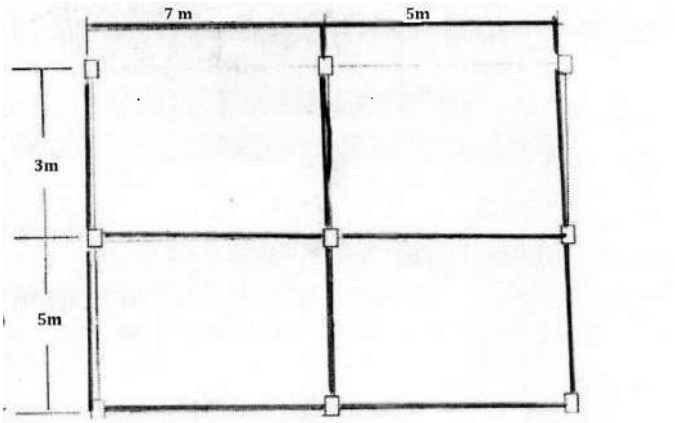

Figure 1 Q.6

Q.7 Explain the planning aspects for earthquake resistant design of building. **09**

Q.8 Describe the response reduction factor? How it is related to ductility? Explain in detail. **09**

Q.9 Describe the various earthquake resistant features that can be introduced in masonry building to make it earthquake resistant. **09**

Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Earthquake Engineering (BTN01702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book).
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4) Each MCQ carries two marks each.
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6) Use of IS 1893:2016 is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: (Two marks each) **14**

1) Storey shear is _____
a) Product of storey stiffness and floor displacement
b) Product of mass and floor displacement
c) Floor displacement
d) Storey stiffness

2) The transmissibility is zero at the frequency ratio $(\omega/\omega n)$ equal to _____
a) 0.5 b) 1.0
c) $\sqrt{2}$ d) 2^2

3) The response reduction factor with the increase in redundancy _____
a) Decreases b) Increases
c) Remains unaffected d) Remains constant

4) The response is maximum when _____
a) Damping ratio = 1 b) Mass ratio = 1
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5) IS 1893-2016 (Part-2) with earthquake resistant design of structures.
a) Liquid Retaining tanks b) Bridges & Retaining walls
c) Industrial structures d) General Provisions & Buildings

6) Which of the following describes the build up and release of stress during an earthquake?
a) Modified Mercalli Scale b) Elastic rebound theory
c) Principle of superposition d) Travel time difference

7) Approximately what percentage of earthquakes occur at plate boundaries?

a) 25%
b) 50%
c) 75%
d) 90%

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Earthquake Engineering (BTN01702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section I, Q. No. 3 is compulsory and attempt any two questions remaining of the questions.
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4) Use of IS 1893:2016 is permitted.

Section – I

Q.2 Explain in detail soil liquefaction. What are the factors affecting liquefaction? **09**

Q.3 A SDOF system consists of a man with weight 1750 N and spring of stiffness 15 KN/mm. By testing the system it was found that a force of 470N produces relative velocity of 0.3 m/s. Find: **10**
1) Damping ratio
2) Damped frequency of vibration (ω_D)
3) Logarithmic decrement (δ)
4) The ratio of two successive amplitudes

Q.4 Describe the force transmissibility? Derive an expression for force transmissibility to the foundation of a SDOF system subjected to harmonic force. **09**

Q.5 Explain the concept of Duhamel's integral for damped systems. Derive its expression. **09**

Section – II

Q.6 It is proposed to construct a R.C.C. three storied commercial building having plan dimensions as shown in fig. 1 in zone III with following data. Determine the lateral forces and base shear. The all-column sizes are 300 x 450 mm & beams sizes are 230 x 450 mm. The slab thickness is 120mm & thk. of walls is 230mm. The ht. of floor is 3.2m & Live load is 4.0 kN/m^2 IS 13920 provisions will not be used. The strata are Medium. **10**

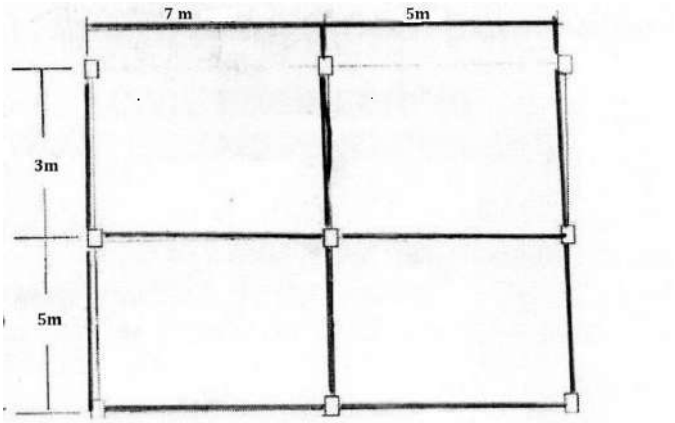

Figure 1 Q.6

Q.7 Explain the planning aspects for earthquake resistant design of building. **09**

Q.8 Describe the response reduction factor? How it is related to ductility? Explain in detail. **09**

Q.9 Describe the various earthquake resistant features that can be introduced in masonry building to make it earthquake resistant. **09**

SLR-BD-326

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Earthquake Engineering (BTN01702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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4) Each MCQ carries two marks each.
5) Assume suitable data wherever needed and mention it clearly.
6) Use of IS 1893:2016 is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: (Two marks each) 14

1) IS 1893-2016 (Part-2) with earthquake resistant design of structures.
a) Liquid Retaining tanks b) Bridges & Retaining walls
c) Industrial structures d) General Provisions & Buildings

2) Which of the following describes the build up and release of stress during an earthquake?
a) Modified Mercalli Scale b) Elastic rebound theory
c) Principle of superposition d) Travel time difference

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b) Product of mass and floor displacement
c) Floor displacement
d) Storey stiffness

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a) 0.5 b) 1.0
c) $\sqrt{2}$ d) 2^2

6) The response reduction factor with the increase in redundancy _____
a) Decreases b) Increases
c) Remains unaffected d) Remains constant

7) The response is maximum when _____

a) Damping ratio = 1 b) Mass ratio = 1

c) Stiffness ratio = 1 d) Frequency ratio = 1

SLR-BD-326

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Earthquake Engineering (BTN01702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
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4) Use of IS 1893:2016 is permitted.

Section – I

Q.2 Explain in detail soil liquefaction. What are the factors affecting liquefaction? **09**

Q.3 A SDOF system consists of a man with weight 1750 N and spring of stiffness 15 KN/mm. By testing the system it was found that a force of 470N produces relative velocity of 0.3 m/s. Find: **10**
1) Damping ratio
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4) The ratio of two successive amplitudes

Q.4 Describe the force transmissibility? Derive an expression for force transmissibility to the foundation of a SDOF system subjected to harmonic force. **09**

Q.5 Explain the concept of Duhamel's integral for damped systems. Derive its expression. **09**

Section – II

Q.6 It is proposed to construct a R.C.C. three storied commercial building having plan dimensions as shown in fig. 1 in zone III with following data. Determine the lateral forces and base shear. The all-column sizes are 300 x 450 mm & beams sizes are 230 x 450 mm. The slab thickness is 120mm & thk. of walls is 230mm. The ht. of floor is 3.2m & Live load is 4.0 kN/m^2 IS 13920 provisions will not be used. The strata are Medium. **10**

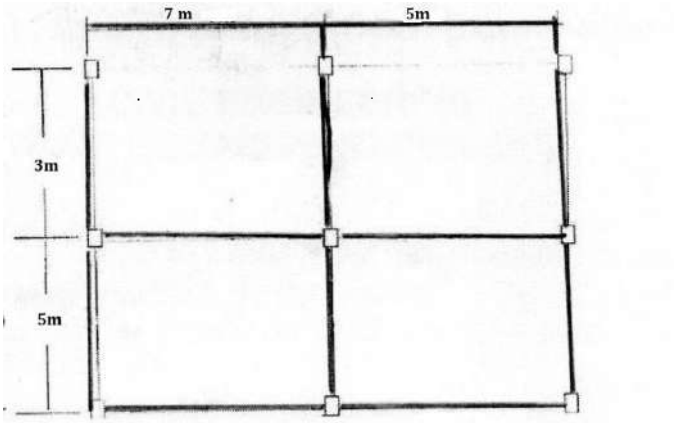


Figure 1 Q.6

Q.7 Explain the planning aspects for earthquake resistant design of building. **09**

Q.8 Describe the response reduction factor? How it is related to ductility? Explain in detail. **09**

Q.9 Describe the various earthquake resistant features that can be introduced in masonry building to make it earthquake resistant. **09**

SLR-BD-327

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Management and Practices (BTN01703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) _____ cranes are used for handling loads over a large rectangular area in factories, power stations, shipyards and workshops.
a) Mobile b) Derrick
c) Gantry d) Hydraulic

2) _____ is used for removing materials from cofferdams.
a) Dragline b) Back hoe
c) Clamshell d) Crane

3) _____ are used to excavate below the ground on which the machine stands.
a) Hoes b) Power Shovel
c) Trenchers d) Rippers

4) _____ slack is an indication of 'on schedule' project.
a) Positive b) Negative
c) Zero d) Greater

5) In PERT, the distribution should have a _____ probability of reaching the optimistic time.
a) Big b) Average
c) Small d) Medium

6) In a CPM network, if earliest start time of an activity is 8 days and activity duration is 7 days, the value of earliest finish time of that activity will be _____ days.
a) 1 b) 15
c) 56 d) 23

7) If for an activity optimistic time is 7 days, pessimistic time is 13 days and most likely time is 10 days, its standard deviation will be ____

a) 10 b) 3.28
c) 10.77 d) 1

8) If the scheduled completion time of a project is 40 days and earliest expected completion time is 35 days, what will be the value of probability factor if the standard deviation is 2.87 days?

a) 1.74 b) 3.00
c) 2.74 d) 0.74

9) The area under the Beta distribution curve is divided into two equal parts by _____.

a) Most likely time b) Optimistic time
c) Pessimistic time d) Expected time

10) What is the process of incorporating changes and rescheduling or re planning called?

a) Resource Allocation b) Resource smoothing
c) Resource levelling d) Updating

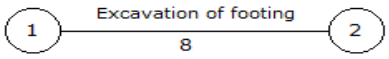
11) The key functions of safety management system are, (1) Planning for safety, (2) Organizing for safety, (3) Scheduling for safety, (4) Controlling for safety.

a) 1, 3 and 4 are correct b) 2, 3 and 4 are correct
c) 1, 2 and 3 are correct d) 1, 2 and 4 are correct

12) Pick up the correct statement from the following _____.

a) Programme Evaluation and Review Technique is event oriented
b) Programme Evaluation and Review Technique is not event oriented
c) Critical Path Method is event oriented
d) Critical Path Method is not event oriented

13) In the given figure, the network of a project represents _____



a) Activity of an excavation of a footing
b) Activity of an excavation which starts at event No. 1 and ends at even No. 2
c) Activity of excavation which takes 8 units of time
d) None of these

14) If D is the duration, ES and EF are the earliest start and finish, LS and LF are latest start and latest finish time, then the following relation holds good _____

a) EF = ES + D b) D = EF – ES
c) LF = LS + D d) All of the above

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Management and Practices (BTN01703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions remaining of the questions.
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3) Figure to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Consider a project shown in the table. **12**
i) Draw PERT Network.
ii) Find expected critical path.
iii) Find duration and variance of the project.

Activity i – j	Duration in Days		
	Optimistic	Most Likely	Pessimistic
1-2	5	7	9
2-3	11	14	17
2-4	13	15	17
2-5	4	6	8
3-7	9	10	11
4-5	0	0	0
5-6	3	3	3
6-8	5	12	17
7-8	2	4	8

Q.3 Answer the following questions **08**
a) What is WBS? Explain its importance in project management.
b) Following activities pertains to a project. Determine critical path and Duration

Activity	1-2	2-3	2-4	3-4	3-5	4-6	5-6
Duration(Days)	15	13	16	15	18	23	15

Q.4 Answer the following question **08**
a) Differentiate between PERT and CPM
b) What is process and different steps followed in network updating?

Q.5 Answer the following question **08**
a) Write a short note an application of software in construction industry.
b) What is BIM? Also explain the output of BIM.

SECTION II

Q.6 Write short notes on. **12**

a) Bulldozers
b) Power shovel
c) Hot mix plant

Q.7 Explain in detail **08**

a) safety equipment's used on construction site
b) Causes of accidents on construction site.

Q.8 Explain in detail. **08**

a) Write a short note on Mivan formwork.
b) Explain different components and elements used in prefabricated construction.

Q.9 Explain in detail. **08**

a) Write note on Dredging equipment and their types.
b) Explain the types and uses of diaphragm walls.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Management and Practices (BTN01703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) If the scheduled completion time of a project is 40 days and earliest expected completion time is 35 days, what will be the value of probability factor if the standard deviation is 2.87 days?
a) 1.74 b) 3.00
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3) What is the process of incorporating changes and rescheduling or re planning called?
a) Resource Allocation b) Resource smoothing
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4) The key functions of safety management system are, (1) Planning for safety, (2) Organizing for safety, (3) Scheduling for safety, (4) Controlling for safety.
a) 1, 3 and 4 are correct b) 2, 3 and 4 are correct
c) 1, 2 and 3 are correct d) 1, 2 and 4 are correct

5) Pick up the correct statement from the following _____.
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b) Programme Evaluation and Review Technique is not event oriented
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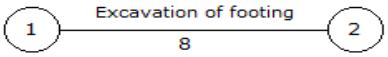
6) In the given figure, the network of a project represents _____



a) Activity of an excavation of a footing
b) Activity of an excavation which starts at event No. 1 and ends at even No. 2
c) Activity of excavation which takes 8 units of time
d) None of these

7) If D is the duration, ES and EF are the earliest start and finish, LS and LF are latest start and latest finish time, then the following relation holds good _____

a) EF = ES + D
b) D = EF – ES
c) LF = LS + D
d) All of the above

8) _____ cranes are used for handling loads over a large rectangular area in factories, power stations, shipyards and workshops.

a) Mobile
b) Derrick
c) Gantry
d) Hydraulic

9) _____ is used for removing materials from cofferdams.

a) Dragline
b) Back hoe
c) Clamshell
d) Crane

10) _____ are used to excavate below the ground on which the machine stands.

a) Hoes
b) Power Shovel
c) Trenchers
d) Rippers

11) _____ slack is an indication of 'on schedule' project.

a) Positive
b) Negative
c) Zero
d) Greater

12) In PERT, the distribution should have a _____ probability of reaching the optimistic time.

a) Big
b) Average
c) Small
d) Medium

13) In a CPM network, if earliest start time of an activity is 8 days and activity duration is 7 days, the value of earliest finish time of that activity will be _____ days.

a) 1
b) 15
c) 56
d) 23

14) If for an activity optimistic time is 7 days, pessimistic time is 13 days and most likely time is 10 days, its standard deviation will be ____

a) 10
b) 3.28
c) 10.77
d) 1

Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Management and Practices (BTN01703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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Section – I

Q.2 Consider a project shown in the table. **12**
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3-7	9	10	11
4-5	0	0	0
5-6	3	3	3
6-8	5	12	17
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a) What is WBS? Explain its importance in project management.
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Activity	1-2	2-3	2-4	3-4	3-5	4-6	5-6
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Q.4 Answer the following question **08**
a) Differentiate between PERT and CPM
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SECTION II

Q.6 Write short notes on. **12**

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Q.9 Explain in detail. **08**

a) Write note on Dredging equipment and their types.
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Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Management and Practices (BTN01703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
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Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) The key functions of safety management system are, (1) Planning for safety, (2) Organizing for safety, (3) Scheduling for safety, (4) Controlling for safety.
a) 1, 3 and 4 are correct
b) 2, 3 and 4 are correct
c) 1, 2 and 3 are correct
d) 1, 2 and 4 are correct

2) Pick up the correct statement from the following _____.
a) Programme Evaluation and Review Technique is event oriented
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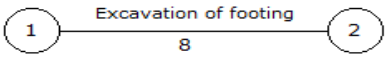

a) Activity of an excavation of a footing
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a) Big b) Average
c) Small d) Medium

10) In a CPM network, if earliest start time of an activity is 8 days and activity duration is 7 days, the value of earliest finish time of that activity will be _____ days.
a) 1 b) 15
c) 56 d) 23

11) If for an activity optimistic time is 7 days, pessimistic time is 13 days and most likely time is 10 days, its standard deviation will be ____
a) 10 b) 3.28
c) 10.77 d) 1

12) If the scheduled completion time of a project is 40 days and earliest expected completion time is 35 days, what will be the value of probability factor if the standard deviation is 2.87 days?
a) 1.74 b) 3.00
c) 2.74 d) 0.74

13) The area under the Beta distribution curve is divided into two equal parts by _____.
a) Most likely time b) Optimistic time
c) Pessimistic time d) Expected time

14) What is the process of incorporating changes and rescheduling or re planning called?
a) Resource Allocation b) Resource smoothing
c) Resource levelling d) Updating

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Management and Practices (BTN01703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions remaining of the questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions.
3) Figure to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Consider a project shown in the table. **12**
i) Draw PERT Network.
ii) Find expected critical path.
iii) Find duration and variance of the project.

Activity i – j	Duration in Days		
	Optimistic	Most Likely	Pessimistic
1-2	5	7	9
2-3	11	14	17
2-4	13	15	17
2-5	4	6	8
3-7	9	10	11
4-5	0	0	0
5-6	3	3	3
6-8	5	12	17
7-8	2	4	8

Q.3 Answer the following questions **08**
a) What is WBS? Explain its importance in project management.
b) Following activities pertains to a project. Determine critical path and Duration

Activity	1-2	2-3	2-4	3-4	3-5	4-6	5-6
Duration(Days)	15	13	16	15	18	23	15

Q.4 Answer the following question **08**
a) Differentiate between PERT and CPM
b) What is process and different steps followed in network updating?

Q.5 Answer the following question **08**
a) Write a short note an application of software in construction industry.
b) What is BIM? Also explain the output of BIM.

SECTION II

Q.6 Write short notes on. **12**

a) Bulldozers
b) Power shovel
c) Hot mix plant

Q.7 Explain in detail **08**

a) safety equipment's used on construction site
b) Causes of accidents on construction site.

Q.8 Explain in detail. **08**

a) Write a short note on Mivan formwork.
b) Explain different components and elements used in prefabricated construction.

Q.9 Explain in detail. **08**

a) Write note on Dredging equipment and their types.
b) Explain the types and uses of diaphragm walls.

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Management and Practices (BTN01703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) In a CPM network, if earliest start time of an activity is 8 days and activity duration is 7 days, the value of earliest finish time of that activity will be _____ days.
a) 1 b) 15
c) 56 d) 23

2) If for an activity optimistic time is 7 days, pessimistic time is 13 days and most likely time is 10 days, its standard deviation will be ____
a) 10 b) 3.28
c) 10.77 d) 1

3) If the scheduled completion time of a project is 40 days and earliest expected completion time is 35 days, what will be the value of probability factor if the standard deviation is 2.87 days?
a) 1.74 b) 3.00
c) 2.74 d) 0.74

4) The area under the Beta distribution curve is divided into two equal parts by _____.
a) Most likely time b) Optimistic time
c) Pessimistic time d) Expected time

5) What is the process of incorporating changes and rescheduling or re planning called?
a) Resource Allocation b) Resource smoothing
c) Resource levelling d) Updating

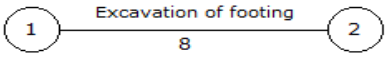
6) The key functions of safety management system are, (1) Planning for safety, (2) Organizing for safety, (3) Scheduling for safety, (4) Controlling for safety.

a) 1, 3 and 4 are correct
b) 2, 3 and 4 are correct
c) 1, 2 and 3 are correct
d) 1, 2 and 4 are correct

7) Pick up the correct statement from the following _____.

a) Programme Evaluation and Review Technique is event oriented
b) Programme Evaluation and Review Technique is not event oriented
c) Critical Path Method is event oriented
d) Critical Path Method is not event oriented

8) In the given figure, the network of a project represents _____



a) Activity of an excavation of a footing
b) Activity of an excavation which starts at event No. 1 and ends at even No. 2
c) Activity of excavation which takes 8 units of time
d) None of these

9) If D is the duration, ES and EF are the earliest start and finish, LS and LF are latest start and latest finish time, then the following relation holds good _____

a) EF = ES + D
b) D = EF – ES
c) LF = LS + D
d) All of the above

10) _____ cranes are used for handling loads over a large rectangular area in factories, power stations, shipyards and workshops.

a) Mobile
b) Derrick
c) Gantry
d) Hydraulic

11) _____ is used for removing materials from cofferdams.

a) Dragline
b) Back hoe
c) Clamshell
d) Crane

12) _____ are used to excavate below the ground on which the machine stands.

a) Hoes
b) Power Shovel
c) Trenchers
d) Rippers

13) _____ slack is an indication of 'on schedule' project.

a) Positive
b) Negative
c) Zero
d) Greater

14) In PERT, the distribution should have a _____ probability of reaching the optimistic time.

a) Big
b) Average
c) Small
d) Medium

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Management and Practices (BTN01703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions remaining of the questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions.
3) Figure to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Consider a project shown in the table. **12**
i) Draw PERT Network.
ii) Find expected critical path.
iii) Find duration and variance of the project.

Activity i – j	Duration in Days		
	Optimistic	Most Likely	Pessimistic
1-2	5	7	9
2-3	11	14	17
2-4	13	15	17
2-5	4	6	8
3-7	9	10	11
4-5	0	0	0
5-6	3	3	3
6-8	5	12	17
7-8	2	4	8

Q.3 Answer the following questions **08**
a) What is WBS? Explain its importance in project management.
b) Following activities pertains to a project. Determine critical path and Duration

Activity	1-2	2-3	2-4	3-4	3-5	4-6	5-6
Duration(Days)	15	13	16	15	18	23	15

Q.4 Answer the following question **08**
a) Differentiate between PERT and CPM
b) What is process and different steps followed in network updating?

Q.5 Answer the following question **08**
a) Write a short note an application of software in construction industry.
b) What is BIM? Also explain the output of BIM.

SECTION II

Q.6 Write short notes on. **12**

a) Bulldozers
b) Power shovel
c) Hot mix plant

Q.7 Explain in detail **08**

a) safety equipment's used on construction site
b) Causes of accidents on construction site.

Q.8 Explain in detail. **08**

a) Write a short note on Mivan formwork.
b) Explain different components and elements used in prefabricated construction.

Q.9 Explain in detail. **08**

a) Write note on Dredging equipment and their types.
b) Explain the types and uses of diaphragm walls.

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Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Traffic Engineering and Management (BTN01710)

Day & Date: Thursday, 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Question. **14**

1) If the space headway is 9m, then the jam density in vehicle/km is _____
a) 115 b) 111
c) 120 d) 100

2) Maximum number of vehicles can be parked with _____
a) Parallel parking b) 45° angle parking
c) 90° angle parking d) 30° angle parking

3) In the context of parking studies, what is the term "parking load" defined as?
a) The total area of land allocated for parking spaces
b) The number of vehicles occupying a parking space at any given moment
c) The total number of parking spaces available for use
d) The demand for parking spaces based on the type of vehicles using them

4) The time interval measured between the passage of successive vehicles from head-to-head is known as _____
a) Headway distance b) Space headway
c) Time headway d) All of these

5) Cumulative speed distribution curve is usually adopted for geometric design of highway. The percentile speed adopted for geometric design is _____
a) 85th percentile b) 90th percentile
c) 98th percentile d) 99.9th percentile

6) Which of the following is NOT a key objective of traffic engineering?
   a) To reduce the number of road accidents
   b) To improve the travel time for all vehicles
   c) To increase the road network's capacity without considering safety
   d) To design roads that ensure the safe interaction between road users

7) As per IRC:67-2001, a traffic sign indicating the speed limit on a road should be of _____
   a) Circular shape with White Background and Red Border
   b) Triangular shape with White Background and Red Border
   c) Triangular shape with Red Background and White Border
   d) Circular shape with Red Background and White Border

8) When volume of the road reaches maximum flow or the capacity, the volume capacity ratio approaches to a value of _____
   a) 1.0 b) 1.5
   c) 0.0 d) 0.5

9) Traffic flow can be defined as _____
   a) The number of vehicles at an intersection
   b) The movement of vehicles along a road over time
   c) The distance between two vehicles on a road
   d) The speed of a vehicle at a given moment

10) What is the purpose of driver licensing?
   a) To ensure that drivers are qualified to operate a vehicle safely
   b) To increase government revenue
   c) To ensure that vehicles are parked legally
   d) To control the number of drivers on the road

11) In a traffic lane at rotary, the traffic moving extreme left is 250 PCU, and in extreme right, it is 200 PCU, the sum of the weaving traffic crossing left and right is 500 PCU, so find the proportion of weaving traffic.
   a) 0.5 b) 1.71
   c) 2.11 d) 1.11

12) Automated toll collection in ITS helps by ____
   a) Reducing human involvement in toll collection
   b) Increasing Road toll rates
   c) Monitoring vehicles for emissions
   d) Providing entertainment to drivers

13) The one-way street system helps in _____
   a) Reducing traffic congestion
   b) Increasing the number of accidents
   c) Allowing both directions of traffic
   d) Making roads wider

14) Level of Service A and F represents _____
   a) Free Flow and Forced Flow respectively
   b) Both are free-flow
   c) Both are Forced flow
   d) Forced Flow and Free Flow respectively

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Traffic Engineering and Management (BTN01710)

Day & Date: Thursday, 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.
3) Assume any missing data suitably and mention it clearly.

Section – I

Q.2 Answer the following questions (Any Two) **14**

a) Discuss briefly the various factors which affect the road user characteristics and their effects in traffic performance.

b) From an in-out survey conducted for a parking area consisting of 40 bays, the initial count was found to be 25. Table-1 gives the result of the survey. The number of vehicles coming in and out of the parking lot for a time interval of 5 minutes is as shown in the Table-1 below. Find the accumulation, total parking load, average occupancy and efficiency of the parking lot.

Table-1-In-Out Survey data

In-Out survey data		
Time	In	Out
5	3	2
10	2	4
15	4	2
20	5	4
25	7	3
30	8	2

In-Out survey data		
Time	In	Out
35	2	7
40	4	2
45	6	4
50	4	1
55	3	3
60	2	5

c) List and explain the factors which affect the vehicle characteristics.

d) Write a short note on a) O-D Study b) Spot Speed Study.

Q.3 Answer the following questions (Any Two) **14**

a) Explain factors affecting capacity and level of service.

b) Explain the relationship between speed, travel time, volume, density and capacity.

c) Discuss various types of parking, their advantages and disadvantages.

d) Write a short note - i) Passenger Car Unit ii) Parallel and angle parking.

Section – II

Q.4 Answer the following questions (Any Two) **14**

a) Write a short note on i) Regulation on driver ii) Regulation on speed

b) Discuss the advantages and disadvantages of one way street.

c) Explain general principles governing application of speed limits in Rural and Urban area.

d) Explain the various types of traffic signals and their functions.

Q.5 Answer the following questions (Any Two) **14**

a) Explain with a neat sketch.

i) STOP and GIVE WAY sign
ii) Hazard Markers
iii) Roadway Delineators

b) Define, cycle, Interval and Phase. The average normal flow of traffic on cross roads 1 and 2 during design period are 440 and 280 PCU per hour, the saturation flow values on these roads are estimated as 1300 and 1100 PCU per hour respectively. The all-red time required for pedestrian crossing is 12 sec. Design two phase traffic signal with pedestrian crossing by Webster's method. Sketch the phase diagram.

c) Explain in detail various types of traffic control devices

d) Write a short note on ITS applications in the urban transport system.

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Traffic Engineering and Management (BTN01710)

Day & Date: Thursday, 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume any missing data suitably and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Question. **14**

1) When volume of the road reaches maximum flow or the capacity, the volume capacity ratio approaches to a value of _____
a) 1.0 b) 1.5
c) 0.0 d) 0.5

2) Traffic flow can be defined as _____
a) The number of vehicles at an intersection
b) The movement of vehicles along a road over time
c) The distance between two vehicles on a road
d) The speed of a vehicle at a given moment

3) What is the purpose of driver licensing?
a) To ensure that drivers are qualified to operate a vehicle safely
b) To increase government revenue
c) To ensure that vehicles are parked legally
d) To control the number of drivers on the road

4) In a traffic lane at rotary, the traffic moving extreme left is 250 PCU, and in extreme right, it is 200 PCU, the sum of the weaving traffic crossing left and right is 500 PCU, so find the proportion of weaving traffic.
a) 0.5 b) 1.71
c) 2.11 d) 1.11

5) Automated toll collection in ITS helps by ____
a) Reducing human involvement in toll collection
b) Increasing Road toll rates
c) Monitoring vehicles for emissions
d) Providing entertainment to drivers

6) The one-way street system helps in _____
   a) Reducing traffic congestion
   b) Increasing the number of accidents
   c) Allowing both directions of traffic
   d) Making roads wider

7) Level of Service A and F represents _____
   a) Free Flow and Forced Flow respectively
   b) Both are free-flow
   c) Both are Forced flow
   d) Forced Flow and Free Flow respectively

8) If the space headway is 9m, then the jam density in vehicle/km is _____
   a) 115 b) 111
   c) 120 d) 100

9) Maximum number of vehicles can be parked with _____
   a) Parallel parking b) 45° angle parking
   c) 90° angle parking d) 30° angle parking

10) In the context of parking studies, what is the term "parking load" defined as?
   a) The total area of land allocated for parking spaces
   b) The number of vehicles occupying a parking space at any given moment
   c) The total number of parking spaces available for use
   d) The demand for parking spaces based on the type of vehicles using them

11) The time interval measured between the passage of successive vehicles from head-to-head is known as _____
   a) Headway distance b) Space headway
   c) Time headway d) All of these

12) Cumulative speed distribution curve is usually adopted for geometric design of highway. The percentile speed adopted for geometric design is _____
   a) 85th percentile b) 90th percentile
   c) 98th percentile d) 99.9th percentile

13) Which of the following is NOT a key objective of traffic engineering?
   a) To reduce the number of road accidents
   b) To improve the travel time for all vehicles
   c) To increase the road network's capacity without considering safety
   d) To design roads that ensure the safe interaction between road users

14) As per IRC:67-2001, a traffic sign indicating the speed limit on a road should be of _____

a) Circular shape with White Background and Red Border
b) Triangular shape with White Background and Red Border
c) Triangular shape with Red Background and White Border
d) Circular shape with Red Background and White Border

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Traffic Engineering and Management (BTN01710)

Day & Date: Thursday, 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.
3) Assume any missing data suitably and mention it clearly.

Section – I

Q.2 Answer the following questions (Any Two) **14**

a) Discuss briefly the various factors which affect the road user characteristics and their effects in traffic performance.

b) From an in-out survey conducted for a parking area consisting of 40 bays, the initial count was found to be 25. Table-1 gives the result of the survey. The number of vehicles coming in and out of the parking lot for a time interval of 5 minutes is as shown in the Table-1 below. Find the accumulation, total parking load, average occupancy and efficiency of the parking lot.

Table-1-In-Out Survey data

In-Out survey data		
Time	In	Out
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10	2	4
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20	5	4
25	7	3
30	8	2

In-Out survey data		
Time	In	Out
35	2	7
40	4	2
45	6	4
50	4	1
55	3	3
60	2	5

c) List and explain the factors which affect the vehicle characteristics.

d) Write a short note on a) O-D Study b) Spot Speed Study.

Q.3 Answer the following questions (Any Two) **14**

a) Explain factors affecting capacity and level of service.

b) Explain the relationship between speed, travel time, volume, density and capacity.

c) Discuss various types of parking, their advantages and disadvantages.

d) Write a short note - i) Passenger Car Unit ii) Parallel and angle parking.

Section – II

Q.4 Answer the following questions (Any Two) **14**

a) Write a short note on i) Regulation on driver ii) Regulation on speed

b) Discuss the advantages and disadvantages of one way street.

c) Explain general principles governing application of speed limits in Rural and Urban area.

d) Explain the various types of traffic signals and their functions.

Q.5 Answer the following questions (Any Two) **14**

a) Explain with a neat sketch.

i) STOP and GIVE WAY sign
ii) Hazard Markers
iii) Roadway Delineators

b) Define, cycle, Interval and Phase. The average normal flow of traffic on cross roads 1 and 2 during design period are 440 and 280 PCU per hour, the saturation flow values on these roads are estimated as 1300 and 1100 PCU per hour respectively. The all-red time required for pedestrian crossing is 12 sec. Design two phase traffic signal with pedestrian crossing by Webster's method. Sketch the phase diagram.

c) Explain in detail various types of traffic control devices

d) Write a short note on ITS applications in the urban transport system.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Traffic Engineering and Management (BTN01710)

Day & Date: Thursday, 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Question. **14**

1) In a traffic lane at rotary, the traffic moving extreme left is 250 PCU, and in extreme right, it is 200 PCU, the sum of the weaving traffic crossing left and right is 500 PCU, so find the proportion of weaving traffic.
a) 0.5 b) 1.71
c) 2.11 d) 1.11

2) Automated toll collection in ITS helps by ____
a) Reducing human involvement in toll collection
b) Increasing Road toll rates
c) Monitoring vehicles for emissions
d) Providing entertainment to drivers

3) The one-way street system helps in _____
a) Reducing traffic congestion
b) Increasing the number of accidents
c) Allowing both directions of traffic
d) Making roads wider

4) Level of Service A and F represents _____
a) Free Flow and Forced Flow respectively
b) Both are free-flow
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5) If the space headway is 9m, then the jam density in vehicle/km is _____
a) 115 b) 111
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6) Maximum number of vehicles can be parked with _____
   a) Parallel parking
   b) 45° angle parking
   c) 90° angle parking
   d) 30° angle parking

7) In the context of parking studies, what is the term "parking load" defined as?
   a) The total area of land allocated for parking spaces
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8) The time interval measured between the passage of successive vehicles from head-to-head is known as _____
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9) Cumulative speed distribution curve is usually adopted for geometric design of highway. The percentile speed adopted for geometric design is _____
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10) Which of the following is NOT a key objective of traffic engineering?
   a) To reduce the number of road accidents
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11) As per IRC:67-2001, a traffic sign indicating the speed limit on a road should be of _____
   a) Circular shape with White Background and Red Border
   b) Triangular shape with White Background and Red Border
   c) Triangular shape with Red Background and White Border
   d) Circular shape with Red Background and White Border

12) When volume of the road reaches maximum flow or the capacity, the volume capacity ratio approaches to a value of _____
   a) 1.0
   b) 1.5
   c) 0.0
   d) 0.5

13) Traffic flow can be defined as _____
   a) The number of vehicles at an intersection
   b) The movement of vehicles along a road over time
   c) The distance between two vehicles on a road
   d) The speed of a vehicle at a given moment

14) What is the purpose of driver licensing?

a) To ensure that drivers are qualified to operate a vehicle safely
b) To increase government revenue
c) To ensure that vehicles are parked legally
d) To control the number of drivers on the road

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Traffic Engineering and Management (BTN01710)

Day & Date: Thursday, 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume any missing data suitably and mention it clearly.

Section – I

Q.2 Answer the following questions (Any Two) **14**

a) Discuss briefly the various factors which affect the road user characteristics and their effects in traffic performance.

b) From an in-out survey conducted for a parking area consisting of 40 bays, the initial count was found to be 25. Table-1 gives the result of the survey. The number of vehicles coming in and out of the parking lot for a time interval of 5 minutes is as shown in the Table-1 below. Find the accumulation, total parking load, average occupancy and efficiency of the parking lot.

Table-1-In-Out Survey data

In-Out survey data		
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20	5	4
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30	8	2

In-Out survey data		
Time	In	Out
35	2	7
40	4	2
45	6	4
50	4	1
55	3	3
60	2	5

c) List and explain the factors which affect the vehicle characteristics.

d) Write a short note on a) O-D Study b) Spot Speed Study.

Q.3 Answer the following questions (Any Two) **14**

a) Explain factors affecting capacity and level of service.

b) Explain the relationship between speed, travel time, volume, density and capacity.

c) Discuss various types of parking, their advantages and disadvantages.

d) Write a short note - i) Passenger Car Unit ii) Parallel and angle parking.

Section – II

Q.4 Answer the following questions (Any Two) **14**

a) Write a short note on i) Regulation on driver ii) Regulation on speed

b) Discuss the advantages and disadvantages of one way street.

c) Explain general principles governing application of speed limits in Rural and Urban area.

d) Explain the various types of traffic signals and their functions.

Q.5 Answer the following questions (Any Two) **14**

a) Explain with a neat sketch.

i) STOP and GIVE WAY sign
ii) Hazard Markers
iii) Roadway Delineators

b) Define, cycle, Interval and Phase. The average normal flow of traffic on cross roads 1 and 2 during design period are 440 and 280 PCU per hour, the saturation flow values on these roads are estimated as 1300 and 1100 PCU per hour respectively. The all-red time required for pedestrian crossing is 12 sec. Design two phase traffic signal with pedestrian crossing by Webster's method. Sketch the phase diagram.

c) Explain in detail various types of traffic control devices

d) Write a short note on ITS applications in the urban transport system.

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Traffic Engineering and Management (BTN01710)

Day & Date: Thursday, 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Question. **14**

1) Which of the following is NOT a key objective of traffic engineering?
a) To reduce the number of road accidents
b) To improve the travel time for all vehicles
c) To increase the road network's capacity without considering safety
d) To design roads that ensure the safe interaction between road users

2) As per IRC:67-2001, a traffic sign indicating the speed limit on a road should be of _____
a) Circular shape with White Background and Red Border
b) Triangular shape with White Background and Red Border
c) Triangular shape with Red Background and White Border
d) Circular shape with Red Background and White Border

3) When volume of the road reaches maximum flow or the capacity, the volume capacity ratio approaches to a value of _____
a) 1.0 b) 1.5
c) 0.0 d) 0.5

4) Traffic flow can be defined as _____
a) The number of vehicles at an intersection
b) The movement of vehicles along a road over time
c) The distance between two vehicles on a road
d) The speed of a vehicle at a given moment

5) What is the purpose of driver licensing?
a) To ensure that drivers are qualified to operate a vehicle safely
b) To increase government revenue
c) To ensure that vehicles are parked legally
d) To control the number of drivers on the road

6) In a traffic lane at rotary, the traffic moving extreme left is 250 PCU, and in extreme right, it is 200 PCU, the sum of the weaving traffic crossing left and right is 500 PCU, so find the proportion of weaving traffic.

a) 0.5 b) 1.71
c) 2.11 d) 1.11

7) Automated toll collection in ITS helps by ____

a) Reducing human involvement in toll collection
b) Increasing Road toll rates
c) Monitoring vehicles for emissions
d) Providing entertainment to drivers

8) The one-way street system helps in _____

a) Reducing traffic congestion
b) Increasing the number of accidents
c) Allowing both directions of traffic
d) Making roads wider

9) Level of Service A and F represents _____

a) Free Flow and Forced Flow respectively
b) Both are free-flow
c) Both are Forced flow
d) Forced Flow and Free Flow respectively

10) If the space headway is 9m, then the jam density in vehicle/km is _____

a) 115 b) 111
c) 120 d) 100

11) Maximum number of vehicles can be parked with _____

a) Parallel parking b) 45° angle parking
c) 90° angle parking d) 30° angle parking

12) In the context of parking studies, what is the term "parking load" defined as?

a) The total area of land allocated for parking spaces
b) The number of vehicles occupying a parking space at any given moment
c) The total number of parking spaces available for use
d) The demand for parking spaces based on the type of vehicles using them

13) The time interval measured between the passage of successive vehicles from head-to-head is known as _____

a) Headway distance b) Space headway
c) Time headway d) All of these

14) Cumulative speed distribution curve is usually adopted for geometric design of highway. The percentile speed adopted for geometric design is _____

a) 85th percentile
b) 90th percentile
c) 98th percentile
d) 99.9th percentile

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Traffic Engineering and Management (BTN01710)

Day & Date: Thursday, 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.
3) Assume any missing data suitably and mention it clearly.

Section – I

Q.2 Answer the following questions (Any Two) **14**

a) Discuss briefly the various factors which affect the road user characteristics and their effects in traffic performance.

b) From an in-out survey conducted for a parking area consisting of 40 bays, the initial count was found to be 25. Table-1 gives the result of the survey. The number of vehicles coming in and out of the parking lot for a time interval of 5 minutes is as shown in the Table-1 below. Find the accumulation, total parking load, average occupancy and efficiency of the parking lot.

Table-1-In-Out Survey data

In-Out survey data		
Time	In	Out
5	3	2
10	2	4
15	4	2
20	5	4
25	7	3
30	8	2

In-Out survey data		
Time	In	Out
35	2	7
40	4	2
45	6	4
50	4	1
55	3	3
60	2	5

c) List and explain the factors which affect the vehicle characteristics.

d) Write a short note on a) O-D Study b) Spot Speed Study.

Q.3 Answer the following questions (Any Two) **14**

a) Explain factors affecting capacity and level of service.

b) Explain the relationship between speed, travel time, volume, density and capacity.

c) Discuss various types of parking, their advantages and disadvantages.

d) Write a short note - i) Passenger Car Unit ii) Parallel and angle parking.

Section – II

Q.4 Answer the following questions (Any Two) **14**

a) Write a short note on i) Regulation on driver ii) Regulation on speed

b) Discuss the advantages and disadvantages of one way street.

c) Explain general principles governing application of speed limits in Rural and Urban area.

d) Explain the various types of traffic signals and their functions.

Q.5 Answer the following questions (Any Two) **14**

a) Explain with a neat sketch.

i) STOP and GIVE WAY sign
ii) Hazard Markers
iii) Roadway Delineators

b) Define, cycle, Interval and Phase. The average normal flow of traffic on cross roads 1 and 2 during design period are 440 and 280 PCU per hour, the saturation flow values on these roads are estimated as 1300 and 1100 PCU per hour respectively. The all-red time required for pedestrian crossing is 12 sec. Design two phase traffic signal with pedestrian crossing by Webster's method. Sketch the phase diagram.

c) Explain in detail various types of traffic control devices

d) Write a short note on ITS applications in the urban transport system.

SLR-BD-333

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Productivity (BTN01712)

Day & Date: Thursday, 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions **14**

1) Raw material productivity can be increased by _____
a) Proper choice of design b) Reuse of material
c) Scrap control d) All of the above

2) Total work content = _____
a) Basic work content + Excess time
b) Basic work content - Excess time
c) Basic work content + Ineffective time
d) Basic work content - Ineffective time

3) Which of the following adds idle time due to short runs?
a) Excessive product variety b) Lack of Standardization
c) Both a and b d) Design changes

4) Preventive maintenance improves _____
a) Material productivity b) Labour productivity
c) Machine productivity d) Capital productivity

5) The time for which the worker or machine or both remain idle due to the shortcomings of the management or workers is known as _____
a) Excess time b) Idle time
c) Ineffective time d) Work content

6) Productivity can be increased by _____
a) By increasing the output from the same input
b) By reducing the input for the same output
c) Both a and b
d) None of the above

7) An English word 'Motivation' is originated from a Greek word 'Movere'. Movere means _____

a) Tension b) Drive
c) Motion d) Profit

8) What is the purpose of a Crew Balance Chart?

a) To track individual worker performance
b) To optimize the allocation of labor resources
c) To monitor material consumption
d) To analyze project cash flow

9) A 'change order' in construction is typically issued due to _____

a) A change in the project manager
b) A change in weather conditions
c) A change in the project scope
d) A change in worker morale

10) Which of the following is NOT a method for improving productivity?

a) Implementing new technologies
b) Reducing worker training
c) Improving communication
d) Optimizing resource allocation

11) What is the 'Crew Approach' in work sampling?

a) Observing workers at predetermined time intervals
b) Focusing observations on a specific crew
c) Analyzing the flow of materials on site
d) Using drones to monitor construction progress

12) Which of the following is a tool for identifying productivity loss?

a) Productivity Index b) Foreman Delay Survey
c) Crew Balance Chart d) All of the above

13) What is a major benefit of pre-planning in construction?

a) Increased worker breaks b) Reduced project costs
c) Increased overtime hours d) Ignoring safety protocols

14) Which of the following is a human factor influencing productivity?

a) Skill level b) Weather conditions
c) Material quality d) Equipment availability

SLR-BD-333

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Productivity (BTN01712)

Day & Date: Thursday, 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Attempt Any Two **14**

a) Define productivity in the context of construction. Explain the need for productivity measurement in construction projects.
b) Describe how performance factors are calculated and used for forecasting in construction productivity.
c) Explain the concept of 'Earned Value' and how it is used to assess project performance.

Q.3 Attempt Any Two **14**

a) What is a Productivity Index? Discuss the causes of low productivity in construction.
b) Explain how pre-planning and record keeping can contribute to improving construction productivity.
c) Discuss the impact of new technologies on labor productivity in construction. Give examples.

Section – II

Q.4 Attempt Any Two **14**

a) Discuss the various factors that influence productivity in construction projects.
b) Explain how 'Sources of Lost Time' can be identified and minimized.
c) Discuss the influence of human factors like motivation and teamwork on construction productivity.

Q.5 Attempt Any Two **14**

a) What is work sampling? Explain its applications in construction productivity measurement.
b) Describe the 'Tour Approach' and 'Foreman Delay Survey' in work sampling.
c) Explain the use of 'Crew Balance Charts' and 'Flow Diagrams' in improving construction productivity. Provide examples.

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Productivity (BTN01712)

Day & Date: Thursday, 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions **14**

1) What is the purpose of a Crew Balance Chart?
a) To track individual worker performance
b) To optimize the allocation of labor resources
c) To monitor material consumption
d) To analyze project cash flow

2) A 'change order' in construction is typically issued due to _____
a) A change in the project manager
b) A change in weather conditions
c) A change in the project scope
d) A change in worker morale

3) Which of the following is NOT a method for improving productivity?
a) Implementing new technologies
b) Reducing worker training
c) Improving communication
d) Optimizing resource allocation

4) What is the 'Crew Approach' in work sampling?
a) Observing workers at predetermined time intervals
b) Focusing observations on a specific crew
c) Analyzing the flow of materials on site
d) Using drones to monitor construction progress

5) Which of the following is a tool for identifying productivity loss?
a) Productivity Index b) Foreman Delay Survey
c) Crew Balance Chart d) All of the above

6) What is a major benefit of pre-planning in construction?
a) Increased worker breaks b) Reduced project costs
c) Increased overtime hours d) Ignoring safety protocols

7) Which of the following is a human factor influencing productivity?
a) Skill level b) Weather conditions
c) Material quality d) Equipment availability

8) Raw material productivity can be increased by _____
a) Proper choice of design b) Reuse of material
c) Scrap control d) All of the above

9) Total work content = _____
a) Basic work content + Excess time
b) Basic work content - Excess time
c) Basic work content + Ineffective time
d) Basic work content - Ineffective time

10) Which of the following adds idle time due to short runs?
a) Excessive product variety b) Lack of Standardization
c) Both a and b d) Design changes

11) Preventive maintenance improves _____
a) Material productivity b) Labour productivity
c) Machine productivity d) Capital productivity

12) The time for which the worker or machine or both remain idle due to the shortcomings of the management or workers is known as _____
a) Excess time b) Idle time
c) Ineffective time d) Work content

13) Productivity can be increased by _____
a) By increasing the output from the same input
b) By reducing the input for the same output
c) Both a and b
d) None of the above

14) An English word 'Motivation' is originated from a Greek word 'Movere'. Movere means _____
a) Tension b) Drive
c) Motion d) Profit

SLR-BD-333

Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Productivity (BTN01712)

Day & Date: Thursday, 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Attempt Any Two **14**

a) Define productivity in the context of construction. Explain the need for productivity measurement in construction projects.
b) Describe how performance factors are calculated and used for forecasting in construction productivity.
c) Explain the concept of 'Earned Value' and how it is used to assess project performance.

Q.3 Attempt Any Two **14**

a) What is a Productivity Index? Discuss the causes of low productivity in construction.
b) Explain how pre-planning and record keeping can contribute to improving construction productivity.
c) Discuss the impact of new technologies on labor productivity in construction. Give examples.

Section – II

Q.4 Attempt Any Two **14**

a) Discuss the various factors that influence productivity in construction projects.
b) Explain how 'Sources of Lost Time' can be identified and minimized.
c) Discuss the influence of human factors like motivation and teamwork on construction productivity.

Q.5 Attempt Any Two **14**

a) What is work sampling? Explain its applications in construction productivity measurement.
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c) Explain the use of 'Crew Balance Charts' and 'Flow Diagrams' in improving construction productivity. Provide examples.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Productivity (BTN01712)

Day & Date: Thursday, 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions **14**

1) What is the 'Crew Approach' in work sampling?
a) Observing workers at predetermined time intervals
b) Focusing observations on a specific crew
c) Analyzing the flow of materials on site
d) Using drones to monitor construction progress

2) Which of the following is a tool for identifying productivity loss?
a) Productivity Index b) Foreman Delay Survey
c) Crew Balance Chart d) All of the above

3) What is a major benefit of pre-planning in construction?
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c) Increased overtime hours d) Ignoring safety protocols

4) Which of the following is a human factor influencing productivity?
a) Skill level b) Weather conditions
c) Material quality d) Equipment availability

5) Raw material productivity can be increased by _____
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13) A 'change order' in construction is typically issued due to _____
a) A change in the project manager
b) A change in weather conditions
c) A change in the project scope
d) A change in worker morale

14) Which of the following is NOT a method for improving productivity?
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b) Reducing worker training
c) Improving communication
d) Optimizing resource allocation

SLR-BD-333

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Productivity (BTN01712)

Day & Date: Thursday, 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Attempt Any Two **14**

a) Define productivity in the context of construction. Explain the need for productivity measurement in construction projects.
b) Describe how performance factors are calculated and used for forecasting in construction productivity.
c) Explain the concept of 'Earned Value' and how it is used to assess project performance.

Q.3 Attempt Any Two **14**

a) What is a Productivity Index? Discuss the causes of low productivity in construction.
b) Explain how pre-planning and record keeping can contribute to improving construction productivity.
c) Discuss the impact of new technologies on labor productivity in construction. Give examples.

Section – II

Q.4 Attempt Any Two **14**

a) Discuss the various factors that influence productivity in construction projects.
b) Explain how 'Sources of Lost Time' can be identified and minimized.
c) Discuss the influence of human factors like motivation and teamwork on construction productivity.

Q.5 Attempt Any Two **14**

a) What is work sampling? Explain its applications in construction productivity measurement.
b) Describe the 'Tour Approach' and 'Foreman Delay Survey' in work sampling.
c) Explain the use of 'Crew Balance Charts' and 'Flow Diagrams' in improving construction productivity. Provide examples.

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Productivity (BTN01712)

Day & Date: Thursday, 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions **14**

1) Productivity can be increased by _____
a) By increasing the output from the same input
b) By reducing the input for the same output
c) Both a and b
d) None of the above

2) An English word 'Motivation' is originated from a Greek word 'Movere'. Movere means _____
a) Tension b) Drive
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3) What is the purpose of a Crew Balance Chart?
a) To track individual worker performance
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4) A 'change order' in construction is typically issued due to _____
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12) Which of the following adds idle time due to short runs?
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13) Preventive maintenance improves _____
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14) The time for which the worker or machine or both remain idle due to the shortcomings of the management or workers is known as _____
a) Excess time b) Idle time
c) Ineffective time d) Work content

SLR-BD-333

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Construction Productivity (BTN01712)

Day & Date: Thursday, 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Attempt Any Two **14**

a) Define productivity in the context of construction. Explain the need for productivity measurement in construction projects.
b) Describe how performance factors are calculated and used for forecasting in construction productivity.
c) Explain the concept of 'Earned Value' and how it is used to assess project performance.

Q.3 Attempt Any Two **14**

a) What is a Productivity Index? Discuss the causes of low productivity in construction.
b) Explain how pre-planning and record keeping can contribute to improving construction productivity.
c) Discuss the impact of new technologies on labor productivity in construction. Give examples.

Section – II

Q.4 Attempt Any Two **14**

a) Discuss the various factors that influence productivity in construction projects.
b) Explain how 'Sources of Lost Time' can be identified and minimized.
c) Discuss the influence of human factors like motivation and teamwork on construction productivity.

Q.5 Attempt Any Two **14**

a) What is work sampling? Explain its applications in construction productivity measurement.
b) Describe the 'Tour Approach' and 'Foreman Delay Survey' in work sampling.
c) Explain the use of 'Crew Balance Charts' and 'Flow Diagrams' in improving construction productivity. Provide examples.

SLR-BD-334

Seat No.		Set	P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Entrepreneurship (BTN01713)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Question. **14**

1) Venture capital is concerned with: ____.
a) New project having potential for higher profit
b) New project of high technology
c) New project having high risk
d) All the above

2) Why should an entrepreneur do a feasibility study for starting a new venture _____.
a) To identify possible sources of funds
b) To see if there are possible barriers to success
c) To estimate the expected sales
d) To explore potential customers

3) What is the process by which individuals pursue opportunities without regard to resources they currently control?
a) Startup management b) Entrepreneurship
c) Financial analysis d) Feasibility planning

4) Which one of the following is the process of entrepreneurs developing new products that over time make current products obsolete?
a) New business model b) Anatomization
c) None of the given options d) Creative destruction

5) The term Entrepreneur is derived from the _____ word.
a) English b) Tamil
c) Hindi d) French

6) The person who creates an enterprise is called ____.
a) Entrepreneur b) Managers
c) Leaders d) Owners

7) An entrepreneur is someone who _____.
a) Organize a business
b) Manages a business
c) Takes risks
d) All of the above

8) Business plan is an important ____ for entrepreneurs.
a) Document
b) Tool
c) Vision
d) Mission

9) Who is an idea Champion?
a) The One who defeats elephant of ideas
b) The rider who shapes the path for elephant
c) The one who open new channels for idea to move forward
d) All the above

10) SIDBI stands for ____.
a) Small Institutions Development Bank of India
b) Small Industries Development Bank of India
c) Small Industries Derivatives Bank of India
d) Small Industries Development Bureau of India

11) Having less than 50 percent of equity share in an international venture is called ____.
a) Joint Venture
b) Majority interest
c) Minority interest
d) Exporting

12) To provide financial assistance to entrepreneurs the government has set up a number of ____.
a) Financial Advisors
b) Financial Intermediaries
c) Industrial Estates
d) Financial Institutions

13) The activity of setting up a business or businesses, taking on ____ in the hope of profit.
a) Financial risk
b) Loss
c) Profit
d) Technical risk

14) Which of the following is used by entrepreneurs to acquire experience in an international market before making a major commitment?
a) Merger
b) Minority Interest
c) Joint venture
d) Majority interest

Seat No.	

Set | P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Entrepreneurship (BTN01713)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following: (Any Two) **14**

a) What are Different Types of Entrepreneurs? Also Compare Entrepreneur with Manager.
b) Differentiate Entrepreneur v/s Intrapreneur
c) Make a prescribed note on Women Entrepreneurship including Problems of Women Entrepreneurship in India.

Q.3 Answer the following: (Any Two) **14**

a) Elaborate 'Role of Government in promoting entrepreneurship'.
b) What is Financial Support System? Explain about Long Term & Short-Term Financial Support System.
c) Explain various characteristics and qualities of entrepreneurs

Section – II

Q.4 Answer the following: (Any Two) **14**

a) What is project report? Describe its elements and significance.
b) Explain Project implementation process.
c) What is Break Even Analysis? Explain with analytical & graphical Approach.

Q.5 Write a note: (Any Two) **14**

a) Goal sitting, Sale and Sales Promotion in Marketing.
b) Industrial and commercial tax laws.
c) Working capital and Fixed capital assessment.

Seat No.		Set	Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Entrepreneurship (BTN01713)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Question. **14**

1) Business plan is an important ____ for entrepreneurs.
a) Document b) Tool
c) Vision d) Mission

2) Who is an idea Champion?
a) The One who defeats elephant of ideas
b) The rider who shapes the path for elephant
c) The one who open new channels for idea to move forward
d) All the above

3) SIDBI stands for ____.
a) Small Institutions Development Bank of India
b) Small Industries Development Bank of India
c) Small Industries Derivatives Bank of India
d) Small Industries Development Bureau of India

4) Having less than 50 percent of equity share in an international venture is called ____.
a) Joint Venture b) Majority interest
c) Minority interest d) Exporting

5) To provide financial assistance to entrepreneurs the government has set up a number of ____.
a) Financial Advisors b) Financial Intermediaries
c) Industrial Estates d) Financial Institutions

6) The activity of setting up a business or businesses, taking on ____ in the hope of profit.
a) Financial risk b) Loss
c) Profit d) Technical risk

7) Which of the following is used by entrepreneurs to acquire experience in an international market before making a major commitment?

a) Merger
b) Minority Interest
c) Joint venture
d) Majority interest

8) Venture capital is concerned with: ____.

a) New project having potential for higher profit
b) New project of high technology
c) New project having high risk
d) All the above

9) Why should an entrepreneur do a feasibility study for starting a new venture _____.

a) To identify possible sources of funds
b) To see if there are possible barriers to success
c) To estimate the expected sales
d) To explore potential customers

10) What is the process by which individuals pursue opportunities without regard to resources they currently control?

a) Startup management
b) Entrepreneurship
c) Financial analysis
d) Feasibility planning

11) Which one of the following is the process of entrepreneurs developing new products that over time make current products obsolete?

a) New business model
b) Anatomization
c) None of the given options
d) Creative destruction

12) The term Entrepreneur is derived from the _____ word.

a) English
b) Tamil
c) Hindi
d) French

13) The person who creates an enterprise is called ____.

a) Entrepreneur
b) Managers
c) Leaders
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14) An entrepreneur is someone who _____.

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Seat No.	

Set | Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Entrepreneurship (BTN01713)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Answer the following: (Any Two) **14**

a) What are Different Types of Entrepreneurs? Also Compare Entrepreneur with Manager.
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Section – II

Q.4 Answer the following: (Any Two) **14**

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b) Explain Project implementation process.
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Seat No.		Set	R

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Entrepreneurship (BTN01713)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Question. **14**

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a) Joint Venture b) Majority interest
c) Minority interest d) Exporting

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Seat No.	

Set **R**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Entrepreneurship (BTN01713)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Answer the following: (Any Two) **14**
- **a)** What are Different Types of Entrepreneurs? Also Compare Entrepreneur with Manager.
- **b)** Differentiate Entrepreneur v/s Intrapreneur
- **c)** Make a prescribed note on Women Entrepreneurship including Problems of Women Entrepreneurship in India.

Q.3 Answer the following: (Any Two) **14**
- **a)** Elaborate 'Role of Government in promoting entrepreneurship'.
- **b)** What is Financial Support System? Explain about Long Term & Short-Term Financial Support System.
- **c)** Explain various characteristics and qualities of entrepreneurs

Section – II

Q.4 Answer the following: (Any Two) **14**
- **a)** What is project report? Describe its elements and significance.
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- **c)** What is Break Even Analysis? Explain with analytical & graphical Approach.

Q.5 Write a note: (Any Two) **14**
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- **b)** Industrial and commercial tax laws.
- **c)** Working capital and Fixed capital assessment.

Seat No.		Set	S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Entrepreneurship (BTN01713)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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Seat No.	

Set | S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Entrepreneurship (BTN01713)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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a) What are Different Types of Entrepreneurs? Also Compare Entrepreneur with Manager.
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c) Make a prescribed note on Women Entrepreneurship including Problems of Women Entrepreneurship in India.

Q.3 Answer the following: (Any Two) **14**

a) Elaborate 'Role of Government in promoting entrepreneurship'.
b) What is Financial Support System? Explain about Long Term & Short-Term Financial Support System.
c) Explain various characteristics and qualities of entrepreneurs

Section – II

Q.4 Answer the following: (Any Two) **14**

a) What is project report? Describe its elements and significance.
b) Explain Project implementation process.
c) What is Break Even Analysis? Explain with analytical & graphical Approach.

Q.5 Write a note: (Any Two) **14**

a) Goal sitting, Sale and Sales Promotion in Marketing.
b) Industrial and commercial tax laws.
c) Working capital and Fixed capital assessment.

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Optimization Techniques (BTN01714)

Day & Date: Thursday 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Allocation of units is not dependent on transport cost in _____.
a) LCM b) VAM
c) NWCM d) Penalty Method

2) Hungarian method is suitable for _____.
a) Graphical Problem b) Transportation Model
c) Simplex Problem d) Assignment Model

3) _____ means one employee getting orders and instructions from one supervisor.
a) Order b) Remuneration
c) Discipline d) Unity of command

4) If we take the example of Dustbin, _____ service is provided in Queuing theory.
a) FCFS b) LCFS
c) Priority Basis d) None of the above

5) Graphical method to solve the linear programming problem is commonly used if we have _____.
a) Number of decision variables are two
b) Number of decent variables are three
c) Number of decision variables are four
d) Number of decision variables is one

6) Dual of the Dual is _____.
a) Primal b) Dual
c) Zero d) Infinity

7) When total supply is not equals to total demand, the transportation problem is called _____.

a) Simple b) Balanced
c) Equated d) Unbalanced

8) Advantage of VAM of transportation is _____.

a) Illogical Approach b) Near to optimal solution
c) Faster solution d) Slower solution

9) 'Decision Tree' technique used to solve problems of 'Decision under _____.

a) Certainty b) Risk
c) Uncertainty d) Conflict

10) In a bank if customer arrival rate is 12 person per hour and service rate is 15 customer per hour then the average waiting time in queue is _____.

a) 16 min b) 48 min
c) 2 min d) 60 min

11) EOQ decreases when the Ordering cost of item _____.

a) Increases b) Decreases
c) Zero d) None of these

12) Moderate inventory control is sufficient for _____.

a) A class items b) B class items
c) C class items d) All of these

13) _____ problem is a special problem of LPP.

a) Queuing b) Transportation
c) Simulation d) Decision Tree

14) If primal is maximize $30X_1 + 40X_2$; subjected to $6X_1 + 12X_2 \leq 16$; and $8X_1 + 5X_2 \leq 12$; $X_1, X_2 \geq 0$, Then objective function of the dual as _____.

a) Minimize $6Y_1 + 8Y_2$ b) Maximize $6Y_1 - 8Y_2$
c) Minimize $16Y_1 + 12Y_2$ d) Minimize $12Y_1 + 5Y_2$

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Optimization Techniques (BTN01714)

Day & Date: Thursday 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the three. **24**

a) Maximize $Z = 3X_1 + 4X_2$
Subject to $5X_1 + 4X_2 \leq 200;$
$3X_1 + 5X_2 \leq 150;$
$5X_1 + 4X_2 \geq 100;$
$8X_1 + 4X_2 \leq 80;$
$X_{1,}X_2 \geq 0;$

b) Determine IBFS of the following transportation Problem using LCM. And Calculate Transportation Cost.

		Destination				
		P	Q	R	S	Supply
Origin	A	1000	5000	2000	1200	7
	B	500	700	1900	2100	10
	C	2700	300	100	1300	5
Demand		3	9	4	6	

c) Determine the optimal strategy & value of game.

		Player B		
		I	II	III
Player A	I	6	5	2
	II	-1	1	-2
	III	4	9	6

d) Discuss 14 Principles of Management.
e) What are advantages of Simulation? Give its applications & Limitations. Elaborate stepwise procedure of 'Monte Carlo simulation'

Q.3 Write a note on (Any One) **04**

a) Decision Under Uncertainty
b) Waiting Line Theory

Section – II

Q.4 Attempt the following (Any Three) **24**

a) Write a detailed note on ABC analysis. Explain with a graph.

b) A manufacturing firm produce a single product whose selling price is 16 ₹/ Unit and variable cost per unit is 12₹. If the annual fixed cost of the firm is estimated as 1,20,000 ₹. Find the BEP in ₹, in Units and in % of capacity if the firm has estimated capacity of 50,000 units. What is the margin of Safety?

c) A cycle brand 'X' has demanded 9000 units per year. The cost of one procurement is Rs.100 and the holding cost per unit is Rs.2.4 per year. The replacement is instantaneous and no shortage are allowed. Determine

i) Economic lot size
ii) Number of orders per year
iii) Time between orders
iv) Total cost per year if the cost of one cycle is Rs.300

d) What are quality control charts? What are the different pattern indications in quality control charts?

e) Write a note on the ERP system.

Q.5 Write a note on (Any One) **04**

a) Needs & Characteristics of Dynamic Programming

b) ANN

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Optimization Techniques (BTN01714)

Day & Date: Thursday 05-June-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Advantage of VAM of transportation is _____.
a) Illogical Approach b) Near to optimal solution
c) Faster solution d) Slower solution

2) 'Decision Tree' technique used to solve problems of 'Decision under _____.
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Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Optimization Techniques (BTN01714)

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Demand		3	9	4	6	

c) Determine the optimal strategy & value of game.

		Player B		
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Section – II

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Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Optimization Techniques (BTN01714)

Day & Date: Thursday 05-June-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Optimization Techniques (BTN01714)

Day & Date: Thursday 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the three. **24**

a) Maximize $Z = 3X_1 + 4X_2$
Subject to $5X_1 + 4X_2 \leq 200;$
$3X_1 + 5X_2 \leq 150;$
$5X_1 + 4X_2 \geq 100;$
$8X_1 + 4X_2 \leq 80;$
$X_{1,}X_2 \geq 0;$

b) Determine IBFS of the following transportation Problem using LCM. And Calculate Transportation Cost.

		Destination				
		P	Q	R	S	Supply
Origin	A	1000	5000	2000	1200	7
	B	500	700	1900	2100	10
	C	2700	300	100	1300	5
Demand		3	9	4	6	

c) Determine the optimal strategy & value of game.

		Player B		
		I	II	III
Player A	I	6	5	2
	II	-1	1	-2
	III	4	9	6

d) Discuss 14 Principles of Management.
e) What are advantages of Simulation? Give its applications & Limitations. Elaborate stepwise procedure of 'Monte Carlo simulation'

Q.3 Write a note on (Any One) **04**

a) Decision Under Uncertainty
b) Waiting Line Theory

Section – II

Q.4 Attempt the following (Any Three) **24**

a) Write a detailed note on ABC analysis. Explain with a graph.

b) A manufacturing firm produce a single product whose selling price is 16 ₹/ Unit and variable cost per unit is 12₹. If the annual fixed cost of the firm is estimated as 1,20,000 ₹. Find the BEP in ₹, in Units and in % of capacity if the firm has estimated capacity of 50,000 units. What is the margin of Safety?

c) A cycle brand 'X' has demanded 9000 units per year. The cost of one procurement is Rs.100 and the holding cost per unit is Rs.2.4 per year. The replacement is instantaneous and no shortage are allowed. Determine

i) Economic lot size
ii) Number of orders per year
iii) Time between orders
iv) Total cost per year if the cost of one cycle is Rs.300

d) What are quality control charts? What are the different pattern indications in quality control charts?

e) Write a note on the ERP system.

Q.5 Write a note on (Any One) **04**

a) Needs & Characteristics of Dynamic Programming

b) ANN

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Optimization Techniques (BTN01714)

Day & Date: Thursday 05-June-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Dual of the Dual is _____.
a) Primal b) Dual
c) Zero d) Infinity

2) When total supply is not equals to total demand, the transportation problem is called _____.
a) Simple b) Balanced
c) Equated d) Unbalanced

3) Advantage of VAM of transportation is _____.
a) Illogical Approach b) Near to optimal solution
c) Faster solution d) Slower solution

4) 'Decision Tree' technique used to solve problems of 'Decision under _____.
a) Certainty b) Risk
c) Uncertainty d) Conflict

5) In a bank if customer arrival rate is 12 person per hour and service rate is 15 customer per hour then the average waiting time in queue is _____.
a) 16 min b) 48 min
c) 2 min d) 60 min

6) EOQ decreases when the Ordering cost of item _____.
a) Increases b) Decreases
c) Zero d) None of these

7) Moderate inventory control is sufficient for _____.
a) A class items b) B class items
c) C class items d) All of these

8) _____ problem is a special problem of LPP.

a) Queuing b) Transportation
c) Simulation d) Decision Tree

9) If primal is maximize $30X_1 + 40X_2$; subjected to $6X_1 + 12X_2 \leq 16$; and $8X_1 + 5X_2 \leq 12$; $X_1, X_2 \geq 0$, Then objective function of the dual as _____.

a) Minimize $6Y_1 + 8Y_2$ b) Maximize $6Y_1 - 8Y_2$
c) Minimize $16Y_1 + 12Y_2$ d) Minimize $12Y_1 + 5Y_2$

10) Allocation of units is not dependent on transport cost in _____.

a) LCM b) VAM
c) NWCM d) Penalty Method

11) Hungarian method is suitable for _____.

a) Graphical Problem b) Transportation Model
c) Simplex Problem d) Assignment Model

12) _____ means one employee getting orders and instructions from one supervisor.

a) Order b) Remuneration
c) Discipline d) Unity of command

13) If we take the example of Dustbin, _____ service is provided in Queuing theory.

a) FCFS b) LCFS
c) Priority Basis d) None of the above

14) Graphical method to solve the linear programming problem is commonly used if we have _____.

a) Number of decision variables are two
b) Number of decent variables are three
c) Number of decision variables are four
d) Number of decision variables is one

Seat No.	

Set S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Optimization Techniques (BTN01714)

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Section – I

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Q.3 Write a note on (Any One) **04**

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b) Waiting Line Theory

Section – II

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b) A manufacturing firm produce a single product whose selling price is 16 ₹/ Unit and variable cost per unit is 12₹. If the annual fixed cost of the firm is estimated as 1,20,000 ₹. Find the BEP in ₹, in Units and in % of capacity if the firm has estimated capacity of 50,000 units. What is the margin of Safety?

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Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Water Power Engineering (BTN01715)

Day & Date: Thursday 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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4) Assume suitable data if necessary.
5) Use of only non-programmable calculator is allowed.
6) Draw neat labeled diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) In a pumped storage hydroelectric scheme, water is _____
a) Only used once
b) Stored in a reservoir and used to generate electricity when needed
c) Constantly flowing downriver
d) Used for irrigation only

2) What is the primary component of a hydro power project?
a) Solar Panels b) Turbine
c) Wind Turbine d) Geothermal Pump

3) Which of the following is a renewable source of energy?
a) Coal b) Natural Gas
c) Solar Energy d) Nuclear Energy

4) Which type of power station primarily uses fossil fuels?
a) Nuclear Power Station b) Hydro Power Station
c) Thermal Power Station d) Wind Power Station

5) What is the primary function of a trash rack in an intake structure?
a) To regulate water flow
b) To filter debris and prevent blockages
c) To control the water level in a reservoir
d) To measure water quality

6) What does the load factor indicate?
   a) The ratio of maximum demand to average demand
   b) The total energy produced in a year
   c) The efficiency of a power plant
   d) The proportion of time a plant operates at full capacity

7) What is the primary advantage of hydro power plants?
   a) High carbon emissions
   b) Low operating costs and renewable energy source
   c) Dependency on fossil fuels
   d) None of the Above

8) What is the basic equation used to estimate hydro power potential?
   a) $P = IV$
   b) $P = \eta \times \rho \times g \times Q \times H$
   c) $P = E/t$
   d) $P = mgh$

9) What is "firm power"?
   a) Power that can be guaranteed to be available at all times
   b) Power generated from renewable sources only
   c) The total capacity of a power plant
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10) What is the primary purpose of a pumped storage plant?
   a) To provide constant power generation
   b) To store energy by moving water between two reservoirs
   c) To filter and purify water
   d) To generate electricity from wind

11) Which of the following is a disadvantage of tidal power stations?
   a) They are environmentally friendly.
   b) They can disrupt local ecosystems.
   c) They have predictable energy output.
   d) They are renewable energy sources

12) What is the primary principle of operation for tidal power stations?
   a) Solar energy conversion
   b) Kinetic and potential energy of tides
   c) Wind energy harnessing
   d) Geothermal energy extraction

13) What is a significant disadvantage of pumped storage plants?
   a) High initial capital costs
   b) Low efficiency compared to conventional plants
   c) Limited energy storage capability
   d) Dependency on weather conditions

14) What is the primary environmental concern associated with tidal power stations?

a) Air pollution
b) Noise pollution
c) Disruption of marine life and habitats
d) High water consumption

Seat No.	

Set **P**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Water Power Engineering (BTN01715)

Day & Date: Thursday 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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4) Draw neat labeled diagrams whenever necessary.
5) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following questions. 16

a) What are the different classifications of sources?

b) What factors should be considered when estimating hydro power potential in India?

c) State the function of hydro power schemes and draw the general layout of various hydropower scheme.

d) Common load shared by two stations base load plant with 30 MW capacity and other being standby plant with 40 MW capacity. The yearly output for base load station is 120×10^6 KWh, and for standby station is 15.5×10^6 KWh'. The peak load taken by standby station is 20 MW which works for 2500 hrs during the year. The base load station takes peak load as 22.5 MW. Calculate annual load factor, plant use factor, and capacity factor for both the stations.

e) Calculate the power factor for a utility to supply a maximum 2000 kW of real power, when the reactive power at that time is 1250 kVAR.

Q.3 Attempt any two of the following questions. 12

a) A penstock pipe, 780 m long, takes off from a reservoir and feeds water to turbine, the level of which is 250 m below the reservoir water level. The first 300 m length of the penstock has a cross section area of 8 m^2 and the rest has an area of 4 m^2. The steady state discharge is $9m^3$/sec. If the turbine gates are closed completely in 4.5 seconds at a uniform rate, what would be the water hammer pressure developed? (from Allieri chart= $Z^2=1.32$)

b) Explain in brief with diagram the following:
i) Forebay
ii) Intake structure
iii) Tail Race

c) What is water hammer in a pipe line? Derive the expression for the water hammer pressure in case of rigid pipe.

d) A penstock, with an internal diameter of 1.40m, supplies water at a head equivalent to 19.6kg/cm^2. There is a possibility of 25% increase in the pressure due to transient conditions. The design stress and the efficiency of the joint may be assumed to be 1200 kg/cm^2 and 80%, respectively. Calculate the approximate wall thickness of the penstock required.

Section – II

Q.4 Attempt any four of the following questions. **16**

a) Classify the different types of surge tank? Explain any one with sketch.

b) What do you understand by 'pumped storage' plant? What are the advantages and disadvantages of this power plant?

c) What are the advantages and disadvantages of different turbine types?

d) Power house is equipped with 4 units of vertical shaft Pelton turbines to be coupled with 72000 kVA, 3 phase. 50 hertz generators. The generation is provided with 10 pairs of poles. The gross design head is 505 m and transmission efficiency of head race tunnel and penstocks together is to be 94 percent.
The four units together will provide for a power of 256000 KW at a guaranteed efficiency of 91 percent. The nozzle efficiency is 0.98. Find

i) the design discharge for the turbine,
ii) jet dia. and no. of jets,
iii) the nozzle tip diameter
iv) the pitch circle dia. of the wheel
v) the specific speed and
vi) number of buckets on the wheel

e) Can you compare the different types of intake structures and their applications?

Q.5 Attempt any two of the following questions. **12**

a) A Pelton wheel having a mean bucket diameter of 1.2m is running at 1000rpm. The net head on Pelton wheel is 840m. if the side clearance angle is 15° and discharge through nozzle is 0.12m^3/s. determine

i) Power available at the nozzle
ii) Hydraulic efficiency of turbine.

b) Describe the tidal cycle and explain how it affects the feasibility of tidal power generation, including its limitations.

c) At a hydroelectric power station Kaplan turbine is used which has following data, Operating head = 25.5m
output power at this head = 126 MW,
discharge = 615 m3/sec
speed = 68.4 rpm,
Runner tip to tip diameter = 9.3 m
Hub diameter = 4.5m
Number of blades = 6, calculate the speed ratio, flow ratio, and the overall efficiency.

Seat No.	

Set **Q**

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) What is the basic equation used to estimate hydro power potential?
a) $P = IV$ b) $P = \eta \times \rho \times g \times Q \times H$
c) $P = E/t$ d) $P = mgh$

2) What is "firm power"?
a) Power that can be guaranteed to be available at all times
b) Power generated from renewable sources only
c) The total capacity of a power plant
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3) What is the primary purpose of a pumped storage plant?
a) To provide constant power generation
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4) Which of the following is a disadvantage of tidal power stations?
a) They are environmentally friendly.
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5) What is the primary principle of operation for tidal power stations?
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6) What is a significant disadvantage of pumped storage plants?
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7) What is the primary environmental concern associated with tidal power stations?
   a) Air pollution
   b) Noise pollution
   c) Disruption of marine life and habitats
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8) In a pumped storage hydroelectric scheme, water is _____
   a) Only used once
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9) What is the primary component of a hydro power project?
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10) Which of the following is a renewable source of energy?
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Set **Q**

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Section – I

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a) What are the different classifications of sources?

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c) State the function of hydro power schemes and draw the general layout of various hydropower scheme.

d) Common load shared by two stations base load plant with 30 MW capacity and other being standby plant with 40 MW capacity. The yearly output for base load station is 120×10^6 KWh, and for standby station is 15.5×10^6 KWh'. The peak load taken by standby station is 20 MW which works for 2500 hrs during the year. The base load station takes peak load as 22.5 MW. Calculate annual load factor, plant use factor, and capacity factor for both the stations.

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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Set **R**

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CIVIL ENGINEERING
Water Power Engineering (BTN01715)

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Section – I

Q.2 Attempt any four of the following questions. **16**

a) What are the different classifications of sources?

b) What factors should be considered when estimating hydro power potential in India?

c) State the function of hydro power schemes and draw the general layout of various hydropower scheme.

d) Common load shared by two stations base load plant with 30 MW capacity and other being standby plant with 40 MW capacity. The yearly output for base load station is 120×10^6 KWh, and for standby station is 15.5×10^6 KWh'. The peak load taken by standby station is 20 MW which works for 2500 hrs during the year. The base load station takes peak load as 22.5 MW. Calculate annual load factor, plant use factor, and capacity factor for both the stations.

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i) Forebay
ii) Intake structure
iii) Tail Race

c) What is water hammer in a pipe line? Derive the expression for the water hammer pressure in case of rigid pipe.

d) A penstock, with an internal diameter of 1.40m, supplies water at a head equivalent to 19.6kg/cm^2. There is a possibility of 25% increase in the pressure due to transient conditions. The design stress and the efficiency of the joint may be assumed to be 1200 kg/cm^2 and 80%, respectively. Calculate the approximate wall thickness of the penstock required.

Section – II

Q.4 Attempt any four of the following questions. **16**

a) Classify the different types of surge tank? Explain any one with sketch.

b) What do you understand by 'pumped storage' plant? What are the advantages and disadvantages of this power plant?

c) What are the advantages and disadvantages of different turbine types?

d) Power house is equipped with 4 units of vertical shaft Pelton turbines to be coupled with 72000 kVA, 3 phase. 50 hertz generators. The generation is provided with 10 pairs of poles. The gross design head is 505 m and transmission efficiency of head race tunnel and penstocks together is to be 94 percent.
The four units together will provide for a power of 256000 KW at a guaranteed efficiency of 91 percent. The nozzle efficiency is 0.98. Find

i) the design discharge for the turbine,
ii) jet dia. and no. of jets,
iii) the nozzle tip diameter
iv) the pitch circle dia. of the wheel
v) the specific speed and
vi) number of buckets on the wheel

e) Can you compare the different types of intake structures and their applications?

Q.5 Attempt any two of the following questions. **12**

a) A Pelton wheel having a mean bucket diameter of 1.2m is running at 1000rpm. The net head on Pelton wheel is 840m. if the side clearance angle is 15° and discharge through nozzle is 0.12m^3/s. determine

i) Power available at the nozzle
ii) Hydraulic efficiency of turbine.

b) Describe the tidal cycle and explain how it affects the feasibility of tidal power generation, including its limitations.

c) At a hydroelectric power station Kaplan turbine is used which has following data, Operating head = 25.5m
output power at this head = 126 MW,
discharge = 615 m3/sec
speed = 68.4 rpm,
Runner tip to tip diameter = 9.3 m
Hub diameter = 4.5m
Number of blades = 6, calculate the speed ratio, flow ratio, and the overall efficiency.

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Water Power Engineering (BTN01715)

Day & Date: Thursday 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of only non-programmable calculator is allowed.
6) Draw neat labeled diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) What does the load factor indicate?
a) The ratio of maximum demand to average demand
b) The total energy produced in a year
c) The efficiency of a power plant
d) The proportion of time a plant operates at full capacity

2) What is the primary advantage of hydro power plants?
a) High carbon emissions
b) Low operating costs and renewable energy source
c) Dependency on fossil fuels
d) None of the Above

3) What is the basic equation used to estimate hydro power potential?
a) $P = IV$ b) $P = \eta \times \rho \times g \times Q \times H$
c) $P = E/t$ d) $P = mgh$

4) What is "firm power"?
a) Power that can be guaranteed to be available at all times
b) Power generated from renewable sources only
c) The total capacity of a power plant
d) Power that varies with demand

5) What is the primary purpose of a pumped storage plant?
a) To provide constant power generation
b) To store energy by moving water between two reservoirs
c) To filter and purify water
d) To generate electricity from wind

6) Which of the following is a disadvantage of tidal power stations?
   a) They are environmentally friendly.
   b) They can disrupt local ecosystems.
   c) They have predictable energy output.
   d) They are renewable energy sources

7) What is the primary principle of operation for tidal power stations?
   a) Solar energy conversion
   b) Kinetic and potential energy of tides
   c) Wind energy harnessing
   d) Geothermal energy extraction

8) What is a significant disadvantage of pumped storage plants?
   a) High initial capital costs
   b) Low efficiency compared to conventional plants
   c) Limited energy storage capability
   d) Dependency on weather conditions

9) What is the primary environmental concern associated with tidal power stations?
   a) Air pollution
   b) Noise pollution
   c) Disruption of marine life and habitats
   d) High water consumption

10) In a pumped storage hydroelectric scheme, water is _____
   a) Only used once
   b) Stored in a reservoir and used to generate electricity when needed
   c) Constantly flowing downriver
   d) Used for irrigation only

11) What is the primary component of a hydro power project?
   a) Solar Panels
   b) Turbine
   c) Wind Turbine
   d) Geothermal Pump

12) Which of the following is a renewable source of energy?
   a) Coal
   b) Natural Gas
   c) Solar Energy
   d) Nuclear Energy

13) Which type of power station primarily uses fossil fuels?
   a) Nuclear Power Station
   b) Hydro Power Station
   c) Thermal Power Station
   d) Wind Power Station

14) What is the primary function of a trash rack in an intake structure?
   a) To regulate water flow
   b) To filter debris and prevent blockages
   c) To control the water level in a reservoir
   d) To measure water quality

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Water Power Engineering (BTN01715)

Day & Date: Thursday 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Use of non-programmable scientific calculator is allowed.
4) Draw neat labeled diagrams whenever necessary.
5) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following questions. 16

a) What are the different classifications of sources?

b) What factors should be considered when estimating hydro power potential in India?

c) State the function of hydro power schemes and draw the general layout of various hydropower scheme.

d) Common load shared by two stations base load plant with 30 MW capacity and other being standby plant with 40 MW capacity. The yearly output for base load station is 120×10^6 KWh, and for standby station is 15.5×10^6 KWh'. The peak load taken by standby station is 20 MW which works for 2500 hrs during the year. The base load station takes peak load as 22.5 MW. Calculate annual load factor, plant use factor, and capacity factor for both the stations.

e) Calculate the power factor for a utility to supply a maximum 2000 kW of real power, when the reactive power at that time is 1250 kVAR.

Q.3 Attempt any two of the following questions. 12

a) A penstock pipe, 780 m long, takes off from a reservoir and feeds water to turbine, the level of which is 250 m below the reservoir water level. The first 300 m length of the penstock has a cross section area of 8 m^2 and the rest has an area of 4 m^2. The steady state discharge is $9m^3$/sec. If the turbine gates are closed completely in 4.5 seconds at a uniform rate, what would be the water hammer pressure developed? (from Allieri chart= $Z^2=1.32$)

b) Explain in brief with diagram the following:
i) Forebay
ii) Intake structure
iii) Tail Race

c) What is water hammer in a pipe line? Derive the expression for the water hammer pressure in case of rigid pipe.

d) A penstock, with an internal diameter of 1.40m, supplies water at a head equivalent to 19.6kg/cm^2. There is a possibility of 25% increase in the pressure due to transient conditions. The design stress and the efficiency of the joint may be assumed to be 1200 kg/cm^2 and 80%, respectively. Calculate the approximate wall thickness of the penstock required.

Section – II

Q.4 Attempt any four of the following questions. **16**

a) Classify the different types of surge tank? Explain any one with sketch.

b) What do you understand by 'pumped storage' plant? What are the advantages and disadvantages of this power plant?

c) What are the advantages and disadvantages of different turbine types?

d) Power house is equipped with 4 units of vertical shaft Pelton turbines to be coupled with 72000 kVA, 3 phase. 50 hertz generators. The generation is provided with 10 pairs of poles. The gross design head is 505 m and transmission efficiency of head race tunnel and penstocks together is to be 94 percent.
The four units together will provide for a power of 256000 KW at a guaranteed efficiency of 91 percent. The nozzle efficiency is 0.98. Find

i) the design discharge for the turbine,
ii) jet dia. and no. of jets,
iii) the nozzle tip diameter
iv) the pitch circle dia. of the wheel
v) the specific speed and
vi) number of buckets on the wheel

e) Can you compare the different types of intake structures and their applications?

Q.5 Attempt any two of the following questions. **12**

a) A Pelton wheel having a mean bucket diameter of 1.2m is running at 1000rpm. The net head on Pelton wheel is 840m. if the side clearance angle is 15° and discharge through nozzle is 0.12m^3/s. determine

i) Power available at the nozzle
ii) Hydraulic efficiency of turbine.

b) Describe the tidal cycle and explain how it affects the feasibility of tidal power generation, including its limitations.

c) At a hydroelectric power station Kaplan turbine is used which has following data, Operating head = 25.5m
output power at this head = 126 MW,
discharge = 615 m3/sec
speed = 68.4 rpm,
Runner tip to tip diameter = 9.3 m
Hub diameter = 4.5m
Number of blades = 6, calculate the speed ratio, flow ratio, and the overall efficiency.

SLR-BD-337

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Air and Noise Pollution and Control (BTN01716)

Day & Date: Thursday 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Concentration of SPM in ambient air can be determined by using _____.
a) Stack monitoring kit
b) Auto exhaust analyzer
c) High volume sampler or respirable dust sampler
d) All of above

2) _____ can remove _____.
a) Scrubers, Water soluble Gases
b) Gravity settler, Particulates
c) Adsorption tower, organic gases
d) All of above

3) Molecular mass of H_2S is _____ grams/ mole.
a) 44 b) 48
c) 34 d) 28

4) If stack is having cross sectional area of 4 sq. m, then number of traverse points shall be equal to _____
a) 4 b) 12
c) 20 d) 30

5) _____ are categorized under dry collectors.
a) Venturi scrubber b) Spray tower
c) Cyclonic scrubber d) Cyclone separator

6) Thickness of troposphere is approximately _____ km.
a) 35 b) 11
c) 39 d) 500

7) Bags in bag house filter are _____ mm in diameter.
a) 120-400 b) 10-20
c) 12-40 d) 1000-15000

8) Fugitive emissions consist of _____
a) Street dust
b) Dust from construction activities
c) Dust from farm cultivation
d) All of the above

9) According to EPA of USA, the following is not one of the six major pollutants?
a) Ozone b) Carbon monoxide
c) Nitrogen oxides d) Carbon di-oxide

10) Concentration of pollutants in stack emissions can be measured by _____
a) High volume sampler b) Stack monitoring kit
c) Thermometer d) Hygrometer

11) As per NAAQS (old), standard for PM_{10} for eco-sensitive area considering annual average is _____ micrograms/m^3.
a) 60 b) 100
c) 8 d) 80

12) Noise pollution is created if sound is in excess to _____
a) 70-75 dB b) 50-60 dB
c) 80-99 dB d) 40-65 dB

13) Day time noise standard prescribed for residential areas in India is _____
a) 75 dB b) 65 dB
c) 50 dB d) 55 dB

14) _____ is needed in stack monitoring in order to obtain true and representative samples from stack.
a) Over isokinetic sampling b) Under isokinetic sampling
c) Isokinetic sampling d) None of these

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Air and Noise Pollution and Control (BTN01716)

Day & Date: Thursday 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 3 & Q. No. 7 are compulsory and attempt any two questions from the remaining questions from each section.
2) Figure to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Attempt the following questions.

a) Explain with example: i) Personal air exposure ii) Occupational air exposure iii) Community air exposure. **06**

b) Define air pollution based on composition of clean air. **03**

Q.3 Attempt the following questions.

a) Determine the effective stack height given by the following data : **06**
1) Physical stack height = 203 m
2) Inside diameter of stack = 1.07m
3) Air temperature = 13°C
4) Barometric pressure = 1000 mbar
5) Stack gas velocity = 9.14 m/sec
6) Stack gas temperature = 149°C
7) Wind speed = 5m/sec.

b) Give Gaussian dispersion model equation used for prediction of concentration of air pollutants. **04**

Q.4 Attempt the following.

a) Give detailed classification of sources of air pollution. **04**

b) A factory uses 1.5 million litres of fuel oil/month. The exhaust gases from factory contain the following quantities of pollutants/million litres/year. **05**
1) Particulate matter = 5 tonnes / year
2) Sulphur dioxide = 21 tonnes / year

Q.5 Attempt the following.

a) What is standard cyclone? Explain with the help of neat sketch. **04**

b) A conventional cyclone with diameter 1 m handles 3 m^3/sec of air carrying particles of density 2000 kg/m^3. Number of effective turns = 6. Determine cut size diameter (dpc) if $\mu = 1.81 \times 10^{-5}$ kg/m.sec. (Note - treat it as a standard cyclone) **05**

Section – II

Q.6 Attempt the following.

a) Explain with neat sketch working of ESP. Also give advantages and disadvantages. **04**

b) It was decided to construct a fabric filter, using bags of 0.45 m diameter and 7.5 m long, for removing industrial stack gas containing particulates. The expected rate of airflow into the filter is 10 m^3/s. If the filtering velocity is 2.0 m/min, compute the minimum number of bags (rounded to nearest higher integer) required for continuous cleaning operation. **05**

Q.7 Attempt the following.

a) An ESP with overall spacing of 0.23 cm and mean gas velocity 1.5 m/s has collector plate area of 6000 m^2 gives efficiency of 97% in treating 200 m^3/s of gas. To achieve 98% and 99% efficiency. What should be plate area required? **05**

b) Explain the principle working of wet scrubber. **05**

Q.8 Attempt the following.

a) Discuss in brief the sources of noise. **04**

b) Explain decibel scale with sample sound level and frequency of sound waves. **05**

Q.9 Write short notes on the following: **09**

a) National ambient quality standards for noise

b) Effects of noise on health

c) Instrumentation Requirements in noise

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Air and Noise Pollution and Control (BTN01716)

Day & Date: Thursday 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) Fugitive emissions consist of _____
a) Street dust
b) Dust from construction activities
c) Dust from farm cultivation
d) All of the above

2) According to EPA of USA, the following is not one of the six major pollutants?
a) Ozone b) Carbon monoxide
c) Nitrogen oxides d) Carbon di-oxide

3) Concentration of pollutants in stack emissions can be measured by _____
a) High volume sampler b) Stack monitoring kit
c) Thermometer d) Hygrometer

4) As per NAAQS (old), standard for PM_{10} for eco-sensitive area considering annual average is _____ micrograms/m^3.
a) 60 b) 100
c) 8 d) 80

5) Noise pollution is created if sound is in excess to _____
a) 70-75 dB b) 50-60 dB
c) 80-99 dB d) 40-65 dB

6) Day time noise standard prescribed for residential areas in India is _____
a) 75 dB b) 65 dB
c) 50 dB d) 55 dB

7) _____ is needed in stack monitoring in order to obtain true and representative samples from stack.

a) Over isokinetic sampling
b) Under isokinetic sampling
c) Isokinetic sampling
d) None of these

8) Concentration of SPM in ambient air can be determined by using _____.

a) Stack monitoring kit
b) Auto exhaust analyzer
c) High volume sampler or respirable dust sampler
d) All of above

9) _____ can remove _____.

a) Scrubers, Water soluble Gases
b) Gravity settler, Particulates
c) Adsorption tower, organic gases
d) All of above

10) Molecular mass of H_2S is _____ grams/ mole.

a) 44
b) 48
c) 34
d) 28

11) If stack is having cross sectional area of 4 sq. m, then number of traverse points shall be equal to _____

a) 4
b) 12
c) 20
d) 30

12) _____ are categorized under dry collectors.

a) Venturi scrubber
b) Spray tower
c) Cyclonic scrubber
d) Cyclone separator

13) Thickness of troposphere is approximately _____ km.

a) 35
b) 11
c) 39
d) 500

14) Bags in bag house filter are _____ mm in diameter.

a) 120-400
b) 10-20
c) 12-40
d) 1000-15000

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Air and Noise Pollution and Control (BTN01716)

Day & Date: Thursday 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 3 & Q. No. 7 are compulsory and attempt any two questions from the remaining questions from each section.
2) Figure to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Attempt the following questions.

a) Explain with example: i) Personal air exposure ii) Occupational air exposure iii) Community air exposure. **06**

b) Define air pollution based on composition of clean air. **03**

Q.3 Attempt the following questions.

a) Determine the effective stack height given by the following data : **06**
1) Physical stack height = 203 m
2) Inside diameter of stack = 1.07m
3) Air temperature = 13°C
4) Barometric pressure = 1000 mbar
5) Stack gas velocity = 9.14 m/sec
6) Stack gas temperature = 149°C
7) Wind speed = 5m/sec.

b) Give Gaussian dispersion model equation used for prediction of concentration of air pollutants. **04**

Q.4 Attempt the following.

a) Give detailed classification of sources of air pollution. **04**

b) A factory uses 1.5 million litres of fuel oil/month. The exhaust gases from factory contain the following quantities of pollutants/million litres/year. **05**
1) Particulate matter = 5 tonnes / year
2) Sulphur dioxide = 21 tonnes / year

Q.5 Attempt the following.

a) What is standard cyclone? Explain with the help of neat sketch. **04**

b) A conventional cyclone with diameter 1 m handles 3 m^3/sec of air carrying particles of density 2000 kg/m^3. Number of effective turns = 6. Determine cut size diameter (dpc) if $\mu = 1.81 \times 10^{-5}$ kg/m.sec. **05**
(Note - treat it as a standard cyclone)

Section – II

Q.6 Attempt the following.

a) Explain with neat sketch working of ESP. Also give advantages and disadvantages. **04**

b) It was decided to construct a fabric filter, using bags of 0.45 m diameter and 7.5 m long, for removing industrial stack gas containing particulates. The expected rate of airflow into the filter is 10 m^3/s. If the filtering velocity is 2.0 m/min, compute the minimum number of bags (rounded to nearest higher integer) required for continuous cleaning operation. **05**

Q.7 Attempt the following.

a) An ESP with overall spacing of 0.23 cm and mean gas velocity 1.5 m/s has collector plate area of 6000 m^2 gives efficiency of 97% in treating 200 m^3/s of gas. To achieve 98% and 99% efficiency. What should be plate area required? **05**

b) Explain the principle working of wet scrubber. **05**

Q.8 Attempt the following.

a) Discuss in brief the sources of noise. **04**

b) Explain decibel scale with sample sound level and frequency of sound waves. **05**

Q.9 Write short notes on the following: **09**

a) National ambient quality standards for noise

b) Effects of noise on health

c) Instrumentation Requirements in noise

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Air and Noise Pollution and Control (BTN01716)

Day & Date: Thursday 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) As per NAAQS (old), standard for PM_{10} for eco-sensitive area considering annual average is _____ micrograms/m^3.
a) 60 b) 100
c) 8 d) 80

2) Noise pollution is created if sound is in excess to _____
a) 70-75 dB b) 50-60 dB
c) 80-99 dB d) 40-65 dB

3) Day time noise standard prescribed for residential areas in India is _____
a) 75 dB b) 65 dB
c) 50 dB d) 55 dB

4) _____ is needed in stack monitoring in order to obtain true and representative samples from stack.
a) Over isokinetic sampling b) Under isokinetic sampling
c) Isokinetic sampling d) None of these

5) Concentration of SPM in ambient air can be determined by using _____.
a) Stack monitoring kit
b) Auto exhaust analyzer
c) High volume sampler or respirable dust sampler
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6) _____ can remove _____.
a) Scrubers, Water soluble Gases
b) Gravity settler, Particulates
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7) Molecular mass of H_2S is _____ grams/ mole.

a) 44 b) 48
c) 34 d) 28

8) If stack is having cross sectional area of 4 sq. m, then number of traverse points shall be equal to _____

a) 4 b) 12
c) 20 d) 30

9) _____ are categorized under dry collectors.

a) Venturi scrubber b) Spray tower
c) Cyclonic scrubber d) Cyclone separator

10) Thickness of troposphere is approximately _____ km.

a) 35 b) 11
c) 39 d) 500

11) Bags in bag house filter are _____ mm in diameter.

a) 120-400 b) 10-20
c) 12-40 d) 1000-15000

12) Fugitive emissions consist of _____

a) Street dust
b) Dust from construction activities
c) Dust from farm cultivation
d) All of the above

13) According to EPA of USA, the following is not one of the six major pollutants?

a) Ozone b) Carbon monoxide
c) Nitrogen oxides d) Carbon di-oxide

14) Concentration of pollutants in stack emissions can be measured by _____

a) High volume sampler b) Stack monitoring kit
c) Thermometer d) Hygrometer

SLR-BD-337

Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Air and Noise Pollution and Control (BTN01716)

Day & Date: Thursday 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 3 & Q. No. 7 are compulsory and attempt any two questions from the remaining questions from each section.
2) Figure to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Attempt the following questions.

a) Explain with example: i) Personal air exposure ii) Occupational air exposure iii) Community air exposure. **06**

b) Define air pollution based on composition of clean air. **03**

Q.3 Attempt the following questions.

a) Determine the effective stack height given by the following data : **06**
1) Physical stack height = 203 m
2) Inside diameter of stack = 1.07m
3) Air temperature = 13°C
4) Barometric pressure = 1000 mbar
5) Stack gas velocity = 9.14 m/sec
6) Stack gas temperature = 149°C
7) Wind speed = 5m/sec.

b) Give Gaussian dispersion model equation used for prediction of concentration of air pollutants. **04**

Q.4 Attempt the following.

a) Give detailed classification of sources of air pollution. **04**

b) A factory uses 1.5 million litres of fuel oil/month. The exhaust gases from factory contain the following quantities of pollutants/million litres/year. **05**
1) Particulate matter = 5 tonnes / year
2) Sulphur dioxide = 21 tonnes / year

Q.5 Attempt the following.

a) What is standard cyclone? Explain with the help of neat sketch. **04**

b) A conventional cyclone with diameter 1 m handles 3 m^3/sec of air carrying particles of density 2000 kg/m^3. Number of effective turns = 6. Determine cut size diameter (dpc) if $\mu = 1.81 \times 10^{-5}$ kg/m.sec. **05**
(Note - treat it as a standard cyclone)

Section – II

Q.6 Attempt the following.

a) Explain with neat sketch working of ESP. Also give advantages and disadvantages. **04**

b) It was decided to construct a fabric filter, using bags of 0.45 m diameter and 7.5 m long, for removing industrial stack gas containing particulates. The expected rate of airflow into the filter is 10 m^3/s. If the filtering velocity is 2.0 m/min, compute the minimum number of bags (rounded to nearest higher integer) required for continuous cleaning operation. **05**

Q.7 Attempt the following.

a) An ESP with overall spacing of 0.23 cm and mean gas velocity 1.5 m/s has collector plate area of 6000 m^2 gives efficiency of 97% in treating 200 m^3/s of gas. To achieve 98% and 99% efficiency. What should be plate area required? **05**

b) Explain the principle working of wet scrubber. **05**

Q.8 Attempt the following.

a) Discuss in brief the sources of noise. **04**

b) Explain decibel scale with sample sound level and frequency of sound waves. **05**

Q.9 Write short notes on the following: **09**

a) National ambient quality standards for noise

b) Effects of noise on health

c) Instrumentation Requirements in noise

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Air and Noise Pollution and Control (BTN01716)

Day & Date: Thursday 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) Thickness of troposphere is approximately _____ km.
a) 35 b) 11
c) 39 d) 500

2) Bags in bag house filter are _____ mm in diameter.
a) 120-400 b) 10-20
c) 12-40 d) 1000-15000

3) Fugitive emissions consist of _____
a) Street dust
b) Dust from construction activities
c) Dust from farm cultivation
d) All of the above

4) According to EPA of USA, the following is not one of the six major pollutants?
a) Ozone b) Carbon monoxide
c) Nitrogen oxides d) Carbon di-oxide

5) Concentration of pollutants in stack emissions can be measured by _____
a) High volume sampler b) Stack monitoring kit
c) Thermometer d) Hygrometer

6) As per NAAQS (old), standard for PM_{10} for eco-sensitive area considering annual average is _____ micrograms/m^3.
a) 60 b) 100
c) 8 d) 80

7) Noise pollution is created if sound is in excess to _____
a) 70-75 dB b) 50-60 dB
c) 80-99 dB d) 40-65 dB

8) Day time noise standard prescribed for residential areas in India is _____
a) 75 dB b) 65 dB
c) 50 dB d) 55 dB

9) _____ is needed in stack monitoring in order to obtain true and representative samples from stack.
a) Over isokinetic sampling b) Under isokinetic sampling
c) Isokinetic sampling d) None of these

10) Concentration of SPM in ambient air can be determined by using _____.
a) Stack monitoring kit
b) Auto exhaust analyzer
c) High volume sampler or respirable dust sampler
d) All of above

11) _____ can remove _____.
a) Scrubers, Water soluble Gases
b) Gravity settler, Particulates
c) Adsorption tower, organic gases
d) All of above

12) Molecular mass of H_2S is _____ grams/ mole.
a) 44 b) 48
c) 34 d) 28

13) If stack is having cross sectional area of 4 sq. m, then number of traverse points shall be equal to _____
a) 4 b) 12
c) 20 d) 30

14) _____ are categorized under dry collectors.
a) Venturi scrubber b) Spray tower
c) Cyclonic scrubber d) Cyclone separator

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Air and Noise Pollution and Control (BTN01716)

Day & Date: Thursday 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 3 & Q. No. 7 are compulsory and attempt any two questions from the remaining questions from each section.
2) Figure to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Attempt the following questions.

a) Explain with example: i) Personal air exposure ii) Occupational air exposure iii) Community air exposure. **06**

b) Define air pollution based on composition of clean air. **03**

Q.3 Attempt the following questions.

a) Determine the effective stack height given by the following data : **06**
1) Physical stack height = 203 m
2) Inside diameter of stack = 1.07m
3) Air temperature = 13°C
4) Barometric pressure = 1000 mbar
5) Stack gas velocity = 9.14 m/sec
6) Stack gas temperature = 149°C
7) Wind speed = 5m/sec.

b) Give Gaussian dispersion model equation used for prediction of concentration of air pollutants. **04**

Q.4 Attempt the following.

a) Give detailed classification of sources of air pollution. **04**

b) A factory uses 1.5 million litres of fuel oil/month. The exhaust gases from factory contain the following quantities of pollutants/million litres/year. **05**
1) Particulate matter = 5 tonnes / year
2) Sulphur dioxide = 21 tonnes / year

Q.5 Attempt the following.

a) What is standard cyclone? Explain with the help of neat sketch. **04**

b) A conventional cyclone with diameter 1 m handles 3 m^3/sec of air carrying particles of density 2000 kg/m^3. Number of effective turns = 6. Determine cut size diameter (dpc) if $\mu = 1.81 \times 10^{-5}$ kg/m.sec. (Note - treat it as a standard cyclone) **05**

Section – II

Q.6 Attempt the following.

a) Explain with neat sketch working of ESP. Also give advantages and disadvantages. **04**

b) It was decided to construct a fabric filter, using bags of 0.45 m diameter and 7.5 m long, for removing industrial stack gas containing particulates. The expected rate of airflow into the filter is 10 m^3/s. If the filtering velocity is 2.0 m/min, compute the minimum number of bags (rounded to nearest higher integer) required for continuous cleaning operation. **05**

Q.7 Attempt the following.

a) An ESP with overall spacing of 0.23 cm and mean gas velocity 1.5 m/s has collector plate area of 6000 m^2 gives efficiency of 97% in treating 200 m^3/s of gas. To achieve 98% and 99% efficiency. What should be plate area required? **05**

b) Explain the principle working of wet scrubber. **05**

Q.8 Attempt the following.

a) Discuss in brief the sources of noise. **04**

b) Explain decibel scale with sample sound level and frequency of sound waves. **05**

Q.9 Write short notes on the following: **09**

a) National ambient quality standards for noise

b) Effects of noise on health

c) Instrumentation Requirements in noise

SLR-BD-338

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Recovery, Rehabilitation and Reconstruction (BTN01717)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is vulnerability in the context of development?
a) A measure of economic growth
b) The state of being exposed to the risk of harm or damage
c) A synonym for resilience
d) The level of technological advancement

2) How does vegetation and afforestation contribute to disaster mitigation?
a) By creating barriers to emergency responders
b) By increasing vulnerability to disasters
c) By providing natural barriers against floods, landslides, and soil erosion
d) By promoting deforestation

3) The National Disaster Management Authority (NDMA) is headed by ____.
a) Prime Minister of India b) President of India
c) Governor of States d) Chief Minister of States

4) What is the primary purpose of insurance in disaster risk management?
a) To create financial burdens for individuals
b) To transfer and manage the financial risks associated with disasters
c) To discourage risk reduction efforts
d) To ignore the impact of disasters

5) Which international agency is often involved in providing financial assistance for poverty reduction and development projects in developing countries?
a) United Nations Educational, Scientific and Cultural Organization (UNESCO)
b) World Health Organization (WHO)
c) World Bank
d) International Labour Organization (ILO)

6) In flood-prone areas, what feature is important for the ground floor of a disaster resistant house?

a) Elevated foundation b) Basement
c) Slab foundation d) Sunken living room

7) What is the primary goal of socio-economic rehabilitation?

a) Preservation of cultural heritage
b) Restoration of physical health
c) Restoration of economic and social well-being
d) Implementation of new policies

8) In the aftermath of a natural disaster, which aspect of socio-economic rehabilitation is crucial for long-term resilience?

a) Short-term financial aid b) Infrastructure reconstruction
c) Community empowerment d) Technological advancements

9) What is the role of baseline data in the monitoring process?

a) To determine the final project outcome
b) To establish a reference point for measuring changes and impacts
c) To identify the individuals responsible for the project
d) To compare different rehabilitation projects

10) What is the role of prioritization in time management during a disaster?

a) To focus solely on non-urgent tasks
b) To identify and address high-priority and time-sensitive activities
c) To promote procrastination
d) To discourage collaboration with external agencies

11) How does Community-Based Disaster Management contribute to increasing community resilience?

a) By promoting dependency on external aid
b) By isolating the community from the disaster management process
c) By enhancing local capacity, knowledge, and self-reliance
d) By avoiding community input for quick decision-making

12) What is a primary concern regarding drinking water during a disaster?

a) Over hydration b) Contamination
c) Lack of taste d) Excessive fluoride content

13) What is the purpose of a lightning rod in disaster-resistant construction?

a) Prevent earthquakes
b) Reduce wind impact
c) Protect against lightning strikes
d) Enhance insulation

14) What role does feedback play in the monitoring and evaluation process?

a) It is irrelevant to the process
b) It helps identify areas for improvement and informs decision-making
c) It is solely for public relations purposes
d) It is only necessary at the project's conclusion

SLR-BD-338

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Recovery, Rehabilitation and Reconstruction (BTN01717)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.2 is compulsory; answer any two from remaining questions from Section - I.
2) Q.6 is compulsory; answer any two from remaining questions from Section - II.
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2	**a)**	What is mean by Disaster mitigation? Write its importance.	**04**
	b)	Write the roles of Local elected bodies in rehabilitation.	**03**
	c)	What is role of World bank in Relief and reconstruction?	**03**
Q.3	**a)**	Give the classification of damage as per the Medvedev-Sponheuer-Karnik (MSK) Scale of 1964.	**05**
	b)	Write the importance of Disaster mitigation.	**04**
Q.4	**a)**	What do you mean by Social Infrastructure? Explain development of Social Infrastructure.	**05**
	b)	Describe Disaster Management Act.	**04**
Q.5	**a)**	Explain various traditional disaster-resistant construction techniques.	**05**
	b)	Write short note on Chief Minister's Disaster Relief Fund.	**04**

Section – II

Q.6	**a)**	Write note on rehabilitation of animal husbandry affected due to the disaster.	**04**
	b)	Explain various categories of Recovery.	**03**
	c)	Write note on Community Response in Disaster Management.	**03**
Q.7	**a)**	What are the key steps and considerations for evaluating rehabilitation work?	**05**
	b)	What is importance of Rural and Urban local bodies in recovery work?	**04**
Q.8	**a)**	What is Recovery and what are key elements of Recovery?	**05**
	b)	What is Speedy recovery? What is its importance?	**04**

Q.9	**a)**	Write note on Hygiene and Sanitation and response strategies for it after disaster.	**05**
	b)	What are tools for time management? And what are challenges in time management during disasters?	**04**

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Recovery, Rehabilitation and Reconstruction (BTN01717)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In the aftermath of a natural disaster, which aspect of socio-economic rehabilitation is crucial for long-term resilience?
a) Short-term financial aid b) Infrastructure reconstruction
c) Community empowerment d) Technological advancements

2) What is the role of baseline data in the monitoring process?
a) To determine the final project outcome
b) To establish a reference point for measuring changes and impacts
c) To identify the individuals responsible for the project
d) To compare different rehabilitation projects

3) What is the role of prioritization in time management during a disaster?
a) To focus solely on non-urgent tasks
b) To identify and address high-priority and time-sensitive activities
c) To promote procrastination
d) To discourage collaboration with external agencies

4) How does Community-Based Disaster Management contribute to increasing community resilience?
a) By promoting dependency on external aid
b) By isolating the community from the disaster management process
c) By enhancing local capacity, knowledge, and self-reliance
d) By avoiding community input for quick decision-making

5) What is a primary concern regarding drinking water during a disaster?
a) Over hydration b) Contamination
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6) What is the purpose of a lightning rod in disaster-resistant construction?
a) Prevent earthquakes
b) Reduce wind impact
c) Protect against lightning strikes
d) Enhance insulation

7) What role does feedback play in the monitoring and evaluation process?
a) It is irrelevant to the process
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c) It is solely for public relations purposes
d) It is only necessary at the project's conclusion

8) What is vulnerability in the context of development?
a) A measure of economic growth
b) The state of being exposed to the risk of harm or damage
c) A synonym for resilience
d) The level of technological advancement

9) How does vegetation and afforestation contribute to disaster mitigation?
a) By creating barriers to emergency responders
b) By increasing vulnerability to disasters
c) By providing natural barriers against floods, landslides, and soil erosion
d) By promoting deforestation

10) The National Disaster Management Authority (NDMA) is headed by ____.
a) Prime Minister of India
b) President of India
c) Governor of States
d) Chief Minister of States

11) What is the primary purpose of insurance in disaster risk management?
a) To create financial burdens for individuals
b) To transfer and manage the financial risks associated with disasters
c) To discourage risk reduction efforts
d) To ignore the impact of disasters

12) Which international agency is often involved in providing financial assistance for poverty reduction and development projects in developing countries?
a) United Nations Educational, Scientific and Cultural Organization (UNESCO)
b) World Health Organization (WHO)
c) World Bank
d) International Labour Organization (ILO)

13) In flood-prone areas, what feature is important for the ground floor of a disaster resistant house?
a) Elevated foundation
b) Basement
c) Slab foundation
d) Sunken living room

14) What is the primary goal of socio-economic rehabilitation?

a) Preservation of cultural heritage
b) Restoration of physical health
c) Restoration of economic and social well-being
d) Implementation of new policies

SLR-BD-338

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Recovery, Rehabilitation and Reconstruction (BTN01717)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.2 is compulsory; answer any two from remaining questions from Section - I.
2) Q.6 is compulsory; answer any two from remaining questions from Section - II.
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2	**a)**	What is mean by Disaster mitigation? Write its importance.	**04**
	b)	Write the roles of Local elected bodies in rehabilitation.	**03**
	c)	What is role of World bank in Relief and reconstruction?	**03**
Q.3	**a)**	Give the classification of damage as per the Medvedev-Sponheuer-Karnik (MSK) Scale of 1964.	**05**
	b)	Write the importance of Disaster mitigation.	**04**
Q.4	**a)**	What do you mean by Social Infrastructure? Explain development of Social Infrastructure.	**05**
	b)	Describe Disaster Management Act.	**04**
Q.5	**a)**	Explain various traditional disaster-resistant construction techniques.	**05**
	b)	Write short note on Chief Minister's Disaster Relief Fund.	**04**

Section – II

Q.6	**a)**	Write note on rehabilitation of animal husbandry affected due to the disaster.	**04**
	b)	Explain various categories of Recovery.	**03**
	c)	Write note on Community Response in Disaster Management.	**03**
Q.7	**a)**	What are the key steps and considerations for evaluating rehabilitation work?	**05**
	b)	What is importance of Rural and Urban local bodies in recovery work?	**04**
Q.8	**a)**	What is Recovery and what are key elements of Recovery?	**05**
	b)	What is Speedy recovery? What is its importance?	**04**

Q.9	**a)**	Write note on Hygiene and Sanitation and response strategies for it after disaster.	**05**
	b)	What are tools for time management? And what are challenges in time management during disasters?	**04**

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Recovery, Rehabilitation and Reconstruction (BTN01717)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) How does Community-Based Disaster Management contribute to increasing community resilience?
a) By promoting dependency on external aid
b) By isolating the community from the disaster management process
c) By enhancing local capacity, knowledge, and self-reliance
d) By avoiding community input for quick decision-making

2) What is a primary concern regarding drinking water during a disaster?
a) Over hydration b) Contamination
c) Lack of taste d) Excessive fluoride content

3) What is the purpose of a lightning rod in disaster-resistant construction?
a) Prevent earthquakes
b) Reduce wind impact
c) Protect against lightning strikes
d) Enhance insulation

4) What role does feedback play in the monitoring and evaluation process?
a) It is irrelevant to the process
b) It helps identify areas for improvement and informs decision-making
c) It is solely for public relations purposes
d) It is only necessary at the project's conclusion

5) What is vulnerability in the context of development?
a) A measure of economic growth
b) The state of being exposed to the risk of harm or damage
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d) The level of technological advancement

6) How does vegetation and afforestation contribute to disaster mitigation?
a) By creating barriers to emergency responders
b) By increasing vulnerability to disasters
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11) What is the primary goal of socio-economic rehabilitation?
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b) Restoration of physical health
c) Restoration of economic and social well-being
d) Implementation of new policies

12) In the aftermath of a natural disaster, which aspect of socio-economic rehabilitation is crucial for long-term resilience?
a) Short-term financial aid
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13) What is the role of baseline data in the monitoring process?
a) To determine the final project outcome
b) To establish a reference point for measuring changes and impacts
c) To identify the individuals responsible for the project
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14) What is the role of prioritization in time management during a disaster?

a) To focus solely on non-urgent tasks
b) To identify and address high-priority and time-sensitive activities
c) To promote procrastination
d) To discourage collaboration with external agencies

SLR-BD-338

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Recovery, Rehabilitation and Reconstruction (BTN01717)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.2 is compulsory; answer any two from remaining questions from Section - I.
2) Q.6 is compulsory; answer any two from remaining questions from Section - II.
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2	**a)**	What is mean by Disaster mitigation? Write its importance.	**04**
	b)	Write the roles of Local elected bodies in rehabilitation.	**03**
	c)	What is role of World bank in Relief and reconstruction?	**03**
Q.3	**a)**	Give the classification of damage as per the Medvedev-Sponheuer-Karnik (MSK) Scale of 1964.	**05**
	b)	Write the importance of Disaster mitigation.	**04**
Q.4	**a)**	What do you mean by Social Infrastructure? Explain development of Social Infrastructure.	**05**
	b)	Describe Disaster Management Act.	**04**
Q.5	**a)**	Explain various traditional disaster-resistant construction techniques.	**05**
	b)	Write short note on Chief Minister's Disaster Relief Fund.	**04**

Section – II

Q.6	**a)**	Write note on rehabilitation of animal husbandry affected due to the disaster.	**04**
	b)	Explain various categories of Recovery.	**03**
	c)	Write note on Community Response in Disaster Management.	**03**
Q.7	**a)**	What are the key steps and considerations for evaluating rehabilitation work?	**05**
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Q.8	**a)**	What is Recovery and what are key elements of Recovery?	**05**
	b)	What is Speedy recovery? What is its importance?	**04**

Q.9	**a)**	Write note on Hygiene and Sanitation and response strategies for it after disaster.	**05**
	b)	What are tools for time management? And what are challenges in time management during disasters?	**04**

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Recovery, Rehabilitation and Reconstruction (BTN01717)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In flood-prone areas, what feature is important for the ground floor of a disaster resistant house?
a) Elevated foundation b) Basement
c) Slab foundation d) Sunken living room

2) What is the primary goal of socio-economic rehabilitation?
a) Preservation of cultural heritage
b) Restoration of physical health
c) Restoration of economic and social well-being
d) Implementation of new policies

3) In the aftermath of a natural disaster, which aspect of socio-economic rehabilitation is crucial for long-term resilience?
a) Short-term financial aid b) Infrastructure reconstruction
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13) What is the primary purpose of insurance in disaster risk management?
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14) Which international agency is often involved in providing financial assistance for poverty reduction and development projects in developing countries?

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b) World Health Organization (WHO)
c) World Bank
d) International Labour Organization (ILO)

SLR-BD-338

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Recovery, Rehabilitation and Reconstruction (BTN01717)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.2 is compulsory; answer any two from remaining questions from Section - I.
2) Q.6 is compulsory; answer any two from remaining questions from Section - II.
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2	**a)**	What is mean by Disaster mitigation? Write its importance.	**04**
	b)	Write the roles of Local elected bodies in rehabilitation.	**03**
	c)	What is role of World bank in Relief and reconstruction?	**03**
Q.3	**a)**	Give the classification of damage as per the Medvedev-Sponheuer-Karnik (MSK) Scale of 1964.	**05**
	b)	Write the importance of Disaster mitigation.	**04**
Q.4	**a)**	What do you mean by Social Infrastructure? Explain development of Social Infrastructure.	**05**
	b)	Describe Disaster Management Act.	**04**
Q.5	**a)**	Explain various traditional disaster-resistant construction techniques.	**05**
	b)	Write short note on Chief Minister's Disaster Relief Fund.	**04**

Section – II

Q.6	**a)**	Write note on rehabilitation of animal husbandry affected due to the disaster.	**04**
	b)	Explain various categories of Recovery.	**03**
	c)	Write note on Community Response in Disaster Management.	**03**
Q.7	**a)**	What are the key steps and considerations for evaluating rehabilitation work?	**05**
	b)	What is importance of Rural and Urban local bodies in recovery work?	**04**
Q.8	**a)**	What is Recovery and what are key elements of Recovery?	**05**
	b)	What is Speedy recovery? What is its importance?	**04**

Q.9	**a)**	Write note on Hygiene and Sanitation and response strategies for it after disaster.	**05**
	b)	What are tools for time management? And what are challenges in time management during disasters?	**04**

SLR-BD-339

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Bridge and Grade Separated Structures (BTN01718)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable data wherever needed and mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ following are components of bridges.
a) Pier b) Abutment
c) Foundation d) All of these

2) Factors affecting selection of type of Bridge and Bridge Site are _____.
a) The nature and bed conditions of river or stream
b) Hydraulic data collected at the site
c) The climatic condition of the area
d) All of these

3) Abutment of Bridge is _____.
a) Foundation b) End pier
c) Bearing d) All of these

4) Types of grades separated structures are _____.
a) Overpass b) Under pass
c) Flyover d) All of these

5) Types of Bridge foundations are _____.
a) Caisson Foundation b) Pile foundation
c) Pier Foundation d) All of these

6) Steps involved in the Construction of Diaphragm Walls are _____.
a) Excavation Preparation b) Slurry Trench
c) Concrete Pouring d) All of these

7) Pipe jacking involves moving _____ to the ground.
a) Box b) Pipe
c) both a and b d) All of these

8) Launching girders for bridges involves the following steps _____
a) Planning and Design b) Fabrication
c) Transportation to the Site d) All of these

9) Offshore platforms are _____.
a) Structure built in lake b) Structure built on the sea
c) Structure built in the pond d) All of these

10) Material handling is _____.
a) Process of change of material.
b) Process of transporting, lifting, and placing various construction materials and equipment.
c) Process of finding Quality of Construction Material.
d) Process of finding Quantity of Construction Material.

11) Erecting lightweight components on tall structures in bridges requires ___.
a) Engineering and Design b) Assembly and Connection
c) Specialized Equipment d) All of these

12) The cross section of a pier may be _____.
a) with triangular edges towards upstream and downstream sides
b) with curved faces on upstream and downstream sides
c) rectangular
d) all the above

13) Ground improvement techniques are _____.
a) Compaction b) Grouting
c) Deep Soil Mixing d) All of these

14) What is the basis for PERT analysis?
a) An optimistic time b) A pessimistic period of time
c) The date that is most likely d) All options mentioned above

Seat No.	

Set **P**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Bridge and Grade Separated Structures (BTN01718)

Day & Date: Friday, 06-June-2025 Max. Marks:
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable data wherever needed and mention it clearly.
4) Draw neat sketches wherever necessary.

Section – I

Q.2 Solve following (Any 2) **14**

a) Enlist and explain various types of grade separated structures.
b) Explain structural requirements of grade separated structures.
c) Explain the construction process for 'Diaphragm Walls'.

Q.3 Solve following (Any 2) **14**

a) Enlist and explain various types of 'Tunneling Techniques'.
b) Explain, 'Bridge testing for safe carrying capacity' in detail.
c) Explain, 'Bridge Approaches' in detail.

Section – II

Q.4 Solve following (Any 2) **14**

a) Explain the process of Embankment Construction in detail.
b) Explain various types of Ground Improvement Techniques in details.
c) Explain the factors affecting selection of equipment and methods.

Q.5 Solve following (Any 2) **14**

a) Explain the concept of Equipment management in construction projects.
b) Differentiate between CPM and PERT Techniques.
c) The following table shows the list of activities and their durations. Calculate the project duration and critical path of the network.

Activity	Duration	Depends on
A	2	-
B	4	A
C	3	A
D	6	B,C
E	7	B
F	3	D,E

SLR-BD-339

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Bridge and Grade Separated Structures (BTN01718)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable data wherever needed and mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Launching girders for bridges involves the following steps _____
a) Planning and Design b) Fabrication
c) Transportation to the Site d) All of these

2) Offshore platforms are _____.
a) Structure built in lake b) Structure built on the sea
c) Structure built in the pond d) All of these

3) Material handling is _____.
a) Process of change of material.
b) Process of transporting, lifting, and placing various construction materials and equipment.
c) Process of finding Quality of Construction Material.
d) Process of finding Quantity of Construction Material.

4) Erecting lightweight components on tall structures in bridges requires ___.
a) Engineering and Design b) Assembly and Connection
c) Specialized Equipment d) All of these

5) The cross section of a pier may be _____.
a) with triangular edges towards upstream and downstream sides
b) with curved faces on upstream and downstream sides
c) rectangular
d) all the above

6) Ground improvement techniques are _____.
a) Compaction b) Grouting
c) Deep Soil Mixing d) All of these

7) What is the basis for PERT analysis?
a) An optimistic time
b) A pessimistic period of time
c) The date that is most likely
d) All options mentioned above

8) _____ following are components of bridges.
a) Pier
b) Abutment
c) Foundation
d) All of these

9) Factors affecting selection of type of Bridge and Bridge Site are _____.
a) The nature and bed conditions of river or stream
b) Hydraulic data collected at the site
c) The climatic condition of the area
d) All of these

10) Abutment of Bridge is _____.
a) Foundation
b) End pier
c) Bearing
d) All of these

11) Types of grades separated structures are _____.
a) Overpass
b) Under pass
c) Flyover
d) All of these

12) Types of Bridge foundations are _____.
a) Caisson Foundation
b) Pile foundation
c) Pier Foundation
d) All of these

13) Steps involved in the Construction of Diaphragm Walls are _____.
a) Excavation Preparation
b) Slurry Trench
c) Concrete Pouring
d) All of these

14) Pipe jacking involves moving _____ to the ground.
a) Box
b) Pipe
c) both a and b
d) All of these

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Bridge and Grade Separated Structures (BTN01718)

Day & Date: Friday, 06-June-2025 Max. Marks:
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable data wherever needed and mention it clearly.
4) Draw neat sketches wherever necessary.

Section – I

Q.2 Solve following (Any 2) **14**

a) Enlist and explain various types of grade separated structures.
b) Explain structural requirements of grade separated structures.
c) Explain the construction process for 'Diaphragm Walls'.

Q.3 Solve following (Any 2) **14**

a) Enlist and explain various types of 'Tunneling Techniques'.
b) Explain, 'Bridge testing for safe carrying capacity' in detail.
c) Explain, 'Bridge Approaches' in detail.

Section – II

Q.4 Solve following (Any 2) **14**

a) Explain the process of Embankment Construction in detail.
b) Explain various types of Ground Improvement Techniques in details.
c) Explain the factors affecting selection of equipment and methods.

Q.5 Solve following (Any 2) **14**

a) Explain the concept of Equipment management in construction projects.
b) Differentiate between CPM and PERT Techniques.
c) The following table shows the list of activities and their durations. Calculate the project duration and critical path of the network.

Activity	Duration	Depends on
A	2	-
B	4	A
C	3	A
D	6	B,C
E	7	B
F	3	D,E

SLR-BD-339

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Bridge and Grade Separated Structures (BTN01718)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable data wherever needed and mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) Erecting lightweight components on tall structures in bridges requires ___.
a) Engineering and Design b) Assembly and Connection
c) Specialized Equipment d) All of these

2) The cross section of a pier may be _____.
a) with triangular edges towards upstream and downstream sides
b) with curved faces on upstream and downstream sides
c) rectangular
d) all the above

3) Ground improvement techniques are _____.
a) Compaction b) Grouting
c) Deep Soil Mixing d) All of these

4) What is the basis for PERT analysis?
a) An optimistic time b) A pessimistic period of time
c) The date that is most likely d) All options mentioned above

5) _____ following are components of bridges.
a) Pier b) Abutment
c) Foundation d) All of these

6) Factors affecting selection of type of Bridge and Bridge Site are _____.
a) The nature and bed conditions of river or stream
b) Hydraulic data collected at the site
c) The climatic condition of the area
d) All of these

7) Abutment of Bridge is _____.
a) Foundation b) End pier
c) Bearing d) All of these

8) Types of grades separated structures are _____.
a) Overpass b) Under pass
c) Flyover d) All of these

9) Types of Bridge foundations are _____.
a) Caisson Foundation b) Pile foundation
c) Pier Foundation d) All of these

10) Steps involved in the Construction of Diaphragm Walls are _____.
a) Excavation Preparation b) Slurry Trench
c) Concrete Pouring d) All of these

11) Pipe jacking involves moving _____ to the ground.
a) Box b) Pipe
c) both a and b d) All of these

12) Launching girders for bridges involves the following steps _____
a) Planning and Design b) Fabrication
c) Transportation to the Site d) All of these

13) Offshore platforms are _____.
a) Structure built in lake b) Structure built on the sea
c) Structure built in the pond d) All of these

14) Material handling is _____.
a) Process of change of material.
b) Process of transporting, lifting, and placing various construction materials and equipment.
c) Process of finding Quality of Construction Material.
d) Process of finding Quantity of Construction Material.

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Bridge and Grade Separated Structures (BTN01718)

Day & Date: Friday, 06-June-2025 Max. Marks:
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable data wherever needed and mention it clearly.
4) Draw neat sketches wherever necessary.

Section – I

Q.2 Solve following (Any 2) **14**

a) Enlist and explain various types of grade separated structures.
b) Explain structural requirements of grade separated structures.
c) Explain the construction process for 'Diaphragm Walls'.

Q.3 Solve following (Any 2) **14**

a) Enlist and explain various types of 'Tunneling Techniques'.
b) Explain, 'Bridge testing for safe carrying capacity' in detail.
c) Explain, 'Bridge Approaches' in detail.

Section – II

Q.4 Solve following (Any 2) **14**

a) Explain the process of Embankment Construction in detail.
b) Explain various types of Ground Improvement Techniques in details.
c) Explain the factors affecting selection of equipment and methods.

Q.5 Solve following (Any 2) **14**

a) Explain the concept of Equipment management in construction projects.
b) Differentiate between CPM and PERT Techniques.
c) The following table shows the list of activities and their durations. Calculate the project duration and critical path of the network.

Activity	Duration	Depends on
A	2	-
B	4	A
C	3	A
D	6	B,C
E	7	B
F	3	D,E

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Bridge and Grade Separated Structures (BTN01718)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable data wherever needed and mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Steps involved in the Construction of Diaphragm Walls are _____.
a) Excavation Preparation b) Slurry Trench
c) Concrete Pouring d) All of these

2) Pipe jacking involves moving _____ to the ground.
a) Box b) Pipe
c) both a and b d) All of these

3) Launching girders for bridges involves the following steps _____
a) Planning and Design b) Fabrication
c) Transportation to the Site d) All of these

4) Offshore platforms are _____.
a) Structure built in lake b) Structure built on the sea
c) Structure built in the pond d) All of these

5) Material handling is _____.
a) Process of change of material.
b) Process of transporting, lifting, and placing various construction materials and equipment.
c) Process of finding Quality of Construction Material.
d) Process of finding Quantity of Construction Material.

6) Erecting lightweight components on tall structures in bridges requires ___.
a) Engineering and Design b) Assembly and Connection
c) Specialized Equipment d) All of these

7) The cross section of a pier may be _____.
   a) with triangular edges towards upstream and downstream sides
   b) with curved faces on upstream and downstream sides
   c) rectangular
   d) all the above

8) Ground improvement techniques are _____.
   a) Compaction b) Grouting
   c) Deep Soil Mixing d) All of these

9) What is the basis for PERT analysis?
   a) An optimistic time b) A pessimistic period of time
   c) The date that is most likely d) All options mentioned above

10) _____ following are components of bridges.
   a) Pier b) Abutment
   c) Foundation d) All of these

11) Factors affecting selection of type of Bridge and Bridge Site are _____.
   a) The nature and bed conditions of river or stream
   b) Hydraulic data collected at the site
   c) The climatic condition of the area
   d) All of these

12) Abutment of Bridge is _____.
   a) Foundation b) End pier
   c) Bearing d) All of these

13) Types of grades separated structures are _____.
   a) Overpass b) Under pass
   c) Flyover d) All of these

14) Types of Bridge foundations are _____.
   a) Caisson Foundation b) Pile foundation
   c) Pier Foundation d) All of these

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Bridge and Grade Separated Structures (BTN01718)

Day & Date: Friday, 06-June-2025 Max. Marks:
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable data wherever needed and mention it clearly.
4) Draw neat sketches wherever necessary.

Section – I

Q.2 Solve following (Any 2) **14**
a) Enlist and explain various types of grade separated structures.
b) Explain structural requirements of grade separated structures.
c) Explain the construction process for 'Diaphragm Walls'.

Q.3 Solve following (Any 2) **14**
a) Enlist and explain various types of 'Tunneling Techniques'.
b) Explain, 'Bridge testing for safe carrying capacity' in detail.
c) Explain, 'Bridge Approaches' in detail.

Section – II

Q.4 Solve following (Any 2) **14**
a) Explain the process of Embankment Construction in detail.
b) Explain various types of Ground Improvement Techniques in details.
c) Explain the factors affecting selection of equipment and methods.

Q.5 Solve following (Any 2) **14**
a) Explain the concept of Equipment management in construction projects.
b) Differentiate between CPM and PERT Techniques.
c) The following table shows the list of activities and their durations. Calculate the project duration and critical path of the network.

Activity	Duration	Depends on
A	2	-
B	4	A
C	3	A
D	6	B,C
E	7	B
F	3	D,E

SLR-BD-340

Seat No.		Set	P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Sustainable Engineering & Technology (BTN01719)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following is not considered in an LCA?
a) Energy consumption b) Water usage
c) Greenhouse gas emissions d) Aesthetics

2) How can sustainable engineering contribute to a circular economy?
a) By promoting linear production and consumption practices
b) By designing products for reuse, recycling and resource recovery
c) By disregarding environmental considerations in engineering decisions
d) By prioritizing short term economic gains

3) Which stage of the product life cycle is important for sustainable engineering?
a) Raw material extraction and processing
b) Manufacturing and production
c) End of life disposal
d) Product use and maintenance

4) From which perspective sustainable engineering designs are different from the conventional engineering designs?
a) Operational safety b) Environmental impact
c) Functionality d) Cost effectiveness

5) Which of following falls under environmental impact categories in LCA?
a) Acid rain b) Eutrophication
c) Photochemical smog d) All of the above

6) Which of the following is a principle of sustainable engineering?
a) Long term thinking and planning
b) Short term decision making
c) Minimizing resource efficiency
d) All of the above

7) Which statement dictates the relation between functional unit and reference flows?

a) Reference flows indicate the amounts of input necessary to fulfil the amount of function specified by the functional unit
b) Reference flow provides the basis for functional unit determination
c) Reference flow has no correlation with functional unit
d) Reference flow is the functional unit multiplied by impact factor

8) Elementary flows involve the input and output relation between _____.

a) two-unit processes and represents the function of unit process
b) two system boundaries and represents connection among systems
c) system boundary and impact category and represents the potential of impact from the system boundary chosen
d) environment and unit process and represents the environmental intervention

9) Which of the following stage cannot be ignored for conducting a comparative life cycle assessment between two waste management technologies for the same product?

a) Manufacturing
b) Product Usage
c) End-of-life
d) Resource acquisition

10) Electric vehicles (EVs) are not zero emission vehicles. Why?

a) Batteries needs to be recharged by electricity and electricity production has air emissions
b) Batteries emits radiation like nuclear wastes
c) EV has a non zero gasoline indicator installed in the car
d) Batteries contain heavy metals, production and disposal of these metals is associated with environmental emissions

11) Which instrument is used to measure the Beam radiations?

a) Pyrheliometer
b) Sunshine Recorder
c) Anemometer
d) All of the above

12) The chemical industry is not a cause of: _____

a) Water pollution
b) Noise pollution
c) Air pollution
d) Nuclear pollution

13) In which collector the solar radiation collection efficiency is maximum?

a) Flat Plate
b) Line Focusing
c) Evacuated Tube
d) Paraboloid Dish

14) The maximum number of individuals that can be supported by a given environment is called _____.

a) Biotic potential
b) Carrying capacity
c) Environmental resistance
d) Population size

Seat No.		Set	P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Sustainable Engineering & Technology (BTN01719)

Day & Date: Friday, 06-June-2025 Max. Marks:
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory in section I, and solve any two questions from the remaining. Q. No. 6 is compulsory in section II, and solve any two questions from the remaining
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).
4) Use of non- programmable calculator is allowed.

Section – I

Q.2	**a)**	Categorize 5R concepts in solid waste management of ideal town.	**05**
	b)	Compare Social, environmental and economic sustainability concepts for Solapur city.	**05**
Q.3	**a)**	Discuss reuse of concrete as construction materials in detail.	**05**
	b)	Intercept effects of greenhouse gases in Solapur city and Pune city.	**04**
Q.4	**a)**	Categorize Clean Development Mechanism in detail.	**05**
	b)	Categorize Air Pollution and its effects of a town contributing 60% air pollution due to transportation sector.	**04**
Q.5	**a)**	Illustrate global warming concept in detail.	**05**
	b)	Outline advantages of carbon trading in developing countries.	**04**

Section – II

Q.6	**a)**	Categorize frame work and benefits of ISO 14001:2015 in detail.	**05**
	b)	Illustrate numerous advantages legal environmental laws in EIA.	**05**
Q.7	**a)**	Illustrate Scope and goal of Life Cycle Analysis (LCA) in detail.	**05**
	b)	Explain legal provisions for environmental protection in India in brief.	**04**
Q.8	**a)**	Intercept effects of sustainable transport to conventional transport with the help of practical example.	**05**
	b)	Discuss Liquid flat Plate collector with a neat diagram.	**04**
Q.9	**a)**	Illustrate sustainable urbanization using developing and developed country scenario.	**05**
	b)	Categorize numerous practices following in maintaining the sustainable city in general.	**04**

SLR-BD-340

Seat No.	

Set Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Sustainable Engineering & Technology (BTN01719)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) Elementary flows involve the input and output relation between _____.
a) two-unit processes and represents the function of unit process
b) two system boundaries and represents connection among systems
c) system boundary and impact category and represents the potential of impact from the system boundary chosen
d) environment and unit process and represents the environmental intervention

2) Which of the following stage cannot be ignored for conducting a comparative life cycle assessment between two waste management technologies for the same product?
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a) Batteries needs to be recharged by electricity and electricity production has air emissions
b) Batteries emits radiation like nuclear wastes
c) EV has a non zero gasoline indicator installed in the car
d) Batteries contain heavy metals, production and disposal of these metals is associated with environmental emissions

4) Which instrument is used to measure the Beam radiations?
a) Pyrheliometer b) Sunshine Recorder
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5) The chemical industry is not a cause of: _____
a) Water pollution b) Noise pollution
c) Air pollution d) Nuclear pollution

6) In which collector the solar radiation collection efficiency is maximum?
a) Flat Plate b) Line Focusing
c) Evacuated Tube d) Paraboloid Dish

7) The maximum number of individuals that can be supported by a given environment is called _____.
a) Biotic potential b) Carrying capacity
c) Environmental resistance d) Population size

8) Which of the following is not considered in an LCA?
a) Energy consumption b) Water usage
c) Greenhouse gas emissions d) Aesthetics

9) How can sustainable engineering contribute to a circular economy?
a) By promoting linear production and consumption practices
b) By designing products for reuse, recycling and resource recovery
c) By disregarding environmental considerations in engineering decisions
d) By prioritizing short term economic gains

10) Which stage of the product life cycle is important for sustainable engineering?
a) Raw material extraction and processing
b) Manufacturing and production
c) End of life disposal
d) Product use and maintenance

11) From which perspective sustainable engineering designs are different from the conventional engineering designs?
a) Operational safety b) Environmental impact
c) Functionality d) Cost effectiveness

12) Which of following falls under environmental impact categories in LCA?
a) Acid rain b) Eutrophication
c) Photochemical smog d) All of the above

13) Which of the following is a principle of sustainable engineering?
a) Long term thinking and planning
b) Short term decision making
c) Minimizing resource efficiency
d) All of the above

14) Which statement dictates the relation between functional unit and reference flows?
a) Reference flows indicate the amounts of input necessary to fulfil the amount of function specified by the functional unit
b) Reference flow provides the basis for functional unit determination
c) Reference flow has no correlation with functional unit
d) Reference flow is the functional unit multiplied by impact factor

Seat No.		Set	Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Sustainable Engineering & Technology (BTN01719)

Day & Date: Friday, 06-June-2025 Max. Marks:
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory in section I, and solve any two questions from the remaining. Q. No. 6 is compulsory in section II, and solve any two questions from the remaining
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).
4) Use of non- programmable calculator is allowed.

Section – I

Q.2	**a)**	Categorize 5R concepts in solid waste management of ideal town.	**05**
	b)	Compare Social, environmental and economic sustainability concepts for Solapur city.	**05**
Q.3	**a)**	Discuss reuse of concrete as construction materials in detail.	**05**
	b)	Intercept effects of greenhouse gases in Solapur city and Pune city.	**04**
Q.4	**a)**	Categorize Clean Development Mechanism in detail.	**05**
	b)	Categorize Air Pollution and its effects of a town contributing 60% air pollution due to transportation sector.	**04**
Q.5	**a)**	Illustrate global warming concept in detail.	**05**
	b)	Outline advantages of carbon trading in developing countries.	**04**

Section – II

Q.6	**a)**	Categorize frame work and benefits of ISO 14001:2015 in detail.	**05**
	b)	Illustrate numerous advantages legal environmental laws in EIA.	**05**
Q.7	**a)**	Illustrate Scope and goal of Life Cycle Analysis (LCA) in detail.	**05**
	b)	Explain legal provisions for environmental protection in India in brief.	**04**
Q.8	**a)**	Intercept effects of sustainable transport to conventional transport with the help of practical example.	**05**
	b)	Discuss Liquid flat Plate collector with a neat diagram.	**04**
Q.9	**a)**	Illustrate sustainable urbanization using developing and developed country scenario.	**05**
	b)	Categorize numerous practices following in maintaining the sustainable city in general.	**04**

Seat No.	

Set **R**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Sustainable Engineering & Technology (BTN01719)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which instrument is used to measure the Beam radiations?
a) Pyrheliometer b) Sunshine Recorder
c) Anemometer d) All of the above

2) The chemical industry is not a cause of: _____
a) Water pollution b) Noise pollution
c) Air pollution d) Nuclear pollution

3) In which collector the solar radiation collection efficiency is maximum?
a) Flat Plate b) Line Focusing
c) Evacuated Tube d) Paraboloid Dish

4) The maximum number of individuals that can be supported by a given environment is called _____.
a) Biotic potential b) Carrying capacity
c) Environmental resistance d) Population size

5) Which of the following is not considered in an LCA?
a) Energy consumption b) Water usage
c) Greenhouse gas emissions d) Aesthetics

6) How can sustainable engineering contribute to a circular economy?
a) By promoting linear production and consumption practices
b) By designing products for reuse, recycling and resource recovery
c) By disregarding environmental considerations in engineering decisions
d) By prioritizing short term economic gains

7) Which stage of the product life cycle is important for sustainable engineering?
   a) Raw material extraction and processing
   b) Manufacturing and production
   c) End of life disposal
   d) Product use and maintenance

8) From which perspective sustainable engineering designs are different from the conventional engineering designs?
   a) Operational safety
   b) Environmental impact
   c) Functionality
   d) Cost effectiveness

9) Which of following falls under environmental impact categories in LCA?
   a) Acid rain
   b) Eutrophication
   c) Photochemical smog
   d) All of the above

10) Which of the following is a principle of sustainable engineering?
   a) Long term thinking and planning
   b) Short term decision making
   c) Minimizing resource efficiency
   d) All of the above

11) Which statement dictates the relation between functional unit and reference flows?
   a) Reference flows indicate the amounts of input necessary to fulfil the amount of function specified by the functional unit
   b) Reference flow provides the basis for functional unit determination
   c) Reference flow has no correlation with functional unit
   d) Reference flow is the functional unit multiplied by impact factor

12) Elementary flows involve the input and output relation between _____.
   a) two-unit processes and represents the function of unit process
   b) two system boundaries and represents connection among systems
   c) system boundary and impact category and represents the potential of impact from the system boundary chosen
   d) environment and unit process and represents the environmental intervention

13) Which of the following stage cannot be ignored for conducting a comparative life cycle assessment between two waste management technologies for the same product?
   a) Manufacturing
   b) Product Usage
   c) End-of-life
   d) Resource acquisition

14) Electric vehicles (EVs) are not zero emission vehicles. Why?

a) Batteries needs to be recharged by electricity and electricity production has air emissions
b) Batteries emits radiation like nuclear wastes
c) EV has a non zero gasoline indicator installed in the car
d) Batteries contain heavy metals, production and disposal of these metals is associated with environmental emissions

SLR-BD-340

Seat No.		Set	R

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Sustainable Engineering & Technology (BTN01719)

Day & Date: Friday, 06-June-2025 Max. Marks:
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory in section I, and solve any two questions from the remaining. Q. No. 6 is compulsory in section II, and solve any two questions from the remaining
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).
4) Use of non- programmable calculator is allowed.

Section – I

Q.2	**a)**	Categorize 5R concepts in solid waste management of ideal town.	**05**
	b)	Compare Social, environmental and economic sustainability concepts for Solapur city.	**05**
Q.3	**a)**	Discuss reuse of concrete as construction materials in detail.	**05**
	b)	Intercept effects of greenhouse gases in Solapur city and Pune city.	**04**
Q.4	**a)**	Categorize Clean Development Mechanism in detail.	**05**
	b)	Categorize Air Pollution and its effects of a town contributing 60% air pollution due to transportation sector.	**04**
Q.5	**a)**	Illustrate global warming concept in detail.	**05**
	b)	Outline advantages of carbon trading in developing countries.	**04**

Section – II

Q.6	**a)**	Categorize frame work and benefits of ISO 14001:2015 in detail.	**05**
	b)	Illustrate numerous advantages legal environmental laws in EIA.	**05**
Q.7	**a)**	Illustrate Scope and goal of Life Cycle Analysis (LCA) in detail.	**05**
	b)	Explain legal provisions for environmental protection in India in brief.	**04**
Q.8	**a)**	Intercept effects of sustainable transport to conventional transport with the help of practical example.	**05**
	b)	Discuss Liquid flat Plate collector with a neat diagram.	**04**
Q.9	**a)**	Illustrate sustainable urbanization using developing and developed country scenario.	**05**
	b)	Categorize numerous practices following in maintaining the sustainable city in general.	**04**

Seat No.	

Set **S**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Sustainable Engineering & Technology (BTN01719)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following is a principle of sustainable engineering?
a) Long term thinking and planning
b) Short term decision making
c) Minimizing resource efficiency
d) All of the above

2) Which statement dictates the relation between functional unit and reference flows?
a) Reference flows indicate the amounts of input necessary to fulfil the amount of function specified by the functional unit
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3) Elementary flows involve the input and output relation between _____.
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c) End-of-life d) Resource acquisition

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a) Batteries needs to be recharged by electricity and electricity production has air emissions
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c) Anemometer d) All of the above

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c) Air pollution d) Nuclear pollution

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c) Evacuated Tube d) Paraboloid Dish

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c) Greenhouse gas emissions d) Aesthetics

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b) By designing products for reuse, recycling and resource recovery
c) By disregarding environmental considerations in engineering decisions
d) By prioritizing short term economic gains

12) Which stage of the product life cycle is important for sustainable engineering?
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b) Manufacturing and production
c) End of life disposal
d) Product use and maintenance

13) From which perspective sustainable engineering designs are different from the conventional engineering designs?
a) Operational safety b) Environmental impact
c) Functionality d) Cost effectiveness

14) Which of following falls under environmental impact categories in LCA?

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b) Eutrophication
c) Photochemical smog
d) All of the above

SLR-BD-340

Seat No.		Set	S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Sustainable Engineering & Technology (BTN01719)

Day & Date: Friday, 06-June-2025 Max. Marks:
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory in section I, and solve any two questions from the remaining. Q. No. 6 is compulsory in section II, and solve any two questions from the remaining
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).
4) Use of non- programmable calculator is allowed.

Section – I

Q.2	**a)**	Categorize 5R concepts in solid waste management of ideal town.	**05**
	b)	Compare Social, environmental and economic sustainability concepts for Solapur city.	**05**
Q.3	**a)**	Discuss reuse of concrete as construction materials in detail.	**05**
	b)	Intercept effects of greenhouse gases in Solapur city and Pune city.	**04**
Q.4	**a)**	Categorize Clean Development Mechanism in detail.	**05**
	b)	Categorize Air Pollution and its effects of a town contributing 60% air pollution due to transportation sector.	**04**
Q.5	**a)**	Illustrate global warming concept in detail.	**05**
	b)	Outline advantages of carbon trading in developing countries.	**04**

Section – II

Q.6	**a)**	Categorize frame work and benefits of ISO 14001:2015 in detail.	**05**
	b)	Illustrate numerous advantages legal environmental laws in EIA.	**05**
Q.7	**a)**	Illustrate Scope and goal of Life Cycle Analysis (LCA) in detail.	**05**
	b)	Explain legal provisions for environmental protection in India in brief.	**04**
Q.8	**a)**	Intercept effects of sustainable transport to conventional transport with the help of practical example.	**05**
	b)	Discuss Liquid flat Plate collector with a neat diagram.	**04**
Q.9	**a)**	Illustrate sustainable urbanization using developing and developed country scenario.	**05**
	b)	Categorize numerous practices following in maintaining the sustainable city in general.	**04**

SLR-BD-341

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Civil Engineering System Analysis and Design (BTN01720)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ is set of components that work together for overall objectives.
a) System b) Goals
c) Objective d) None of these

2) _____ is termed as performance measure, simply an objective that stated in measurable terms.
a) Measure of Effectiveness b) Dimension
c) Planning d) None

3) Which of the following is not property of desired MOE?
a) Appropriateness b) Measurability
c) Realistic d) Cost Saving

4) The super systems are _____.
a) Higher level systems b) Lower level systems
c) Both d) None of these.

5) _____ models describe the amount of money needed to undertake specific action.
a) Demand b) Cost
c) Real d) Supply

6) Which of the following is tool for task of description?
a) Probability b) Statistics
c) Economics d) All of the above

7) _____ models are that use the mathematics of decision making to choose a course of action, design or policy.
a) Prescriptive b) Descriptive
c) Analog d) Real

8) _____ Provides basis for predicting the need for proposed civil system.
a) Planning b) Need Assessment
c) Controlling d) None

9) A _____ may be defined as deficiency, an unfulfilled requirement, lack of product that is necessary.
a) Supply b) Need
c) None d) All of these

10) Which of the following is the stakeholder of system?
a) Users b) Community
c) System Owner d) All

11) From _____ perspective, the system inputs considered in system planning could have short term, moderate term & long term effects.
a) Temporal b) Operational
c) Phase d) None

12) Which of the following is classification of design?
a) Selection Design b) Configuration Design
c) Both of the above d) None of the above

13) In Preliminary Design, analysis & evaluation of design is done on _____ stage.
a) Detailed b) Conceptual
c) Multiple d) Preliminary

14) In _____ design, analysis & evaluation of alternative designs is done in details.
a) Conceptual b) Preliminary
c) Detailed d) None

Seat No.	

Set | P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Civil Engineering System Analysis and Design (BTN01720)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 Answer any four. **28**

a) Explain various classifications of system.
b) Explain hierarchy of desired outcomes: Values. Goals. Objectives.
c) Classify different models with examples.
d) Explain Traditional tasks of analyzing systems in civil engineering.
e) Explain examples of tasks at each phase of civil system development.
f) Explain development of civil engineering system.

Section – II

Q.3 Answer any four. **28**

a) Explain engineering design process in detail with sketch.
b) Explain process for system planning.
c) i) Explain assessment of system needs.
ii) Explain Initial vs Recurring needs & Growing vs Sudden needs.
d) Explain classification of engineering design with examples.
e) Explain various principles of planning in detail.
f) Explain various of mechanisms for need assessment of system.

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Civil Engineering System Analysis and Design (BTN01720)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ Provides basis for predicting the need for proposed civil system.
a) Planning b) Need Assessment
c) Controlling d) None

2) A _____ may be defined as deficiency, an unfulfilled requirement, lack of product that is necessary.
a) Supply b) Need
c) None d) All of these

3) Which of the following is the stakeholder of system?
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c) System Owner d) All

4) From _____ perspective, the system inputs considered in system planning could have short term, moderate term & long term effects.
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a) Selection Design b) Configuration Design
c) Both of the above d) None of the above

6) In Preliminary Design, analysis & evaluation of design is done on _____ stage.
a) Detailed b) Conceptual
c) Multiple d) Preliminary

7) In _____ design, analysis & evaluation of alternative designs is done in details.
a) Conceptual b) Preliminary
c) Detailed d) None

8) _____ is set of components that work together for overall objectives.
a) System b) Goals
c) Objective d) None of these

9) _____ is termed as performance measure, simply an objective that stated in measurable terms.
a) Measure of Effectiveness b) Dimension
c) Planning d) None

10) Which of the following is not property of desired MOE?
a) Appropriateness b) Measurability
c) Realistic d) Cost Saving

11) The super systems are _____.
a) Higher level systems b) Lower level systems
c) Both d) None of these.

12) _____ models describe the amount of money needed to undertake specific action.
a) Demand b) Cost
c) Real d) Supply

13) Which of the following is tool for task of description?
a) Probability b) Statistics
c) Economics d) All of the above

14) _____ models are that use the mathematics of decision making to choose a course of action, design or policy.
a) Prescriptive b) Descriptive
c) Analog d) Real

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Civil Engineering System Analysis and Design (BTN01720)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 Answer any four. **28**

a) Explain various classifications of system.
b) Explain hierarchy of desired outcomes: Values. Goals. Objectives.
c) Classify different models with examples.
d) Explain Traditional tasks of analyzing systems in civil engineering.
e) Explain examples of tasks at each phase of civil system development.
f) Explain development of civil engineering system.

Section – II

Q.3 Answer any four. **28**

a) Explain engineering design process in detail with sketch.
b) Explain process for system planning.
c) i) Explain assessment of system needs.
ii) Explain Initial vs Recurring needs & Growing vs Sudden needs.
d) Explain classification of engineering design with examples.
e) Explain various principles of planning in detail.
f) Explain various of mechanisms for need assessment of system.

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Civil Engineering System Analysis and Design (BTN01720)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) From _____ perspective, the system inputs considered in system planning could have short term, moderate term & long term effects.
a) Temporal b) Operational
c) Phase d) None

2) Which of the following is classification of design?
a) Selection Design b) Configuration Design
c) Both of the above d) None of the above

3) In Preliminary Design, analysis & evaluation of design is done on _____ stage.
a) Detailed b) Conceptual
c) Multiple d) Preliminary

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a) Conceptual b) Preliminary
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a) System b) Goals
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a) Measure of Effectiveness b) Dimension
c) Planning d) None

7) Which of the following is not property of desired MOE?
a) Appropriateness b) Measurability
c) Realistic d) Cost Saving

8) The super systems are _____.
a) Higher level systems b) Lower level systems
c) Both d) None of these.

9) _____ models describe the amount of money needed to undertake specific action.
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c) Real d) Supply

10) Which of the following is tool for task of description?
a) Probability b) Statistics
c) Economics d) All of the above

11) _____ models are that use the mathematics of decision making to choose a course of action, design or policy.
a) Prescriptive b) Descriptive
c) Analog d) Real

12) _____ Provides basis for predicting the need for proposed civil system.
a) Planning b) Need Assessment
c) Controlling d) None

13) A _____ may be defined as deficiency, an unfulfilled requirement, lack of product that is necessary.
a) Supply b) Need
c) None d) All of these

14) Which of the following is the stakeholder of system?
a) Users b) Community
c) System Owner d) All

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Civil Engineering System Analysis and Design (BTN01720)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 Answer any four. **28**

a) Explain various classifications of system.
b) Explain hierarchy of desired outcomes: Values. Goals. Objectives.
c) Classify different models with examples.
d) Explain Traditional tasks of analyzing systems in civil engineering.
e) Explain examples of tasks at each phase of civil system development.
f) Explain development of civil engineering system.

Section – II

Q.3 Answer any four. **28**

a) Explain engineering design process in detail with sketch.
b) Explain process for system planning.
c) i) Explain assessment of system needs.
ii) Explain Initial vs Recurring needs & Growing vs Sudden needs.
d) Explain classification of engineering design with examples.
e) Explain various principles of planning in detail.
f) Explain various of mechanisms for need assessment of system.

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Civil Engineering System Analysis and Design (BTN01720)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following is tool for task of description?
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c) Multiple d) Preliminary

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c) Real d) Supply

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Civil Engineering System Analysis and Design (BTN01720)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 Answer any four. **28**

a) Explain various classifications of system.
b) Explain hierarchy of desired outcomes: Values. Goals. Objectives.
c) Classify different models with examples.
d) Explain Traditional tasks of analyzing systems in civil engineering.
e) Explain examples of tasks at each phase of civil system development.
f) Explain development of civil engineering system.

Section – II

Q.3 Answer any four. **28**

a) Explain engineering design process in detail with sketch.
b) Explain process for system planning.
c) i) Explain assessment of system needs.
ii) Explain Initial vs Recurring needs & Growing vs Sudden needs.
d) Explain classification of engineering design with examples.
e) Explain various principles of planning in detail.
f) Explain various of mechanisms for need assessment of system.

SLR-BD-342

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Professional Practice, Law & Ethics (BTN01801)

Day & Date: Monday 26-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:20

Q.1 Choose the correct alternatives from the options. 20

1) Copyright law gives _____ exclusive rights to the owner of copyright.
a) 2 b) 4
c) 6 d) 3

2) Ethical Style is _____
a) Promises only what can be delivered
b) Deals honestly with others
c) Behaves unselfishly
d) Contributes to knowledge base

3) _____ is defined as the right of a person to guide.
a) Democracy b) Freedom
c) Responsibility d) Authority

4) Patents are granted by national patent offices or by regional offices that carry out examination work for a group of countries _____
a) True b) False

5) Rules that mandate or prohibit certain behavior in society _____
a) Regulation b) Law
c) Rules d) Moral ethics

6) The hardware or a process used in its manufacture may be protected by a _____
a) Copyright b) Design registry
c) Patent d) Trademark

7) The look of the product may be registered in the _____
a) Copyright b) Trademark
c) Patent d) Designs registry

8) Which of the following is not true with respect to ensure a safety design?

a) The maximum requirement is that a design must comply with the applicable laws.
b) An acceptable design must meet the standard of "accepted engineering practice."
c) Alternative designs that are potentially safer must be explored.
d) Engineer must attempt to foresee potential misuses of the product by the consumer and must design to avoid these problems.

9) In _____, a neutral third party assists the disputing parties in reaching a settlement of their dispute.

a) Infiltration b) Arbitration
c) Mediation d) Negotiation

10) Which of the following stakeholder has the responsibility of prescribing norms to ensure safety of the citizens?

a) Government b) Professional Societies
c) Standardization Bodies d) All of these

11) What does a trademark protect?

a) An invention
b) Logos, names and brands
c) The look, shape and feel of a product
d) A secret formula

12) How long do patents usually last for?

a) 10 years b) 20 years
c) 40 years d) 60 years

13) Safety provisions in Indian Factory Act does not cover _____

a) Fencing of machinery b) Precaution against fire
c) Lunch rooms d) Protection eyes

14) Which of the following matter are not referred to arbitration?

a) Civil matters b) Matrimonial matters
c) Banking matters d) Property matters

15) The quest to maximize profitability should be constrained by _____

a) Ethical obligations
b) Stakeholders
c) Unethical obligations
d) Lack of social responsibility

16) Which of the following is not usually the objective of a code of ethics?
   a) to create an ethical workplace
   b) to evaluate the ethical components of the proposed actions of the employees
   c) to improve the public image of the company
   d) to enhance the profits of the business continuously

17) What kinds of trademarks can be registered?
   a) one or a combination of words
   b) Letters
   c) Numerals
   d) All of these

18) Which of the following is not a way of protection?
   a) Personnel security
   b) Physical security
   c) Personal security
   d) Piracy

19) Industrial acts are useful for _____
   a) Guarantee of employee welfare
   b) Provision of legal platform
   c) Removes extortion of workers
   d) All of these

20) Workman's Compensation Act consists of which of following provisions of act?
   a) Partial disablement
   b) Total disablement
   c) Amount of compensation
   d) All of these

SLR-BD-342

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Professional Practice, Law & Ethics (BTN01801)

Day & Date: Monday 26-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from Section I
2) Solve any two questions from Section II
3) Figures to the right indicate full marks.
4) Make suitable assumptions if necessary and state them clearly.

SECTION – I

Q.2 Attempt the following questions.

a) What is the difference between Moral and Ethics? **10**

b) Explain role of Government regulatory bodies prescribing norms to ensure safety of the citizens. **10**

Q.3 Attempt the following questions.

a) Define the terms: - **10**
1) Professional Ethics
2) Professionalism
3) Whistleblowing
4) Ethical dilemma

b) Write note on: **10**
1) Conflict of Interest
2) Gift Vs Bribery

Q.4 Attempt the following questions.

a) What are the various types of contracts and their features? **10**

b) Write note on: **10**
1) Public-Private Partnerships
2) Wrong practices in contracting

SECTION – II

Q.5 Attempt the following questions.

a) What is arbitration? Discuss the Extent of judicial intervention. **10**

b) Distinguish between Conciliation, Negotiation, Mediation and Arbitration. **10**

Q.6 Attempt the following questions.

a) Describe the rules for developers given by RERA. **10**

b) Describe Workmen's Compensation Act. **10**

Q.7 Attempt the following questions.

a) Explain the patents Act, 1970 and discuss historical perspective of patents law in India. **10**

b) Explain Piracy in Internet - Remedies and procedures in India. **10**

SLR-BD-342

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Professional Practice, Law & Ethics (BTN01801)

Day & Date: Monday 26-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:20

Q.1 Choose the correct alternatives from the options. **20**

1) The hardware or a process used in its manufacture may be protected by a _____
a) Copyright b) Design registry
c) Patent d) Trademark

2) The look of the product may be registered in the _____
a) Copyright b) Trademark
c) Patent d) Designs registry

3) Which of the following is not true with respect to ensure a safety design?
a) The maximum requirement is that a design must comply with the applicable laws.
b) An acceptable design must meet the standard of "accepted engineering practice."
c) Alternative designs that are potentially safer must be explored.
d) Engineer must attempt to foresee potential misuses of the product by the consumer and must design to avoid these problems.

4) In _____, a neutral third party assists the disputing parties in reaching a settlement of their dispute.
a) Infiltration b) Arbitration
c) Mediation d) Negotiation

5) Which of the following stakeholder has the responsibility of prescribing norms to ensure safety of the citizens?
a) Government b) Professional Societies
c) Standardization Bodies d) All of these

6) What does a trademark protect?
a) An invention
b) Logos, names and brands
c) The look, shape and feel of a product
d) A secret formula

7) How long do patents usually last for?
a) 10 years b) 20 years
c) 40 years d) 60 years

8) Safety provisions in Indian Factory Act does not cover _____
a) Fencing of machinery b) Precaution against fire
c) Lunch rooms d) Protection eyes

9) Which of the following matter are not referred to arbitration?
a) Civil matters b) Matrimonial matters
c) Banking matters d) Property matters

10) The quest to maximize profitability should be constrained by _____
a) Ethical obligations
b) Stakeholders
c) Unethical obligations
d) Lack of social responsibility

11) Which of the following is not usually the objective of a code of ethics?
a) to create an ethical workplace
b) to evaluate the ethical components of the proposed actions of the employees
c) to improve the public image of the company
d) to enhance the profits of the business continuously

12) What kinds of trademarks can be registered?
a) one or a combination of words
b) Letters
c) Numerals
d) All of these

13) Which of the following is not a way of protection?
a) Personnel security b) Physical security
c) Personal security d) Piracy

14) Industrial acts are useful for _____
a) Guarantee of employee welfare
b) Provision of legal platform
c) Removes extortion of workers
d) All of these

15) Workman's Compensation Act consists of which of following provisions of act?

a) Partial disablement b) Total disablement
c) Amount of compensation d) All of these

16) Copyright law gives _____ exclusive rights to the owner of copyright.

a) 2 b) 4
c) 6 d) 3

17) Ethical Style is _____

a) Promises only what can be delivered
b) Deals honestly with others
c) Behaves unselfishly
d) Contributes to knowledge base

18) _____ is defined as the right of a person to guide.

a) Democracy b) Freedom
c) Responsibility d) Authority

19) Patents are granted by national patent offices or by regional offices that carry out examination work for a group of countries _____

a) True b) False

20) Rules that mandate or prohibit certain behavior in society _____

a) Regulation b) Law
c) Rules d) Moral ethics

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Professional Practice, Law & Ethics (BTN01801)

Day & Date: Monday 26-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from Section I
2) Solve any two questions from Section II
3) Figures to the right indicate full marks.
4) Make suitable assumptions if necessary and state them clearly.

SECTION – I

Q.2 Attempt the following questions.

a) What is the difference between Moral and Ethics? **10**

b) Explain role of Government regulatory bodies prescribing norms to ensure safety of the citizens. **10**

Q.3 Attempt the following questions.

a) Define the terms: - **10**
1) Professional Ethics
2) Professionalism
3) Whistleblowing
4) Ethical dilemma

b) Write note on: **10**
1) Conflict of Interest
2) Gift Vs Bribery

Q.4 Attempt the following questions.

a) What are the various types of contracts and their features? **10**

b) Write note on: **10**
1) Public-Private Partnerships
2) Wrong practices in contracting

SECTION – II

Q.5 Attempt the following questions.

a) What is arbitration? Discuss the Extent of judicial intervention. **10**

b) Distinguish between Conciliation, Negotiation, Mediation and Arbitration. **10**

Q.6 Attempt the following questions.

a) Describe the rules for developers given by RERA. **10**

b) Describe Workmen's Compensation Act. **10**

Q.7 Attempt the following questions.

a) Explain the patents Act, 1970 and discuss historical perspective of patents law in India. **10**

b) Explain Piracy in Internet - Remedies and procedures in India. **10**

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Professional Practice, Law & Ethics (BTN01801)

Day & Date: Monday 26-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:20

Q.1 Choose the correct alternatives from the options. 20

1) What does a trademark protect?
a) An invention
b) Logos, names and brands
c) The look, shape and feel of a product
d) A secret formula

2) How long do patents usually last for?
a) 10 years b) 20 years
c) 40 years d) 60 years

3) Safety provisions in Indian Factory Act does not cover _____
a) Fencing of machinery b) Precaution against fire
c) Lunch rooms d) Protection eyes

4) Which of the following matter are not referred to arbitration?
a) Civil matters b) Matrimonial matters
c) Banking matters d) Property matters

5) The quest to maximize profitability should be constrained by _____
a) Ethical obligations
b) Stakeholders
c) Unethical obligations
d) Lack of social responsibility

6) Which of the following is not usually the objective of a code of ethics?
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b) to evaluate the ethical components of the proposed actions of the employees
c) to improve the public image of the company
d) to enhance the profits of the business continuously

7) What kinds of trademarks can be registered?
a) one or a combination of words
b) Letters
c) Numerals
d) All of these

8) Which of the following is not a way of protection?
a) Personnel security b) Physical security
c) Personal security d) Piracy

9) Industrial acts are useful for _____
a) Guarantee of employee welfare
b) Provision of legal platform
c) Removes extortion of workers
d) All of these

10) Workman's Compensation Act consists of which of following provisions of act?
a) Partial disablement b) Total disablement
c) Amount of compensation d) All of these

11) Copyright law gives _____ exclusive rights to the owner of copyright.
a) 2 b) 4
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12) Ethical Style is _____
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13) _____ is defined as the right of a person to guide.
a) Democracy b) Freedom
c) Responsibility d) Authority

14) Patents are granted by national patent offices or by regional offices that carry out examination work for a group of countries _____
a) True b) False

15) Rules that mandate or prohibit certain behavior in society _____
a) Regulation b) Law
c) Rules d) Moral ethics

16) The hardware or a process used in its manufacture may be protected by a _____
a) Copyright b) Design registry
c) Patent d) Trademark

17) The look of the product may be registered in the _____

a) Copyright b) Trademark
c) Patent d) Designs registry

18) Which of the following is not true with respect to ensure a safety design?

a) The maximum requirement is that a design must comply with the applicable laws.
b) An acceptable design must meet the standard of “accepted engineering practice.”
c) Alternative designs that are potentially safer must be explored.
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19) In _____, a neutral third party assists the disputing parties in reaching a settlement of their dispute.

a) Infiltration b) Arbitration
c) Mediation d) Negotiation

20) Which of the following stakeholder has the responsibility of prescribing norms to ensure safety of the citizens?

a) Government b) Professional Societies
c) Standardization Bodies d) All of these

SLR-BD-342

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Professional Practice, Law & Ethics (BTN01801)

Day & Date: Monday 26-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from Section I
2) Solve any two questions from Section II
3) Figures to the right indicate full marks.
4) Make suitable assumptions if necessary and state them clearly.

SECTION – I

Q.2 Attempt the following questions.

a) What is the difference between Moral and Ethics? **10**

b) Explain role of Government regulatory bodies prescribing norms to ensure safety of the citizens. **10**

Q.3 Attempt the following questions.

a) Define the terms: - **10**
1) Professional Ethics
2) Professionalism
3) Whistleblowing
4) Ethical dilemma

b) Write note on: **10**
1) Conflict of Interest
2) Gift Vs Bribery

Q.4 Attempt the following questions.

a) What are the various types of contracts and their features? **10**

b) Write note on: **10**
1) Public-Private Partnerships
2) Wrong practices in contracting

SECTION – II

Q.5 Attempt the following questions.

a) What is arbitration? Discuss the Extent of judicial intervention. **10**

b) Distinguish between Conciliation, Negotiation, Mediation and Arbitration. **10**

Q.6 Attempt the following questions.

a) Describe the rules for developers given by RERA. **10**

b) Describe Workmen's Compensation Act. **10**

Q.7 Attempt the following questions.

a) Explain the patents Act, 1970 and discuss historical perspective of patents law in India. **10**

b) Explain Piracy in Internet - Remedies and procedures in India. **10**

Seat No.	

Set **S**

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Professional Practice, Law & Ethics (BTN01801)

Day & Date: Monday 26-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:20

Q.1 Choose the correct alternatives from the options. **20**

1) Which of the following is not usually the objective of a code of ethics?
a) to create an ethical workplace
b) to evaluate the ethical components of the proposed actions of the employees
c) to improve the public image of the company
d) to enhance the profits of the business continuously

2) What kinds of trademarks can be registered?
a) one or a combination of words
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c) Numerals
d) All of these

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c) Personal security d) Piracy

4) Industrial acts are useful for _____
a) Guarantee of employee welfare
b) Provision of legal platform
c) Removes extortion of workers
d) All of these

5) Workman's Compensation Act consists of which of following provisions of act?
a) Partial disablement b) Total disablement
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8) _____ is defined as the right of a person to guide.
a) Democracy b) Freedom
c) Responsibility d) Authority

9) Patents are granted by national patent offices or by regional offices that carry out examination work for a group of countries _____
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a) Regulation b) Law
c) Rules d) Moral ethics

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12) The look of the product may be registered in the _____
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c) Mediation d) Negotiation

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c) Standardization Bodies
d) All of these

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a) An invention
b) Logos, names and brands
c) The look, shape and feel of a product
d) A secret formula

17) How long do patents usually last for?

a) 10 years
b) 20 years
c) 40 years
d) 60 years

18) Safety provisions in Indian Factory Act does not cover _____

a) Fencing of machinery
b) Precaution against fire
c) Lunch rooms
d) Protection eyes

19) Which of the following matter are not referred to arbitration?

a) Civil matters
b) Matrimonial matters
c) Banking matters
d) Property matters

20) The quest to maximize profitability should be constrained by _____

a) Ethical obligations
b) Stakeholders
c) Unethical obligations
d) Lack of social responsibility

SLR-BD-342

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Professional Practice, Law & Ethics (BTN01801)

Day & Date: Monday 26-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from Section I
2) Solve any two questions from Section II
3) Figures to the right indicate full marks.
4) Make suitable assumptions if necessary and state them clearly.

SECTION – I

Q.2 Attempt the following questions.

a) What is the difference between Moral and Ethics? **10**

b) Explain role of Government regulatory bodies prescribing norms to ensure safety of the citizens. **10**

Q.3 Attempt the following questions.

a) Define the terms: - **10**
1) Professional Ethics
2) Professionalism
3) Whistleblowing
4) Ethical dilemma

b) Write note on: **10**
1) Conflict of Interest
2) Gift Vs Bribery

Q.4 Attempt the following questions.

a) What are the various types of contracts and their features? **10**

b) Write note on: **10**
1) Public-Private Partnerships
2) Wrong practices in contracting

SECTION – II

Q.5 Attempt the following questions.

a) What is arbitration? Discuss the Extent of judicial intervention. **10**

b) Distinguish between Conciliation, Negotiation, Mediation and Arbitration. **10**

Q.6 Attempt the following questions.

a) Describe the rules for developers given by RERA. **10**

b) Describe Workmen's Compensation Act. **10**

Q.7 Attempt the following questions.

a) Explain the patents Act, 1970 and discuss historical perspective of patents law in India. **10**

b) Explain Piracy in Internet - Remedies and procedures in India. **10**

SLR-BD-343

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Repairs & Rehabilitation of Structures (BTN01803)

Day & Date: Wednesday 28-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. **20**

1) The pH value of fresh concrete is around _____.
a) 10 b) 9
c) 8 d) 12.5

2) _____ is responsible for the combination of the polymer particles.
a) Monomer b) Nanomer
c) Tetramer d) Crystal

3) Bacterial concrete is a _____ concrete.
a) Porous b) Self healing
c) Foamed d) Vacuum

4) Process of maintaining different components of building so that it can provide proper service throughout its working life is known as _____.
a) Building maintenance b) Building management
c) Building service d) Building repairs

5) If the cracks width is less than 0.1 mm then they are called _____.
a) Fine b) Thin
c) Medium d) Wide

6) _____ is a similar phenomenon to explosion but the pieces collapse into the center of the object instead of being expelled.
a) Explosion b) An implosion
c) both a and b d) none

7) _____ type of activity is carried out during the maintenance process.
a) Repair of plaster
b) Repair of cracks in walls and ceiling
c) Repair of flooring settlement
d) All of the above

8) Epoxy resins have ____.
a) Poor mechanical strength b) poor thermal strength
c) low tensile strength d) none of the above

9) _____ type of plaster defect generates a series of hair cracks inside the plaster.
a) Crazing b) Blistering
c) Flaking d) Popping

10) _____ metal is used for making a foamed concrete.
a) Aluminum b) Zinc
c) a & b both d) none of the above

11) _____ method used for the fire damage assessment.
a) TDA b) XRD
c) DTA d) All

12) _____ is used to repair, strengthen or renewal of the foundation of an existing building.
a) Shoring b) Underpinning
c) Grouting d) Scaffolding

13) The repair and rehabilitation of damaged or spelled concrete is done by removing the _____.
a) Loose concrete b) Collapsing
c) Breakage d) Bonding

14) Main causes of failure of the structure _____.
a) Design error b) poor inspection
c) Poor quality of materials d) all of the above

15) _____ bacteria are commonly used in bacterial concrete for crack repair.
a) E. coli b) Lactobacillus
c) Streptococcus d) Salmonella

16) _____ NDT test used a chemical attack method.
a) Load test b) ultrasonic test
c) chloride test d) none of the above

17) _____ type of sensor is commonly used to measure structural strain.
a) Thermocouples b) Accelerometers
c) Strain gauges d) Pressure sensors

18) _____ compound is responsible for sulfate attack inside a concrete.
a) Gypsum b) K2O
c) K3O d) none of the above

19) _____ is the primary benefit of using carbon fiber reinforced polymer (CFRP) composites for retrofitting.

a) Decreased structural strength
b) Increased corrosion
c) High strength-to-weight ratio and durability
d) Reduced cost

20) One of the testing equipment used for inspection is _____.

a) Strain Gauge
b) Measuring Jar
c) Test Tubes
d) None of these

SLR-BD-343

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Repairs & Rehabilitation of Structures (BTN01803)

Day & Date: Wednesday 28-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any two. **16**

a) Explain necessity and importance of maintenance required for civil structures.
b) Explain the various causes for deterioration of concrete structures.
c) Explain bacterial concrete and fiber reinforced concrete.

Q.3 Solve any four. **24**

a) Explain Shoring and underpinning.
b) Describe on Shotcrete and Guniting with applications.
c) Explain Ferro cement concrete.
d) Explain about cracks observed in concrete structures.
e) Explain about polymer concrete.
f) Describe about cause of corrosion occurred in R.C. Concrete.

Section – II

Q.4 Solve any two. **16**

a) Describe causes of various distress occurred in marine structures.
b) Explain various demolition techniques used in dilapidated buildings.
c) Explain repair techniques used in R.C.slab for leakages.

Q.5 Solve any four. **24**

a) Explain in detail sensors used in structural health monitoring of buildings.
b) Explain strengthening of R.C beams.
c) Describe repair techniques used to overcome low member strength, deflection in R.C. members.
d) Explain repair methods in underwater structures.
e) Explain repairs in fire damaged structures.
f) Explain retrofitting of columns in R.C structures.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Repairs & Rehabilitation of Structures (BTN01803)

Day & Date: Wednesday 28-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. **20**

1) _____ is a similar phenomenon to explosion but the pieces collapse into the center of the object instead of being expelled.
a) Explosion b) An implosion
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c) Test Tubes d) None of these

16) The pH value of fresh concrete is around _____.
a) 10 b) 9
c) 8 d) 12.5

17) _____ is responsible for the combination of the polymer particles.
a) Monomer b) Nanomer
c) Tetramer d) Crystal

18) Bacterial concrete is a _____ concrete.
a) Porous b) Self healing
c) Foamed d) Vacuum

19) Process of maintaining different components of building so that it can provide proper service throughout its working life is known as _____.

a) Building maintenance
b) Building management
c) Building service
d) Building repairs

20) If the cracks width is less than 0.1 mm then they are called _____.

a) Fine
b) Thin
c) Medium
d) Wide

SLR-BD-343

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Repairs & Rehabilitation of Structures (BTN01803)

Day & Date: Wednesday 28-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any two. **16**

a) Explain necessity and importance of maintenance required for civil structures.
b) Explain the various causes for deterioration of concrete structures.
c) Explain bacterial concrete and fiber reinforced concrete.

Q.3 Solve any four. **24**

a) Explain Shoring and underpinning.
b) Describe on Shotcrete and Guniting with applications.
c) Explain Ferro cement concrete.
d) Explain about cracks observed in concrete structures.
e) Explain about polymer concrete.
f) Describe about cause of corrosion occurred in R.C. Concrete.

Section – II

Q.4 Solve any two. **16**

a) Describe causes of various distress occurred in marine structures.
b) Explain various demolition techniques used in dilapidated buildings.
c) Explain repair techniques used in R.C.slab for leakages.

Q.5 Solve any four. **24**

a) Explain in detail sensors used in structural health monitoring of buildings.
b) Explain strengthening of R.C beams.
c) Describe repair techniques used to overcome low member strength, deflection in R.C. members.
d) Explain repair methods in underwater structures.
e) Explain repairs in fire damaged structures.
f) Explain retrofitting of columns in R.C structures.

Seat No.		Set	R

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Repairs & Rehabilitation of Structures (BTN01803)

Day & Date: Wednesday 28-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. **20**

1) _____ method used for the fire damage assessment.
a) TDA b) XRD
c) DTA d) All

2) _____ is used to repair, strengthen or renewal of the foundation of an existing building.
a) Shoring b) Underpinning
c) Grouting d) Scaffolding

3) The repair and rehabilitation of damaged or spelled concrete is done by removing the _____.
a) Loose concrete b) Collapsing
c) Breakage d) Bonding

4) Main causes of failure of the structure _____.
a) Design error b) poor inspection
c) Poor quality of materials d) all of the above

5) _____ bacteria are commonly used in bacterial concrete for crack repair.
a) E. coli b) Lactobacillus
c) Streptococcus d) Salmonella

6) _____ NDT test used a chemical attack method.
a) Load test b) ultrasonic test
c) chloride test d) none of the above

7) _____ type of sensor is commonly used to measure structural strain.
a) Thermocouples b) Accelerometers
c) Strain gauges d) Pressure sensors

8) _____ compound is responsible for sulfate attack inside a concrete.
a) Gypsum b) K2O
c) K3O d) none of the above

9) _____ is the primary benefit of using carbon fiber reinforced polymer (CFRP) composites for retrofitting.
a) Decreased structural strength
b) Increased corrosion
c) High strength-to-weight ratio and durability
d) Reduced cost

10) One of the testing equipment used for inspection is _____.
a) Strain Gauge b) Measuring Jar
c) Test Tubes d) None of these

11) The pH value of fresh concrete is around _____.
a) 10 b) 9
c) 8 d) 12.5

12) _____ is responsible for the combination of the polymer particles.
a) Monomer b) Nanomer
c) Tetramer d) Crystal

13) Bacterial concrete is a _____ concrete.
a) Porous b) Self healing
c) Foamed d) Vacuum

14) Process of maintaining different components of building so that it can provide proper service throughout its working life is known as _____.
a) Building maintenance b) Building management
c) Building service d) Building repairs

15) If the cracks width is less than 0.1 mm then they are called _____.
a) Fine b) Thin
c) Medium d) Wide

16) _____ is a similar phenomenon to explosion but the pieces collapse into the center of the object instead of being expelled.
a) Explosion b) An implosion
c) both a and b d) none

17) _____ type of activity is carried out during the maintenance process.
a) Repair of plaster
b) Repair of cracks in walls and ceiling
c) Repair of flooring settlement
d) All of the above

18) Epoxy resins have ____.
a) Poor mechanical strength b) poor thermal strength
c) low tensile strength d) none of the above

19) _____ type of plaster defect generates a series of hair cracks inside the plaster.

a) Crazing
b) Blistering
c) Flaking
d) Popping

20) _____ metal is used for making a foamed concrete.

a) Aluminum
b) Zinc
c) a & b both
d) none of the above

SLR-BD-343

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Repairs & Rehabilitation of Structures (BTN01803)

Day & Date: Wednesday 28-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any two. **16**

a) Explain necessity and importance of maintenance required for civil structures.
b) Explain the various causes for deterioration of concrete structures.
c) Explain bacterial concrete and fiber reinforced concrete.

Q.3 Solve any four. **24**

a) Explain Shoring and underpinning.
b) Describe on Shotcrete and Guniting with applications.
c) Explain Ferro cement concrete.
d) Explain about cracks observed in concrete structures.
e) Explain about polymer concrete.
f) Describe about cause of corrosion occurred in R.C. Concrete.

Section – II

Q.4 Solve any two. **16**

a) Describe causes of various distress occurred in marine structures.
b) Explain various demolition techniques used in dilapidated buildings.
c) Explain repair techniques used in R.C.slab for leakages.

Q.5 Solve any four. **24**

a) Explain in detail sensors used in structural health monitoring of buildings.
b) Explain strengthening of R.C beams.
c) Describe repair techniques used to overcome low member strength, deflection in R.C. members.
d) Explain repair methods in underwater structures.
e) Explain repairs in fire damaged structures.
f) Explain retrofitting of columns in R.C structures.

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Repairs & Rehabilitation of Structures (BTN01803)

Day & Date: Wednesday 28-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. **20**

1) _____ NDT test used a chemical attack method.
a) Load test b) ultrasonic test
c) chloride test d) none of the above

2) _____ type of sensor is commonly used to measure structural strain.
a) Thermocouples b) Accelerometers
c) Strain gauges d) Pressure sensors

3) _____ compound is responsible for sulfate attack inside a concrete.
a) Gypsum b) K2O
c) K3O d) none of the above

4) _____ is the primary benefit of using carbon fiber reinforced polymer (CFRP) composites for retrofitting.
a) Decreased structural strength
b) Increased corrosion
c) High strength-to-weight ratio and durability
d) Reduced cost

5) One of the testing equipment used for inspection is _____.
a) Strain Gauge b) Measuring Jar
c) Test Tubes d) None of these

6) The pH value of fresh concrete is around _____.
a) 10 b) 9
c) 8 d) 12.5

7) _____ is responsible for the combination of the polymer particles.
a) Monomer b) Nanomer
c) Tetramer d) Crystal

8) Bacterial concrete is a _____ concrete.
a) Porous b) Self healing
c) Foamed d) Vacuum

9) Process of maintaining different components of building so that it can provide proper service throughout its working life is known as _____.
a) Building maintenance b) Building management
c) Building service d) Building repairs

10) If the cracks width is less than 0.1 mm then they are called _____.
a) Fine b) Thin
c) Medium d) Wide

11) _____ is a similar phenomenon to explosion but the pieces collapse into the center of the object instead of being expelled.
a) Explosion b) An implosion
c) both a and b d) none

12) _____ type of activity is carried out during the maintenance process.
a) Repair of plaster
b) Repair of cracks in walls and ceiling
c) Repair of flooring settlement
d) All of the above

13) Epoxy resins have ____.
a) Poor mechanical strength b) poor thermal strength
c) low tensile strength d) none of the above

14) _____ type of plaster defect generates a series of hair cracks inside the plaster.
a) Crazing b) Blistering
c) Flaking d) Popping

15) _____ metal is used for making a foamed concrete.
a) Aluminum b) Zinc
c) a & b both d) none of the above

16) _____ method used for the fire damage assessment.
a) TDA b) XRD
c) DTA d) All

17) _____ is used to repair, strengthen or renewal of the foundation of an existing building.
a) Shoring b) Underpinning
c) Grouting d) Scaffolding

18) The repair and rehabilitation of damaged or spelled concrete is done by removing the _____.
a) Loose concrete b) Collapsing
c) Breakage d) Bonding

19) Main causes of failure of the structure _____.

a) Design error b) poor inspection

c) Poor quality of materials d) all of the above

20) _____ bacteria are commonly used in bacterial concrete for crack repair.

a) E. coli b) Lactobacillus

c) Streptococcus d) Salmonella

SLR-BD-343

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Repairs & Rehabilitation of Structures (BTN01803)

Day & Date: Wednesday 28-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any two. **16**

a) Explain necessity and importance of maintenance required for civil structures.
b) Explain the various causes for deterioration of concrete structures.
c) Explain bacterial concrete and fiber reinforced concrete.

Q.3 Solve any four. **24**

a) Explain Shoring and underpinning.
b) Describe on Shotcrete and Guniting with applications.
c) Explain Ferro cement concrete.
d) Explain about cracks observed in concrete structures.
e) Explain about polymer concrete.
f) Describe about cause of corrosion occurred in R.C. Concrete.

Section – II

Q.4 Solve any two. **16**

a) Describe causes of various distress occurred in marine structures.
b) Explain various demolition techniques used in dilapidated buildings.
c) Explain repair techniques used in R.C.slab for leakages.

Q.5 Solve any four. **24**

a) Explain in detail sensors used in structural health monitoring of buildings.
b) Explain strengthening of R.C beams.
c) Describe repair techniques used to overcome low member strength, deflection in R.C. members.
d) Explain repair methods in underwater structures.
e) Explain repairs in fire damaged structures.
f) Explain retrofitting of columns in R.C structures.

SLR-BD-344

Seat No.	

Set P

Fourth.Y. (B. Tech) (Sem- II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Industrial Structures (BTN01804)

Day & Date: Wednesday 28-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:20

Q.1 Choose the correct Answer. **20**

1) Which of the following load is to be considered on liquid retaining structure? **01**
a) Design Strength = Ultimate strength / Partial factor of safety
b) Design Strength = Ultimate strength + Partial factor of safety
c) Design Strength = Ultimate strength * Partial factor of safety
d) Design Strength = Ultimate strength - Partial factor of safety

2) Which of the following load is to be considered on liquid retaining structure? **01**
a) dynamic load b) earth pressure
c) hydrostatic load d) wave and current load

3) Proof stress for minimum bolt tension is ____. **01**
a) $0.7f_{yb}$ b) $0.5f_{yb}$
c) $0.7f_{ub}$ d) $0.5f_{ub}$

4) During design of elements in prefabricated structures due consideration should be given to ____. **01**
a) Quality Materials
b) Stresses developed during handling the members
c) Minimum factor of safety
d) All of these

5) Which of the following is not an assumption of first-order elastic analysis of rigid jointed frame? **01**

a) member instability effects cannot be ignored
b) materials behave linearly
c) frame instability effects can be ignored
d) yielding effects can be ignored

6) Which of the following is true regarding plastic design methods? **01**

a) moments produced by different loading conditions can be added together
b) lateral bracing requirements are less stringent than for elastic design
c) difficult to design for fatigue
d) more saving in column design

7) Calculate minimum wall thickness given a cylindrical prestressed water tank of internal diameter 30m over a depth of 7.5m and the permissible compressive stress at transfer is 13N/mm^2 and the maximum compressive stress under working pressure is 1N/mm^2 and the loss ratio is 0.75? **01**

a) 43.8 b) 82.3
c) 64.5 d) 90.4

8) A self-supporting steel chimney transmits the lateral forces to the foundation by ____ **01**

a) fixed beam action b) proposed beam action
c) cantilever action d) simply supported beam action

9) Coefficient of wind resistance of a circular surface is ____. **02**

a) ½ b) 1/3
c) 2/3 d) 3/2

10) Which of the following load combination is not possible? **02**

a) Dead load + Imposed load + Wind load
b) Dead load + Imposed load + Earthquake load
c) Dead load + Earthquake load + Wind load
d) Dead load + Imposed load

11) Which type of foundation bolts are used for fixing the heavy machines? **02**

a) Cotter foundation bolt b) Eye foundation bolt
c) Rag foundation bolt d) Lewis foundation bolt

12) Which of the following is not a type of machine foundation? **02**

a) unit type b) wall type
c) box type d) block type

13) If the combined C.G. of the machine and foundation lies in the same vertical line, then the twisting modes are ____. **02**

a) Coupled
b) Uncoupled
c) Both
d) None of these

14) The permissible amplitude should not exceed ____ for reciprocating machine. **02**

a) Probable amplitude
b) Limiting amplitude
c) Maximum amplitude
d) Minimum amplitude

Seat No.	

Set | P

Fourth.Y. (B. Tech) (Sem- II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Industrial Structures (BTN01804)

Day & Date: Wednesday 29-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Slove any 2 questions from remaining questions from each section.
2) Assume suitable data if necessary and mention it clearly before the Solution.
3) Use of scientific non-programmable calculator is allowed.
4) Draw the appropriate sketches wherever necessary.
5) Figures to the right indicate full marks.

Section – I

Q.2 An Industrial building has the following: **20**
a) Span- 20 m
b) Length- 50 m
c) Wind speed- 5 m/s
d) Clear height- 8 m
e) Class B Building
f) Galvanized Steel Sheet
Design roof truss, purlin, and girder for the industrial building.
Assume any missing data as Indian Standards.

Q.3 With the help of a diagram, explain structural framing of a braced industrial building. Show cross section at end bay and bottom chord bracing. **20**

Q.4 An elevated cylindrical tank is to be designed for a capacity of 250 KL, the tank has conical roof and suspended hemispherical bottom. Design the tank for the thickness of the plates at cylindrical and hemispherical sections. Also design the connections. Take Fy=250 and assume any missing data as per standards. **20**

Section – II

Q.5 A self-supporting steel chimney is 80 m high and its diameter at the top is 3 meters, design breech (flue) opening. Adopt the wind force as per IS: 875. The location of the place is such that the intensity of wind pressure at 30 m height is 130 kN/m^2. Assume any missing data as per Indian Standards. **20**

Q.6 **a)** Sketch the elevation of different transmission line towers. **10**
b) Explain the procedure for designing transmission line towers. **10**

Q.7 **a)** Explain the different types of machine foundation. **08**
b) Explain the design procedure of turbo generator foundation. **12**

Seat No.	

Set **Q**

Fourth.Y. (B. Tech) (Sem- II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Industrial Structures (BTN01804)

Day & Date: Wednesday 28-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:20

Q.1 Choose the correct Answer. **20**

1) Which of the following is true regarding plastic design methods? **01**
a) moments produced by different loading conditions can be added together
b) lateral bracing requirements are less stringent than for elastic design
c) difficult to design for fatigue
d) more saving in column design

2) Calculate minimum wall thickness given a cylindrical prestressed water tank of internal diameter 30m over a depth of 7.5m and the permissible compressive stress at transfer is 13N/mm^2 and the maximum compressive stress under working pressure is 1N/mm^2 and the loss ratio is 0.75? **01**
a) 43.8 b) 82.3
c) 64.5 d) 90.4

3) A self-supporting steel chimney transmits the lateral forces to the foundation by ____ **01**
a) fixed beam action b) proposed beam action
c) cantilever action d) simply supported beam action

4) Which of the following load is to be considered on liquid retaining structure? **01**

a) Design Strength = Ultimate strength / Partial factor of safety
b) Design Strength = Ultimate strength + Partial factor of safety
c) Design Strength = Ultimate strength * Partial factor of safety
d) Design Strength = Ultimate strength - Partial factor of safety

5) Which of the following load is to be considered on liquid retaining structure? **01**

a) dynamic load
b) earth pressure
c) hydrostatic load
d) wave and current load

6) Proof stress for minimum bolt tension is ____. **01**

a) $0.7f_{yb}$
b) $0.5f_{yb}$
c) $0.7f_{ub}$
d) $0.5f_{ub}$

7) During design of elements in prefabricated structures due consideration should be given to ____. **01**

a) Quality Materials
b) Stresses developed during handling the members
c) Minimum factor of safety
d) All of these

8) Which of the following is not an assumption of first-order elastic analysis of rigid jointed frame? **01**

a) member instability effects cannot be ignored
b) materials behave linearly
c) frame instability effects can be ignored
d) yielding effects can be ignored

9) Which type of foundation bolts are used for fixing the heavy machines? **02**

a) Cotter foundation bolt
b) Eye foundation bolt
c) Rag foundation bolt
d) Lewis foundation bolt

10) Which of the following is not a type of machine foundation? **02**

a) unit type
b) wall type
c) box type
d) block type

11) If the combined C.G. of the machine and foundation lies in the same vertical line, then the twisting modes are ____. **02**

a) Coupled
b) Uncoupled
c) Both
d) None of these

12) The permissible amplitude should not exceed ____ for reciprocating machine. **02**

a) Probable amplitude
b) Limiting amplitude
c) Maximum amplitude
d) Minimum amplitude

13) Coefficient of wind resistance of a circular surface is ____. **02**

a) ½ b) 1/3

c) 2/3 d) 3/2

14) Which of the following load combination is not possible? **02**

a) Dead load + Imposed load + Wind load

b) Dead load + Imposed load + Earthquake load

c) Dead load + Earthquake load + Wind load

d) Dead load + Imposed load

Seat No.	

Set **Q**

Fourth.Y. (B. Tech) (Sem- II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Industrial Structures (BTN01804)

Day & Date: Wednesday 29-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Slove any 2 questions from remaining questions from each section.
2) Assume suitable data if necessary and mention it clearly before the Solution.
3) Use of scientific non-programmable calculator is allowed.
4) Draw the appropriate sketches wherever necessary.
5) Figures to the right indicate full marks.

Section – I

Q.2 An Industrial building has the following: **20**
a) Span- 20 m
b) Length- 50 m
c) Wind speed- 5 m/s
d) Clear height- 8 m
e) Class B Building
f) Galvanized Steel Sheet
Design roof truss, purlin, and girder for the industrial building.
Assume any missing data as Indian Standards.

Q.3 With the help of a diagram, explain structural framing of a braced industrial building. Show cross section at end bay and bottom chord bracing. **20**

Q.4 An elevated cylindrical tank is to be designed for a capacity of 250 KL, the tank has conical roof and suspended hemispherical bottom. Design the tank for the thickness of the plates at cylindrical and hemispherical sections. Also design the connections. Take Fy=250 and assume any missing data as per standards. **20**

Section – II

Q.5 A self-supporting steel chimney is 80 m high and its diameter at the top is 3 meters, design breech (flue) opening. Adopt the wind force as per IS: 875. The location of the place is such that the intensity of wind pressure at 30 m height is 130 kN/m^2. Assume any missing data as per Indian Standards. **20**

Q.6 **a)** Sketch the elevation of different transmission line towers. **10**
b) Explain the procedure for designing transmission line towers. **10**

Q.7 **a)** Explain the different types of machine foundation. **08**
b) Explain the design procedure of turbo generator foundation. **12**

Seat No.	

Set **R**

Fourth.Y. (B. Tech) (Sem- II) (New) (CBCS) Examination:
March/April - 2025
CIVIL ENGINEERING
Industrial Structures (BTN01804)

Day & Date: Wednesday 28-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever needed and mention it clearly.
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6) Use of scientific non programmable calculator is allowed.
7) Draw the appropriate sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:20

Q.1 Choose the correct Answer. **20**

1) Proof stress for minimum bolt tension is ____. **01**

a) $0.7f_{yb}$ b) $0.5f_{yb}$
c) $0.7f_{ub}$ d) $0.5f_{ub}$

2) During design of elements in prefabricated structures due consideration should be given to ____. **01**

a) Quality Materials
b) Stresses developed during handling the members
c) Minimum factor of safety
d) All of these

3) Which of the following is not an assumption of first-order elastic analysis of rigid jointed frame? **01**

a) member instability effects cannot be ignored
b) materials behave linearly
c) frame instability effects can be ignored
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4) Which of the following is true regarding plastic design methods? **01**

a) moments produced by different loading conditions can be added together
b) lateral bracing requirements are less stringent than for elastic design
c) difficult to design for fatigue
d) more saving in column design

5) Calculate minimum wall thickness given a cylindrical prestressed water tank of internal diameter 30m over a depth of 7.5m and the permissible compressive stress at transfer is 13N/mm^2 and the maximum compressive stress under working pressure is 1N/mm^2 and the loss ratio is 0.75? **01**

a) 43.8 b) 82.3
c) 64.5 d) 90.4

6) A self-supporting steel chimney transmits the lateral forces to the foundation by ____ **01**

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7) Which of the following load is to be considered on liquid retaining structure? **01**

a) Design Strength = Ultimate strength / Partial factor of safety
b) Design Strength = Ultimate strength + Partial factor of safety
c) Design Strength = Ultimate strength * Partial factor of safety
d) Design Strength = Ultimate strength - Partial factor of safety

8) Which of the following load is to be considered on liquid retaining structure? **01**

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9) Which of the following load combination is not possible? **02**

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a) Coupled b) Uncoupled
c) Both d) None of these

13) The permissible amplitude should not exceed ____ for reciprocating machine. **02**

a) Probable amplitude b) Limiting amplitude
c) Maximum amplitude d) Minimum amplitude

14) Coefficient of wind resistance of a circular surface is ____. **02**

a) ½ b) 1/3
c) 2/3 d) 3/2

Seat No.	

Set **R**

Fourth.Y. (B. Tech) (Sem- II) (New) (CBCS) Examination:
March/April - 2025
CIVIL ENGINEERING
Industrial Structures (BTN01804)

Day & Date: Wednesday 29-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Slove any 2 questions from remaining questions from each section.
2) Assume suitable data if necessary and mention it clearly before the Solution.
3) Use of scientific non-programmable calculator is allowed.
4) Draw the appropriate sketches wherever necessary.
5) Figures to the right indicate full marks.

Section – I

Q.2 An Industrial building has the following: **20**
a) Span- 20 m
b) Length- 50 m
c) Wind speed- 5 m/s
d) Clear height- 8 m
e) Class B Building
f) Galvanized Steel Sheet
Design roof truss, purlin, and girder for the industrial building.
Assume any missing data as Indian Standards.

Q.3 With the help of a diagram, explain structural framing of a braced industrial building. Show cross section at end bay and bottom chord bracing. **20**

Q.4 An elevated cylindrical tank is to be designed for a capacity of 250 KL, the tank has conical roof and suspended hemispherical bottom. Design the tank for the thickness of the plates at cylindrical and hemispherical sections. Also design the connections. Take Fy=250 and assume any missing data as per standards. **20**

Section – II

Q.5 A self-supporting steel chimney is 80 m high and its diameter at the top is 3 meters, design breech (flue) opening. Adopt the wind force as per IS: 875. The location of the place is such that the intensity of wind pressure at 30 m height is 130 kN/m^2. Assume any missing data as per Indian Standards. **20**

Q.6 **a)** Sketch the elevation of different transmission line towers. **10**
b) Explain the procedure for designing transmission line towers. **10**

Q.7 **a)** Explain the different types of machine foundation. **08**
b) Explain the design procedure of turbo generator foundation. **12**

Seat No.		Set	S

Fourth.Y. (B. Tech) (Sem- II) (New) (CBCS) Examination:
March/April - 2025
CIVIL ENGINEERING
Industrial Structures (BTN01804)

Day & Date: Wednesday 28-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:20

Q.1 Choose the correct Answer. **20**

1) Calculate minimum wall thickness given a cylindrical prestressed water tank of internal diameter 30m over a depth of 7.5m and the permissible compressive stress at transfer is 13N/mm^2 and the maximum compressive stress under working pressure is 1N/mm^2 and the loss ratio is 0.75? **01**

a) 43.8 b) 82.3
c) 64.5 d) 90.4

2) A self-supporting steel chimney transmits the lateral forces to the foundation by ____ **01**

a) fixed beam action b) proposed beam action
c) cantilever action d) simply supported beam action

3) Which of the following load is to be considered on liquid retaining structure? **01**

a) Design Strength = Ultimate strength / Partial factor of safety
b) Design Strength = Ultimate strength + Partial factor of safety
c) Design Strength = Ultimate strength * Partial factor of safety
d) Design Strength = Ultimate strength - Partial factor of safety

4) Which of the following load is to be considered on liquid retaining structure? **01**

a) dynamic load b) earth pressure
c) hydrostatic load d) wave and current load

5) Proof stress for minimum bolt tension is ____. **01**

a) $0.7f_{yb}$ b) $0.5f_{yb}$

c) $0.7f_{ub}$ d) $0.5f_{ub}$

6) During design of elements in prefabricated structures due consideration should be given to ____. **01**

a) Quality Materials
b) Stresses developed during handling the members
c) Minimum factor of safety
d) All of these

7) Which of the following is not an assumption of first-order elastic analysis of rigid jointed frame? **01**

a) member instability effects cannot be ignored
b) materials behave linearly
c) frame instability effects can be ignored
d) yielding effects can be ignored

8) Which of the following is true regarding plastic design methods? **01**

a) moments produced by different loading conditions can be added together
b) lateral bracing requirements are less stringent than for elastic design
c) difficult to design for fatigue
d) more saving in column design

9) The permissible amplitude should not exceed ____ for reciprocating machine. **02**

a) Probable amplitude b) Limiting amplitude

c) Maximum amplitude d) Minimum amplitude

10) Coefficient of wind resistance of a circular surface is ____. **02**

a) ½ b) 1/3

c) 2/3 d) 3/2

11) Which of the following load combination is not possible? **02**

a) Dead load + Imposed load + Wind load
b) Dead load + Imposed load + Earthquake load
c) Dead load + Earthquake load + Wind load
d) Dead load + Imposed load

12) Which type of foundation bolts are used for fixing the heavy machines? **02**

a) Cotter foundation bolt b) Eye foundation bolt

c) Rag foundation bolt d) Lewis foundation bolt

13) Which of the following is not a type of machine foundation? **02**

a) unit type b) wall type

c) box type d) block type

14) If the combined C.G. of the machine and foundation lies in the same vertical line, then the twisting modes are ____. **02**

a) Coupled
b) Uncoupled
c) Both
d) None of these

Seat No.	

Set | S

Fourth.Y. (B. Tech) (Sem- II) (New) (CBCS) Examination: March/April - 2025
CIVIL ENGINEERING
Industrial Structures (BTN01804)

Day & Date: Wednesday 29-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Slove any 2 questions from remaining questions from each section.
2) Assume suitable data if necessary and mention it clearly before the Solution.
3) Use of scientific non-programmable calculator is allowed.
4) Draw the appropriate sketches wherever necessary.
5) Figures to the right indicate full marks.

Section – I

Q.2 An Industrial building has the following: **20**
a) Span- 20 m
b) Length- 50 m
c) Wind speed- 5 m/s
d) Clear height- 8 m
e) Class B Building
f) Galvanized Steel Sheet
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Assume any missing data as Indian Standards.

Q.3 With the help of a diagram, explain structural framing of a braced industrial building. Show cross section at end bay and bottom chord bracing. **20**

Q.4 An elevated cylindrical tank is to be designed for a capacity of 250 KL, the tank has conical roof and suspended hemispherical bottom. Design the tank for the thickness of the plates at cylindrical and hemispherical sections. Also design the connections. Take Fy=250 and assume any missing data as per standards. **20**

Section – II

Q.5 A self-supporting steel chimney is 80 m high and its diameter at the top is 3 meters, design breech (flue) opening. Adopt the wind force as per IS: 875. The location of the place is such that the intensity of wind pressure at 30 m height is 130 kN/m^2. Assume any missing data as per Indian Standards. **20**

Q.6 **a)** Sketch the elevation of different transmission line towers. **10**
b) Explain the procedure for designing transmission line towers. **10**

Q.7 **a)** Explain the different types of machine foundation. **08**
b) Explain the design procedure of turbo generator foundation. **12**

SLR-BD-345

Seat No.

Set P

Fourth. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Urban Transportation Planning (BTN01805)

Day & Date: Wednesday 28-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. **20**

1) What does the transportation planning process primarily aim to achieve?
a) Minimizing land use
b) Maximizing individual vehicle usage
c) Efficient movement of people and goods
d) Increasing traffic congestion

2) Land use transportation planning involves:
a) Separating residential areas from commercial areas
b) Introducing mixed land-use developments
c) Creating transportation networks that support land use goals
d) All of the above

3) Which approach emphasizes the interconnectedness of transportation systems with other urban systems?
a) Linear approach b) Isolated approach
c) Systems approach d) Component approach

4) What are the stages typically involved in the transportation planning process?
a) Data collection, analysis, and implementation
b) Implementation, evaluation, and revision
c) Visioning, goal setting, and implementation
d) Feasibility study, design, and construction

5) Difficulties in implementing transportation plans often include:
a) Lack of funding and resources
b) Opposition from local communities
c) Conflicting interests among stakeholders
d) All of the above

6) Which of the following best defines urban sprawl?
a) Concentrated urban development
b) Dispersed, low-density urban expansion
c) Preservation of natural landscapes within urban areas
d) Controlled growth of urban infrastructure

7) What are the components of the urban system?
a) Transportation, housing, and agriculture
b) Land use, transportation, and infrastructure
c) Education, healthcare, and recreation
d) Government, industry, and commerce

8) Location theory in urban planning primarily focuses on:
a) Assessing environmental impact
b) Identifying optimal locations for urban development
c) Analyzing historical land use patterns
d) Evaluating cultural heritage sites

9) Criteria for measuring urban sprawl typically include all of the following except:
a) Population density
b) Land consumption per capita
c) Proximity to urban amenities
d) Access to public transportation

10) Urban growth or decline is influenced by factors such as:
a) Economic trends and technological advancements
b) Natural disasters and climate change
c) Political stability and government policies
d) All of the above

11) What is the primary factors governing trip generation?
a) Population density and land use mix
b) Road infrastructure quality
c) Average household income
d) Distance to recreational facilities

12) Which statistical technique is commonly used in trip generation analysis?
a) Descriptive statistics b) Regression analysis
c) Hypothesis testing d) Time series analysis

13) Which method is used for trip distribution?
a) Regression analysis b) Growth model
c) Synthetic model d) Gravity model

14) The gravity model in trip distribution is based on:
a) The mass of vehicles on the road
b) The attraction between origin and destination zones
c) The velocity of vehicles in motion
d) The friction between vehicles and road surfaces

15) Category analysis in trip generation involves:
a) Classifying trips based on their purpose and mode of travel
b) Analyzing the impact of weather on trip generation
c) Assessing the availability of parking spaces
d) Evaluating the efficiency of public transportation systems

16) What is the primary purpose of transport surveys?
a) To analyze land use patterns
b) To understand travel behavior and demand
c) To assess environmental impacts of transportation
d) To evaluate road infrastructure quality

17) In transport surveys, what does "study area" refer to?
a) The geographical region covered by the survey
b) The specific transportation mode being studied
c) The time duration of the survey
d) The socioeconomic characteristics of respondents

18) Zones in transport surveys are typically defined based on:
a) Administrative boundaries
b) Economic indicators
c) Environmental factors
d) Travel time between locations

19) Which of the following is NOT a type of transport survey?
a) Origin-Destination survey
b) Traffic flow survey
c) Household income survey
d) Mode choice survey

20) Traffic surveys for mass transit system planning are essential for:
a) Estimating passenger demand and route optimization
b) Assessing air quality in urban areas
c) Evaluating road pavement conditions
d) Determining parking requirements

SLR-BD-345

Seat No.	

Set P

Fourth. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Urban Transportation Planning (BTN01805)

Day & Date: Wednesday 28-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Solve the following: (Any Two) **16**

a) Explain the criteria for measuring the urban sprawl and discuss its impact on urban development patterns.
b) Explain the process of transportation planning.
c) Define location theory and discuss its relevance in urban planning and development.
d) Discuss the factors influencing urban growth or decline in modern cities, considering economic, social, and environmental perspectives.

Q.3 Solve the following: (Any Four) **24**

a) Describe the transportation planning process, outlining its key stages and objectives.
b) Explain the importance of considering factors such as land use, environmental impact, and social equity in transportation planning.
c) Explain the Traffic surveys for mass transit system.
d) Elaborate on the stages involved in conducting an inventory of existing conditions in transportation planning. How is data collected and analyzed to inform the planning process?
e) Explain the types of Survey in Transportation and interpretation.

SECTION-II

Q.4 Solve the following: (Any Two) **16**

a) What are factors that govern trip generation and attraction in transportation planning?

b) Explain the application of regression analysis in trip generation modeling. How are regressions models developed, calibrated, and validated using empirical data? Discuss the strengths and limitations of regression analysis in predicting trip generation rates.

c) Describe the methods of trip distribution used in transportation planning, including gravity models, growth models, and synthetic models. How do these methods estimate the flow of trips between origin-destination pairs?

d) What are the key components of the gravity model, and how are parameters calibrated using observed trip data? How can the gravity model be used to analyze and optimize transportation networks?

Q.5 Solve the following: (Any four) **24**

a) Discuss the factors influencing modal split in transportation systems.

b) Explain the role of modal split in transport planning. How does understanding modal split help transportation planners optimize infrastructure investments, improve mobility, reduce congestion, and minimize environmental impacts?

c) Discuss the importance of promoting sustainable transportation modes in achieving modal shift objectives.

d) Explain the Fleet planning and Scheduling.

e) Explain the Land Use Models - Lowry Model-Hansen’s

SLR-BD-345

Seat No.

Set Q

Fourth. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Urban Transportation Planning (BTN01805)

Day & Date: Wednesday 28-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. **20**

1) Which of the following best defines urban sprawl?
a) Concentrated urban development
b) Dispersed, low-density urban expansion
c) Preservation of natural landscapes within urban areas
d) Controlled growth of urban infrastructure

2) What are the components of the urban system?
a) Transportation, housing, and agriculture
b) Land use, transportation, and infrastructure
c) Education, healthcare, and recreation
d) Government, industry, and commerce

3) Location theory in urban planning primarily focuses on:
a) Assessing environmental impact
b) Identifying optimal locations for urban development
c) Analyzing historical land use patterns
d) Evaluating cultural heritage sites

4) Criteria for measuring urban sprawl typically include all of the following except:
a) Population density
b) Land consumption per capita
c) Proximity to urban amenities
d) Access to public transportation

5) Urban growth or decline is influenced by factors such as:
a) Economic trends and technological advancements
b) Natural disasters and climate change
c) Political stability and government policies
d) All of the above

6) What is the primary factors governing trip generation?
a) Population density and land use mix
b) Road infrastructure quality
c) Average household income
d) Distance to recreational facilities

7) Which statistical technique is commonly used in trip generation analysis?
a) Descriptive statistics b) Regression analysis
c) Hypothesis testing d) Time series analysis

8) Which method is used for trip distribution?
a) Regression analysis b) Growth model
c) Synthetic model d) Gravity model

9) The gravity model in trip distribution is based on:
a) The mass of vehicles on the road
b) The attraction between origin and destination zones
c) The velocity of vehicles in motion
d) The friction between vehicles and road surfaces

10) Category analysis in trip generation involves:
a) Classifying trips based on their purpose and mode of travel
b) Analyzing the impact of weather on trip generation
c) Assessing the availability of parking spaces
d) Evaluating the efficiency of public transportation systems

11) What is the primary purpose of transport surveys?
a) To analyze land use patterns
b) To understand travel behavior and demand
c) To assess environmental impacts of transportation
d) To evaluate road infrastructure quality

12) In transport surveys, what does "study area" refer to?
a) The geographical region covered by the survey
b) The specific transportation mode being studied
c) The time duration of the survey
d) The socioeconomic characteristics of respondents

13) Zones in transport surveys are typically defined based on:
a) Administrative boundaries
b) Economic indicators
c) Environmental factors
d) Travel time between locations

14) Which of the following is NOT a type of transport survey?
a) Origin-Destination survey
b) Traffic flow survey
c) Household income survey
d) Mode choice survey

15) Traffic surveys for mass transit system planning are essential for:
a) Estimating passenger demand and route optimization
b) Assessing air quality in urban areas
c) Evaluating road pavement conditions
d) Determining parking requirements

16) What does the transportation planning process primarily aim to achieve?
a) Minimizing land use
b) Maximizing individual vehicle usage
c) Efficient movement of people and goods
d) Increasing traffic congestion

17) Land use transportation planning involves:
a) Separating residential areas from commercial areas
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c) Creating transportation networks that support land use goals
d) All of the above

18) Which approach emphasizes the interconnectedness of transportation systems with other urban systems?
a) Linear approach
b) Isolated approach
c) Systems approach
d) Component approach

19) What are the stages typically involved in the transportation planning process?
a) Data collection, analysis, and implementation
b) Implementation, evaluation, and revision
c) Visioning, goal setting, and implementation
d) Feasibility study, design, and construction

20) Difficulties in implementing transportation plans often include:
a) Lack of funding and resources
b) Opposition from local communities
c) Conflicting interests among stakeholders
d) All of the above

SLR-BD-345

Seat No.	

Set Q

Fourth. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Urban Transportation Planning (BTN01805)

Day & Date: Wednesday 28-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Solve the following: (Any Two) **16**

a) Explain the criteria for measuring the urban sprawl and discuss its impact on urban development patterns.
b) Explain the process of transportation planning.
c) Define location theory and discuss its relevance in urban planning and development.
d) Discuss the factors influencing urban growth or decline in modern cities, considering economic, social, and environmental perspectives.

Q.3 Solve the following: (Any Four) **24**

a) Describe the transportation planning process, outlining its key stages and objectives.
b) Explain the importance of considering factors such as land use, environmental impact, and social equity in transportation planning.
c) Explain the Traffic surveys for mass transit system.
d) Elaborate on the stages involved in conducting an inventory of existing conditions in transportation planning. How is data collected and analyzed to inform the planning process?
e) Explain the types of Survey in Transportation and interpretation.

SECTION-II

Q.4 Solve the following: (Any Two) **16**

a) What are factors that govern trip generation and attraction in transportation planning?

b) Explain the application of regression analysis in trip generation modeling. How are regressions models developed, calibrated, and validated using empirical data? Discuss the strengths and limitations of regression analysis in predicting trip generation rates.

c) Describe the methods of trip distribution used in transportation planning, including gravity models, growth models, and synthetic models. How do these methods estimate the flow of trips between origin-destination pairs?

d) What are the key components of the gravity model, and how are parameters calibrated using observed trip data? How can the gravity model be used to analyze and optimize transportation networks?

Q.5 Solve the following: (Any four) **24**

a) Discuss the factors influencing modal split in transportation systems.

b) Explain the role of modal split in transport planning. How does understanding modal split help transportation planners optimize infrastructure investments, improve mobility, reduce congestion, and minimize environmental impacts?

c) Discuss the importance of promoting sustainable transportation modes in achieving modal shift objectives.

d) Explain the Fleet planning and Scheduling.

e) Explain the Land Use Models - Lowry Model-Hansen’s

SLR-BD-345

Seat No.

Set R

Fourth. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Urban Transportation Planning (BTN01805)

Day & Date: Wednesday 28-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. **20**

1) What is the primary factors governing trip generation?
a) Population density and land use mix
b) Road infrastructure quality
c) Average household income
d) Distance to recreational facilities

2) Which statistical technique is commonly used in trip generation analysis?
a) Descriptive statistics b) Regression analysis
c) Hypothesis testing d) Time series analysis

3) Which method is used for trip distribution?
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4) The gravity model in trip distribution is based on:
a) The mass of vehicles on the road
b) The attraction between origin and destination zones
c) The velocity of vehicles in motion
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5) Category analysis in trip generation involves:
a) Classifying trips based on their purpose and mode of travel
b) Analyzing the impact of weather on trip generation
c) Assessing the availability of parking spaces
d) Evaluating the efficiency of public transportation systems

6) What is the primary purpose of transport surveys?
   a) To analyze land use patterns
   b) To understand travel behavior and demand
   c) To assess environmental impacts of transportation
   d) To evaluate road infrastructure quality

7) In transport surveys, what does "study area" refer to?
   a) The geographical region covered by the survey
   b) The specific transportation mode being studied
   c) The time duration of the survey
   d) The socioeconomic characteristics of respondents

8) Zones in transport surveys are typically defined based on:
   a) Administrative boundaries
   b) Economic indicators
   c) Environmental factors
   d) Travel time between locations

9) Which of the following is NOT a type of transport survey?
   a) Origin-Destination survey
   b) Traffic flow survey
   c) Household income survey
   d) Mode choice survey

10) Traffic surveys for mass transit system planning are essential for:
   a) Estimating passenger demand and route optimization
   b) Assessing air quality in urban areas
   c) Evaluating road pavement conditions
   d) Determining parking requirements

11) What does the transportation planning process primarily aim to achieve?
   a) Minimizing land use
   b) Maximizing individual vehicle usage
   c) Efficient movement of people and goods
   d) Increasing traffic congestion

12) Land use transportation planning involves:
   a) Separating residential areas from commercial areas
   b) Introducing mixed land-use developments
   c) Creating transportation networks that support land use goals
   d) All of the above

13) Which approach emphasizes the interconnectedness of transportation systems with other urban systems?
   a) Linear approach
   b) Isolated approach
   c) Systems approach
   d) Component approach

14) What are the stages typically involved in the transportation planning process?
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19) Criteria for measuring urban sprawl typically include all of the following except:
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20) Urban growth or decline is influenced by factors such as:
a) Economic trends and technological advancements
b) Natural disasters and climate change
c) Political stability and government policies
d) All of the above

SLR-BD-345

Seat No.	

Set R

Fourth. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Urban Transportation Planning (BTN01805)

Day & Date: Wednesday 28-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Solve the following: (Any Two) **16**

a) Explain the criteria for measuring the urban sprawl and discuss its impact on urban development patterns.
b) Explain the process of transportation planning.
c) Define location theory and discuss its relevance in urban planning and development.
d) Discuss the factors influencing urban growth or decline in modern cities, considering economic, social, and environmental perspectives.

Q.3 Solve the following: (Any Four) **24**

a) Describe the transportation planning process, outlining its key stages and objectives.
b) Explain the importance of considering factors such as land use, environmental impact, and social equity in transportation planning.
c) Explain the Traffic surveys for mass transit system.
d) Elaborate on the stages involved in conducting an inventory of existing conditions in transportation planning. How is data collected and analyzed to inform the planning process?
e) Explain the types of Survey in Transportation and interpretation.

SECTION-II

Q.4 Solve the following: (Any Two) **16**

a) What are factors that govern trip generation and attraction in transportation planning?

b) Explain the application of regression analysis in trip generation modeling. How are regressions models developed, calibrated, and validated using empirical data? Discuss the strengths and limitations of regression analysis in predicting trip generation rates.

c) Describe the methods of trip distribution used in transportation planning, including gravity models, growth models, and synthetic models. How do these methods estimate the flow of trips between origin-destination pairs?

d) What are the key components of the gravity model, and how are parameters calibrated using observed trip data? How can the gravity model be used to analyze and optimize transportation networks?

Q.5 Solve the following: (Any four) **24**

a) Discuss the factors influencing modal split in transportation systems.

b) Explain the role of modal split in transport planning. How does understanding modal split help transportation planners optimize infrastructure investments, improve mobility, reduce congestion, and minimize environmental impacts?

c) Discuss the importance of promoting sustainable transportation modes in achieving modal shift objectives.

d) Explain the Fleet planning and Scheduling.

e) Explain the Land Use Models - Lowry Model-Hansen’s

SLR-BD-345

Seat No.

Set S

Fourth. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Urban Transportation Planning (BTN01805)

Day & Date: Wednesday 28-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. **20**

1) What is the primary purpose of transport surveys?
a) To analyze land use patterns
b) To understand travel behavior and demand
c) To assess environmental impacts of transportation
d) To evaluate road infrastructure quality

2) In transport surveys, what does "study area" refer to?
a) The geographical region covered by the survey
b) The specific transportation mode being studied
c) The time duration of the survey
d) The socioeconomic characteristics of respondents

3) Zones in transport surveys are typically defined based on:
a) Administrative boundaries
b) Economic indicators
c) Environmental factors
d) Travel time between locations

4) Which of the following is NOT a type of transport survey?
a) Origin-Destination survey
b) Traffic flow survey
c) Household income survey
d) Mode choice survey

5) Traffic surveys for mass transit system planning are essential for:
a) Estimating passenger demand and route optimization
b) Assessing air quality in urban areas
c) Evaluating road pavement conditions
d) Determining parking requirements

6) What does the transportation planning process primarily aim to achieve?
a) Minimizing land use
b) Maximizing individual vehicle usage
c) Efficient movement of people and goods
d) Increasing traffic congestion

7) Land use transportation planning involves:
a) Separating residential areas from commercial areas
b) Introducing mixed land-use developments
c) Creating transportation networks that support land use goals
d) All of the above

8) Which approach emphasizes the interconnectedness of transportation systems with other urban systems?
a) Linear approach b) Isolated approach
c) Systems approach d) Component approach

9) What are the stages typically involved in the transportation planning process?
a) Data collection, analysis, and implementation
b) Implementation, evaluation, and revision
c) Visioning, goal setting, and implementation
d) Feasibility study, design, and construction

10) Difficulties in implementing transportation plans often include:
a) Lack of funding and resources
b) Opposition from local communities
c) Conflicting interests among stakeholders
d) All of the above

11) Which of the following best defines urban sprawl?
a) Concentrated urban development
b) Dispersed, low-density urban expansion
c) Preservation of natural landscapes within urban areas
d) Controlled growth of urban infrastructure

12) What are the components of the urban system?
a) Transportation, housing, and agriculture
b) Land use, transportation, and infrastructure
c) Education, healthcare, and recreation
d) Government, industry, and commerce

13) Location theory in urban planning primarily focuses on:
a) Assessing environmental impact
b) Identifying optimal locations for urban development
c) Analyzing historical land use patterns
d) Evaluating cultural heritage sites

14) Criteria for measuring urban sprawl typically include all of the following except:
a) Population density
b) Land consumption per capita
c) Proximity to urban amenities
d) Access to public transportation

15) Urban growth or decline is influenced by factors such as:
a) Economic trends and technological advancements
b) Natural disasters and climate change
c) Political stability and government policies
d) All of the above

16) What is the primary factors governing trip generation?
a) Population density and land use mix
b) Road infrastructure quality
c) Average household income
d) Distance to recreational facilities

17) Which statistical technique is commonly used in trip generation analysis?
a) Descriptive statistics b) Regression analysis
c) Hypothesis testing d) Time series analysis

18) Which method is used for trip distribution?
a) Regression analysis b) Growth model
c) Synthetic model d) Gravity model

19) The gravity model in trip distribution is based on:
a) The mass of vehicles on the road
b) The attraction between origin and destination zones
c) The velocity of vehicles in motion
d) The friction between vehicles and road surfaces

20) Category analysis in trip generation involves:
a) Classifying trips based on their purpose and mode of travel
b) Analyzing the impact of weather on trip generation
c) Assessing the availability of parking spaces
d) Evaluating the efficiency of public transportation systems

SLR-BD-345

Seat No.	

Set S

Fourth. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Urban Transportation Planning (BTN01805)

Day & Date: Wednesday 28-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Solve the following: (Any Two) **16**

a) Explain the criteria for measuring the urban sprawl and discuss its impact on urban development patterns.
b) Explain the process of transportation planning.
c) Define location theory and discuss its relevance in urban planning and development.
d) Discuss the factors influencing urban growth or decline in modern cities, considering economic, social, and environmental perspectives.

Q.3 Solve the following: (Any Four) **24**

a) Describe the transportation planning process, outlining its key stages and objectives.
b) Explain the importance of considering factors such as land use, environmental impact, and social equity in transportation planning.
c) Explain the Traffic surveys for mass transit system.
d) Elaborate on the stages involved in conducting an inventory of existing conditions in transportation planning. How is data collected and analyzed to inform the planning process?
e) Explain the types of Survey in Transportation and interpretation.

SECTION-II

Q.4 Solve the following: (Any Two) **16**

a) What are factors that govern trip generation and attraction in transportation planning?

b) Explain the application of regression analysis in trip generation modeling. How are regressions models developed, calibrated, and validated using empirical data? Discuss the strengths and limitations of regression analysis in predicting trip generation rates.

c) Describe the methods of trip distribution used in transportation planning, including gravity models, growth models, and synthetic models. How do these methods estimate the flow of trips between origin-destination pairs?

d) What are the key components of the gravity model, and how are parameters calibrated using observed trip data? How can the gravity model be used to analyze and optimize transportation networks?

Q.5 Solve the following: (Any four) **24**

a) Discuss the factors influencing modal split in transportation systems.

b) Explain the role of modal split in transport planning. How does understanding modal split help transportation planners optimize infrastructure investments, improve mobility, reduce congestion, and minimize environmental impacts?

c) Discuss the importance of promoting sustainable transportation modes in achieving modal shift objectives.

d) Explain the Fleet planning and Scheduling.

e) Explain the Land Use Models - Lowry Model-Hansen’s

SLR-BD-348

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Disaster Management (BTN01808)

Day & Date: Wednesday 28-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. **20**

1) National Disaster Management Authority chaired by _____.
a) Home minister b) Home secretary
c) PMO Secretary d) Prime minister

2) Arson is ____ type disaster.
a) Social b) Chemical
c) Geological d) Technological

3) As the magnitude of natural disasters increases their frequency of occurrence ____.
a) Increases b) Decreases
c) Remains the same d) Unpredictable

4) NDMA stands for ____.
a) National Disaster Mitigation Agency
b) National Disaster Management Authority
c) National Disaster Management Association
d) National Development Managing Association

5) ____ denotes the characteristics and circumstances of community or area that may be subjected to harm from hazardous situation.
a) Risk b) Vulnerability
c) Hazard d) Disaster

6) The National Institute of Disaster Management (NIDM) is at ____.
a) New Delhi b) Mumbai
c) Chennai d) Kolkata

7) ____ can be defined as the ability of community to cope with a disaster.
a) Potential b) Perception
c) Capacity d) None of these

8) ____ Hazards cause harm to the humans as also the environment and property.
a) Social b) Chemical
c) Biological d) Physical

9) The eye of a cyclone is ____.
a) Cloudy and highly stormy
b) Full of strong winds
c) Calm and cloudless
d) Site with high atmospheric pressure

10) Which of the following is not a specific function of disaster management?
a) Organizing b) Response
c) Preparedness d) Recovery

11) Warehousing of relief material is included in ____ of the following Phase of disaster management.
a) Response b) Mitigation
c) Preparedness d) Recovery

12) The change in elevation of a stream per unit length is called ____.
a) Base level b) Gradient
c) Velocity d) Discharge

13) Psychological impact of disaster means ____.
a) Destruction of infrastructure
b) Problem of hygiene and sanitation
c) People having nightmares after seeing the death and destruction
d) Injuries to people due to disaster

14) The apex body for disaster management in India is ____.
a) National Executive Committee
b) National Disaster Management Agency
c) National Disaster Response Force
d) National Disaster Response Platform

15) _____ Phase starts after the immediate threat to human life has subsided
a) Recovery b) Preparedness
c) Response d) Mitigation

16) In the disaster management cycle, mitigation refers to _____.
a) Relief operations done after disaster
b) Rescue operations done after disaster
c) Making preparations & getting ready before the disaster
d) Reduce the risks from a possible disaster

17) In the disaster management cycle, response refers to _____.
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a) A road accident
b) An earth tremor
c) A landslide
d) A volcanic eruption

19) The objective of ____ phase is to provide relief to reduce the suffering of affected people.
a) Response
b) Preparedness
c) Recovery
d) Mitigation

20) NEC stands for ____.
a) National Emergency Corps
b) National Executive Committee
c) National Empowerment Committee
d) National Evacuation Corps

SLR-BD-348

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Disaster Management (BTN01808)

Day & Date: Wednesday 28-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.2 is compulsory. Attempt any two out of Q.3 to Q.5.
2) Q.6 is compulsory. Attempt any two out of Q.7 to Q.9.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2	**a)**	Explain environmental disaster risk reduction using perception approach.	**09**
	b)	Explain the concept of environmental disaster.	**05**
Q.3	**a)**	Explain the distribution of earthquake prone zone in India.	**05**
	b)	Explain the hazardous effects of volcanic eruptions.	**08**
Q.4	**a)**	Describe the causes of Cyclones.	**08**
	b)	Explain about one of the recent cyclone hazards in India.	**05**
Q.5	**a)**	Explain drought control measures.	**08**
	b)	Describe the “Bhopal Gas Tragedy”.	**05**

Section – II

Q.6	**a)**	Explain post disaster phase in disaster management.	**09**
	b)	Discuss the measures of adjustments to natural hazards.	**05**
Q.7	**a)**	Explain the role of meteorological observatory in disaster mitigation.	**08**
	b)	Explain the role of GIS and GPS in disaster mitigation.	**05**
Q.8	**a)**	Elaborate the role of Panchayats in Disaster mitigation.	**05**
	b)	Explain about ecological planning for sustainability in India.	**08**
Q.9	**a)**	Discuss the details for disaster of land subsidence in India.	**08**
	b)	Describe the role of National Disaster Management authority in disaster management activities.	**05**

SLR-BD-348

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Disaster Management (BTN01808)

Day & Date: Wednesday 28-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. **20**

1) The National Institute of Disaster Management (NIDM) is at ____.
a) New Delhi b) Mumbai
c) Chennai d) Kolkata

2) ____ can be defined as the ability of community to cope with a disaster.
a) Potential b) Perception
c) Capacity d) None of these

3) ____ Hazards cause harm to the humans as also the environment and property.
a) Social b) Chemical
c) Biological d) Physical

4) The eye of a cyclone is ____.
a) Cloudy and highly stormy
b) Full of strong winds
c) Calm and cloudless
d) Site with high atmospheric pressure

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c) Preparedness d) Recovery

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a) Response b) Mitigation
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a) Base level b) Gradient
c) Velocity d) Discharge

8) Psychological impact of disaster means ____.
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b) Problem of hygiene and sanitation
c) People having nightmares after seeing the death and destruction
d) Injuries to people due to disaster

9) The apex body for disaster management in India is ____.
a) National Executive Committee
b) National Disaster Management Agency
c) National Disaster Response Force
d) National Disaster Response Platform

10) _____ Phase starts after the immediate threat to human life has subsided
a) Recovery
b) Preparedness
c) Response
d) Mitigation

11) In the disaster management cycle, mitigation refers to _____.
a) Relief operations done after disaster
b) Rescue operations done after disaster
c) Making preparations & getting ready before the disaster
d) Reduce the risks from a possible disaster

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13) An example of an anthropogenic disaster is ____.
a) A road accident
b) An earth tremor
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d) A volcanic eruption

14) The objective of ____ phase is to provide relief to reduce the suffering of affected people.
a) Response
b) Preparedness
c) Recovery
d) Mitigation

15) NEC stands for ____.
a) National Emergency Corps
b) National Executive Committee
c) National Empowerment Committee
d) National Evacuation Corps

16) National Disaster Management Authority chaired by _____.
a) Home minister
b) Home secretary
c) PMO Secretary
d) Prime minister

17) Arson is ____ type disaster.

a) Social
b) Chemical
c) Geological
d) Technological

18) As the magnitude of natural disasters increases their frequency of occurrence ____.

a) Increases
b) Decreases
c) Remains the same
d) Unpredictable

19) NDMA stands for ____.

a) National Disaster Mitigation Agency
b) National Disaster Management Authority
c) National Disaster Management Association
d) National Development Managing Association

20) ____ denotes the characteristics and circumstances of community or area that may be subjected to harm from hazardous situation.

a) Risk
b) Vulnerability
c) Hazard
d) Disaster

SLR-BD-348

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Disaster Management (BTN01808)

Day & Date: Wednesday 28-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.2 is compulsory. Attempt any two out of Q.3 to Q.5.
2) Q.6 is compulsory. Attempt any two out of Q.7 to Q.9.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2	**a)**	Explain environmental disaster risk reduction using perception approach.	**09**
	b)	Explain the concept of environmental disaster.	**05**
Q.3	**a)**	Explain the distribution of earthquake prone zone in India.	**05**
	b)	Explain the hazardous effects of volcanic eruptions.	**08**
Q.4	**a)**	Describe the causes of Cyclones.	**08**
	b)	Explain about one of the recent cyclone hazards in India.	**05**
Q.5	**a)**	Explain drought control measures.	**08**
	b)	Describe the “Bhopal Gas Tragedy”.	**05**

Section – II

Q.6	**a)**	Explain post disaster phase in disaster management.	**09**
	b)	Discuss the measures of adjustments to natural hazards.	**05**
Q.7	**a)**	Explain the role of meteorological observatory in disaster mitigation.	**08**
	b)	Explain the role of GIS and GPS in disaster mitigation.	**05**
Q.8	**a)**	Elaborate the role of Panchayats in Disaster mitigation.	**05**
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Q.9	**a)**	Discuss the details for disaster of land subsidence in India.	**08**
	b)	Describe the role of National Disaster Management authority in disaster management activities.	**05**

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Disaster Management (BTN01808)

Day & Date: Wednesday 28-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. 20

1) Warehousing of relief material is included in ____ of the following Phase of disaster management.
a) Response b) Mitigation
c) Preparedness d) Recovery

2) The change in elevation of a stream per unit length is called ____.
a) Base level b) Gradient
c) Velocity d) Discharge

3) Psychological impact of disaster means ____.
a) Destruction of infrastructure
b) Problem of hygiene and sanitation
c) People having nightmares after seeing the death and destruction
d) Injuries to people due to disaster

4) The apex body for disaster management in India is ____.
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b) National Disaster Management Agency
c) National Disaster Response Force
d) National Disaster Response Platform

5) _____ Phase starts after the immediate threat to human life has subsided
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c) Response d) Mitigation

6) In the disaster management cycle, mitigation refers to _____.
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b) Rescue operations done after disaster
c) Making preparations & getting ready before the disaster
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7) In the disaster management cycle, response refers to _____.
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b) An earth tremor
c) A landslide
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c) PMO Secretary
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12) Arson is ____ type disaster.
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b) Chemical
c) Geological
d) Technological

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a) Increases
b) Decreases
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14) NDMA stands for ____.
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15) ____ denotes the characteristics and circumstances of community or area that may be subjected to harm from hazardous situation.
a) Risk
b) Vulnerability
c) Hazard
d) Disaster

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17) ____ can be defined as the ability of community to cope with a disaster.
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19) The eye of a cyclone is ____.
a) Cloudy and highly stormy
b) Full of strong winds
c) Calm and cloudless
d) Site with high atmospheric pressure

20) Which of the following is not a specific function of disaster management?
a) Organizing b) Response
c) Preparedness d) Recovery

SLR-BD-348

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Disaster Management (BTN01808)

Day & Date: Wednesday 28-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.2 is compulsory. Attempt any two out of Q.3 to Q.5.
2) Q.6 is compulsory. Attempt any two out of Q.7 to Q.9.
3) Figures to the right indicate full marks.
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Section – I

Q.2	**a)**	Explain environmental disaster risk reduction using perception approach.	**09**
	b)	Explain the concept of environmental disaster.	**05**
Q.3	**a)**	Explain the distribution of earthquake prone zone in India.	**05**
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Q.4	**a)**	Describe the causes of Cyclones.	**08**
	b)	Explain about one of the recent cyclone hazards in India.	**05**
Q.5	**a)**	Explain drought control measures.	**08**
	b)	Describe the “Bhopal Gas Tragedy”.	**05**

Section – II

Q.6	**a)**	Explain post disaster phase in disaster management.	**09**
	b)	Discuss the measures of adjustments to natural hazards.	**05**
Q.7	**a)**	Explain the role of meteorological observatory in disaster mitigation.	**08**
	b)	Explain the role of GIS and GPS in disaster mitigation.	**05**
Q.8	**a)**	Elaborate the role of Panchayats in Disaster mitigation.	**05**
	b)	Explain about ecological planning for sustainability in India.	**08**
Q.9	**a)**	Discuss the details for disaster of land subsidence in India.	**08**
	b)	Describe the role of National Disaster Management authority in disaster management activities.	**05**

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Disaster Management (BTN01808)

Day & Date: Wednesday 28-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. **20**

1) In the disaster management cycle, mitigation refers to _____.
a) Relief operations done after disaster
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d) Reduce the risks from a possible disaster

2) In the disaster management cycle, response refers to _____.
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d) Reduce the risks from a possible disaster

3) An example of an anthropogenic disaster is ____.
a) A road accident b) An earth tremor
c) A landslide d) A volcanic eruption

4) The objective of ____ phase is to provide relief to reduce the suffering of affected people.
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c) Recovery d) Mitigation

5) NEC stands for ____.
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b) Gradient
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19) The apex body for disaster management in India is ____.

a) National Executive Committee
b) National Disaster Management Agency
c) National Disaster Response Force
d) National Disaster Response Platform

20) _____ Phase starts after the immediate threat to human life has subsided

a) Recovery
b) Preparedness
c) Response
d) Mitigation

SLR-BD-348

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Disaster Management (BTN01808)

Day & Date: Wednesday 28-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.2 is compulsory. Attempt any two out of Q.3 to Q.5.
2) Q.6 is compulsory. Attempt any two out of Q.7 to Q.9.
3) Figures to the right indicate full marks.
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Section – I

Q.2	**a)**	Explain environmental disaster risk reduction using perception approach.	**09**
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Q.3	**a)**	Explain the distribution of earthquake prone zone in India.	**05**
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	b)	Explain about one of the recent cyclone hazards in India.	**05**
Q.5	**a)**	Explain drought control measures.	**08**
	b)	Describe the “Bhopal Gas Tragedy”.	**05**

Section – II

Q.6	**a)**	Explain post disaster phase in disaster management.	**09**
	b)	Discuss the measures of adjustments to natural hazards.	**05**
Q.7	**a)**	Explain the role of meteorological observatory in disaster mitigation.	**08**
	b)	Explain the role of GIS and GPS in disaster mitigation.	**05**
Q.8	**a)**	Elaborate the role of Panchayats in Disaster mitigation.	**05**
	b)	Explain about ecological planning for sustainability in India.	**08**
Q.9	**a)**	Discuss the details for disaster of land subsidence in India.	**08**
	b)	Describe the role of National Disaster Management authority in disaster management activities.	**05**

Seat No.	

Set **P**

Fourth. Y. (B. Tech)(Sem - II)(New) (CBCS) Examination: March/April-2025
Civil Engineering
Water and Air Quality Modelling (BTN01809)

Day & Date: Wednesday 28-05-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Ground water models are used to predict the effect of hydrological changes on the behavior of ____.
a) Soil water zone b) Aquifer
c) Capillary zone d) Intermediate zone

2) ____ states that the rate of any chemical reaction is proportional to product of masses of reacting substances with each mass raised to a power equal to coefficient that occurs in chemical reaction.
a) Mass balance b) Conservation of mass
c) Equilibrium Principle d) Rate Constants

3) The concentration of pollutants associated with moving vehicles is determined by ____.
a) Emission rate b) Mixing height
c) Wind speed and direction d) All of above

4) Water quality model is a mathematical representation of ____ from land-based sources to a water body.
a) Inorganic Pollutants b) Contamination of pollutants
c) Movement of pollutant d) Volatile compounds

5) ____ are mathematical models representing relationship with an individual system.
a) Statistical models b) Casual models
c) Stochastic Models d) Simple Models

6) ____ equation is used as water quality model to describe decrease of DO content in a river along a certain distance by degradation of BOD.

a) Delphi method
b) Streeter Phelps
c) Le Chatelier's
d) Darcy

7) The atmospheric stability is related to the variation with altitude of ____.

a) Temperature
b) Pressure
c) Humidity
d) All of above

8) Mass balance ensures a consistent and accurate record of ____ material.

a) Decision making
b) Quantity and Quality
c) Estimating
d) Cost cutting

9) Concentration such as CO and SO2 forecast ____ due to their relative inertness.

a) Non-reactive models
b) Emission Standards
c) Meteorology
d) Ambient air

10) The density of ambient water at room temperature 20-25^{o}C is ____.

a) 1 g/cm3
b) 0.5 g/cm3
c) 0.99 g/cm3
d) 1.98 g/cm3

11) The object of ambient water quality programs is to ensure water quality monitoring ____.

a) Toxic Control
b) Quality assurance and quality control
c) Standard quantity
d) Pollution control

12) The diffusion of pollutants by turbulence related to temperature, stratification and wind field leads to ____.

a) Stability class
b) Smog
c) Biological change in air
d) Physical change in air

13) The suitability of water sources for human consumption is described in terms of ____.

a) Non-reactive index
b) Extreme value index
c) Water quality index
d) Water control index

14) The national Air quality index was launched in New Delhi on ____ under Swach Bharat.

a) September 2014
b) September 2020
c) September 2000
d) September 1998

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem - II)(New) (CBCS) Examination: March/April - 2025
Civil Engineering
Water and Air Quality Modelling (BTN01809)

Day & Date: Wednesday 28-05-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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

SECTION – I

Q.2	**a)**	What factors affect the intensity of Oxygen Sag Curve?	**05**
	b)	Explain 4 main types of Statistical model.	**05**
Q.3	**a)**	Explain the importance of Casual Model.	**05**
	b)	How can meteorology help in controlling air pollutants.	**04**
Q.4	**a)**	Explain the purpose of water quality model.	**05**
	b)	Explain 5 major air pollutants and their health effects.	**04**
Q.5	**Write Short Notes on:**		
	a)	Mechanism of Pollutant transport.	**05**
	b)	Benefits of Model Making.	**04**

SECTION-II

Q.6	**a)**	Explain diffusion model and also states application of this model.	**05**
	b)	Explain the features of Gaussian Plume Model.	**05**
Q.7	**a)**	What are the six categories of National Air Quality Index?	**04**
	b)	Explain Fixed box model with respect to wind blowing parallel to longer direction X.	**05**
Q.8	**a)**	Explain the advantages of Delphi model.	**05**
	b)	Explain theory of diffusion model and how it is useful in decision making.	**04**
Q.9	**Write Short Notes on:**		
	a)	Ambient Water Quality.	**05**
	b)	Fixed Box Model	**04**

Seat No.	

Set **Q**

Fourth. Y. (B. Tech)(Sem - II)(New) (CBCS) Examination: March/April-2025
Civil Engineering
Water and Air Quality Modelling (BTN01809)

Day & Date: Wednesday 28-05-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Mass balance ensures a consistent and accurate record of ____ material.
a) Decision making b) Quantity and Quality
c) Estimating d) Cost cutting

2) Concentration such as CO and SO2 forecast ____ due to their relative inertness.
a) Non-reactive models b) Emission Standards
c) Meteorology d) Ambient air

3) The density of ambient water at room temperature 20-25^{o}C is ____.
a) 1 g/cm3 b) 0.5 g/cm3
c) 0.99 g/cm3 d) 1.98 g/cm3

4) The object of ambient water quality programs is to ensure water quality monitoring ____.
a) Toxic Control
b) Quality assurance and quality control
c) Standard quantity
d) Pollution control

5) The diffusion of pollutants by turbulence related to temperature, stratification and wind field leads to ____.
a) Stability class b) Smog
c) Biological change in air d) Physical change in air

6) The suitability of water sources for human consumption is described in terms of ____.

a) Non-reactive index b) Extreme value index
c) Water quality index d) Water control index

7) The national Air quality index was launched in New Delhi on ____ under Swach Bharat.

a) September 2014 b) September 2020
c) September 2000 d) September 1998

8) Ground water models are used to predict the effect of hydrological changes on the behavior of ____.

a) Soil water zone b) Aquifer
c) Capillary zone d) Intermediate zone

9) ____ states that the rate of any chemical reaction is proportional to product of masses of reacting substances with each mass raised to a power equal to coefficient that occurs in chemical reaction.

a) Mass balance b) Conservation of mass
c) Equilibrium Principle d) Rate Constants

10) The concentration of pollutants associated with moving vehicles is determined by ____.

a) Emission rate b) Mixing height
c) Wind speed and direction d) All of above

11) Water quality model is a mathematical representation of ____ from land-based sources to a water body.

a) Inorganic Pollutants b) Contamination of pollutants
c) Movement of pollutant d) Volatile compounds

12) ____ are mathematical models representing relationship with an individual system.

a) Statistical models b) Casual models
c) Stochastic Models d) Simple Models

13) ____ equation is used as water quality model to describe decrease of DO content in a river along a certain distance by degradation of BOD.

a) Delphi method b) Streeter Phelps
c) Le Chatelier's d) Darcy

14) The atmospheric stability is related to the variation with altitude of ____.

a) Temperature b) Pressure
c) Humidity d) All of above

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem - II)(New) (CBCS) Examination: March/April - 2025
Civil Engineering
Water and Air Quality Modelling (BTN01809)

Day & Date: Wednesday 28-05-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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

SECTION – I

Q.2	**a)**	What factors affect the intensity of Oxygen Sag Curve?	**05**
	b)	Explain 4 main types of Statistical model.	**05**
Q.3	**a)**	Explain the importance of Casual Model.	**05**
	b)	How can meteorology help in controlling air pollutants.	**04**
Q.4	**a)**	Explain the purpose of water quality model.	**05**
	b)	Explain 5 major air pollutants and their health effects.	**04**
Q.5	**Write Short Notes on:**		
	a)	Mechanism of Pollutant transport.	**05**
	b)	Benefits of Model Making.	**04**

SECTION-II

Q.6	**a)**	Explain diffusion model and also states application of this model.	**05**
	b)	Explain the features of Gaussian Plume Model.	**05**
Q.7	**a)**	What are the six categories of National Air Quality Index?	**04**
	b)	Explain Fixed box model with respect to wind blowing parallel to longer direction X.	**05**
Q.8	**a)**	Explain the advantages of Delphi model.	**05**
	b)	Explain theory of diffusion model and how it is useful in decision making.	**04**
Q.9	**Write Short Notes on:**		
	a)	Ambient Water Quality.	**05**
	b)	Fixed Box Model	**04**

SLR-BD-349

Seat No.	

Set R

Fourth. Y. (B. Tech)(Sem - II)(New) (CBCS) Examination: March/April-2025
Civil Engineering
Water and Air Quality Modelling (BTN01809)

Day & Date: Wednesday 28-05-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) The object of ambient water quality programs is to ensure water quality monitoring ____.
a) Toxic Control
b) Quality assurance and quality control
c) Standard quantity
d) Pollution control

2) The diffusion of pollutants by turbulence related to temperature, stratification and wind field leads to ____.
a) Stability class b) Smog
c) Biological change in air d) Physical change in air

3) The suitability of water sources for human consumption is described in terms of ____.
a) Non-reactive index b) Extreme value index
c) Water quality index d) Water control index

4) The national Air quality index was launched in New Delhi on ____ under Swach Bharat.
a) September 2014 b) September 2020
c) September 2000 d) September 1998

5) Ground water models are used to predict the effect of hydrological changes on the behavior of ____.
a) Soil water zone b) Aquifer
c) Capillary zone d) Intermediate zone

6) ____ states that the rate of any chemical reaction is proportional to product of masses of reacting substances with each mass raised to a power equal to coefficient that occurs in chemical reaction.

a) Mass balance b) Conservation of mass
c) Equilibrium Principle d) Rate Constants

7) The concentration of pollutants associated with moving vehicles is determined by ____.

a) Emission rate b) Mixing height
c) Wind speed and direction d) All of above

8) Water quality model is a mathematical representation of ____ from land-based sources to a water body.

a) Inorganic Pollutants b) Contamination of pollutants
c) Movement of pollutant d) Volatile compounds

9) ____ are mathematical models representing relationship with an individual system.

a) Statistical models b) Casual models
c) Stochastic Models d) Simple Models

10) ____ equation is used as water quality model to describe decrease of DO content in a river along a certain distance by degradation of BOD.

a) Delphi method b) Streeter Phelps
c) Le Chatelier's d) Darcy

11) The atmospheric stability is related to the variation with altitude of ____.

a) Temperature b) Pressure
c) Humidity d) All of above

12) Mass balance ensures a consistent and accurate record of ____ material.

a) Decision making b) Quantity and Quality
c) Estimating d) Cost cutting

13) Concentration such as CO and SO2 forecast ____ due to their relative inertness.

a) Non-reactive models b) Emission Standards
c) Meteorology d) Ambient air

14) The density of ambient water at room temperature 20-25^{o}C is ____.

a) 1 g/cm3 b) 0.5 g/cm3
c) 0.99 g/cm3 d) 1.98 g/cm3

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem - II)(New) (CBCS) Examination: March/April - 2025
Civil Engineering
Water and Air Quality Modelling (BTN01809)

Day & Date: Wednesday 28-05-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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

SECTION – I

Q.2	**a)**	What factors affect the intensity of Oxygen Sag Curve?	**05**
	b)	Explain 4 main types of Statistical model.	**05**
Q.3	**a)**	Explain the importance of Casual Model.	**05**
	b)	How can meteorology help in controlling air pollutants.	**04**
Q.4	**a)**	Explain the purpose of water quality model.	**05**
	b)	Explain 5 major air pollutants and their health effects.	**04**
Q.5	**Write Short Notes on:**		
	a)	Mechanism of Pollutant transport.	**05**
	b)	Benefits of Model Making.	**04**

SECTION-II

Q.6	**a)**	Explain diffusion model and also states application of this model.	**05**
	b)	Explain the features of Gaussian Plume Model.	**05**
Q.7	**a)**	What are the six categories of National Air Quality Index?	**04**
	b)	Explain Fixed box model with respect to wind blowing parallel to longer direction X.	**05**
Q.8	**a)**	Explain the advantages of Delphi model.	**05**
	b)	Explain theory of diffusion model and how it is useful in decision making.	**04**
Q.9	**Write Short Notes on:**		
	a)	Ambient Water Quality.	**05**
	b)	Fixed Box Model	**04**

Seat No.	

Set **S**

Fourth. Y. (B. Tech)(Sem - II)(New) (CBCS) Examination: March/April-2025
Civil Engineering
Water and Air Quality Modelling (BTN01809)

Day & Date: Wednesday 28-05-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) ____ equation is used as water quality model to describe decrease of DO content in a river along a certain distance by degradation of BOD.
a) Delphi method b) Streeter Phelps
c) Le Chatelier's d) Darcy

2) The atmospheric stability is related to the variation with altitude of ____.
a) Temperature b) Pressure
c) Humidity d) All of above

3) Mass balance ensures a consistent and accurate record of ____ material.
a) Decision making b) Quantity and Quality
c) Estimating d) Cost cutting

4) Concentration such as CO and SO2 forecast ____ due to their relative inertness.
a) Non-reactive models b) Emission Standards
c) Meteorology d) Ambient air

5) The density of ambient water at room temperature 20-25^{o}C is ____.
a) 1 g/cm3 b) 0.5 g/cm3
c) 0.99 g/cm3 d) 1.98 g/cm3

6) The object of ambient water quality programs is to ensure water quality monitoring ____.
a) Toxic Control
b) Quality assurance and quality control
c) Standard quantity
d) Pollution control

7) The diffusion of pollutants by turbulence related to temperature, stratification and wind field leads to ____.
a) Stability class b) Smog
c) Biological change in air d) Physical change in air

8) The suitability of water sources for human consumption is described in terms of ____.
a) Non-reactive index b) Extreme value index
c) Water quality index d) Water control index

9) The national Air quality index was launched in New Delhi on ____ under Swach Bharat.
a) September 2014 b) September 2020
c) September 2000 d) September 1998

10) Ground water models are used to predict the effect of hydrological changes on the behavior of ____.
a) Soil water zone b) Aquifer
c) Capillary zone d) Intermediate zone

11) ____ states that the rate of any chemical reaction is proportional to product of masses of reacting substances with each mass raised to a power equal to coefficient that occurs in chemical reaction.
a) Mass balance b) Conservation of mass
c) Equilibrium Principle d) Rate Constants

12) The concentration of pollutants associated with moving vehicles is determined by ____.
a) Emission rate b) Mixing height
c) Wind speed and direction d) All of above

13) Water quality model is a mathematical representation of ____ from land-based sources to a water body.
a) Inorganic Pollutants b) Contamination of pollutants
c) Movement of pollutant d) Volatile compounds

14) ____ are mathematical models representing relationship with an individual system.
a) Statistical models b) Casual models
c) Stochastic Models d) Simple Models

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - II)(New) (CBCS) Examination: March/April - 2025
Civil Engineering
Water and Air Quality Modelling (BTN01809)

Day & Date: Wednesday 28-05-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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

SECTION – I

Q.2	**a)**	What factors affect the intensity of Oxygen Sag Curve?	**05**
	b)	Explain 4 main types of Statistical model.	**05**
Q.3	**a)**	Explain the importance of Casual Model.	**05**
	b)	How can meteorology help in controlling air pollutants.	**04**
Q.4	**a)**	Explain the purpose of water quality model.	**05**
	b)	Explain 5 major air pollutants and their health effects.	**04**
Q.5	**Write Short Notes on:**		
	a)	Mechanism of Pollutant transport.	**05**
	b)	Benefits of Model Making.	**04**

SECTION-II

Q.6	**a)**	Explain diffusion model and also states application of this model.	**05**
	b)	Explain the features of Gaussian Plume Model.	**05**
Q.7	**a)**	What are the six categories of National Air Quality Index?	**04**
	b)	Explain Fixed box model with respect to wind blowing parallel to longer direction X.	**05**
Q.8	**a)**	Explain the advantages of Delphi model.	**05**
	b)	Explain theory of diffusion model and how it is useful in decision making.	**04**
Q.9	**Write Short Notes on:**		
	a)	Ambient Water Quality.	**05**
	b)	Fixed Box Model	**04**

SLR-BD-350

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Concrete Composites (BTN01810)

Day & Date: Friday, 30-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:20

Q.1 Choose the correct Answer. **20**

1) What is Fiber Reinforced Concrete (FRC)?
a) Concrete mixed with synthetic fibers only
b) Concrete mixed with steel fibers only
c) Concrete mixed with both synthetic and steel fibers
d) Concrete mixed with aggregate only

2) What is the main reinforcement material used in ferrocement?
a) Steel bars b) Fiberglass
c) Aluminum d) Wood

3) What is the primary reaction mechanism of silica fume in concrete?
a) Nucleation and crystallization
b) Hydration and pozzolanic reaction
c) Carbonation and hardening
d) Oxidation and reduction

4) Silica fume concrete exhibits enhanced durability primarily due to:
a) Increased permeability
b) Improved resistance to chemical attack
c) Higher shrinkage
d) Lower freeze-thaw resistance

5) Which constituent material provides improved chemical resistance in polymer concrete?
a) Aggregate b) Cement
c) Polymer d) Water

6) Which application is polymer concrete commonly used for?
a) Structural foundations b) Decorative flooring
c) Road construction d) All of the above

7) The addition of polymers in concrete can improve its: _____.
a) Workability b) Carbonation resistance
c) Curing time d) Density

8) Which method is commonly used for designing High Strength Concrete (HSC)?
a) Shaklok method b) Erintroy method
c) Microstructure method d) Ultra High Strength method

9) What are the typical requirements of High-Performance Concrete (HPC)?
a) High water-cement ratio b) Low compressive strength
c) High durability and strength d) High porosity

10) What distinguishes High Strength Concrete from conventional concrete?
a) Higher water-cement ratio b) Lower compressive strength
c) Lower density d) Higher compressive strength

11) Fiber Reinforced Concrete is most suitable for structures subjected to:
a) Dynamic loads
b) Static loads
c) Both dynamic and static loads
d) None of the above

12) Which application of Fiber Reinforced Concrete requires high tensile strength and durability?
a) Airport runways b) Seawalls
c) Architectural panels d) Residential driveways

13) The mechanical properties of Fiber Reinforced Concrete depend on:
a) Type of fibers b) Aspect ratio of fibers
c) Volume fraction of fibers d) All of the above

14) What role does the mesh or lath play in ferrocement construction?
a) Provides compressive strength
b) Provides tensile strength
c) Enhances durability
d) Acts as a thermal insulator

15) Which of the following factors influences the flexural behavior of ferrocement?
a) Type of cement
b) Thickness of the cement layer
c) Temperature during construction
d) Presence of additives

16) What is the approximate particle size range of silica fume?

a) 1-10 micrometers
b) 100-500 micrometers
c) 1-10 millimeters
d) 10-100 nanometers

17) Which of the following is a chemical property of silica fume?

a) High water content
b) Low pH
c) High electrical conductivity
d) Low specific surface area

18) What property of polymer concrete distinguishes it from traditional concrete?

a) Higher compressive strength
b) Lower tensile strength
c) Improved chemical resistance
d) Lower density

19) What is-the primary advantage of Ultra High Strength Concrete (UHSC)?

a) Lower cost
b) Higher workability
c) Exceptionally high compressive strength
d) Lower density

20) Which of the following properties is typically associated with High Performance Concrete?

a) Low strength
b) High porosity
c) High durability
d) Low workability

Seat No.	

Set **P**

Fourth. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Concrete Composites (BTN01810)

Day & Date: Friday, 30-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Solve any two. **16**

a) Explains the behavior of fiber reinforced concrete under the compression, tension and flexure.
b) What is mean by Fiber Reinforced Concrete? Explains the different types of constituents used for construction Fiber Reinforced Concrete.
c) Explain the advantages and disadvantages of fiber reinforced concrete.

Q.3 Solve any four. **24**

a) Explains the mechanical properties of Ferro cement.
b) Explain the materials used in Ferro cement.
c) What are the applications of Ferrocement?
d) Explains the merits of Ferro cement as a structural material.
e) Explain the properties of freshly mixed fiber reinforced concrete.
f) What is workability of Concrete? Explain the methods of measurement of workability.

SECTION – II

Q.4 Solve any two. **16**

a) Explain a) Polymer concrete b) Silica Fume Concrete.
b) Explain about the Durability of Silica Fume Concrete.
c) Explain the physical and chemical properties of Silica Fume Concrete.

Q.5 Solve any four. **24**

a) Write note on types of polymer concrete.
b) Explain properties of constituent materials of Polymer Concrete.
c) Explain ultra-high strength concrete.
d) What are the applications of polymer impregnated concrete and polymer concrete?
e) What is high performance concrete? Explain the properties of high-performance concrete.
f) What are the design consideration for High performance concrete?

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Concrete Composites (BTN01810)

Day & Date: Friday, 30-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:20

Q.1 Choose the correct Answer. **20**

1) Which application is polymer concrete commonly used for?
a) Structural foundations b) Decorative flooring
c) Road construction d) All of the above

2) The addition of polymers in concrete can improve its: _____.
a) Workability b) Carbonation resistance
c) Curing time d) Density

3) Which method is commonly used for designing High Strength Concrete (HSC)?
a) Shaklok method b) Erintroy method
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a) Type of fibers
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9) What role does the mesh or lath play in ferrocement construction?

a) Provides compressive strength
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c) Enhances durability
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10) Which of the following factors influences the flexural behavior of ferrocement?

a) Type of cement
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11) What is the approximate particle size range of silica fume?

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b) 100-500 micrometers
c) 1-10 millimeters
d) 10-100 nanometers

12) Which of the following is a chemical property of silica fume?

a) High water content
b) Low pH
c) High electrical conductivity
d) Low specific surface area

13) What property of polymer concrete distinguishes it from traditional concrete?

a) Higher compressive strength
b) Lower tensile strength
c) Improved chemical resistance
d) Lower density

14) What is-the primary advantage of Ultra High Strength Concrete (UHSC)?

a) Lower cost
b) Higher workability
c) Exceptionally high compressive strength
d) Lower density

15) Which of the following properties is typically associated with High Performance Concrete?

a) Low strength
b) High porosity
c) High durability
d) Low workability

16) What is Fiber Reinforced Concrete (FRC)?
a) Concrete mixed with synthetic fibers only
b) Concrete mixed with steel fibers only
c) Concrete mixed with both synthetic and steel fibers
d) Concrete mixed with aggregate only

17) What is the main reinforcement material used in ferrocement?
a) Steel bars
b) Fiberglass
c) Aluminum
d) Wood

18) What is the primary reaction mechanism of silica fume in concrete?
a) Nucleation and crystallization
b) Hydration and pozzolanic reaction
c) Carbonation and hardening
d) Oxidation and reduction

19) Silica fume concrete exhibits enhanced durability primarily due to:
a) Increased permeability
b) Improved resistance to chemical attack
c) Higher shrinkage
d) Lower freeze-thaw resistance

20) Which constituent material provides improved chemical resistance in polymer concrete?
a) Aggregate
b) Cement
c) Polymer
d) Water

Seat No.	

Set **Q**

Fourth. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Concrete Composites (BTN01810)

Day & Date: Friday, 30-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Solve any two. **16**

a) Explains the behavior of fiber reinforced concrete under the compression, tension and flexure.
b) What is mean by Fiber Reinforced Concrete? Explains the different types of constituents used for construction Fiber Reinforced Concrete.
c) Explain the advantages and disadvantages of fiber reinforced concrete.

Q.3 Solve any four. **24**

a) Explains the mechanical properties of Ferro cement.
b) Explain the materials used in Ferro cement.
c) What are the applications of Ferrocement?
d) Explains the merits of Ferro cement as a structural material.
e) Explain the properties of freshly mixed fiber reinforced concrete.
f) What is workability of Concrete? Explain the methods of measurement of workability.

SECTION – II

Q.4 Solve any two. **16**

a) Explain a) Polymer concrete b) Silica Fume Concrete.
b) Explain about the Durability of Silica Fume Concrete.
c) Explain the physical and chemical properties of Silica Fume Concrete.

Q.5 Solve any four. **24**

a) Write note on types of polymer concrete.
b) Explain properties of constituent materials of Polymer Concrete.
c) Explain ultra-high strength concrete.
d) What are the applications of polymer impregnated concrete and polymer concrete?
e) What is high performance concrete? Explain the properties of high-performance concrete.
f) What are the design consideration for High performance concrete?

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Concrete Composites (BTN01810)

Day & Date: Friday, 30-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:20

Q.1 Choose the correct Answer. 20

1) Fiber Reinforced Concrete is most suitable for structures subjected to:
a) Dynamic loads
b) Static loads
c) Both dynamic and static loads
d) None of the above

2) Which application of Fiber Reinforced Concrete requires high tensile strength and durability?
a) Airport runways b) Seawalls
c) Architectural panels d) Residential driveways

3) The mechanical properties of Fiber Reinforced Concrete depend on:
a) Type of fibers b) Aspect ratio of fibers
c) Volume fraction of fibers d) All of the above

4) What role does the mesh or lath play in ferrocement construction?
a) Provides compressive strength
b) Provides tensile strength
c) Enhances durability
d) Acts as a thermal insulator

5) Which of the following factors influences the flexural behavior of ferrocement?
a) Type of cement
b) Thickness of the cement layer
c) Temperature during construction
d) Presence of additives

6) What is the approximate particle size range of silica fume?
a) 1-10 micrometers b) 100-500 micrometers
c) 1-10 millimeters d) 10-100 nanometers

7) Which of the following is a chemical property of silica fume?
a) High water content b) Low pH
c) High electrical conductivity d) Low specific surface area

8) What property of polymer concrete distinguishes it from traditional concrete?
a) Higher compressive strength
b) Lower tensile strength
c) Improved chemical resistance
d) Lower density

9) What is-the primary advantage of Ultra High Strength Concrete (UHSC)?
a) Lower cost
b) Higher workability
c) Exceptionally high compressive strength
d) Lower density

10) Which of the following properties is typically associated with High Performance Concrete?
a) Low strength b) High porosity
c) High durability d) Low workability

11) What is Fiber Reinforced Concrete (FRC)?
a) Concrete mixed with synthetic fibers only
b) Concrete mixed with steel fibers only
c) Concrete mixed with both synthetic and steel fibers
d) Concrete mixed with aggregate only

12) What is the main reinforcement material used in ferrocement?
a) Steel bars b) Fiberglass
c) Aluminum d) Wood

13) What is the primary reaction mechanism of silica fume in concrete?
a) Nucleation and crystallization
b) Hydration and pozzolanic reaction
c) Carbonation and hardening
d) Oxidation and reduction

14) Silica fume concrete exhibits enhanced durability primarily due to:
a) Increased permeability
b) Improved resistance to chemical attack
c) Higher shrinkage
d) Lower freeze-thaw resistance

15) Which constituent material provides improved chemical resistance in polymer concrete?

a) Aggregate b) Cement
c) Polymer d) Water

16) Which application is polymer concrete commonly used for?

a) Structural foundations b) Decorative flooring
c) Road construction d) All of the above

17) The addition of polymers in concrete can improve its: _____.

a) Workability b) Carbonation resistance
c) Curing time d) Density

18) Which method is commonly used for designing High Strength Concrete (HSC)?

a) Shaklok method b) Erintroy method
c) Microstructure method d) Ultra High Strength method

19) What are the typical requirements of High-Performance Concrete (HPC)?

a) High water-cement ratio b) Low compressive strength
c) High durability and strength d) High porosity

20) What distinguishes High Strength Concrete from conventional concrete?

a) Higher water-cement ratio b) Lower compressive strength
c) Lower density d) Higher compressive strength

Seat No.	

Set **R**

Fourth. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Concrete Composites (BTN01810)

Day & Date: Friday, 30-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Solve any two. **16**

a) Explains the behavior of fiber reinforced concrete under the compression, tension and flexure.
b) What is mean by Fiber Reinforced Concrete? Explains the different types of constituents used for construction Fiber Reinforced Concrete.
c) Explain the advantages and disadvantages of fiber reinforced concrete.

Q.3 Solve any four. **24**

a) Explains the mechanical properties of Ferro cement.
b) Explain the materials used in Ferro cement.
c) What are the applications of Ferrocement?
d) Explains the merits of Ferro cement as a structural material.
e) Explain the properties of freshly mixed fiber reinforced concrete.
f) What is workability of Concrete? Explain the methods of measurement of workability.

SECTION – II

Q.4 Solve any two. **16**

a) Explain a) Polymer concrete b) Silica Fume Concrete.
b) Explain about the Durability of Silica Fume Concrete.
c) Explain the physical and chemical properties of Silica Fume Concrete.

Q.5 Solve any four. **24**

a) Write note on types of polymer concrete.
b) Explain properties of constituent materials of Polymer Concrete.
c) Explain ultra-high strength concrete.
d) What are the applications of polymer impregnated concrete and polymer concrete?
e) What is high performance concrete? Explain the properties of high-performance concrete.
f) What are the design consideration for High performance concrete?

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Concrete Composites (BTN01810)

Day & Date: Friday, 30-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:20

Q.1 Choose the correct Answer. **20**

1) What is the approximate particle size range of silica fume?
a) 1-10 micrometers b) 100-500 micrometers
c) 1-10 millimeters d) 10-100 nanometers

2) Which of the following is a chemical property of silica fume?
a) High water content b) Low pH
c) High electrical conductivity d) Low specific surface area

3) What property of polymer concrete distinguishes it from traditional concrete?
a) Higher compressive strength
b) Lower tensile strength
c) Improved chemical resistance
d) Lower density

4) What is-the primary advantage of Ultra High Strength Concrete (UHSC)?
a) Lower cost
b) Higher workability
c) Exceptionally high compressive strength
d) Lower density

5) Which of the following properties is typically associated with High Performance Concrete?
a) Low strength b) High porosity
c) High durability d) Low workability

6) What is Fiber Reinforced Concrete (FRC)?
a) Concrete mixed with synthetic fibers only
b) Concrete mixed with steel fibers only
c) Concrete mixed with both synthetic and steel fibers
d) Concrete mixed with aggregate only

7) What is the main reinforcement material used in ferrocement?
a) Steel bars b) Fiberglass
c) Aluminum d) Wood

8) What is the primary reaction mechanism of silica fume in concrete?
a) Nucleation and crystallization
b) Hydration and pozzolanic reaction
c) Carbonation and hardening
d) Oxidation and reduction

9) Silica fume concrete exhibits enhanced durability primarily due to:
a) Increased permeability
b) Improved resistance to chemical attack
c) Higher shrinkage
d) Lower freeze-thaw resistance

10) Which constituent material provides improved chemical resistance in polymer concrete?
a) Aggregate b) Cement
c) Polymer d) Water

11) Which application is polymer concrete commonly used for?
a) Structural foundations b) Decorative flooring
c) Road construction d) All of the above

12) The addition of polymers in concrete can improve its: _____.
a) Workability b) Carbonation resistance
c) Curing time d) Density

13) Which method is commonly used for designing High Strength Concrete (HSC)?
a) Shaklok method b) Erintroy method
c) Microstructure method d) Ultra High Strength method

14) What are the typical requirements of High-Performance Concrete (HPC)?
a) High water-cement ratio b) Low compressive strength
c) High durability and strength d) High porosity

15) What distinguishes High Strength Concrete from conventional concrete?
a) Higher water-cement ratio b) Lower compressive strength
c) Lower density d) Higher compressive strength

16) Fiber Reinforced Concrete is most suitable for structures subjected to:
a) Dynamic loads
b) Static loads
c) Both dynamic and static loads
d) None of the above

17) Which application of Fiber Reinforced Concrete requires high tensile strength and durability?
a) Airport runways
b) Seawalls
c) Architectural panels
d) Residential driveways

18) The mechanical properties of Fiber Reinforced Concrete depend on:
a) Type of fibers
b) Aspect ratio of fibers
c) Volume fraction of fibers
d) All of the above

19) What role does the mesh or lath play in ferrocement construction?
a) Provides compressive strength
b) Provides tensile strength
c) Enhances durability
d) Acts as a thermal insulator

20) Which of the following factors influences the flexural behavior of ferrocement?
a) Type of cement
b) Thickness of the cement layer
c) Temperature during construction
d) Presence of additives

Seat No.	

Set **S**

Fourth. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Concrete Composites (BTN01810)

Day & Date: Friday, 30-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Solve any two. **16**

a) Explains the behavior of fiber reinforced concrete under the compression, tension and flexure.
b) What is mean by Fiber Reinforced Concrete? Explains the different types of constituents used for construction Fiber Reinforced Concrete.
c) Explain the advantages and disadvantages of fiber reinforced concrete.

Q.3 Solve any four. **24**

a) Explains the mechanical properties of Ferro cement.
b) Explain the materials used in Ferro cement.
c) What are the applications of Ferrocement?
d) Explains the merits of Ferro cement as a structural material.
e) Explain the properties of freshly mixed fiber reinforced concrete.
f) What is workability of Concrete? Explain the methods of measurement of workability.

SECTION – II

Q.4 Solve any two. **16**

a) Explain a) Polymer concrete b) Silica Fume Concrete.
b) Explain about the Durability of Silica Fume Concrete.
c) Explain the physical and chemical properties of Silica Fume Concrete.

Q.5 Solve any four. **24**

a) Write note on types of polymer concrete.
b) Explain properties of constituent materials of Polymer Concrete.
c) Explain ultra-high strength concrete.
d) What are the applications of polymer impregnated concrete and polymer concrete?
e) What is high performance concrete? Explain the properties of high-performance concrete.
f) What are the design consideration for High performance concrete?

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Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Rural Roads (BTN01812)

Day & Date: Friday, 30-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. **20**

1) What is the primary consideration in planning rural roads?
a) Speed b) Cost
c) Aesthetics d) Safety

2) Which factor plays a significant role in determining the alignment of rural roads?
a) Population density b) Topography
c) Economic status d) Cultural heritage

3) Which type of surfacing is commonly used for rural roads due to its cost-effectiveness?
a) Asphalt b) Concrete
c) Gravel d) Cobblestone

4) What is the standard width of a single-lane rural road in most countries?
a) 2.5 meters b) 3.5 meters
c) 4.5 meters d) 5.5 meters

5) Which geometric design element primarily determines the curvature and alignment of a roadway?
a) Super-elevation b) Sight distance
c) Horizontal alignment d) Vertical alignment

6) What is the purpose of super-elevation in geometric design?
a) To increase sight distance
b) To provide drainage on the roadway
c) To counteract the centrifugal force acting on vehicles during curves
d) To control the vertical profile of the road

7) Which of the following factors affects the choice of horizontal alignment?
a) Traffic volume
b) Soil composition
c) Pavement thickness
d) Traffic signal placement

8) What is the primary purpose of a clear zone in geometric design?
a) To provide space for pedestrians
b) To allow for emergency stopping of vehicles
c) To provide a buffer area for errant vehicles
d) To accommodate utility lines

9) Which of the following materials is commonly used as a binder in asphalt pavement?
a) Concrete
b) Bitumen
c) Cement
d) Gravel

10) Which of the following properties makes gravel suitable for rural road pavements?
a) High cost
b) Low availability
c) Good drainage
d) High maintenance

11) Which material is often used as a surface course in rural road pavements due to its ease of construction and maintenance?
a) Concrete
b) Asphalt
c) Cobblestone
d) Bitumen

12) What is the primary purpose of pavement design in rural roads?
a) Aesthetics
b) Safety
c) Noise reduction
d) Environmental conservation

13) Which of the following factors is NOT considered in pavement design for rural roads?
a) Traffic volume
b) Soil type
c) Weather conditions
d) Proximity to urban areas

14) Which layer of pavement structure bears the maximum load?
a) Sub-base
b) Base
c) Surface course
d) Subgrade

15) Which of the following is NOT a common material used in the construction of rural roads?
a) Asphalt
b) Concrete
c) Brick
d) Steel

16) What is the primary purpose of specifications in rural road construction?
a) To increase project cost
b) To ensure quality and performance
c) To delay project completion
d) To decrease project durability

17) Which of the following factors is NOT typically considered in road construction specifications?
a) Traffic volume
b) Climate conditions
c) Local culture
d) Economic status of the area

18) What is the primary purpose of road drainage?
a) To enhance road aesthetics
b) To prevent soil erosion
c) To provide habitat for aquatic life
d) To regulate traffic flow

19) Which of the following is NOT a component of road drainage systems?
a) Culverts
b) Road signs
c) Ditches
d) Drains

20) Which type of drainage system is typically used to collect surface water from the road and divert it away?
a) Culverts
b) Gutter drains
c) French drains
d) Permeable pavements

Seat No.	

Set **P**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Rural Roads (BTN01812)

Day & Date: Friday, 30-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any Two from the following. **20**

a) Explain various problems associated with planning of low volume rural roads in India.
b) Explain the concept of 'Network Planning in Rural Roads'.
c) A vehicle is moving on descending gradient of 5% on 2-lane divided road. Speed of overtaking vehicle is 70 kmph and reaction time is 3.5 seconds. Calculate Overtaking Sight Distance (OSD)

Q.3 Attempt any Two from the following. **20**

a) Explain special considerations for rural roads in hilly terrain.
b) Explain Soil investigations for low embankment, high embankment, cut sections, subgrade.
c) Explain uses of locally available materials for pavement construction.

Section – II

Q.4 Attempt any Two from the following. **20**

a) Explain various ***"Design parameters'*** for Pavement design in Rural Roads.
b) Explain procedure for the design of flexible pavement in Rural Roads.
c) Explain Construction of Earth (Subgrade &Embankment), Sub-base, Base course and surface course.

Q.5 Attempt any Two from the following. **20**

a) Explain Construction of ***lime fly ash bound.***
b) Explain Construction of dry lean fly ash concrete, cement stabilized fly ash.
c) Explain maintenance of paved roads.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Rural Roads (BTN01812)

Day & Date: Friday, 30-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. **20**

1) What is the purpose of super-elevation in geometric design?
a) To increase sight distance
b) To provide drainage on the roadway
c) To counteract the centrifugal force acting on vehicles during curves
d) To control the vertical profile of the road

2) Which of the following factors affects the choice of horizontal alignment?
a) Traffic volume b) Soil composition
c) Pavement thickness d) Traffic signal placement

3) What is the primary purpose of a clear zone in geometric design?
a) To provide space for pedestrians
b) To allow for emergency stopping of vehicles
c) To provide a buffer area for errant vehicles
d) To accommodate utility lines

4) Which of the following materials is commonly used as a binder in asphalt pavement?
a) Concrete b) Bitumen
c) Cement d) Gravel

5) Which of the following properties makes gravel suitable for rural road pavements?
a) High cost b) Low availability
c) Good drainage d) High maintenance

6) Which material is often used as a surface course in rural road pavements due to its ease of construction and maintenance?
a) Concrete b) Asphalt
c) Cobblestone d) Bitumen

7) What is the primary purpose of pavement design in rural roads?
a) Aesthetics b) Safety
c) Noise reduction d) Environmental conservation

8) Which of the following factors is NOT considered in pavement design for rural roads?
a) Traffic volume b) Soil type
c) Weather conditions d) Proximity to urban areas

9) Which layer of pavement structure bears the maximum load?
a) Sub-base b) Base
c) Surface course d) Subgrade

10) Which of the following is NOT a common material used in the construction of rural roads?
a) Asphalt b) Concrete
c) Brick d) Steel

11) What is the primary purpose of specifications in rural road construction?
a) To increase project cost
b) To ensure quality and performance
c) To delay project completion
d) To decrease project durability

12) Which of the following factors is NOT typically considered in road construction specifications?
a) Traffic volume b) Climate conditions
c) Local culture d) Economic status of the area

13) What is the primary purpose of road drainage?
a) To enhance road aesthetics
b) To prevent soil erosion
c) To provide habitat for aquatic life
d) To regulate traffic flow

14) Which of the following is NOT a component of road drainage systems?
a) Culverts b) Road signs
c) Ditches d) Drains

15) Which type of drainage system is typically used to collect surface water from the road and divert it away?
a) Culverts b) Gutter drains
c) French drains d) Permeable pavements

16) What is the primary consideration in planning rural roads?

a) Speed b) Cost
c) Aesthetics d) Safety

17) Which factor plays a significant role in determining the alignment of rural roads?

a) Population density b) Topography
c) Economic status d) Cultural heritage

18) Which type of surfacing is commonly used for rural roads due to its cost-effectiveness?

a) Asphalt b) Concrete
c) Gravel d) Cobblestone

19) What is the standard width of a single-lane rural road in most countries?

a) 2.5 meters b) 3.5 meters
c) 4.5 meters d) 5.5 meters

20) Which geometric design element primarily determines the curvature and alignment of a roadway?

a) Super-elevation b) Sight distance
c) Horizontal alignment d) Vertical alignment

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Rural Roads (BTN01812)

Day & Date: Friday, 30-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any Two from the following. **20**

a) Explain various problems associated with planning of low volume rural roads in India.
b) Explain the concept of 'Network Planning in Rural Roads'.
c) A vehicle is moving on descending gradient of 5% on 2-lane divided road. Speed of overtaking vehicle is 70 kmph and reaction time is 3.5 seconds. Calculate Overtaking Sight Distance (OSD)

Q.3 Attempt any Two from the following. **20**

a) Explain special considerations for rural roads in hilly terrain.
b) Explain Soil investigations for low embankment, high embankment, cut sections, subgrade.
c) Explain uses of locally available materials for pavement construction.

Section – II

Q.4 Attempt any Two from the following. **20**

a) Explain various ***"Design parameters'*** for Pavement design in Rural Roads.
b) Explain procedure for the design of flexible pavement in Rural Roads.
c) Explain Construction of Earth (Subgrade &Embankment), Sub-base, Base course and surface course.

Q.5 Attempt any Two from the following. **20**

a) Explain Construction of ***lime fly ash bound.***
b) Explain Construction of dry lean fly ash concrete, cement stabilized fly ash.
c) Explain maintenance of paved roads.

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Rural Roads (BTN01812)

Day & Date: Friday, 30-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. 20

1) Which material is often used as a surface course in rural road pavements due to its ease of construction and maintenance?
a) Concrete b) Asphalt
c) Cobblestone d) Bitumen

2) What is the primary purpose of pavement design in rural roads?
a) Aesthetics b) Safety
c) Noise reduction d) Environmental conservation

3) Which of the following factors is NOT considered in pavement design for rural roads?
a) Traffic volume b) Soil type
c) Weather conditions d) Proximity to urban areas

4) Which layer of pavement structure bears the maximum load?
a) Sub-base b) Base
c) Surface course d) Subgrade

5) Which of the following is NOT a common material used in the construction of rural roads?
a) Asphalt b) Concrete
c) Brick d) Steel

6) What is the primary purpose of specifications in rural road construction?
a) To increase project cost
b) To ensure quality and performance
c) To delay project completion
d) To decrease project durability

7) Which of the following factors is NOT typically considered in road construction specifications?

a) Traffic volume
b) Climate conditions
c) Local culture
d) Economic status of the area

8) What is the primary purpose of road drainage?

a) To enhance road aesthetics
b) To prevent soil erosion
c) To provide habitat for aquatic life
d) To regulate traffic flow

9) Which of the following is NOT a component of road drainage systems?

a) Culverts
b) Road signs
c) Ditches
d) Drains

10) Which type of drainage system is typically used to collect surface water from the road and divert it away?

a) Culverts
b) Gutter drains
c) French drains
d) Permeable pavements

11) What is the primary consideration in planning rural roads?

a) Speed
b) Cost
c) Aesthetics
d) Safety

12) Which factor plays a significant role in determining the alignment of rural roads?

a) Population density
b) Topography
c) Economic status
d) Cultural heritage

13) Which type of surfacing is commonly used for rural roads due to its cost-effectiveness?

a) Asphalt
b) Concrete
c) Gravel
d) Cobblestone

14) What is the standard width of a single-lane rural road in most countries?

a) 2.5 meters
b) 3.5 meters
c) 4.5 meters
d) 5.5 meters

15) Which geometric design element primarily determines the curvature and alignment of a roadway?

a) Super-elevation
b) Sight distance
c) Horizontal alignment
d) Vertical alignment

16) What is the purpose of super-elevation in geometric design?
a) To increase sight distance
b) To provide drainage on the roadway
c) To counteract the centrifugal force acting on vehicles during curves
d) To control the vertical profile of the road

17) Which of the following factors affects the choice of horizontal alignment?
a) Traffic volume
b) Soil composition
c) Pavement thickness
d) Traffic signal placement

18) What is the primary purpose of a clear zone in geometric design?
a) To provide space for pedestrians
b) To allow for emergency stopping of vehicles
c) To provide a buffer area for errant vehicles
d) To accommodate utility lines

19) Which of the following materials is commonly used as a binder in asphalt pavement?
a) Concrete
b) Bitumen
c) Cement
d) Gravel

20) Which of the following properties makes gravel suitable for rural road pavements?
a) High cost
b) Low availability
c) Good drainage
d) High maintenance

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Rural Roads (BTN01812)

Day & Date: Friday, 30-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any Two from the following. **20**

a) Explain various problems associated with planning of low volume rural roads in India.
b) Explain the concept of 'Network Planning in Rural Roads'.
c) A vehicle is moving on descending gradient of 5% on 2-lane divided road. Speed of overtaking vehicle is 70 kmph and reaction time is 3.5 seconds. Calculate Overtaking Sight Distance (OSD)

Q.3 Attempt any Two from the following. **20**

a) Explain special considerations for rural roads in hilly terrain.
b) Explain Soil investigations for low embankment, high embankment, cut sections, subgrade.
c) Explain uses of locally available materials for pavement construction.

Section – II

Q.4 Attempt any Two from the following. **20**

a) Explain various ***"Design parameters'*** for Pavement design in Rural Roads.
b) Explain procedure for the design of flexible pavement in Rural Roads.
c) Explain Construction of Earth (Subgrade &Embankment), Sub-base, Base course and surface course.

Q.5 Attempt any Two from the following. **20**

a) Explain Construction of ***lime fly ash bound.***
b) Explain Construction of dry lean fly ash concrete, cement stabilized fly ash.
c) Explain maintenance of paved roads.

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Rural Roads (BTN01812)

Day & Date: Friday, 30-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. 20

1) What is the primary purpose of specifications in rural road construction?
a) To increase project cost
b) To ensure quality and performance
c) To delay project completion
d) To decrease project durability

2) Which of the following factors is NOT typically considered in road construction specifications?
a) Traffic volume b) Climate conditions
c) Local culture d) Economic status of the area

3) What is the primary purpose of road drainage?
a) To enhance road aesthetics
b) To prevent soil erosion
c) To provide habitat for aquatic life
d) To regulate traffic flow

4) Which of the following is NOT a component of road drainage systems?
a) Culverts b) Road signs
c) Ditches d) Drains

5) Which type of drainage system is typically used to collect surface water from the road and divert it away?
a) Culverts b) Gutter drains
c) French drains d) Permeable pavements

6) What is the primary consideration in planning rural roads?
a) Speed b) Cost
c) Aesthetics d) Safety

7) Which factor plays a significant role in determining the alignment of rural roads?
a) Population density
b) Topography
c) Economic status
d) Cultural heritage

8) Which type of surfacing is commonly used for rural roads due to its cost-effectiveness?
a) Asphalt
b) Concrete
c) Gravel
d) Cobblestone

9) What is the standard width of a single-lane rural road in most countries?
a) 2.5 meters
b) 3.5 meters
c) 4.5 meters
d) 5.5 meters

10) Which geometric design element primarily determines the curvature and alignment of a roadway?
a) Super-elevation
b) Sight distance
c) Horizontal alignment
d) Vertical alignment

11) What is the purpose of super-elevation in geometric design?
a) To increase sight distance
b) To provide drainage on the roadway
c) To counteract the centrifugal force acting on vehicles during curves
d) To control the vertical profile of the road

12) Which of the following factors affects the choice of horizontal alignment?
a) Traffic volume
b) Soil composition
c) Pavement thickness
d) Traffic signal placement

13) What is the primary purpose of a clear zone in geometric design?
a) To provide space for pedestrians
b) To allow for emergency stopping of vehicles
c) To provide a buffer area for errant vehicles
d) To accommodate utility lines

14) Which of the following materials is commonly used as a binder in asphalt pavement?
a) Concrete
b) Bitumen
c) Cement
d) Gravel

15) Which of the following properties makes gravel suitable for rural road pavements?
a) High cost
b) Low availability
c) Good drainage
d) High maintenance

16) Which material is often used as a surface course in rural road pavements due to its ease of construction and maintenance?

a) Concrete
b) Asphalt
c) Cobblestone
d) Bitumen

17) What is the primary purpose of pavement design in rural roads?

a) Aesthetics
b) Safety
c) Noise reduction
d) Environmental conservation

18) Which of the following factors is NOT considered in pavement design for rural roads?

a) Traffic volume
b) Soil type
c) Weather conditions
d) Proximity to urban areas

19) Which layer of pavement structure bears the maximum load?

a) Sub-base
b) Base
c) Surface course
d) Subgrade

20) Which of the following is NOT a common material used in the construction of rural roads?

a) Asphalt
b) Concrete
c) Brick
d) Steel

SLR-BD-351

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Rural Roads (BTN01812)

Day & Date: Friday, 30-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any Two from the following. **20**

a) Explain various problems associated with planning of low volume rural roads in India.
b) Explain the concept of 'Network Planning in Rural Roads'.
c) A vehicle is moving on descending gradient of 5% on 2-lane divided road. Speed of overtaking vehicle is 70 kmph and reaction time is 3.5 seconds. Calculate Overtaking Sight Distance (OSD)

Q.3 Attempt any Two from the following. **20**

a) Explain special considerations for rural roads in hilly terrain.
b) Explain Soil investigations for low embankment, high embankment, cut sections, subgrade.
c) Explain uses of locally available materials for pavement construction.

Section – II

Q.4 Attempt any Two from the following. **20**

a) Explain various ***"Design parameters'*** for Pavement design in Rural Roads.
b) Explain procedure for the design of flexible pavement in Rural Roads.
c) Explain Construction of Earth (Subgrade &Embankment), Sub-base, Base course and surface course.

Q.5 Attempt any Two from the following. **20**

a) Explain Construction of ***lime fly ash bound.***
b) Explain Construction of dry lean fly ash concrete, cement stabilized fly ash.
c) Explain maintenance of paved roads.

SLR-BD-352

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
TQM and MIS in Civil Engineering (BTN01813)

Day & Date: Friday, 30-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. **20**

1) A key difference between data and information is: _____.
a) Data is processed, information is raw
b) Data is meaningful, information is not
c) Data is raw, information is processed and meaningful
d) There is no difference

2) What does the acronym ERP stand for in a business context?
a) Employee Resource Planning
b) Enterprise Resource Planning
c) External Resource Protocol
d) Efficiency Reporting Program

3) TQM & ISO both focuses on _____.
a) Customer b) Employee
c) Supplier d) All of the above

4) ISO 9000 seeks standardization in terms of _____.
a) products b) production procedures
c) suppliers' specifications d) procedures to manage quality

5) The person who ensures that systems are developed on time, within budget, and with acceptable quality is a _____.
a) systems designer b) project manager
c) systems owner d) systems builder

6) An _____ is a set of processes and procedures that transform data into information and knowledge.
a) Information system b) Knowledge system
c) Database system d) Computer system

7) The focal point of all quality control should be: _____.
a) Price focus b) Cost Focus
c) Customer Focus d) Manufacturing Focus

8) A company wants to measure the length of a fan as a part of its quality control exercise. The type of data collected will be: _____.
a) Variable b) Attribute
c) Cannot be determined d) None of the above

9) _____ are used in six sigma.
a) black belt
b) green belt
c) both black belt and green belt
d) None of the above

10) _____ is any business-related exchange such as payments to employees, sales to customers, or payments to suppliers.
a) Data b) E-commerce
c) A transaction d) Input

11) In a company _____ is the centre which consists of all processing activities.
a) Data b) Production
c) Information d) Sale

12) _____ models to analysis a problem and provides possible solution for management evaluation.
a) Decision b) Standard
c) Structural d) Periodic

13) _____ is a standard that companies compare themselves to and strive to be that good.
a) Production b) Benchmarking
c) Structuring d) Formatting

14) Meaning of 'Seiri' IN 5s technique is _____.
a) Short b) Shine
c) Structured d) Straighten

15) Basically, _____ is raw material that is to be processed, while _____ is the processed data.
a) information, data b) data, information
c) format, detailing d) goods, services

16) Sigma (σ) is a Greek letter standing for _____.
a) Standard deviation b) Probability
c) Coefficient of Friction d) Currency

17) To reach a level of four Sigma, we can only have _____ defects per 1 million productions.

a) 6210 b) 66807
c) 308,537 d) 690,000

18) In quality management, ISO means _____.

a) Information Static Operator
b) International Organization for Standardization
c) Indian Standard Organization
d) Intelligent Office of Soviet

19) Meaning of 'Seiso' in 5s technique is _____.

a) Short b) Shine
c) Structured d) Straighten

20) Which of the following is NOT a core principle of Total Quality Management (TQM)?

a) Continuous improvement b) Customer focus
c) Defect detection d) Employee involvement

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
TQM and MIS in Civil Engineering (BTN01813)

Day & Date: Friday, 30-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any Four from the following. **40**

a) What is "Six Sigma"? Explain with statical view & relating sigma to defect level.
b) What is "Kaizen"? Explain with 7-key concepts & 5s Methodology.
c) Differentiate between "Total Quality Control" and "Total Quality Management".
d) Explain all 8 Principles of Quality Management.
e) What is Checklist? Enlist it for "Concreting", "Formwork" & "RCC Steelwork".
f) Explain Quality manual along with its importance, contents & documentation.

Section – II

Q.3 Attempt any Four from the following. **40**

a) Define data and information. What are the major differences between them? Explain with the help of suitable example.
b) What data information is required for planning of new road corridor between two megacities?
c) Describe the key steps involved in developing an MIS for a construction organization specializing in building works.
What specific challenges and considerations should be addressed during the implementation phase?
d) Explain Decision Support System with 'purpose' & 'components'.
e) How do these technologies contribute to efficient data processing and information flow within the organization?
f) Explain the various management subsystems of an MIS. How can the structure of an MIS be tailored to support different levels of management activity, such as operational control, management control, and strategic planning within a construction organization?

SLR-BD-352

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
TQM and MIS in Civil Engineering (BTN01813)

Day & Date: Friday, 30-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. 20

1) An _____ is a set of processes and procedures that transform data into information and knowledge.
a) Information system b) Knowledge system
c) Database system d) Computer system

2) The focal point of all quality control should be: _____.
a) Price focus b) Cost Focus
c) Customer Focus d) Manufacturing Focus

3) A company wants to measure the length of a fan as a part of its quality control exercise. The type of data collected will be: _____.
a) Variable b) Attribute
c) Cannot be determined d) None of the above

4) _____ are used in six sigma.
a) black belt
b) green belt
c) both black belt and green belt
d) None of the above

5) _____ is any business-related exchange such as payments to employees, sales to customers, or payments to suppliers.
a) Data b) E-commerce
c) A transaction d) Input

6) In a company _____ is the centre which consists of all processing activities.
a) Data b) Production
c) Information d) Sale

7) _____ models to analysis a problem and provides possible solution for management evaluation.

a) Decision b) Standard
c) Structural d) Periodic

8) _____ is a standard that companies compare themselves to and strive to be that good.

a) Production b) Benchmarking
c) Structuring d) Formatting

9) Meaning of 'Seiri' IN 5s technique is _____.

a) Short b) Shine
c) Structured d) Straighten

10) Basically, _____ is raw material that is to be processed, while _____ is the processed data.

a) information, data b) data, information
c) format, detailing d) goods, services

11) Sigma (σ) is a Greek letter standing for _____.

a) Standard deviation b) Probability
c) Coefficient of Friction d) Currency

12) To reach a level of four Sigma, we can only have _____ defects per 1 million productions.

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c) 308,537 d) 690,000

13) In quality management, ISO means _____.

a) Information Static Operator
b) International Organization for Standardization
c) Indian Standard Organization
d) Intelligent Office of Soviet

14) Meaning of 'Seiso' in 5s technique is _____.

a) Short b) Shine
c) Structured d) Straighten

15) Which of the following is NOT a core principle of Total Quality Management (TQM)?

a) Continuous improvement b) Customer focus
c) Defect detection d) Employee involvement

16) A key difference between data and information is: _____.

a) Data is processed, information is raw
b) Data is meaningful, information is not
c) Data is raw, information is processed and meaningful
d) There is no difference

17) What does the acronym ERP stand for in a business context?
a) Employee Resource Planning
b) Enterprise Resource Planning
c) External Resource Protocol
d) Efficiency Reporting Program

18) TQM & ISO both focuses on _____.
a) Customer
b) Employee
c) Supplier
d) All of the above

19) ISO 9000 seeks standardization in terms of _____.
a) products
b) production procedures
c) suppliers' specifications
d) procedures to manage quality

20) The person who ensures that systems are developed on time, within budget, and with acceptable quality is a _____.
a) systems designer
b) project manager
c) systems owner
d) systems builder

SLR-BD-352

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
TQM and MIS in Civil Engineering (BTN01813)

Day & Date: Friday, 30-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any Four from the following. **40**

a) What is "Six Sigma"? Explain with statical view & relating sigma to defect level.
b) What is "Kaizen"? Explain with 7-key concepts & 5s Methodology.
c) Differentiate between "Total Quality Control" and "Total Quality Management".
d) Explain all 8 Principles of Quality Management.
e) What is Checklist? Enlist it for "Concreting", "Formwork" & "RCC Steelwork".
f) Explain Quality manual along with its importance, contents & documentation.

Section – II

Q.3 Attempt any Four from the following. **40**

a) Define data and information. What are the major differences between them? Explain with the help of suitable example.
b) What data information is required for planning of new road corridor between two megacities?
c) Describe the key steps involved in developing an MIS for a construction organization specializing in building works.
What specific challenges and considerations should be addressed during the implementation phase?
d) Explain Decision Support System with 'purpose' & 'components'.
e) How do these technologies contribute to efficient data processing and information flow within the organization?
f) Explain the various management subsystems of an MIS. How can the structure of an MIS be tailored to support different levels of management activity, such as operational control, management control, and strategic planning within a construction organization?

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
TQM and MIS in Civil Engineering (BTN01813)

Day & Date: Friday, 30-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. **20**

1) In a company _____ is the centre which consists of all processing activities.
a) Data b) Production
c) Information d) Sale

2) _____ models to analysis a problem and provides possible solution for management evaluation.
a) Decision b) Standard
c) Structural d) Periodic

3) _____ is a standard that companies compare themselves to and strive to be that good.
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4) Meaning of 'Seiri' IN 5s technique is _____.
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5) Basically, _____ is raw material that is to be processed, while _____ is the processed data.
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a) 6210 b) 66807
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8) In quality management, ISO means _____.

a) Information Static Operator
b) International Organization for Standardization
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9) Meaning of 'Seiso' in 5s technique is _____.

a) Short b) Shine
c) Structured d) Straighten

10) Which of the following is NOT a core principle of Total Quality Management (TQM)?

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11) A key difference between data and information is: _____.

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12) What does the acronym ERP stand for in a business context?

a) Employee Resource Planning
b) Enterprise Resource Planning
c) External Resource Protocol
d) Efficiency Reporting Program

13) TQM & ISO both focuses on _____.

a) Customer b) Employee
c) Supplier d) All of the above

14) ISO 9000 seeks standardization in terms of _____.

a) products b) production procedures
c) suppliers' specifications d) procedures to manage quality

15) The person who ensures that systems are developed on time, within budget, and with acceptable quality is a _____.

a) systems designer b) project manager
c) systems owner d) systems builder

16) An _____ is a set of processes and procedures that transform data into information and knowledge.

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c) Database system d) Computer system

17) The focal point of all quality control should be: _____.

a) Price focus
b) Cost Focus
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d) Manufacturing Focus

18) A company wants to measure the length of a fan as a part of its quality control exercise. The type of data collected will be: _____.

a) Variable
b) Attribute
c) Cannot be determined
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19) _____ are used in six sigma.

a) black belt
b) green belt
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20) _____ is any business-related exchange such as payments to employees, sales to customers, or payments to suppliers.

a) Data
b) E-commerce
c) A transaction
d) Input

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
TQM and MIS in Civil Engineering (BTN01813)

Day & Date: Friday, 30-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

Q.2 Attempt any Four from the following. **40**

a) What is "Six Sigma"? Explain with statical view & relating sigma to defect level.
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e) What is Checklist? Enlist it for "Concreting", "Formwork" & "RCC Steelwork".
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Section – II

Q.3 Attempt any Four from the following. **40**

a) Define data and information. What are the major differences between them? Explain with the help of suitable example.
b) What data information is required for planning of new road corridor between two megacities?
c) Describe the key steps involved in developing an MIS for a construction organization specializing in building works.
What specific challenges and considerations should be addressed during the implementation phase?
d) Explain Decision Support System with 'purpose' & 'components'.
e) How do these technologies contribute to efficient data processing and information flow within the organization?
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SLR-BD-352

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
TQM and MIS in Civil Engineering (BTN01813)

Day & Date: Friday, 30-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks: 20

Q.1 Choose the correct Answer. **20**

1) Sigma (σ) is a Greek letter standing for _____.
a) Standard deviation b) Probability
c) Coefficient of Friction d) Currency

2) To reach a level of four Sigma, we can only have _____ defects per 1 million productions.
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4) Meaning of 'Seiso' in 5s technique is _____.
a) Short b) Shine
c) Structured d) Straighten

5) Which of the following is NOT a core principle of Total Quality Management (TQM)?
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d) Efficiency Reporting Program

8) TQM & ISO both focuses on _____.
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c) Supplier
d) All of the above

9) ISO 9000 seeks standardization in terms of _____.
a) products
b) production procedures
c) suppliers' specifications
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10) The person who ensures that systems are developed on time, within budget, and with acceptable quality is a _____.
a) systems designer
b) project manager
c) systems owner
d) systems builder

11) An _____ is a set of processes and procedures that transform data into information and knowledge.
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b) Attribute
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c) Information
d) Sale

17) _____ models to analysis a problem and provides possible solution for management evaluation.

a) Decision
b) Standard
c) Structural
d) Periodic

18) _____ is a standard that companies compare themselves to and strive to be that good.

a) Production
b) Benchmarking
c) Structuring
d) Formatting

19) Meaning of 'Seiri' IN 5s technique is _____.

a) Short
b) Shine
c) Structured
d) Straighten

20) Basically, _____ is raw material that is to be processed, while _____ is the processed data.

a) information, data
b) data, information
c) format, detailing
d) goods, services

SLR-BD-352

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
TQM and MIS in Civil Engineering (BTN01813)

Day & Date: Friday, 30-05-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any Four from the following. **40**

a) What is "Six Sigma"? Explain with statical view & relating sigma to defect level.
b) What is "Kaizen"? Explain with 7-key concepts & 5s Methodology.
c) Differentiate between "Total Quality Control" and "Total Quality Management".
d) Explain all 8 Principles of Quality Management.
e) What is Checklist? Enlist it for "Concreting", "Formwork" & "RCC Steelwork".
f) Explain Quality manual along with its importance, contents & documentation.

Section – II

Q.3 Attempt any Four from the following. **40**

a) Define data and information. What are the major differences between them? Explain with the help of suitable example.
b) What data information is required for planning of new road corridor between two megacities?
c) Describe the key steps involved in developing an MIS for a construction organization specializing in building works.
What specific challenges and considerations should be addressed during the implementation phase?
d) Explain Decision Support System with 'purpose' & 'components'.
e) How do these technologies contribute to efficient data processing and information flow within the organization?
f) Explain the various management subsystems of an MIS. How can the structure of an MIS be tailored to support different levels of management activity, such as operational control, management control, and strategic planning within a construction organization?

SLR-BD-353

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Planning for Sustainable Development (BTN01814)

Day & Date: Friday, 30-05-2025 Max. Marks: 100
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 1 is compulsory in section I, and solve any four questions from the remaining.
2) Question no. 7 is compulsory in section II, and solve any four questions from the remaining.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.

SECTION – I

Q.1	Explain the concept of sustainable development. How does it balance environmental, social, and economic considerations?	**10**
Q.2	Critically evaluate the concept of sustainable development. What are its limitations and criticisms in addressing global challenges?	**10**
Q.3	What are the key strategies for promoting sustainable development? Discuss their significance and provide examples of their application.	**10**
Q.4	Why is there resistance to the concept of sustainable development? Discuss the socio-political and economic factors that contribute to this resistance.	**10**
Q.5	Explain the role of innovation in achieving sustainable development. How can technological and social innovations contribute to sustainability goals?	**10**
Q.6	What are the key strategies for environmental management in the context of sustainable development? How do they address environmental challenges?	**10**

SECTION – II

Q.7	What are the key drivers of societal transformation towards sustainable development? How do social, cultural, and economic factors influence these changes?	**10**
Q.8	What are the major challenges in achieving societal transformations for sustainable development?	**10**
Q.9	Provide examples of successful societal transformations that have contributed to sustainable development. What lessons can be drawn from these cases?	**10**
Q.10	Why is capacity development important for fostering innovation in sustainable development? Discuss its role in building skills, resources, and institutions.	**10**
Q.11	What strategies can be employed to enhance capacity development for innovation? Provide examples of successful implementation.	**10**
Q.12	What are the main barriers to capacity development for innovation in sustainable development? How can they be addressed?	**10**

Seat No.	

Set P

T.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Design of Machine Elements (BTN02501)

Day & Date: Saturday, 17-05-2024 Max. Marks: 70
Time: 10:00 PM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The maximum shear stress in spring wire is induced at ____
a) inner surface of coil b) outer surface of coil
c) central surface of coil d) end coils

2) The function of spring is ____
a) to absorb shock b) to generate energy
c) to measure force d) to measure vibration

3) Stress concentration in static loading is more serious in ____
a) ductile material
b) brittle material
c) equally serious in both material
d) depends on other factor

4) The causes of stress concentration is ____
a) variation in material properties
b) variation in cross-sectional area
c) variation of factor of safety
d) all above

5) In case of repeated load which of the following is correct?
a) $\sigma_{\min} = 0$ b) $\sigma_{m} = 0$
c) $\sigma_{\max} = 0$ d) $\sigma_{a} = 0$

6) The type of spring used in door hinges is ____
a) helical extension spring b) multi leaf spring
c) spiral spring d) helical torsion spring

7) In lever terminology, 'mechanical advantage' is the ratio of ____
a) load to effort
b) effort to load
c) load arm to effort arm
d) effort arm to load arm

8) A cotter joint is used to transmit ____
a) axial tensile force only
b) axial tensile or compressive force
c) axial compressive force only
d) combined bending and torsional moment

9) A key made from a cylindrical disc having segmental cross-section, is known as ____
a) Feather key
b) Gib head key
c) Woodruff key
d) Flat saddle key

10) The standard width for square or flat key in terms of shaft diameter (d) is _____
a) d
b) d/2
c) d/4
d) d/8

11) A muff coupling is ____
a) rigid coupling
b) flexible coupling
c) shock absorbing coupling
d) none of the above

12) If the bolts are subjected to an eccentric load with the bolt axes perpendicular to the plane of line of application of load, every bolt will be subjected to ____
a) primary & secondary shear forces
b) primary shear force & tensile force
c) primary shear force & compressive force
d) tensile force & secondary shear force

13) The optimum velocity for Dunlop flat belts is approximately ____.
a) 5 m/s
b) 18 m/s
c) 50 m/s
d) 30 m/s

14) Guest's theory is used for ____
a) Brittle materials
b) Ductile materials
c) Elastic materials
d) Plastic materials

Seat No.		Set	P

T.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Design of Machine Elements (BTN02501)

Day & Date: Saturday, 17-05-2024 Max. Marks: 56
Time: 10:00 PM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figure to right indicate full marks.
3) Use of Scientific calculator is allowed.
4) Assume additional suitable data if necessary and state it clearly.
5) Use university graph paper and semi-log paper if required.

Section – I

Q.2 Attempt the following questions:

a) Write and explain applications of Lever in engineering practice. **06**

b) Explain design procedure of Socket and Spigot cotter joint with necessary sketches. **08**

Q.3 Answer the following:

a) Explain Following terms **06**
i) Endurance Limit
ii) Notch Sensitivity
iii) Fatigue Failure

b) A rotating bar made of steel 45 C 8 having Sut = 630 Mpa is subjected to a completely reversed bending stress. The corrected endurance limit of bar is 315 Mpa. Calculate the fatigue strength of the bar for a life of 90000 cycles. Draw S-N diagram. **08**

Q.4 Answer the following:

a) Differentiate between Flat Belt and V-Belt Drive **06**

b) It is required to select a flat belt drive for a compressor running at 720 rpm driven by a 25 kW, 1440 rpm motor. The space is available for *a* centre distance of 3 m. The belt is open type. Assume a belt velocity of 18 m/s. The reference belt velocity may be taken as 5.08 m/s. Refer the data provided for flat belts. **08**

Section – II

Q.5 Answer the following:

a) What are the design considerations for casting. **06**

b) Design a Muff Coupling which is used to connect two steel shaft transmitting 40 Kw at 350 rpm. The material for the shaft and key is plain carbon steel for which allowable shear and crushing stresses may be taken as 40 Mpa and 80 Mpa respectively. The material for the muff is cast iron for which the allowable shear stress may be assumed as 15 Mpa. **08**

Q.6 Answer the following:

a) Explain different types of spring and their applications with neat sketches **06**

b) Design a helical spring for a spring loaded Ramsbottom safety valve for the following conditions **08**

Dia. of valve seat = 100 mm

Operating pressure = 1 N/ mm^2

Max. pressure when the valve blows off freely = 1.075 N/ mm^2

Max. lift the valve when the pressure rises from 1 to 1.075 N /mm^2 = 6 mm

Max. allowable stress = 400 N/mm^2

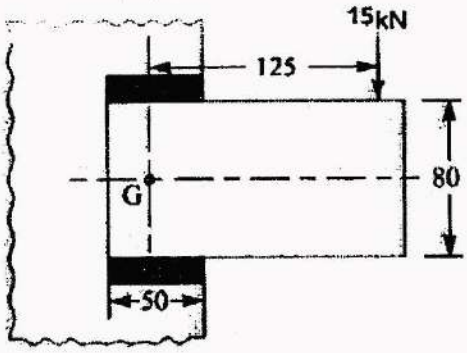
Modulus of rigidity = 84 KN/mm^2

Spring index = 5.5

Q.7 Answer the following:

a) Compare welded and bolted joint. **06**

b) A bracket carrying load of 15 KN is to welded as shown in figure. Find the size of weld required if the allowable shear stress is not be exceed 80 Mpa. **08**



Data for selection of Flat Belts

1) **Preferred diameters (in mm) of cast iron and mild steel pulleys are as below:**
100, 112, 125, 140, 160, 180, 200, 224, 250, 280, 315, 355, 400, 450, 500, 560, 630, 710, 800, 900, 1100.

2) Table for Load Correction Factor (Fa)

Type of load	F_a
i) Normal load	1.0
ii) Steady load e.g. centrifugal pumps, fans light machine tools, conveyors	1.2
iii) International load e.g. heavy duty fans, blowers, compressors, reciprocating pumps, line shaft, heavy duty machines	1.3
iv) Shock load e.g. vacuum pumps, rolling mills, hammers, grinders	1.5

3) Table for Arc of Contact Factor (Fa):

α_s (Degrees)	120	130	140	150	160	170	180	190	200
F_d	1.33	1.26	1.19	1.13	1.08	1.04	1.00	0.97	0.94

4) **Power transmitting capacities of belts:**
HI-SPEED: 0.0118 kW per mm width per ply
FORT: 0.0147 kW per mm width per ply

5) **Table for standard widths of belts (in mm):**

3-Ply	25	40	50	63	76					
4-Ply	40	44	50	63	76	90	100	112	125	152
5-Ply	76	100	112	125	152					
6-Ply	112	125	152	180	200					

Seat No.	

Set Q

T.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Design of Machine Elements (BTN02501)

Day & Date: Saturday, 17-05-2024 Max. Marks: 70
Time: 10:00 PM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) A cotter joint is used to transmit ____
a) axial tensile force only
b) axial tensile or compressive force
c) axial compressive force only
d) combined bending and torsional moment

2) A key made from a cylindrical disc having segmental cross-section, is known as ____
a) Feather key b) Gib head key
c) Woodruff key d) Flat saddle key

3) The standard width for square or flat key in terms of shaft diameter (d) is _____
a) d b) d/2
c) d/4 d) d/8

4) A muff coupling is ____
a) rigid coupling b) flexible coupling
c) shock absorbing coupling d) none of the above

5) If the bolts are subjected to an eccentric load with the bolt axes perpendicular to the plane of line of application of load, every bolt will be subjected to ____
a) primary & secondary shear forces
b) primary shear force & tensile force
c) primary shear force & compressive force
d) tensile force & secondary shear force

6) The optimum velocity for Dunlop flat belts is approximately ____.
a) 5 m/s b) 18 m/s
c) 50 m/s d) 30 m/s

7) Guest's theory is used for ____
a) Brittle materials b) Ductile materials
c) Elastic materials d) Plastic materials

8) The maximum shear stress in spring wire is induced at ____
a) inner surface of coil b) outer surface of coil
c) central surface of coil d) end coils

9) The function of spring is ____
a) to absorb shock b) to generate energy
c) to measure force d) to measure vibration

10) Stress concentration in static loading is more serious in ____
a) ductile material
b) brittle material
c) equally serious in both material
d) depends on other factor

11) The causes of stress concentration is ____
a) variation in material properties
b) variation in cross-sectional area
c) variation of factor of safety
d) all above

12) In case of repeated load which of the following is correct?
a) $\sigma_{\min} = 0$ b) $\sigma_{\mathrm{m}} = 0$
c) $\sigma_{\max} = 0$ d) $\sigma_{\mathrm{a}} = 0$

13) The type of spring used in door hinges is ____
a) helical extension spring b) multi leaf spring
c) spiral spring d) helical torsion spring

14) In lever terminology, 'mechanical advantage' is the ratio of ____
a) load to effort b) effort to load
c) load arm to effort arm d) effort arm to load arm

Seat No.		Set	Q

T.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Design of Machine Elements (BTN02501)

Day & Date: Saturday, 17-05-2024 Max. Marks: 56
Time: 10:00 PM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figure to right indicate full marks.
3) Use of Scientific calculator is allowed.
4) Assume additional suitable data if necessary and state it clearly.
5) Use university graph paper and semi-log paper if required.

Section – I

Q.2 Attempt the following questions:

a) Write and explain applications of Lever in engineering practice. **06**

b) Explain design procedure of Socket and Spigot cotter joint with necessary sketches. **08**

Q.3 Answer the following:

a) Explain Following terms **06**
i) Endurance Limit
ii) Notch Sensitivity
iii) Fatigue Failure

b) A rotating bar made of steel 45 C 8 having Sut = 630 Mpa is subjected to a completely reversed bending stress. The corrected endurance limit of bar is 315 Mpa. Calculate the fatigue strength of the bar for a life of 90000 cycles. Draw S-N diagram. **08**

Q.4 Answer the following:

a) Differentiate between Flat Belt and V-Belt Drive **06**

b) It is required to select a flat belt drive for a compressor running at 720 rpm driven by a 25 kW, 1440 rpm motor. The space is available for *a* centre distance of 3 m. The belt is open type. Assume a belt velocity of 18 m/s. The reference belt velocity may be taken as 5.08 m/s. Refer the data provided for flat belts. **08**

Section – II

Q.5 Answer the following:

a) What are the design considerations for casting. **06**

b) Design a Muff Coupling which is used to connect two steel shaft transmitting 40 Kw at 350 rpm. The material for the shaft and key is plain carbon steel for which allowable shear and crushing stresses may be taken as 40 Mpa and 80 Mpa respectively. The material for the muff is cast iron for which the allowable shear stress may be assumed as 15 Mpa. **08**

Q.6 Answer the following:

a) Explain different types of spring and their applications with neat sketches **06**

b) Design a helical spring for a spring loaded Ramsbottom safety valve for the following conditions **08**

Dia. of valve seat = 100 mm

Operating pressure = 1 N/ mm^2

Max. pressure when the valve blows off freely = 1.075 N/ mm^2

Max. lift the valve when the pressure rises from 1 to 1.075 N /mm^2 = 6 mm

Max. allowable stress = 400 N/mm^2

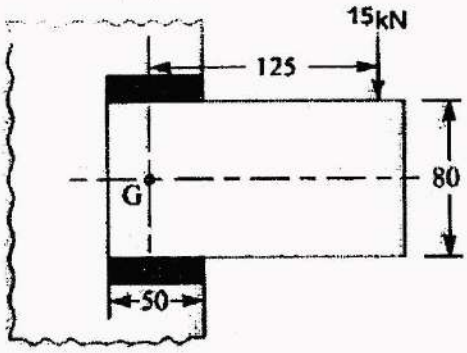
Modulus of rigidity = 84 KN/mm^2

Spring index = 5.5

Q.7 Answer the following:

a) Compare welded and bolted joint. **06**

b) A bracket carrying load of 15 KN is to welded as shown in figure. Find the size of weld required if the allowable shear stress is not be exceed 80 Mpa. **08**



Data for selection of Flat Belts

1) **Preferred diameters (in mm) of cast iron and mild steel pulleys are as below:**
100, 112, 125, 140, 160, 180, 200, 224, 250, 280, 315, 355, 400, 450, 500, 560, 630, 710, 800, 900, 1100.

2) Table for Load Correction Factor (Fa)

Type of load	F_a
i) Normal load	1.0
ii) Steady load e.g. centrifugal pumps, fans light machine tools, conveyors	1.2
iii) International load e.g. heavy duty fans, blowers, compressors, reciprocating pumps, line shaft, heavy duty machines	1.3
iv) Shock load e.g. vacuum pumps, rolling mills, hammers, grinders	1.5

3) Table for Arc of Contact Factor (Fa):

α_s (Degrees)	120	130	140	150	160	170	180	190	200
F_d	1.33	1.26	1.19	1.13	1.08	1.04	1.00	0.97	0.94

4) **Power transmitting capacities of belts:**
HI-SPEED: 0.0118 kW per mm width per ply
FORT: 0.0147 kW per mm width per ply

5) **Table for standard widths of belts (in mm):**

3-Ply	25	40	50	63	76					
4-Ply	40	44	50	63	76	90	100	112	125	152
5-Ply	76	100	112	125	152					
6-Ply	112	125	152	180	200					

Seat No.	

Set R

T.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Design of Machine Elements (BTN02501)

Day & Date: Saturday, 17-05-2024 Max. Marks: 70
Time: 10:00 PM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) A muff coupling is ____
a) rigid coupling b) flexible coupling
c) shock absorbing coupling d) none of the above

2) If the bolts are subjected to an eccentric load with the bolt axes perpendicular to the plane of line of application of load, every bolt will be subjected to ____
a) primary & secondary shear forces
b) primary shear force & tensile force
c) primary shear force & compressive force
d) tensile force & secondary shear force

3) The optimum velocity for Dunlop flat belts is approximately ____.
a) 5 m/s b) 18 m/s
c) 50 m/s d) 30 m/s

4) Guest's theory is used for ____
a) Brittle materials b) Ductile materials
c) Elastic materials d) Plastic materials

5) The maximum shear stress in spring wire is induced at ____
a) inner surface of coil b) outer surface of coil
c) central surface of coil d) end coils

6) The function of spring is ____
a) to absorb shock b) to generate energy
c) to measure force d) to measure vibration

7) Stress concentration in static loading is more serious in ____
a) ductile material
b) brittle material
c) equally serious in both material
d) depends on other factor

8) The causes of stress concentration is ____
a) variation in material properties
b) variation in cross-sectional area
c) variation of factor of safety
d) all above

9) In case of repeated load which of the following is correct?
a) $\sigma_{\min} = 0$ b) $\sigma_{\mathrm{m}} = 0$
c) $\sigma_{\max} = 0$ d) $\sigma_{\mathrm{a}} = 0$

10) The type of spring used in door hinges is ____
a) helical extension spring b) multi leaf spring
c) spiral spring d) helical torsion spring

11) In lever terminology, 'mechanical advantage' is the ratio of ____
a) load to effort b) effort to load
c) load arm to effort arm d) effort arm to load arm

12) A cotter joint is used to transmit ____
a) axial tensile force only
b) axial tensile or compressive force
c) axial compressive force only
d) combined bending and torsional moment

13) A key made from a cylindrical disc having segmental cross-section, is known as ____
a) Feather key b) Gib head key
c) Woodruff key d) Flat saddle key

14) The standard width for square or flat key in terms of shaft diameter (d) is _____
a) d b) d/2
c) d/4 d) d/8

Seat No.		Set	R

T.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Design of Machine Elements (BTN02501)

Day & Date: Saturday, 17-05-2024 Max. Marks: 56
Time: 10:00 PM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figure to right indicate full marks.
3) Use of Scientific calculator is allowed.
4) Assume additional suitable data if necessary and state it clearly.
5) Use university graph paper and semi-log paper if required.

Section – I

Q.2 Attempt the following questions:

a) Write and explain applications of Lever in engineering practice. **06**

b) Explain design procedure of Socket and Spigot cotter joint with necessary sketches. **08**

Q.3 Answer the following:

a) Explain Following terms **06**
i) Endurance Limit
ii) Notch Sensitivity
iii) Fatigue Failure

b) A rotating bar made of steel 45 C 8 having Sut = 630 Mpa is subjected to a completely reversed bending stress. The corrected endurance limit of bar is 315 Mpa. Calculate the fatigue strength of the bar for a life of 90000 cycles. Draw S-N diagram. **08**

Q.4 Answer the following:

a) Differentiate between Flat Belt and V-Belt Drive **06**

b) It is required to select a flat belt drive for a compressor running at 720 rpm driven by a 25 kW, 1440 rpm motor. The space is available for *a* centre distance of 3 m. The belt is open type. Assume a belt velocity of 18 m/s. The reference belt velocity may be taken as 5.08 m/s. Refer the data provided for flat belts. **08**

Section – II

Q.5 Answer the following:

a) What are the design considerations for casting. **06**

b) Design a Muff Coupling which is used to connect two steel shaft transmitting 40 Kw at 350 rpm. The material for the shaft and key is plain carbon steel for which allowable shear and crushing stresses may be taken as 40 Mpa and 80 Mpa respectively. The material for the muff is cast iron for which the allowable shear stress may be assumed as 15 Mpa. **08**

Q.6 Answer the following:

a) Explain different types of spring and their applications with neat sketches **06**

b) Design a helical spring for a spring loaded Ramsbottom safety valve for the following conditions **08**

Dia. of valve seat = 100 mm

Operating pressure = 1 N/ mm^2

Max. pressure when the valve blows off freely = 1.075 N/ mm^2

Max. lift the valve when the pressure rises from 1 to 1.075 N /mm^2 = 6 mm

Max. allowable stress = 400 N/mm^2

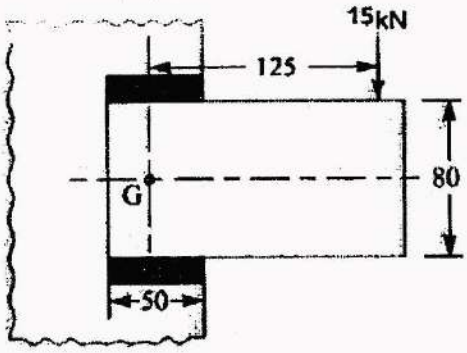
Modulus of rigidity = 84 KN/mm^2

Spring index = 5.5

Q.7 Answer the following:

a) Compare welded and bolted joint. **06**

b) A bracket carrying load of 15 KN is to welded as shown in figure. Find the size of weld required if the allowable shear stress is not be exceed 80 Mpa. **08**



Data for selection of Flat Belts

1) **Preferred diameters (in mm) of cast iron and mild steel pulleys are as below:**
100, 112, 125, 140, 160, 180, 200, 224, 250, 280, 315, 355, 400, 450, 500, 560, 630, 710, 800, 900, 1100.

2) Table for Load Correction Factor (Fa)

Type of load	F_a
i) Normal load	1.0
ii) Steady load e.g. centrifugal pumps, fans light machine tools, conveyors	1.2
iii) International load e.g. heavy duty fans, blowers, compressors, reciprocating pumps, line shaft, heavy duty machines	1.3
iv) Shock load e.g. vacuum pumps, rolling mills, hammers, grinders	1.5

3) Table for Arc of Contact Factor (Fa):

α_s (Degrees)	120	130	140	150	160	170	180	190	200
F_d	1.33	1.26	1.19	1.13	1.08	1.04	1.00	0.97	0.94

4) **Power transmitting capacities of belts:**
HI-SPEED: 0.0118 kW per mm width per ply
FORT: 0.0147 kW per mm width per ply

5) **Table for standard widths of belts (in mm):**

3-Ply	25	40	50	63	76					
4-Ply	40	44	50	63	76	90	100	112	125	152
5-Ply	76	100	112	125	152					
6-Ply	112	125	152	180	200					

Seat No.	

Set S

T.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Design of Machine Elements (BTN02501)

Day & Date: Saturday, 17-05-2024 Max. Marks: 70
Time: 10:00 PM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The type of spring used in door hinges is ____
a) helical extension spring b) multi leaf spring
c) spiral spring d) helical torsion spring

2) In lever terminology, 'mechanical advantage' is the ratio of ____
a) load to effort b) effort to load
c) load arm to effort arm d) effort arm to load arm

3) A cotter joint is used to transmit ____
a) axial tensile force only
b) axial tensile or compressive force
c) axial compressive force only
d) combined bending and torsional moment

4) A key made from a cylindrical disc having segmental cross-section, is known as ____
a) Feather key b) Gib head key
c) Woodruff key d) Flat saddle key

5) The standard width for square or flat key in terms of shaft diameter (d) is _____
a) d b) d/2
c) d/4 d) d/8

6) A muff coupling is ____
a) rigid coupling b) flexible coupling
c) shock absorbing coupling d) none of the above

7) If the bolts are subjected to an eccentric load with the bolt axes perpendicular to the plane of line of application of load, every bolt will be subjected to ____
a) primary & secondary shear forces
b) primary shear force & tensile force
c) primary shear force & compressive force
d) tensile force & secondary shear force

8) The optimum velocity for Dunlop flat belts is approximately ____.
a) 5 m/s
b) 18 m/s
c) 50 m/s
d) 30 m/s

9) Guest's theory is used for ____
a) Brittle materials
b) Ductile materials
c) Elastic materials
d) Plastic materials

10) The maximum shear stress in spring wire is induced at ____
a) inner surface of coil
b) outer surface of coil
c) central surface of coil
d) end coils

11) The function of spring is ____
a) to absorb shock
b) to generate energy
c) to measure force
d) to measure vibration

12) Stress concentration in static loading is more serious in ____
a) ductile material
b) brittle material
c) equally serious in both material
d) depends on other factor

13) The causes of stress concentration is ____
a) variation in material properties
b) variation in cross-sectional area
c) variation of factor of safety
d) all above

14) In case of repeated load which of the following is correct?
a) $\sigma_{\min} = 0$
b) $\sigma_{\mathrm{m}} = 0$
c) $\sigma_{\max} = 0$
d) $\sigma_{\mathrm{a}} = 0$

Seat No.		Set	S

T.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Design of Machine Elements (BTN02501)

Day & Date: Saturday, 17-05-2024 Max. Marks: 56
Time: 10:00 PM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figure to right indicate full marks.
3) Use of Scientific calculator is allowed.
4) Assume additional suitable data if necessary and state it clearly.
5) Use university graph paper and semi-log paper if required.

Section – I

Q.2 Attempt the following questions:

a) Write and explain applications of Lever in engineering practice. **06**

b) Explain design procedure of Socket and Spigot cotter joint with necessary sketches. **08**

Q.3 Answer the following:

a) Explain Following terms **06**
i) Endurance Limit
ii) Notch Sensitivity
iii) Fatigue Failure

b) A rotating bar made of steel 45 C 8 having Sut = 630 Mpa is subjected to a completely reversed bending stress. The corrected endurance limit of bar is 315 Mpa. Calculate the fatigue strength of the bar for a life of 90000 cycles. Draw S-N diagram. **08**

Q.4 Answer the following:

a) Differentiate between Flat Belt and V-Belt Drive **06**

b) It is required to select a flat belt drive for a compressor running at 720 rpm driven by a 25 kW, 1440 rpm motor. The space is available for *a* centre distance of 3 m. The belt is open type. Assume a belt velocity of 18 m/s. The reference belt velocity may be taken as 5.08 m/s. Refer the data provided for flat belts. **08**

Section – II

Q.5 Answer the following:

a) What are the design considerations for casting. **06**

b) Design a Muff Coupling which is used to connect two steel shaft transmitting 40 Kw at 350 rpm. The material for the shaft and key is plain carbon steel for which allowable shear and crushing stresses may be taken as 40 Mpa and 80 Mpa respectively. The material for the muff is cast iron for which the allowable shear stress may be assumed as 15 Mpa. **08**

Q.6 Answer the following:

a) Explain different types of spring and their applications with neat sketches **06**

b) Design a helical spring for a spring loaded Ramsbottom safety valve for the following conditions **08**

Dia. of valve seat = 100 mm

Operating pressure = 1 N/ mm^2

Max. pressure when the valve blows off freely = 1.075 N/ mm^2

Max. lift the valve when the pressure rises from 1 to 1.075 N /mm^2 = 6 mm

Max. allowable stress = 400 N/mm^2

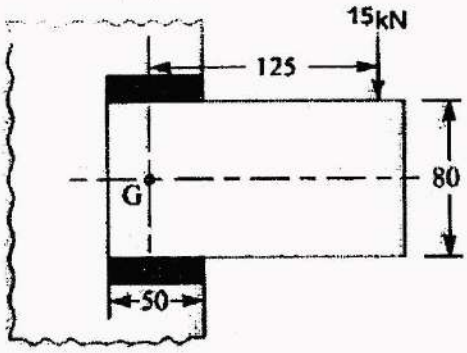
Modulus of rigidity = 84 KN/mm^2

Spring index = 5.5

Q.7 Answer the following:

a) Compare welded and bolted joint. **06**

b) A bracket carrying load of 15 KN is to welded as shown in figure. Find the size of weld required if the allowable shear stress is not be exceed 80 Mpa. **08**



Data for selection of Flat Belts

1) **Preferred diameters (in mm) of cast iron and mild steel pulleys are as below:**
100, 112, 125, 140, 160, 180, 200, 224, 250, 280, 315, 355, 400, 450, 500, 560, 630, 710, 800, 900, 1100.

2) Table for Load Correction Factor (Fa)

Type of load	F_a
i) Normal load	1.0
ii) Steady load e.g. centrifugal pumps, fans light machine tools, conveyors	1.2
iii) International load e.g. heavy duty fans, blowers, compressors, reciprocating pumps, line shaft, heavy duty machines	1.3
iv) Shock load e.g. vacuum pumps, rolling mills, hammers, grinders	1.5

3) Table for Arc of Contact Factor (Fa):

α_s (Degrees)	120	130	140	150	160	170	180	190	200
F_d	1.33	1.26	1.19	1.13	1.08	1.04	1.00	0.97	0.94

4) **Power transmitting capacities of belts:**
HI-SPEED: 0.0118 kW per mm width per ply
FORT: 0.0147 kW per mm width per ply

5) **Table for standard widths of belts (in mm):**

3-Ply	25	40	50	63	76					
4-Ply	40	44	50	63	76	90	100	112	125	152
5-Ply	76	100	112	125	152					
6-Ply	112	125	152	180	200					

Seat No.		Set	P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
CAD-CAM-CAE (BTN02502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in the first 30 minutes in the first 30 minutes in the answer book.
2) Each question carries one mark.
3) Figures to the right indicate foil marks.
4) Use of non-programmable calculators is allowed.
5) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select the correct alternative: **14**

1) Which of the following is not a part of CAD hardware?
a) Graphical display terminal b) Keyboards
c) Computer program d) Peripheral equipment

2) Integration of all business function of enterprise is ____.
a) CIM b) CAD CAM
c) CAE d) None of these

3) Which geometric transformation does not change the basic dimensions of the graphics objects transformed?
a) Scaling b) Transition
c) Rotation d) Both b) and c)

4) IGES is ____.
a) Neutral file format b) Data format
c) Operating system d) All of the above

5) For the modeling of sheet metal parts of a car body, which one of the following may be generally recommended?
a) Wireframe modeling b) Surface modeling
c) Solid modeling d) None of these

6) FANUC is the name of ____.
a) CNC tool b) CNC controller
c) CNC job holding device d) None of these

7) Which curve exhibits better local control?
a) Bezier b) Benazir
c) B-spline d) All of these

8) Among these which is Drawing interchange file format.
a) DXF b) UCS
c) CAD d) None of these

9) The process of building the structure matrix [K] from the element stiffness matrices [K]e is called, ____.
a) Assembly b) Decomposition
c) Interpolation d) Extrapolation

10) APT stands for ____.
a) Automatically programmed tool
b) Auto power tool
c) Automatically punched tape
d) All

11) CAPP involves use of computer in ____.
a) Planning the processes b) Determine cutting conditions
c) Setting time standards d) All of these

12) In case of closed loop control system ____ is used.
a) Servo motors b) Stepper motors
c) DC motors d) All of these

13) The predefined sequence of movement of machine parts in CNC, stored in MCU is called as ____.
a) Machine cycles b) Operation cycles
c) Canned cycles d) None of these

14) The equipment used for the measurement of tool-offsets is called as ____.
a) Vernier b) Micrometer
c) CMM d) Tool pre setter

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
CAD-CAM-CAE (BTN02502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from Section – I
2) Question no. 5 is compulsory and from the remaining attempt any one from Section – II
3) Figures to the right indicate full marks.
4) Use of non-programmable calculators is allowed.
5) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Solve the following:

a) Explain in detail the various functions graphics software can perform. **07**

b) What are geometric transformations? Discuss any two transformations in detail with neat sketches **07**

Q.3 Solve the following:

a) For triangle the vertices are P(15, 10), Q(35, 20), R(25, 30) is rotate in anticlockwise direction by 30° about point Q. Show the final result with figure. **08**

b) What is the finite element method and explain types of analysis? **06**

Q.4 Solve the following: (Any Three) **14**

a) List of latest FEA Software's & their applications in Domain

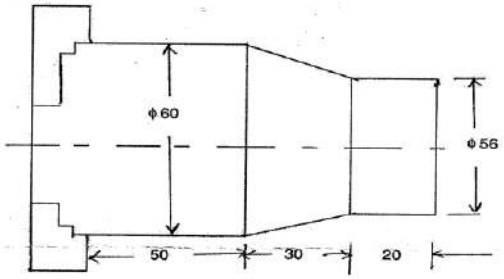
b) CSG and Boolean operations

c) CAPP

d) Parametric representation of curves

Section – II

Q.5 a) Prepare a part program for stepped component given below. The various details are **10**
Speed: 400 rpm feed rate: 200 mm/min
Work material: Mild steel Tool type: Right hand facing tool.



b) Write notes on "Subprogram and macros in NC programming" **04**

Q.6 **a)** What is the concept of DNC? Discuss its advantages and limitations. **07**

b) Discuss the importance of ATC and tool magazine in CNC m/c. **07**

Q.7 **Write Short Notes: (Any Three)** **14**

a) Drives used in NC and CNC

b) Tool magazine

c) Machine zero and work zero

d) open loop and closed loop control system

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
CAD-CAM-CAE (BTN02502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in the first 30 minutes in the first 30 minutes in the answer book.
2) Each question carries one mark.
3) Figures to the right indicate foil marks.
4) Use of non-programmable calculators is allowed.
5) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select the correct alternative: **14**

1) Among these which is Drawing interchange file format.
a) DXF b) UCS
c) CAD d) None of these

2) The process of building the structure matrix [K] from the element stiffness matrices [K]e is called, ____.
a) Assembly b) Decomposition
c) Interpolation d) Extrapolation

3) APT stands for ____.
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12) For the modeling of sheet metal parts of a car body, which one of the following may be generally recommended?
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13) FANUC is the name of ____.
a) CNC tool b) CNC controller
c) CNC job holding device d) None of these

14) Which curve exhibits better local control?
a) Bezier b) Benazir
c) B-spline d) All of these

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
CAD-CAM-CAE (BTN02502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from Section – I
2) Question no. 5 is compulsory and from the remaining attempt any one from Section – II
3) Figures to the right indicate full marks.
4) Use of non-programmable calculators is allowed.
5) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Solve the following:

a) Explain in detail the various functions graphics software can perform. **07**

b) What are geometric transformations? Discuss any two transformations in detail with neat sketches **07**

Q.3 Solve the following:

a) For triangle the vertices are P(15, 10), Q(35, 20), R(25, 30) is rotate in anticlockwise direction by 30° about point Q. Show the final result with figure. **08**

b) What is the finite element method and explain types of analysis? **06**

Q.4 Solve the following: (Any Three) **14**

a) List of latest FEA Software's & their applications in Domain

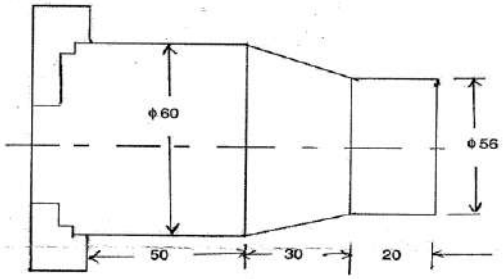
b) CSG and Boolean operations

c) CAPP

d) Parametric representation of curves

Section – II

Q.5 a) Prepare a part program for stepped component given below. The various details are **10**
Speed: 400 rpm feed rate: 200 mm/min
Work material: Mild steel Tool type: Right hand facing tool.



b) Write notes on "Subprogram and macros in NC programming" **04**

Q.6 **a)** What is the concept of DNC? Discuss its advantages and limitations. **07**

b) Discuss the importance of ATC and tool magazine in CNC m/c. **07**

Q.7 **Write Short Notes: (Any Three)** **14**

a) Drives used in NC and CNC

b) Tool magazine

c) Machine zero and work zero

d) open loop and closed loop control system

Seat No.		Set	R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
CAD-CAM-CAE (BTN02502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in the first 30 minutes in the first 30 minutes in the answer book.
2) Each question carries one mark.
3) Figures to the right indicate foil marks.
4) Use of non-programmable calculators is allowed.
5) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select the correct alternative: **14**

1) CAPP involves use of computer in ____.
a) Planning the processes b) Determine cutting conditions
c) Setting time standards d) All of these

2) In case of closed loop control system ____ is used.
a) Servo motors b) Stepper motors
c) DC motors d) All of these

3) The predefined sequence of movement of machine parts in CNC, stored in MCU is called as ____.
a) Machine cycles b) Operation cycles
c) Canned cycles d) None of these

4) The equipment used for the measurement of tool-offsets is called as ____.
a) Vernier b) Micrometer
c) CMM d) Tool pre setter

5) Which of the following is not a part of CAD hardware?
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13) The process of building the structure matrix [K] from the element stiffness matrices [K]e is called, ____.
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c) Interpolation d) Extrapolation

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a) Automatically programmed tool
b) Auto power tool
c) Automatically punched tape
d) All

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
CAD-CAM-CAE (BTN02502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from Section – I
2) Question no. 5 is compulsory and from the remaining attempt any one from Section – II
3) Figures to the right indicate full marks.
4) Use of non-programmable calculators is allowed.
5) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Solve the following:
a) Explain in detail the various functions graphics software can perform. **07**
b) What are geometric transformations? Discuss any two transformations in detail with neat sketches **07**

Q.3 Solve the following:
a) For triangle the vertices are P(15, 10), Q(35, 20), R(25, 30) is rotate in anticlockwise direction by 30° about point Q. Show the final result with figure. **08**
b) What is the finite element method and explain types of analysis? **06**

Q.4 Solve the following: (Any Three) **14**
a) List of latest FEA Software's & their applications in Domain
b) CSG and Boolean operations
c) CAPP
d) Parametric representation of curves

Section – II

Q.5 a) Prepare a part program for stepped component given below. The various details are **10**
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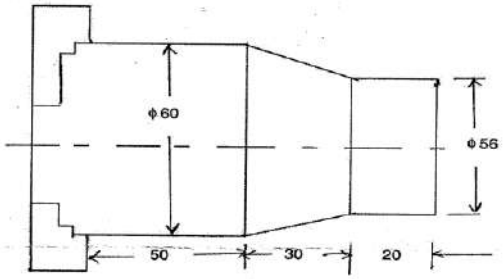

b) Write notes on "Subprogram and macros in NC programming" **04**

Q.6 **a)** What is the concept of DNC? Discuss its advantages and limitations. **07**

b) Discuss the importance of ATC and tool magazine in CNC m/c. **07**

Q.7 **Write Short Notes: (Any Three)** **14**

a) Drives used in NC and CNC

b) Tool magazine

c) Machine zero and work zero

d) open loop and closed loop control system

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
CAD-CAM-CAE (BTN02502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in the first 30 minutes in the first 30 minutes in the answer book.
2) Each question carries one mark.
3) Figures to the right indicate foil marks.
4) Use of non-programmable calculators is allowed.
5) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select the correct alternative: **14**

1) FANUC is the name of ____.
a) CNC tool b) CNC controller
c) CNC job holding device d) None of these

2) Which curve exhibits better local control?
a) Bezier b) Benazir
c) B-spline d) All of these

3) Among these which is Drawing interchange file format.
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4) The process of building the structure matrix [K] from the element stiffness matrices [K]e is called, ____.
a) Assembly b) Decomposition
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5) APT stands for ____.
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a) Neutral file format b) Data format
c) Operating system d) All of the above

14) For the modeling of sheet metal parts of a car body, which one of the following may be generally recommended?

a) Wireframe modeling b) Surface modeling
c) Solid modeling d) None of these

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
CAD-CAM-CAE (BTN02502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from Section – I
2) Question no. 5 is compulsory and from the remaining attempt any one from Section – II
3) Figures to the right indicate full marks.
4) Use of non-programmable calculators is allowed.
5) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Solve the following:

a) Explain in detail the various functions graphics software can perform. **07**

b) What are geometric transformations? Discuss any two transformations in detail with neat sketches **07**

Q.3 Solve the following:

a) For triangle the vertices are P(15, 10), Q(35, 20), R(25, 30) is rotate in anticlockwise direction by 30° about point Q. Show the final result with figure. **08**

b) What is the finite element method and explain types of analysis? **06**

Q.4 Solve the following: (Any Three) **14**

a) List of latest FEA Software's & their applications in Domain

b) CSG and Boolean operations

c) CAPP

d) Parametric representation of curves

Section – II

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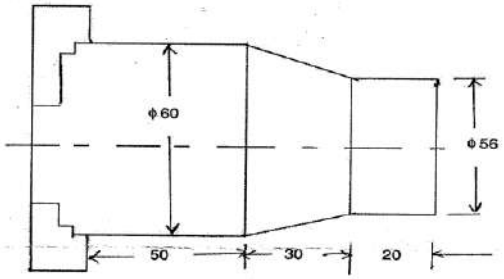

b) Write notes on "Subprogram and macros in NC programming" **04**

Q.6 **a)** What is the concept of DNC? Discuss its advantages and limitations. **07**

b) Discuss the importance of ATC and tool magazine in CNC m/c. **07**

Q.7 **Write Short Notes: (Any Three)** **14**

a) Drives used in NC and CNC

b) Tool magazine

c) Machine zero and work zero

d) open loop and closed loop control system

SLR-BD-356

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Metallurgy (BTN02503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Eutectic means complete solubility in _____.
a) Liquid state b) Solid state
c) Liquid & solid state d) Neither liquid nor solid

2) Which of the following constituent is observed as proeutectic as well as eutectoid constituent in Fe-Fe3C diagram?
a) Ferrite b) Austenite
c) Delta Iron d) Cementite

3) Which of the following steel cannot be hardened by heat treatment?
a) Austenitic stainless steel b) Ferritic stainless steel
c) Maraging Steel d) HCHC Steel

4) Which of the following steels are oil hardened?
a) HCHC steels b) HSLA steel
c) Hadfield 'Mn' steel d) HSS steel

5) Which of the following are proeutectoid constituents present in steels between A3 and A1 temperatures?
a) Ferrite b) Austenite
c) Cementite d) Pearlite

6) Which of the following will subjected to modification treatment?
a) Al-Si alloys b) Al-Cu Alloys
c) Cu-Al Alloys d) None of the above

7) Which of the following alloy is given modification treatment?
a) Al-Cu alloy b) Cu-Sn alloy
c) Al-Si alloy d) Cu-Al alloy

8) After homogenization, which of the following treatment is carried out?
a) Full Annealing b) Spherodising
c) Isothermal Annealing d) No Any Treatment

9) Which of the following treatment is based on isothermal transformation of austenite?
a) Annealing b) Normalizing
c) Patenting d) Tempering

10) Which of the following steel is non hardenable by HT?
a) HSLA Steel b) 304 St. Steel
c) HCHC Steel d) Maraging Steel

11) Powders of metal like Zn, Sn are manufactured by _____method.
a) atomization b) electrodeposition
c) reduction d) condensation of metal vapours

12) Which of the following test is recommended for detecting internal flaws in welded vessel?
a) Gamma ray radiography b) Ultrasonic test
c) Dye penetrant test d) Eddy current test

13) To measure hard ness of hardened and tempered steel, which of the following harness test is recommended?
a) Rockwell b) Brinell
c) Shore's scleroscope d) Vicker's

14) S-N curve is related to test/phenomenon.
a) Creep b) Fatigue
c) Tensile test d) Impact test

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Metallurgy (BTN02503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Out of remaining questions, attempt any **two** questions from each section.
2) Assume suitable data if required.
3) Use of scientific calculator is allowed.

Section – I

Q.2 Solve. **14**
a) Explain Gibbs phase rule & its significance in metallurgical systems.
b) Draw Fe-Fe3C diagram. Label all the phases & temperatures correctly.

Q.3 Solve. **14**
a) Explain classification of metallic materials.
b) What is stainless steel? Give types, compositions, properties & application.

Q.4 Solve. **14**
a) Draw microstructure of Grey Cast iron and S.G. iron with neat sketch.
b) Explain the application of nano materials.

Section – II

Q.5 Solve. **14**
a) Draw TTT diagram for eutectoid steel & label all phases and temperature.
b) Enlist various methods of hardening.

Q.6 Solve. **14**
a) What is the heat treatment? State objectives of annealing & types of annealing.
b) Explain various methods for powder compaction.

Q.7 Solve. **14**
a) Enlist various methods for powder manufacturing in powder metallurgy.
b) Explain set up for ultrasonic test pointing out its advantages, limitation and application.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Metallurgy (BTN02503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) After homogenization, which of the following treatment is carried out?
a) Full Annealing b) Spherodising
c) Isothermal Annealing d) No Any Treatment

2) Which of the following treatment is based on isothermal transformation of austenite?
a) Annealing b) Normalizing
c) Patenting d) Tempering

3) Which of the following steel is non hardenable by HT?
a) HSLA Steel b) 304 St. Steel
c) HCHC Steel d) Maraging Steel

4) Powders of metal like Zn, Sn are manufactured by _____method.
a) atomization b) electrodeposition
c) reduction d) condensation of metal vapours

5) Which of the following test is recommended for detecting internal flaws in welded vessel?
a) Gamma ray radiography b) Ultrasonic test
c) Dye penetrant test d) Eddy current test

6) To measure hard ness of hardened and tempered steel, which of the following harness test is recommended?
a) Rockwell b) Brinell
c) Shore's scleroscope d) Vicker's

7) S-N curve is related to test/phenomenon.
a) Creep b) Fatigue
c) Tensile test d) Impact test

8) Eutectic means complete solubility in _____.

a) Liquid state b) Solid state
c) Liquid & solid state d) Neither liquid nor solid

9) Which of the following constituent is observed as proeutectic as well as eutectoid constituent in Fe-Fe3C diagram?

a) Ferrite b) Austenite
c) Delta Iron d) Cementite

10) Which of the following steel cannot be hardened by heat treatment?

a) Austenitic stainless steel b) Ferritic stainless steel
c) Maraging Steel d) HCHC Steel

11) Which of the following steels are oil hardened?

a) HCHC steels b) HSLA steel
c) Hadfield 'Mn' steel d) HSS steel

12) Which of the following are proeutectoid constituents present in steels between A3 and A1 temperatures?

a) Ferrite b) Austenite
c) Cementite d) Pearlite

13) Which of the following will subjected to modification treatment?

a) Al-Si alloys b) Al-Cu Alloys
c) Cu-Al Alloys d) None of the above

14) Which of the following alloy is given modification treatment?

a) Al-Cu alloy b) Cu-Sn alloy
c) Al-Si alloy d) Cu-AI alloy

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Metallurgy (BTN02503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Out of remaining questions, attempt any **two** questions from each section.
2) Assume suitable data if required.
3) Use of scientific calculator is allowed.

Section – I

Q.2 Solve. **14**
a) Explain Gibbs phase rule & its significance in metallurgical systems.
b) Draw Fe-Fe3C diagram. Label all the phases & temperatures correctly.

Q.3 Solve. **14**
a) Explain classification of metallic materials.
b) What is stainless steel? Give types, compositions, properties & application.

Q.4 Solve. **14**
a) Draw microstructure of Grey Cast iron and S.G. iron with neat sketch.
b) Explain the application of nano materials.

Section – II

Q.5 Solve. **14**
a) Draw TTT diagram for eutectoid steel & label all phases and temperature.
b) Enlist various methods of hardening.

Q.6 Solve. **14**
a) What is the heat treatment? State objectives of annealing & types of annealing.
b) Explain various methods for powder compaction.

Q.7 Solve. **14**
a) Enlist various methods for powder manufacturing in powder metallurgy.
b) Explain set up for ultrasonic test pointing out its advantages, limitation and application.

SLR-BD-356

Seat No.	

Set R

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Metallurgy (BTN02503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) Powders of metal like Zn, Sn are manufactured by _____method.
a) atomization b) electrodeposition
c) reduction d) condensation of metal vapours

2) Which of the following test is recommended for detecting internal flaws in welded vessel?
a) Gamma ray radiography b) Ultrasonic test
c) Dye penetrant test d) Eddy current test

3) To measure hard ness of hardened and tempered steel, which of the following harness test is recommended?
a) Rockwell b) Brinell
c) Shore's scleroscope d) Vicker's

4) S-N curve is related to test/phenomenon.
a) Creep b) Fatigue
c) Tensile test d) Impact test

5) Eutectic means complete solubility in _____.
a) Liquid state b) Solid state
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6) Which of the following constituent is observed as proeutectic as well as eutectoid constituent in Fe-Fe3C diagram?
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c) Delta Iron d) Cementite

7) Which of the following steel cannot be hardened by heat treatment?
a) Austenitic stainless steel b) Ferritic stainless steel
c) Maraging Steel d) HCHC Steel

8) Which of the following steels are oil hardened?
a) HCHC steels b) HSLA steel
c) Hadfield 'Mn' steel d) HSS steel

9) Which of the following are proeutectoid constituents present in steels between A3 and A1 temperatures?
a) Ferrite b) Austenite
c) Cementite d) Pearlite

10) Which of the following will subjected to modification treatment?
a) Al-Si alloys b) Al-Cu Alloys
c) Cu-Al Alloys d) None of the above

11) Which of the following alloy is given modification treatment?
a) Al-Cu alloy b) Cu-Sn alloy
c) Al-Si alloy d) Cu-AI alloy

12) After homogenization, which of the following treatment is carried out?
a) Full Annealing b) Spherodising
c) Isothermal Annealing d) No Any Treatment

13) Which of the following treatment is based on isothermal transformation of austenite?
a) Annealing b) Normalizing
c) Patenting d) Tempering

14) Which of the following steel is non hardenable by HT?
a) HSLA Steel b) 304 St. Steel
c) HCHC Steel d) Maraging Steel

SLR-BD-356

Seat No.	

Set R

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Metallurgy (BTN02503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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2) Assume suitable data if required.
3) Use of scientific calculator is allowed.

Section – I

Q.2 Solve. **14**
a) Explain Gibbs phase rule & its significance in metallurgical systems.
b) Draw Fe-Fe3C diagram. Label all the phases & temperatures correctly.

Q.3 Solve. **14**
a) Explain classification of metallic materials.
b) What is stainless steel? Give types, compositions, properties & application.

Q.4 Solve. **14**
a) Draw microstructure of Grey Cast iron and S.G. iron with neat sketch.
b) Explain the application of nano materials.

Section – II

Q.5 Solve. **14**
a) Draw TTT diagram for eutectoid steel & label all phases and temperature.
b) Enlist various methods of hardening.

Q.6 Solve. **14**
a) What is the heat treatment? State objectives of annealing & types of annealing.
b) Explain various methods for powder compaction.

Q.7 Solve. **14**
a) Enlist various methods for powder manufacturing in powder metallurgy.
b) Explain set up for ultrasonic test pointing out its advantages, limitation and application.

Seat No.		Set	S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Metallurgy (BTN02503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following will subjected to modification treatment?
a) Al-Si alloys b) Al-Cu Alloys
c) Cu-Al Alloys d) None of the above

2) Which of the following alloy is given modification treatment?
a) Al-Cu alloy b) Cu-Sn alloy
c) Al-Si alloy d) Cu-AI alloy

3) After homogenization, which of the following treatment is carried out?
a) Full Annealing b) Spherodising
c) Isothermal Annealing d) No Any Treatment

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a) Annealing b) Normalizing
c) Patenting d) Tempering

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a) atomization b) electrodeposition
c) reduction d) condensation of metal vapours

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13) Which of the following steels are oil hardened?

a) HCHC steels b) HSLA steel
c) Hadfield 'Mn' steel d) HSS steel

14) Which of the following are proeutectoid constituents present in steels between A3 and A1 temperatures?

a) Ferrite b) Austenite
c) Cementite d) Pearlite

SLR-BD-356

Seat No.	

Set S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Metallurgy (BTN02503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Out of remaining questions, attempt any **two** questions from each section.
2) Assume suitable data if required.
3) Use of scientific calculator is allowed.

Section – I

Q.2 Solve. **14**
a) Explain Gibbs phase rule & its significance in metallurgical systems.
b) Draw Fe-Fe3C diagram. Label all the phases & temperatures correctly.

Q.3 Solve. **14**
a) Explain classification of metallic materials.
b) What is stainless steel? Give types, compositions, properties & application.

Q.4 Solve. **14**
a) Draw microstructure of Grey Cast iron and S.G. iron with neat sketch.
b) Explain the application of nano materials.

Section – II

Q.5 Solve. **14**
a) Draw TTT diagram for eutectoid steel & label all phases and temperature.
b) Enlist various methods of hardening.

Q.6 Solve. **14**
a) What is the heat treatment? State objectives of annealing & types of annealing.
b) Explain various methods for powder compaction.

Q.7 Solve. **14**
a) Enlist various methods for powder manufacturing in powder metallurgy.
b) Explain set up for ultrasonic test pointing out its advantages, limitation and application.

SLR-BD-357

Seat No.		Set	P

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Engineering (BTN02504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Productivity can be increased with _____.
a) When production increased with increase in input
b) The same production with increase in input
c) The rate of increase in output is more compared to rate of increase in input
d) Production decreased without increase in input

2) Gilbreth contributed to _____.
a) Time study b) Motion study
c) Project study d) Value engg.

3) Basic tool in work measurement is _____.
a) Graph paper b) Process chart
c) Planning chart d) D. Stopwatch

4) Method study symbol "Rectangle" indicates _____.
a) Storage b) Inspection
c) Operation d) Delay

5) Travel chart indicate _____.
a) Frequency of movement b) Repetitive movement
c) Manual movement d) Ideal time of man & machine

6) Micro-motion study is used in _____.
a) SIMO chart b) Activity chart
c) Flow process chart d) MTM

7) Critical examination is carried out through _____.
a) Cumulative stop watch b) Work sampling technique
c) Travel chart d) Questioning process

8) The most frequently used components are arranged in/at _____.
a) Left side b) Right side
c) Central location d) Any of the above

9) Work study involves _____.
a) Only method study
b) Only work measurement
c) Method study and work measurement
d) Only motion study

10) Normal Time = _____ x Performance rating / 100
a) Standard time b) Observed time
c) Allowance d) Cumulative time

11) Tool breakage is an example of _____.
a) Contingency allowance b) Personal allowance
c) Fatigue allowance d) Policy allowance

12) Which type of layout is used in automobile industry?
a) Product b) Process
c) Fixed d) Group

13) Merit rating is useful for _____.
a) Rewarding the person b) Industrial safety
c) Machine allowance d) Performance appraisal

14) Job evaluation is to determine _____.
a) Worth of Jobs b) Skill required by worker
c) Job assessment d) Relative value of job and worker

SLR-BD-357

Seat No.	

Set P

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Engineering (BTN02504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Answer the following questions.
a) Discuss functions and scope of Industrial Engineering. **07**
b) Elaborate the contribution of Gilbreth. **07**

Q.3 Answer the following questions.
a) Explain two handed process chart with help of a suitable. **05**
b) Explain significance and application of following: **09**
i) Therblig
ii) String Diagram
iii) Multiple activity chart

Q.4 Answer the following questions.
a) Explain types of systems and Man- Machine system. **07**
b) Explain various types of displays with neat sketch. **07**

Section – II

Q.5 Answer the following questions.
a) Define work measurement. What are their objectives? **08**
b) Explains reasons for breaking the job into elements for time study. **06**

Q.6 Answer the following questions.
a) Explain various types of layout. **06**
b) Compare product layout and process layout. **08**

Q.7 Answer the following questions.
a) Explain job evaluation procedure in detail. **07**
b) What is merit rating? Explain its different methods. **07**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Engineering (BTN02504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The most frequently used components are arranged in/at _____.
a) Left side b) Right side
c) Central location d) Any of the above

2) Work study involves _____.
a) Only method study
b) Only work measurement
c) Method study and work measurement
d) Only motion study

3) Normal Time = _____ x Performance rating / 100
a) Standard time b) Observed time
c) Allowance d) Cumulative time

4) Tool breakage is an example of _____.
a) Contingency allowance b) Personal allowance
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5) Which type of layout is used in automobile industry?
a) Product b) Process
c) Fixed d) Group

6) Merit rating is useful for _____.
a) Rewarding the person b) Industrial safety
c) Machine allowance d) Performance appraisal

7) Job evaluation is to determine _____.
a) Worth of Jobs b) Skill required by worker
c) Job assessment d) Relative value of job and worker

8) Productivity can be increased with _____.
a) When production increased with increase in input
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c) The rate of increase in output is more compared to rate of increase in input
d) Production decreased without increase in input

9) Gilbreth contributed to _____.
a) Time study b) Motion study
c) Project study d) Value engg.

10) Basic tool in work measurement is _____.
a) Graph paper b) Process chart
c) Planning chart d) D. Stopwatch

11) Method study symbol "Rectangle" indicates _____.
a) Storage b) Inspection
c) Operation d) Delay

12) Travel chart indicate _____.
a) Frequency of movement b) Repetitive movement
c) Manual movement d) Ideal time of man & machine

13) Micro-motion study is used in _____.
a) SIMO chart b) Activity chart
c) Flow process chart d) MTM

14) Critical examination is carried out through _____.
a) Cumulative stop watch b) Work sampling technique
c) Travel chart d) Questioning process

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Engineering (BTN02504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Answer the following questions.
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Q.3 Answer the following questions.
a) Explain two handed process chart with help of a suitable. **05**
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Q.4 Answer the following questions.
a) Explain types of systems and Man- Machine system. **07**
b) Explain various types of displays with neat sketch. **07**

Section – II

Q.5 Answer the following questions.
a) Define work measurement. What are their objectives? **08**
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Q.6 Answer the following questions.
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b) Compare product layout and process layout. **08**

Q.7 Answer the following questions.
a) Explain job evaluation procedure in detail. **07**
b) What is merit rating? Explain its different methods. **07**

Seat No.	

Set R

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Engineering (BTN02504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Tool breakage is an example of _____.
a) Contingency allowance b) Personal allowance
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2) Which type of layout is used in automobile industry?
a) Product b) Process
c) Fixed d) Group

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4) Job evaluation is to determine _____.
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13) Work study involves _____.
a) Only method study
b) Only work measurement
c) Method study and work measurement
d) Only motion study

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a) Standard time b) Observed time
c) Allowance d) Cumulative time

SLR-BD-357

Seat No.	

Set R

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Engineering (BTN02504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

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b) Explain significance and application of following: **09**
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ii) String Diagram
iii) Multiple activity chart

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a) Explain types of systems and Man- Machine system. **07**
b) Explain various types of displays with neat sketch. **07**

Section – II

Q.5 Answer the following questions.
a) Define work measurement. What are their objectives? **08**
b) Explains reasons for breaking the job into elements for time study. **06**

Q.6 Answer the following questions.
a) Explain various types of layout. **06**
b) Compare product layout and process layout. **08**

Q.7 Answer the following questions.
a) Explain job evaluation procedure in detail. **07**
b) What is merit rating? Explain its different methods. **07**

Seat No.		Set	S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Engineering (BTN02504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Micro-motion study is used in _____.
a) SIMO chart b) Activity chart
c) Flow process chart d) MTM

2) Critical examination is carried out through _____.
a) Cumulative stop watch b) Work sampling technique
c) Travel chart d) Questioning process

3) The most frequently used components are arranged in/at _____.
a) Left side b) Right side
c) Central location d) Any of the above

4) Work study involves _____.
a) Only method study
b) Only work measurement
c) Method study and work measurement
d) Only motion study

5) Normal Time = _____ x Performance rating / 100
a) Standard time b) Observed time
c) Allowance d) Cumulative time

6) Tool breakage is an example of _____.
a) Contingency allowance b) Personal allowance
c) Fatigue allowance d) Policy allowance

7) Which type of layout is used in automobile industry?
a) Product b) Process
c) Fixed d) Group

8) Merit rating is useful for _____.
a) Rewarding the person b) Industrial safety
c) Machine allowance d) Performance appraisal

9) Job evaluation is to determine _____.
a) Worth of Jobs b) Skill required by worker
c) Job assessment d) Relative value of job and worker

10) Productivity can be increased with _____.
a) When production increased with increase in input
b) The same production with increase in input
c) The rate of increase in output is more compared to rate of increase in input
d) Production decreased without increase in input

11) Gilbreth contributed to _____.
a) Time study b) Motion study
c) Project study d) Value engg.

12) Basic tool in work measurement is _____.
a) Graph paper b) Process chart
c) Planning chart d) D. Stopwatch

13) Method study symbol "Rectangle" indicates _____.
a) Storage b) Inspection
c) Operation d) Delay

14) Travel chart indicate _____.
a) Frequency of movement b) Repetitive movement
c) Manual movement d) Ideal time of man & machine

SLR-BD-357

Seat No.	

Set S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Engineering (BTN02504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Answer the following questions.
a) Discuss functions and scope of Industrial Engineering. **07**
b) Elaborate the contribution of Gilbreth. **07**

Q.3 Answer the following questions.
a) Explain two handed process chart with help of a suitable. **05**
b) Explain significance and application of following: **09**
i) Therblig
ii) String Diagram
iii) Multiple activity chart

Q.4 Answer the following questions.
a) Explain types of systems and Man- Machine system. **07**
b) Explain various types of displays with neat sketch. **07**

Section – II

Q.5 Answer the following questions.
a) Define work measurement. What are their objectives? **08**
b) Explains reasons for breaking the job into elements for time study. **06**

Q.6 Answer the following questions.
a) Explain various types of layout. **06**
b) Compare product layout and process layout. **08**

Q.7 Answer the following questions.
a) Explain job evaluation procedure in detail. **07**
b) What is merit rating? Explain its different methods. **07**

SLR-BD-358

Seat No.	

Set P

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Gas Turbines (BTN02514)

Day & Date: Thursday, 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 each question carries one marks.
2) Answer MCQ/Objective type question on Page No. 3 only. Don't forget to mention Q.P. Set (P/Q/R/S) on top of the page.
3) All the sub-questions in Q. No. 1 are compulsory for one mark each and every question has only one correct answer.
4) Answer cannot be changed once it is marked.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. 14

1) The primary application of gas turbines in aviation is due to their ____.
a) Compact size
b) Low fuel consumption
c) Ability to operate at high altitudes
d) Both A and C

2) The thermal efficiency of an ideal Brayton cycle increases with _____.
a) Increase in maximum cycle temperature
b) Decrease in pressure ratio
c) Increase in pressure ratio
d) None of the above

3) In a gas turbine cycle with regeneration, the thermal efficiency increases because _____.
a) The turbine work increases
b) The compressor work decreases
c) Heat input decreases
d) Heat rejected increases

4) A Brayton cycle operates with a pressure ratio of 6. The maximum and minimum temperatures are 1200 K and 300 K. Determine the thermal efficiency (y = 1.4).
a) 42.3% b) 50.6%
c) 45.1% d) 54.2%

5) The Mach angle is given by _____.
a) $\sin^{-1}(1/M)$ b) $\cos^{-1}(M)$
c) $\tan^{-1}(M)$ d) $\tan^{-1}(1/M)$

6) A convergent nozzle operates with an inlet pressure of 10 bar and outlet pressure of 5 bar. Calculate the exit Mach number. (y = 1.4)

a) 1.24 b) 0.95
c) 1.00 d) 0.84

7) The slip factor in a centrifugal compressor is defined as _____.

a) Ratio of actual velocity to theoretical velocity
b) Ratio of theoretical velocity to actual velocity
c) Difference between actual and theoretical velocity
d) None of the above

8) A centrifugal compressor with a blade speed of 300 m/s and outlet velocity of 150 m/s delivers a pressure rise of _____.

a) 45 kPa b) 60 kPa
c) 90 kPa d) 75 kPa

9) For an axial flow compressor, the velocity diagrams show _____.

a) Absolute and relative velocities of air
b) Absolute velocity only
c) Pressure distribution across stages
d) Temperature variation across stages

10) The main function of secondary air in a gas turbine combustion chamber is to _____.

a) Reduce NOx emissions b) Provide flame stability
c) Cool the turbine blades d) Ensure complete combustion

11) In a centrifugal compressor, the impeller blade width is designed to _____.

a) Reduce slip factor
b) Control mass flow rate
c) Increase the velocity of the fluid
d) Reduce pressure loss

12) A convergent-divergent nozzle accelerates the flow to supersonic speeds when the pressure ratio is _____.

a) Greater than the critical pressure ratio
b) Less than the critical pressure ratio
c) Equal to 1
d) Independent of the critical pressure ratio

13) Which of the following is a requirement for a gas turbine combustion chamber?

a) High temperature
b) Low-pressure drop
c) Efficient mixing of air and fuel
d) All of the above

14) The purpose of cooling turbine blades in a gas turbine is ____.

a) To increase the blade strength
b) To prevent corrosion
c) To maintain operational efficiency
d) To avoid blade failure due to overheating

SLR-BD-358

Seat No.	

Set P

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Gas Turbines (BTN02514)

Day & Date: Thursday, 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Use of a calculator is allowed.
3) Figures to the right indicate full marks.
4) Assume additional suitable data, if necessary and mention it clearly

Section – I

Q.2 Attempt any two questions. **14**

a) Explain the classification of gas turbines with examples.

b) Compare gas turbines with reciprocating I.C. engines and steam turbines.

c) A gas turbine plant operates on an ideal Brayton cycle. The compressor inlet temperature is 300 K, and the maximum cycle temperature is 1200 K. The plant operates with a pressure ratio of 8. The specific heat capacity for air is 1.005 kJ/kg K, and the ratio of specific heats for air (γ) is 1.4.
Determine the following:
1) The compressor work per kg of air.
2) The turbine work per kg of air.
3) The thermal efficiency of the cycle.
4) The net work output per kg of air.

d) Derive the expression for the optimum pressure ratio for maximum work output in a Brayton cycle.

Q.3 Attempt any two questions. **14**

a) Explain the concept of Mach number and its significance in gas turbine applications.

b) A gas turbine plant operates with a compressor inlet temperature of 300 K and a turbine inlet temperature of 1400 K. The plant has a pressure ratio of 10. The polytropic efficiency of the compressor is 0.88, and the polytropic efficiency of the turbine is 0.90. The calorific value of the fuel used in the plant is 43,000 kJ/kg. The specific heat capacity for air is 1.005 kJ/kg K, and for gases, it is 1.15 kJ/kg K. The ratio of specific heat is 1.4 for air and 1.33 for gases.
Determine the following:
1) The overall efficiency of the plant.
2) The specific output of the plant.
3) The fuel-to-air ratio
4) The specific fuel consumption (SFC)

c) Describe the methods used to improve the thermal efficiency and specific work output of a gas turbine cycle. Explain with the help of a diagram.

d) Explain the concept of isentropic flow in a nozzle and its significance.

SECTION II

Q.4 Attempt any two questions. **14**

a) Discuss the construction and working principle of a centrifugal compressor.

b) What are the key factors affecting the performance of centrifugal compressors? Explain the terms "slip factor" and "power input factor.

c) Explain the combustion process in a gas turbine. What are the different types of combustion chambers used?

d) Find the polytropic efficiency of an axial flow compressor from the following data:
The total head pressure ratio=4
Overall total head isentropic efficiency=85%
Total head inlet temperature=290K
The inlet and outlet air angles from the rotor blades of the above compressor are 10° and 45° respectively. The rotor and stator blades are symmetrical. The mean blade speed and axial velocity remain constant throughout the compressor. Assuming a value of 220 m/s for blade speed and the work done factor as 0.86, find the number of stages required.

Q.5 Attempt any two questions. **14**

a) Draw and explain the velocity diagrams for a centrifugal compressor.

b) Discuss the components and working principle of an axial flow compressor. Explain the significance of the degree of reaction.

c) A centrifugal compressor has a pressure ratio of 4:1 with an isentropic efficiency of 80% when running at 15000 rpm and inducing air at 293 K. Curved vanes at inlet give the air a prewhirl of 25° to the axial direction at all radii and the mean dia. of eye is 250 mm. The absolute air velocity at inlet is 150 m/s. Impeller tip dia. is 600 mm. Calculate the slip factor.

d) Explore the different types of combustion chambers used in gas turbines.

SLR-BD-358

Seat No.	

Set Q

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Gas Turbines (BTN02514)

Day & Date: Thursday, 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 each question carries one marks.
2) Answer MCQ/Objective type question on Page No. 3 only. Don't forget to mention Q.P. Set (P/Q/R/S) on top of the page.
3) All the sub-questions in Q. No. 1 are compulsory for one mark each and every question has only one correct answer.
4) Answer cannot be changed once it is marked.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) A centrifugal compressor with a blade speed of 300 m/s and outlet velocity of 150 m/s delivers a pressure rise of _____.
a) 45 kPa b) 60 kPa
c) 90 kPa d) 75 kPa

2) For an axial flow compressor, the velocity diagrams show _____.
a) Absolute and relative velocities of air
b) Absolute velocity only
c) Pressure distribution across stages
d) Temperature variation across stages

3) The main function of secondary air in a gas turbine combustion chamber is to _____.
a) Reduce NOx emissions b) Provide flame stability
c) Cool the turbine blades d) Ensure complete combustion

4) In a centrifugal compressor, the impeller blade width is designed to _____.
a) Reduce slip factor
b) Control mass flow rate
c) Increase the velocity of the fluid
d) Reduce pressure loss

5) A convergent-divergent nozzle accelerates the flow to supersonic speeds when the pressure ratio is _____.
a) Greater than the critical pressure ratio
b) Less than the critical pressure ratio
c) Equal to 1
d) Independent of the critical pressure ratio

6) Which of the following is a requirement for a gas turbine combustion chamber?
a) High temperature
b) Low-pressure drop
c) Efficient mixing of air and fuel
d) All of the above

7) The purpose of cooling turbine blades in a gas turbine is ____.
a) To increase the blade strength
b) To prevent corrosion
c) To maintain operational efficiency
d) To avoid blade failure due to overheating

8) The primary application of gas turbines in aviation is due to their ____.
a) Compact size
b) Low fuel consumption
c) Ability to operate at high altitudes
d) Both A and C

9) The thermal efficiency of an ideal Brayton cycle increases with _____.
a) Increase in maximum cycle temperature
b) Decrease in pressure ratio
c) Increase in pressure ratio
d) None of the above

10) In a gas turbine cycle with regeneration, the thermal efficiency increases because _____.
a) The turbine work increases
b) The compressor work decreases
c) Heat input decreases
d) Heat rejected increases

11) A Brayton cycle operates with a pressure ratio of 6. The maximum and minimum temperatures are 1200 K and 300 K. Determine the thermal efficiency (y = 1.4).
a) 42.3% b) 50.6%
c) 45.1% d) 54.2%

12) The Mach angle is given by _____.
a) $\sin^{-1}(1/M)$ b) $\cos^{-1}(M)$
c) $\tan^{-1}(M)$ d) $\tan^{-1}(1/M)$

13) A convergent nozzle operates with an inlet pressure of 10 bar and outlet pressure of 5 bar. Calculate the exit Mach number. (y = 1.4)
a) 1.24 b) 0.95
c) 1.00 d) 0.84

14) The slip factor in a centrifugal compressor is defined as _____.

a) Ratio of actual velocity to theoretical velocity
b) Ratio of theoretical velocity to actual velocity
c) Difference between actual and theoretical velocity
d) None of the above

Seat No.	

Set **Q**

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Gas Turbines (BTN02514)

Day & Date: Thursday, 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Use of a calculator is allowed.
3) Figures to the right indicate full marks.
4) Assume additional suitable data, if necessary and mention it clearly

Section – I

Q.2 Attempt any two questions. **14**

a) Explain the classification of gas turbines with examples.

b) Compare gas turbines with reciprocating I.C. engines and steam turbines.

c) A gas turbine plant operates on an ideal Brayton cycle. The compressor inlet temperature is 300 K, and the maximum cycle temperature is 1200 K. The plant operates with a pressure ratio of 8. The specific heat capacity for air is 1.005 kJ/kg K, and the ratio of specific heats for air (γ) is 1.4.
Determine the following:
1) The compressor work per kg of air.
2) The turbine work per kg of air.
3) The thermal efficiency of the cycle.
4) The net work output per kg of air.

d) Derive the expression for the optimum pressure ratio for maximum work output in a Brayton cycle.

Q.3 Attempt any two questions. **14**

a) Explain the concept of Mach number and its significance in gas turbine applications.

b) A gas turbine plant operates with a compressor inlet temperature of 300 K and a turbine inlet temperature of 1400 K. The plant has a pressure ratio of 10. The polytropic efficiency of the compressor is 0.88, and the polytropic efficiency of the turbine is 0.90. The calorific value of the fuel used in the plant is 43,000 kJ/kg. The specific heat capacity for air is 1.005 kJ/kg K, and for gases, it is 1.15 kJ/kg K. The ratio of specific heat is 1.4 for air and 1.33 for gases.
Determine the following:
1) The overall efficiency of the plant.
2) The specific output of the plant.
3) The fuel-to-air ratio
4) The specific fuel consumption (SFC)

c) Describe the methods used to improve the thermal efficiency and specific work output of a gas turbine cycle. Explain with the help of a diagram.

d) Explain the concept of isentropic flow in a nozzle and its significance.

SECTION II

Q.4 Attempt any two questions. **14**

a) Discuss the construction and working principle of a centrifugal compressor.

b) What are the key factors affecting the performance of centrifugal compressors? Explain the terms "slip factor" and "power input factor.

c) Explain the combustion process in a gas turbine. What are the different types of combustion chambers used?

d) Find the polytropic efficiency of an axial flow compressor from the following data:
The total head pressure ratio=4
Overall total head isentropic efficiency=85%
Total head inlet temperature=290K
The inlet and outlet air angles from the rotor blades of the above compressor are 10° and 45° respectively. The rotor and stator blades are symmetrical. The mean blade speed and axial velocity remain constant throughout the compressor. Assuming a value of 220 m/s for blade speed and the work done factor as 0.86, find the number of stages required.

Q.5 Attempt any two questions. **14**

a) Draw and explain the velocity diagrams for a centrifugal compressor.

b) Discuss the components and working principle of an axial flow compressor. Explain the significance of the degree of reaction.

c) A centrifugal compressor has a pressure ratio of 4:1 with an isentropic efficiency of 80% when running at 15000 rpm and inducing air at 293 K. Curved vanes at inlet give the air a prewhirl of 25° to the axial direction at all radii and the mean dia. of eye is 250 mm. The absolute air velocity at inlet is 150 m/s. Impeller tip dia. is 600 mm. Calculate the slip factor.

d) Explore the different types of combustion chambers used in gas turbines.

SLR-BD-358

Seat No.	

Set R

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Gas Turbines (BTN02514)

Day & Date: Thursday, 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 each question carries one marks.
2) Answer MCQ/Objective type question on Page No. 3 only. Don't forget to mention Q.P. Set (P/Q/R/S) on top of the page.
3) All the sub-questions in Q. No. 1 are compulsory for one mark each and every question has only one correct answer.
4) Answer cannot be changed once it is marked.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) In a centrifugal compressor, the impeller blade width is designed to _____.
a) Reduce slip factor
b) Control mass flow rate
c) Increase the velocity of the fluid
d) Reduce pressure loss

2) A convergent-divergent nozzle accelerates the flow to supersonic speeds when the pressure ratio is _____.
a) Greater than the critical pressure ratio
b) Less than the critical pressure ratio
c) Equal to 1
d) Independent of the critical pressure ratio

3) Which of the following is a requirement for a gas turbine combustion chamber?
a) High temperature
b) Low-pressure drop
c) Efficient mixing of air and fuel
d) All of the above

4) The purpose of cooling turbine blades in a gas turbine is ____.
a) To increase the blade strength
b) To prevent corrosion
c) To maintain operational efficiency
d) To avoid blade failure due to overheating

5) The primary application of gas turbines in aviation is due to their ____.
a) Compact size
b) Low fuel consumption
c) Ability to operate at high altitudes
d) Both A and C

6) The thermal efficiency of an ideal Brayton cycle increases with _____.
a) Increase in maximum cycle temperature
b) Decrease in pressure ratio
c) Increase in pressure ratio
d) None of the above

7) In a gas turbine cycle with regeneration, the thermal efficiency increases because _____.
a) The turbine work increases
b) The compressor work decreases
c) Heat input decreases
d) Heat rejected increases

8) A Brayton cycle operates with a pressure ratio of 6. The maximum and minimum temperatures are 1200 K and 300 K. Determine the thermal efficiency (y = 1.4).
a) 42.3% b) 50.6%
c) 45.1% d) 54.2%

9) The Mach angle is given by _____.
a) $\sin^{-1}(1/M)$ b) $\cos^{-1}(M)$
c) $\tan^{-1}(M)$ d) $\tan^{-1}(1/M)$

10) A convergent nozzle operates with an inlet pressure of 10 bar and outlet pressure of 5 bar. Calculate the exit Mach number. (y = 1.4)
a) 1.24 b) 0.95
c) 1.00 d) 0.84

11) The slip factor in a centrifugal compressor is defined as _____.
a) Ratio of actual velocity to theoretical velocity
b) Ratio of theoretical velocity to actual velocity
c) Difference between actual and theoretical velocity
d) None of the above

12) A centrifugal compressor with a blade speed of 300 m/s and outlet velocity of 150 m/s delivers a pressure rise of _____.
a) 45 kPa b) 60 kPa
c) 90 kPa d) 75 kPa

13) For an axial flow compressor, the velocity diagrams show _____.

a) Absolute and relative velocities of air
b) Absolute velocity only
c) Pressure distribution across stages
d) Temperature variation across stages

14) The main function of secondary air in a gas turbine combustion chamber is to _____.

a) Reduce NOx emissions
b) Provide flame stability
c) Cool the turbine blades
d) Ensure complete combustion

SLR-BD-358

Seat No.	

Set R

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Gas Turbines (BTN02514)

Day & Date: Thursday, 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Use of a calculator is allowed.
3) Figures to the right indicate full marks.
4) Assume additional suitable data, if necessary and mention it clearly

Section – I

Q.2 Attempt any two questions. **14**

a) Explain the classification of gas turbines with examples.

b) Compare gas turbines with reciprocating I.C. engines and steam turbines.

c) A gas turbine plant operates on an ideal Brayton cycle. The compressor inlet temperature is 300 K, and the maximum cycle temperature is 1200 K. The plant operates with a pressure ratio of 8. The specific heat capacity for air is 1.005 kJ/kg K, and the ratio of specific heats for air (γ) is 1.4.
Determine the following:
1) The compressor work per kg of air.
2) The turbine work per kg of air.
3) The thermal efficiency of the cycle.
4) The net work output per kg of air.

d) Derive the expression for the optimum pressure ratio for maximum work output in a Brayton cycle.

Q.3 Attempt any two questions. **14**

a) Explain the concept of Mach number and its significance in gas turbine applications.

b) A gas turbine plant operates with a compressor inlet temperature of 300 K and a turbine inlet temperature of 1400 K. The plant has a pressure ratio of 10. The polytropic efficiency of the compressor is 0.88, and the polytropic efficiency of the turbine is 0.90. The calorific value of the fuel used in the plant is 43,000 kJ/kg. The specific heat capacity for air is 1.005 kJ/kg K, and for gases, it is 1.15 kJ/kg K. The ratio of specific heat is 1.4 for air and 1.33 for gases.
Determine the following:
1) The overall efficiency of the plant.
2) The specific output of the plant.
3) The fuel-to-air ratio
4) The specific fuel consumption (SFC)

c) Describe the methods used to improve the thermal efficiency and specific work output of a gas turbine cycle. Explain with the help of a diagram.

d) Explain the concept of isentropic flow in a nozzle and its significance.

SECTION II

Q.4 Attempt any two questions. **14**

a) Discuss the construction and working principle of a centrifugal compressor.

b) What are the key factors affecting the performance of centrifugal compressors? Explain the terms "slip factor" and "power input factor.

c) Explain the combustion process in a gas turbine. What are the different types of combustion chambers used?

d) Find the polytropic efficiency of an axial flow compressor from the following data:
The total head pressure ratio=4
Overall total head isentropic efficiency=85%
Total head inlet temperature=290K
The inlet and outlet air angles from the rotor blades of the above compressor are 10° and 45° respectively. The rotor and stator blades are symmetrical. The mean blade speed and axial velocity remain constant throughout the compressor. Assuming a value of 220 m/s for blade speed and the work done factor as 0.86, find the number of stages required.

Q.5 Attempt any two questions. **14**

a) Draw and explain the velocity diagrams for a centrifugal compressor.

b) Discuss the components and working principle of an axial flow compressor. Explain the significance of the degree of reaction.

c) A centrifugal compressor has a pressure ratio of 4:1 with an isentropic efficiency of 80% when running at 15000 rpm and inducing air at 293 K. Curved vanes at inlet give the air a prewhirl of 25° to the axial direction at all radii and the mean dia. of eye is 250 mm. The absolute air velocity at inlet is 150 m/s. Impeller tip dia. is 600 mm. Calculate the slip factor.

d) Explore the different types of combustion chambers used in gas turbines.

SLR-BD-358

Seat No.		Set	S

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Gas Turbines (BTN02514)

Day & Date: Thursday, 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 each question carries one marks.
2) Answer MCQ/Objective type question on Page No. 3 only. Don't forget to mention Q.P. Set (P/Q/R/S) on top of the page.
3) All the sub-questions in Q. No. 1 are compulsory for one mark each and every question has only one correct answer.
4) Answer cannot be changed once it is marked.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) A convergent nozzle operates with an inlet pressure of 10 bar and outlet pressure of 5 bar. Calculate the exit Mach number. (y = 1.4)
a) 1.24 b) 0.95
c) 1.00 d) 0.84

2) The slip factor in a centrifugal compressor is defined as _____.
a) Ratio of actual velocity to theoretical velocity
b) Ratio of theoretical velocity to actual velocity
c) Difference between actual and theoretical velocity
d) None of the above

3) A centrifugal compressor with a blade speed of 300 m/s and outlet velocity of 150 m/s delivers a pressure rise of _____.
a) 45 kPa b) 60 kPa
c) 90 kPa d) 75 kPa

4) For an axial flow compressor, the velocity diagrams show _____.
a) Absolute and relative velocities of air
b) Absolute velocity only
c) Pressure distribution across stages
d) Temperature variation across stages

5) The main function of secondary air in a gas turbine combustion chamber is to _____.
a) Reduce NOx emissions b) Provide flame stability
c) Cool the turbine blades d) Ensure complete combustion

6) In a centrifugal compressor, the impeller blade width is designed to _____.
a) Reduce slip factor
b) Control mass flow rate
c) Increase the velocity of the fluid
d) Reduce pressure loss

7) A convergent-divergent nozzle accelerates the flow to supersonic speeds when the pressure ratio is _____.
a) Greater than the critical pressure ratio
b) Less than the critical pressure ratio
c) Equal to 1
d) Independent of the critical pressure ratio

8) Which of the following is a requirement for a gas turbine combustion chamber?
a) High temperature
b) Low-pressure drop
c) Efficient mixing of air and fuel
d) All of the above

9) The purpose of cooling turbine blades in a gas turbine is ____.
a) To increase the blade strength
b) To prevent corrosion
c) To maintain operational efficiency
d) To avoid blade failure due to overheating

10) The primary application of gas turbines in aviation is due to their ____.
a) Compact size
b) Low fuel consumption
c) Ability to operate at high altitudes
d) Both A and C

11) The thermal efficiency of an ideal Brayton cycle increases with _____.
a) Increase in maximum cycle temperature
b) Decrease in pressure ratio
c) Increase in pressure ratio
d) None of the above

12) In a gas turbine cycle with regeneration, the thermal efficiency increases because _____.
a) The turbine work increases
b) The compressor work decreases
c) Heat input decreases
d) Heat rejected increases

13) A Brayton cycle operates with a pressure ratio of 6. The maximum and minimum temperatures are 1200 K and 300 K. Determine the thermal efficiency (y = 1.4).

a) 42.3% b) 50.6%
c) 45.1% d) 54.2%

14) The Mach angle is given by _____.

a) $\sin^{-1}(1/M)$ b) $\cos^{-1}(M)$
c) $\tan^{-1}(M)$ d) $\tan^{-1}(1/M)$

SLR-BD-358

Seat No.		Set	S

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Gas Turbines (BTN02514)

Day & Date: Thursday, 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Use of a calculator is allowed.
3) Figures to the right indicate full marks.
4) Assume additional suitable data, if necessary and mention it clearly

Section – I

Q.2 Attempt any two questions. **14**

a) Explain the classification of gas turbines with examples.

b) Compare gas turbines with reciprocating I.C. engines and steam turbines.

c) A gas turbine plant operates on an ideal Brayton cycle. The compressor inlet temperature is 300 K, and the maximum cycle temperature is 1200 K. The plant operates with a pressure ratio of 8. The specific heat capacity for air is 1.005 kJ/kg K, and the ratio of specific heats for air (γ) is 1.4.
Determine the following:
1) The compressor work per kg of air.
2) The turbine work per kg of air.
3) The thermal efficiency of the cycle.
4) The net work output per kg of air.

d) Derive the expression for the optimum pressure ratio for maximum work output in a Brayton cycle.

Q.3 Attempt any two questions. **14**

a) Explain the concept of Mach number and its significance in gas turbine applications.

b) A gas turbine plant operates with a compressor inlet temperature of 300 K and a turbine inlet temperature of 1400 K. The plant has a pressure ratio of 10. The polytropic efficiency of the compressor is 0.88, and the polytropic efficiency of the turbine is 0.90. The calorific value of the fuel used in the plant is 43,000 kJ/kg. The specific heat capacity for air is 1.005 kJ/kg K, and for gases, it is 1.15 kJ/kg K. The ratio of specific heat is 1.4 for air and 1.33 for gases.
Determine the following:
1) The overall efficiency of the plant.
2) The specific output of the plant.
3) The fuel-to-air ratio
4) The specific fuel consumption (SFC)

c) Describe the methods used to improve the thermal efficiency and specific work output of a gas turbine cycle. Explain with the help of a diagram.

d) Explain the concept of isentropic flow in a nozzle and its significance.

SECTION II

Q.4 Attempt any two questions. **14**

a) Discuss the construction and working principle of a centrifugal compressor.

b) What are the key factors affecting the performance of centrifugal compressors? Explain the terms "slip factor" and "power input factor.

c) Explain the combustion process in a gas turbine. What are the different types of combustion chambers used?

d) Find the polytropic efficiency of an axial flow compressor from the following data:
The total head pressure ratio=4
Overall total head isentropic efficiency=85%
Total head inlet temperature=290K
The inlet and outlet air angles from the rotor blades of the above compressor are 10° and 45° respectively. The rotor and stator blades are symmetrical. The mean blade speed and axial velocity remain constant throughout the compressor. Assuming a value of 220 m/s for blade speed and the work done factor as 0.86, find the number of stages required.

Q.5 Attempt any two questions. **14**

a) Draw and explain the velocity diagrams for a centrifugal compressor.

b) Discuss the components and working principle of an axial flow compressor. Explain the significance of the degree of reaction.

c) A centrifugal compressor has a pressure ratio of 4:1 with an isentropic efficiency of 80% when running at 15000 rpm and inducing air at 293 K. Curved vanes at inlet give the air a prewhirl of 25° to the axial direction at all radii and the mean dia. of eye is 250 mm. The absolute air velocity at inlet is 150 m/s. Impeller tip dia. is 600 mm. Calculate the slip factor.

d) Explore the different types of combustion chambers used in gas turbines.

SLR-BD-359

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Tool Engineering (BTN02515)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 02:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) A tool may fail due to _____
a) Cracking at the cutting edge due to thermal stresses
b) Plastic deformation of the cutting edge
c) Flank and crater wear
d) All of these

2) Crater wear occurs at _____
a) Tool flank b) Tool face
c) Tool shank d) Tool heel

3) The main factors likely to cure excessive heat during a metal cutting operations are _____
a) Cutting speed too high b) Worm out cutting edge
c) Formation or built up edge d) All of the above

4) Tool life is generally better when _____
a) The grain size of the metal is large
b) The grain size of the metal is small
c) Hard constituents are present in the microstructure of the tool material
d) None of the mentioned

5) Which of the following tool materials has highest cutting speed?
a) carbon steel b) tool steel
c) Carbide d) HSS

6) _____ is defined as the time interval between the two successive grinds.
a) Tool Wear b) Machinability
c) Tool Life d) Machinability Index

7) A broach has _____.
a) Roughing teeth b) semi-finishing teeth
c) finishing teeth d) all of the above

8) Fixed cost includes _____
a) Labor cost b) Power cost
c) Setup cost d) Cost of m/c

9) Depending upon the number of cutting edges the cutting tools are classified _____.
a) single b) Multipoint
c) Right hand tool d) a and b

10) Discontinuous chips are formed during machining of _____
a) Cast iron b) Mild steel
c) Aluminum d) None of these

11) Tool signature comprise _____
a) 4 elements b) 5 elements
c) 6 elements d) 7 elements

12) Cutting fluid should possesses the property of _____
a) Low viscosity b) High viscosity
c) Moderate viscosity d) None of these

13) Punching a number of holes in a sheet is known as _____
a) Notching b) Parting
c) Perforating d) Lancing

14) Drill jig bush is made of _____
a) Mild steel b) Cast iron
c) Cast steel d) Carbon steel

Seat No.	

Set **P**

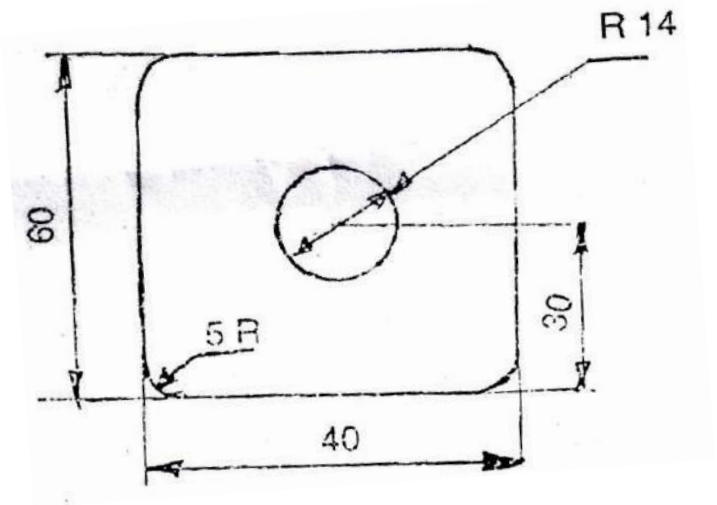
T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Tool Engineering (BTN02515)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 02:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory. Attempt any two questions from the remaining questions.
2) In Section II, Q. No. 6 is compulsory. Attempt any two questions from the remaining questions.
3) Figures to the right indicate full marks.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 a) Design press tool for the component shown in figure below giving following details: **14**
i) Strip layout
ii) Die set selection
iii) Force calculation
iv) Design of various elements
Also draw two views of a tool along with strip layout and part list.
Material - M.S.
Sheet thickness - 5mm
Ultimate shear stress - 320 Nmm^2
All dimension are in mm



OR

b) Design the drawing tool for the component shown in fig. an determine the following: **14**

i) % reduction
ii) No. of draws
iii) Blank size
iv) Draw ratio
v) Die clearance
vi) Drawing force
vii) Blank holding force
viii) Press capacity

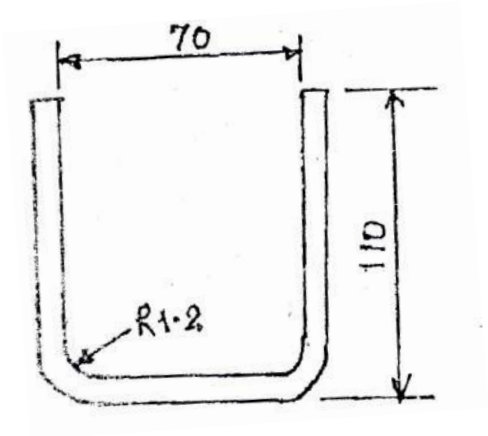
Also draw two views of drawing tool with part list.

Material - M.S.

Thickness = 1mm

UTS = 450 N/mm^2

All dimensions are in mm



Q.3 **a)** Explain ASA tool signature with suitable example. **04**

b) Differentiate between orthogonal cutting and Oblique cutting **03**

Q.4 **a)** Write a note on Cutting tool materials. **03**

b) Write a note on Merchant's circle to find shear force and thrust force. **04**

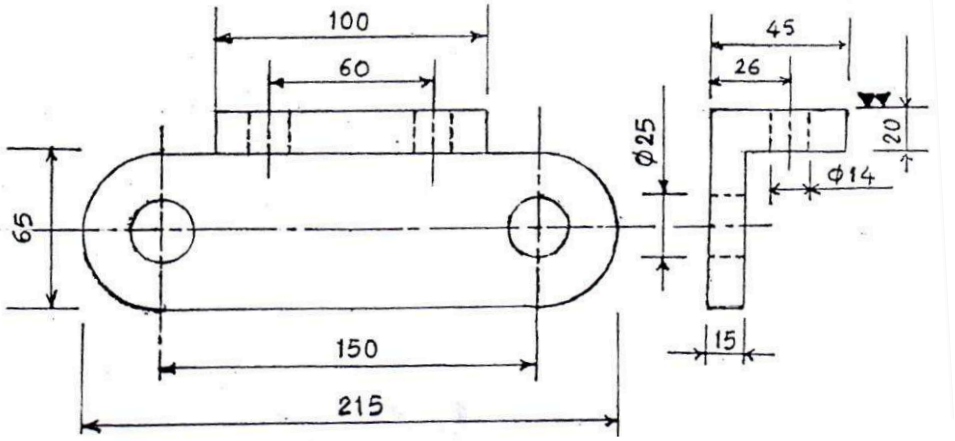
Q.5 In an orthogonal cutting operation the following data have been observed **07**

Uncut chip thickness = 0.127mm
Cutting speed = 2 m/s
Rake angle = 10°
Cutting force = 600 N
Thrust force = 250 N
Chip thickness = 0.3 mm
Determine:

i) Shear angle
ii) Friction angle
iii) Shear stress
iv) Shear force

Section – II

Q.6 Design and draw a jig for drilling 2 Holes of ∅14mm for the same component. **14**



OR

Design and draw a fixture for milling face for the component as shown in above figure for top surface milled up to 100 mm. **14**

Q.7 For machining C40 steel with H.S.S. the following V and T observations have been noted **07**

V m/min	25	35
T min	90	20

Calculate

i) n and c

ii) Recommend the cutting speed for a desired tool life of 70 minutes

Q.8 **a)** Explain the importance of locating devices in jig and fixture. Explain any one with neat sketch. **04**

b) Explain the is fool proofing pin in jig and fixture. **03**

Q.9 **a)** Explain the economic order quantity. **03**

b) Explain various types of costs in economics of tooling. **04**

SLR-BD-359

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Tool Engineering (BTN02515)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 02:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Fixed cost includes _____
a) Labor cost b) Power cost
c) Setup cost d) Cost of m/c

2) Depending upon the number of cutting edges the cutting tools are classified _____.
a) single b) Multipoint
c) Right hand tool d) a and b

3) Discontinuous chips are formed during machining of _____
a) Cast iron b) Mild steel
c) Aluminum d) None of these

4) Tool signature comprise _____
a) 4 elements b) 5 elements
c) 6 elements d) 7 elements

5) Cutting fluid should possesses the property of _____
a) Low viscosity b) High viscosity
c) Moderate viscosity d) None of these

6) Punching a number of holes in a sheet is known as _____
a) Notching b) Parting
c) Perforating d) Lancing

7) Drill jig bush is made of _____
a) Mild steel b) Cast iron
c) Cast steel d) Carbon steel

8) A tool may fail due to _____
a) Cracking at the cutting edge due to thermal stresses
b) Plastic deformation of the cutting edge
c) Flank and crater wear
d) All of these

9) Crater wear occurs at _____
a) Tool flank
b) Tool face
c) Tool shank
d) Tool heel

10) The main factors likely to cure excessive heat during a metal cutting operations are _____
a) Cutting speed too high
b) Worm out cutting edge
c) Formation or built up edge
d) All of the above

11) Tool life is generally better when _____
a) The grain size of the metal is large
b) The grain size of the metal is small
c) Hard constituents are present in the microstructure of the tool material
d) None of the mentioned

12) Which of the following tool materials has highest cutting speed?
a) carbon steel
b) tool steel
c) Carbide
d) HSS

13) _____ is defined as the time interval between the two successive grinds.
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b) Machinability
c) Tool Life
d) Machinability Index

14) A broach has _____.
a) Roughing teeth
b) semi-finishing teeth
c) finishing teeth
d) all of the above

Seat No.	

Set **Q**

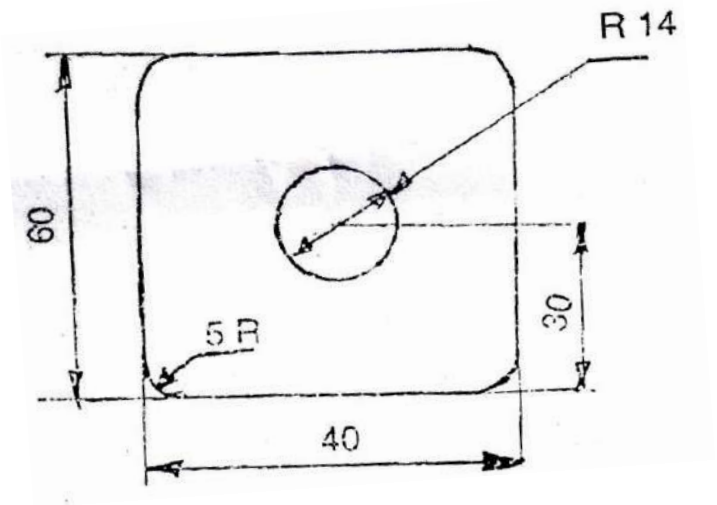
T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Tool Engineering (BTN02515)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 02:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory. Attempt any two questions from the remaining questions.
2) In Section II, Q. No. 6 is compulsory. Attempt any two questions from the remaining questions.
3) Figures to the right indicate full marks.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 a) Design press tool for the component shown in figure below giving following details: **14**
i) Strip layout
ii) Die set selection
iii) Force calculation
iv) Design of various elements
Also draw two views of a tool along with strip layout and part list.
Material - M.S.
Sheet thickness - 5mm
Ultimate shear stress - 320 Nmm^2
All dimension are in mm



OR

b) Design the drawing tool for the component shown in fig. an determine the following: **14**

i) % reduction
ii) No. of draws
iii) Blank size
iv) Draw ratio
v) Die clearance
vi) Drawing force
vii) Blank holding force
viii) Press capacity

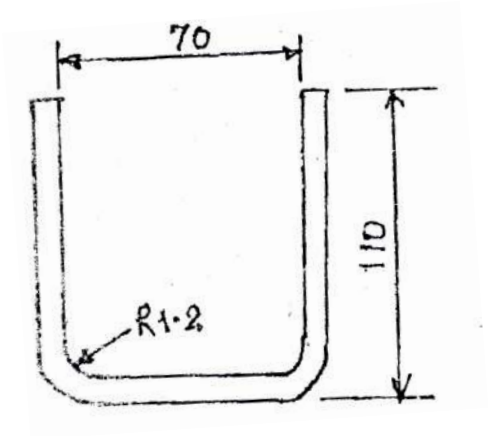
Also draw two views of drawing tool with part list.

Material - M.S.

Thickness = 1mm

UTS = 450 N/mm^2

All dimensions are in mm



Q.3 **a)** Explain ASA tool signature with suitable example. **04**

b) Differentiate between orthogonal cutting and Oblique cutting **03**

Q.4 **a)** Write a note on Cutting tool materials. **03**

b) Write a note on Merchant's circle to find shear force and thrust force. **04**

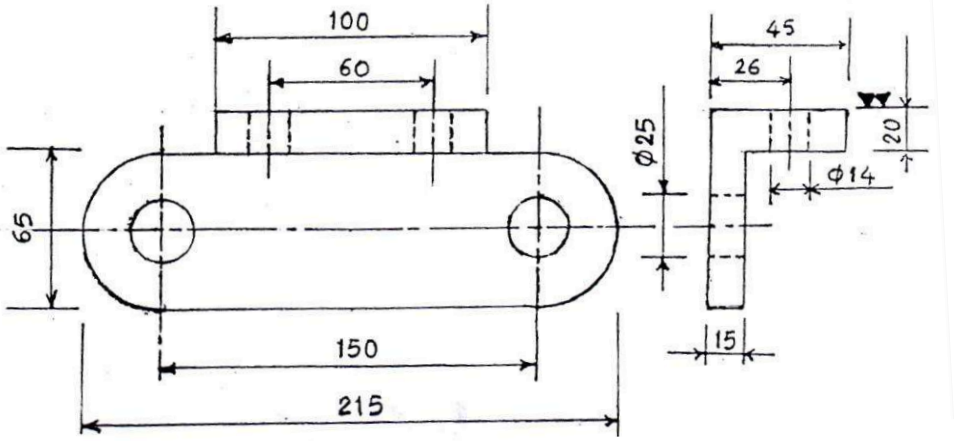
Q.5 In an orthogonal cutting operation the following data have been observed **07**

Uncut chip thickness = 0.127mm
Cutting speed = 2 m/s
Rake angle = 10°
Cutting force = 600 N
Thrust force = 250 N
Chip thickness = 0.3 mm
Determine:

i) Shear angle
ii) Friction angle
iii) Shear stress
iv) Shear force

Section – II

Q.6 Design and draw a jig for drilling 2 Holes of ∅14mm for the same component. **14**



OR

Design and draw a fixture for milling face for the component as shown in above figure for top surface milled up to 100 mm. **14**

Q.7 For machining C40 steel with H.S.S. the following V and T observations have been noted **07**

V m/min	25	35
T min	90	20

Calculate

i) n and c

ii) Recommend the cutting speed for a desired tool life of 70 minutes

Q.8 **a)** Explain the importance of locating devices in jig and fixture. Explain any one with neat sketch. **04**

b) Explain the is fool proofing pin in jig and fixture. **03**

Q.9 **a)** Explain the economic order quantity. **03**

b) Explain various types of costs in economics of tooling. **04**

SLR-BD-359

Seat No.	

Set R

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Tool Engineering (BTN02515)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 02:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Tool signature comprise _____
a) 4 elements b) 5 elements
c) 6 elements d) 7 elements

2) Cutting fluid should possesses the property of _____
a) Low viscosity b) High viscosity
c) Moderate viscosity d) None of these

3) Punching a number of holes in a sheet is known as _____
a) Notching b) Parting
c) Perforating d) Lancing

4) Drill jig bush is made of _____
a) Mild steel b) Cast iron
c) Cast steel d) Carbon steel

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7) The main factors likely to cure excessive heat during a metal cutting operations are _____
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12) Fixed cost includes _____
a) Labor cost b) Power cost
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13) Depending upon the number of cutting edges the cutting tools are classified _____.
a) single b) Multipoint
c) Right hand tool d) a and b

14) Discontinuous chips are formed during machining of _____
a) Cast iron b) Mild steel
c) Aluminum d) None of these

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Tool Engineering (BTN02515)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 02:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory. Attempt any two questions from the remaining questions.
2) In Section II, Q. No. 6 is compulsory. Attempt any two questions from the remaining questions.
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Section – I

Q.2 a) Design press tool for the component shown in figure below giving following details: **14**
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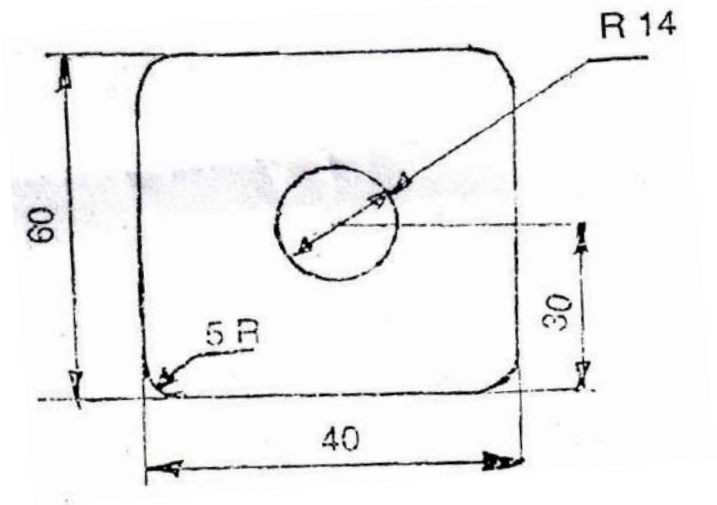
Material - M.S.
Sheet thickness - 5mm
Ultimate shear stress - 320 Nmm^2
All dimension are in mm



OR

b) Design the drawing tool for the component shown in fig. an determine the following: **14**

i) % reduction
ii) No. of draws
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iv) Draw ratio
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vi) Drawing force
vii) Blank holding force
viii) Press capacity

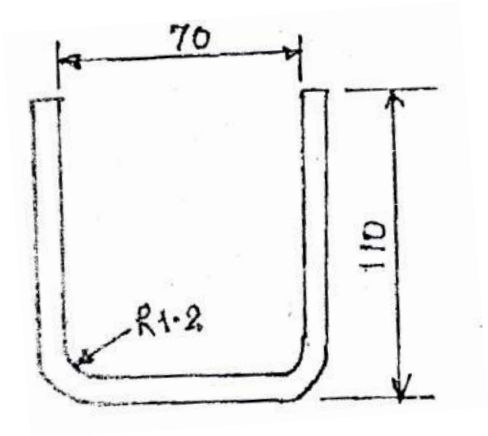
Also draw two views of drawing tool with part list.

Material - M.S.

Thickness = 1mm

UTS = 450 N/mm^2

All dimensions are in mm



Q.3 **a)** Explain ASA tool signature with suitable example. **04**

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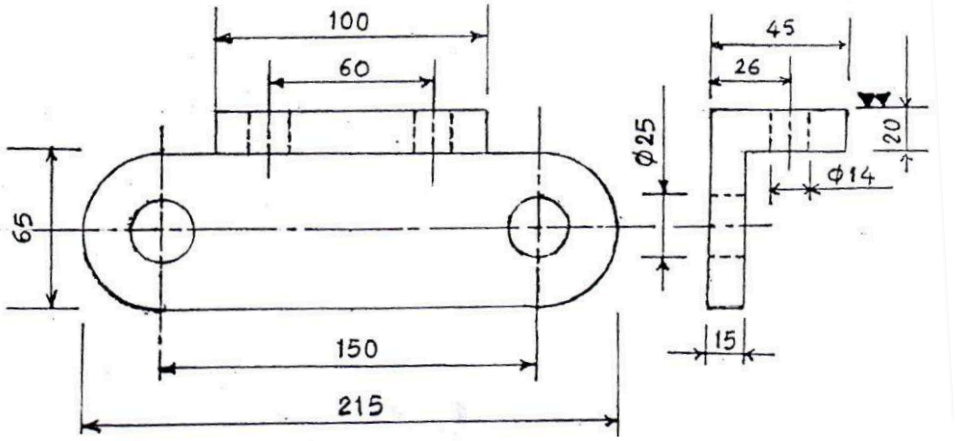
iv) Shear force

Section – II

Q.6 Design and draw a jig for drilling 2 Holes of ∅14mm for the same component. **14**



OR

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Seat No.		Set	S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Tool Engineering (BTN02515)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 02:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) _____ is defined as the time interval between the two successive grinds.
a) Tool Wear b) Machinability
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c) Carbide d) HSS

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Tool Engineering (BTN02515)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 02:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory. Attempt any two questions from the remaining questions.
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Section – I

Q.2 a) Design press tool for the component shown in figure below giving following details: **14**
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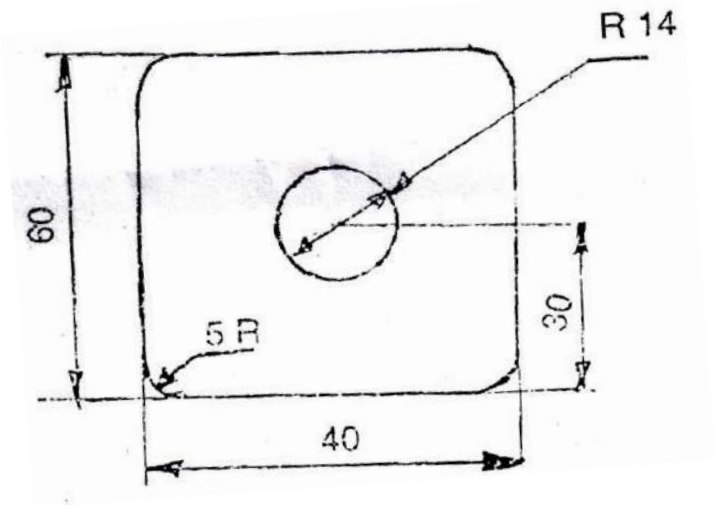
iii) Force calculation
iv) Design of various elements
Also draw two views of a tool along with strip layout and part list.
Material - M.S.
Sheet thickness - 5mm
Ultimate shear stress - 320 Nmm^2
All dimension are in mm



OR

b) Design the drawing tool for the component shown in fig. an determine the following: **14**

i) % reduction
ii) No. of draws
iii) Blank size
iv) Draw ratio
v) Die clearance
vi) Drawing force
vii) Blank holding force
viii) Press capacity

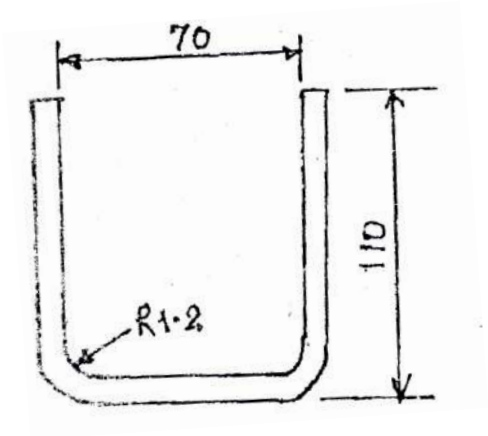
Also draw two views of drawing tool with part list.

Material - M.S.

Thickness = 1mm

UTS = 450 N/mm^2

All dimensions are in mm



Q.3 **a)** Explain ASA tool signature with suitable example. **04**

b) Differentiate between orthogonal cutting and Oblique cutting **03**

Q.4 **a)** Write a note on Cutting tool materials. **03**

b) Write a note on Merchant's circle to find shear force and thrust force. **04**

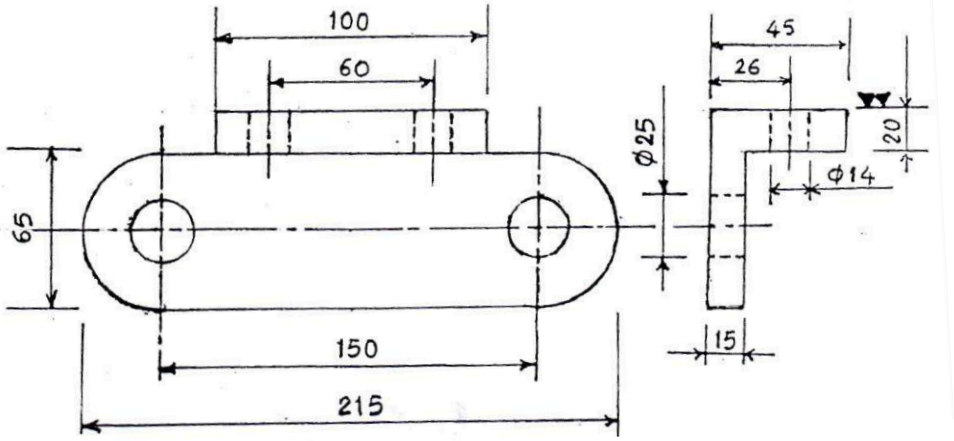
Q.5 In an orthogonal cutting operation the following data have been observed **07**

Uncut chip thickness = 0.127mm
Cutting speed = 2 m/s
Rake angle = 10°
Cutting force = 600 N
Thrust force = 250 N
Chip thickness = 0.3 mm
Determine:

i) Shear angle
ii) Friction angle
iii) Shear stress
iv) Shear force

Section – II

Q.6 Design and draw a jig for drilling 2 Holes of ∅14mm for the same component. **14**



OR

Design and draw a fixture for milling face for the component as shown in above figure for top surface milled up to 100 mm. **14**

Q.7 For machining C40 steel with H.S.S. the following V and T observations have been noted **07**

V m/min	25	35
T min	90	20

Calculate

i) n and c

ii) Recommend the cutting speed for a desired tool life of 70 minutes

Q.8 **a)** Explain the importance of locating devices in jig and fixture. Explain any one with neat sketch. **04**

b) Explain the is fool proofing pin in jig and fixture. **03**

Q.9 **a)** Explain the economic order quantity. **03**

b) Explain various types of costs in economics of tooling. **04**

SLR-BD-360

Seat No.		Set	P

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Industrial Hydraulics & Pneumatics (BTN02516)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) How is power transmitted in fluid power systems?
a) Power is transmitted instantaneously
b) Power is transmitted gradually
c) Both a and b
d) none of the above

2) Seals are used to avoid _____ in the fluid system.
a) Internal leakage
b) External leakage
c) Both internal and external leakage
d) None of the above

3) In case of spring loaded accumulator, the pressure of oil supplied by accumulator _____.
a) remains constant
b) varies
c) may remain constant or vary
d) None of the above

4) Pressure relief valve is normally _____ type valve.
a) Open b) Close
c) Open or Close d) none of these

5) What is the function of flow control valve?
a) Flow control valve changes the direction of oil flow
b) Flow control valve can adjust the flow rate of hydraulic oil
c) Both a and b
d) None of the above

6) A hydraulic intensifier is used to: _____
a) Reduce flow rate in the circuit
b) Increase pressure for specific applications
c) Balance load pressure during lifting
d) Control directional flow

7) An accumulator in a hydraulic circuit is primarily used to: _____
a) Store excess hydraulic energy
b) Regulate actuator speed
c) Limit maximum system pressure
d) Divert flow to the tank

8) In a hydraulic synchronizing circuit, equal flow distribution to actuators is achieved using: _____
a) Check valves b) Sequence valves
c) Flow dividers d) Relief valves

9) In a regenerative circuit, flow from the rod end of the cylinder is: _____
a) Diverted back to the tank
b) Used to assist the pump flow into the piston end
c) Directed to the next actuator in sequence
d) Blocked to build pressure

10) At inlet of air motor, air pressure is _____.
a) less b) more
c) less or more d) none of these

11) In case of pneumatic cylinder, cushioning is _____.
a) needed b) not needed at all
c) not possible due to air d) none of the given

12) The time-delay valve consists of _____.
a) throttle valve (flow control valve)
b) direction control valve
c) air chamber/reservoir
d) all of these

13) Mostly FRL unit is used at _____.
a) Compressor outlet b) Compressor inlet
c) At outlet of actuator d) none of the above

14) Pneumatic power tools are typically used because they offer: _____
a) More torque and speed than electric tools
b) Reduced risk of electrical hazards
c) Lighter weight
d) All of the above

Seat No.		Set	P

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MACHENICAL ENGGINERING
Industrial Hydraulics & Pneumatics (BTN02516)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if required & state it clearly.
4) Use of nonprogrammable calculator is allowed.

Section – I

Q.2	**a)**	Explain advantages, limitations and applications of hydraulic systems.	**05**
	b)	Explain construction and working of telescopic cylinder.	**05**
	c)	Explain construction and working of gear motor.	**04**
Q.3	**a)**	Explain construction and working of 4/2 DCV with symbol.	**05**
	b)	What are the functions of accumulator? Explain construction and working of Spring loaded accumulator.	**05**
	c)	Explain construction and working of pilot operated pressure relief valve.	**04**
Q.4	**a)**	Explain with neat sketch pressure depending sequence control circuit to operate two double acting cylinders.	**05**
	b)	Explain with neat sketch regenerative circuit for double acting cylinder.	**05**
	c)	Explain meter in circuit with neat sketch.	**04**

Section – II

Q.5	**a)**	Explain construction and working of vane type air motor.	**05**
	b)	Explain construction and working of pneumatic tandem cylinder.	**05**
	c)	Differentiate hydraulic and pneumatic systems.	**04**
Q.6	**a)**	Explain construction and working of double acting reciprocating compressor.	**05**
	b)	Explain construction and working of regulator from FRL unit.	**05**
	c)	Explain with neat sketch working of quick exhaust valve.	**04**
Q.7	**a)**	Explain with neat sketch time delay circuit.	**05**
	b)	Explain with neat sketch pneumatic braking system.	**05**
	c)	Draw and explain pneumatic circuit for actuation of double acting cylinder.	**04**

Seat No.	

Set Q

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Industrial Hydraulics & Pneumatics (BTN02516)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) In a hydraulic synchronizing circuit, equal flow distribution to actuators is achieved using: _____
a) Check valves b) Sequence valves
c) Flow dividers d) Relief valves

2) In a regenerative circuit, flow from the rod end of the cylinder is: _____
a) Diverted back to the tank
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c) Directed to the next actuator in sequence
d) Blocked to build pressure

3) At inlet of air motor, air pressure is _____.
a) less b) more
c) less or more d) none of these

4) In case of pneumatic cylinder, cushioning is _____.
a) needed b) not needed at all
c) not possible due to air d) none of the given

5) The time-delay valve consists of _____.
a) throttle valve (flow control valve)
b) direction control valve
c) air chamber/reservoir
d) all of these

6) Mostly FRL unit is used at _____.
a) Compressor outlet b) Compressor inlet
c) At outlet of actuator d) none of the above

7) Pneumatic power tools are typically used because they offer: _____
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c) Lighter weight
d) All of the above

8) How is power transmitted in fluid power systems?
a) Power is transmitted instantaneously
b) Power is transmitted gradually
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d) none of the above

9) Seals are used to avoid _____ in the fluid system.
a) Internal leakage
b) External leakage
c) Both internal and external leakage
d) None of the above

10) In case of spring loaded accumulator, the pressure of oil supplied by accumulator _____.
a) remains constant
b) varies
c) may remain constant or vary
d) None of the above

11) Pressure relief valve is normally _____ type valve.
a) Open b) Close
c) Open or Close d) none of these

12) What is the function of flow control valve?
a) Flow control valve changes the direction of oil flow
b) Flow control valve can adjust the flow rate of hydraulic oil
c) Both a and b
d) None of the above

13) A hydraulic intensifier is used to: _____
a) Reduce flow rate in the circuit
b) Increase pressure for specific applications
c) Balance load pressure during lifting
d) Control directional flow

14) An accumulator in a hydraulic circuit is primarily used to: _____
a) Store excess hydraulic energy
b) Regulate actuator speed
c) Limit maximum system pressure
d) Divert flow to the tank

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MACHENICAL ENGGINERING
Industrial Hydraulics & Pneumatics (BTN02516)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
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4) Use of nonprogrammable calculator is allowed.

Section – I

Q.2	**a)**	Explain advantages, limitations and applications of hydraulic systems.	**05**
	b)	Explain construction and working of telescopic cylinder.	**05**
	c)	Explain construction and working of gear motor.	**04**
Q.3	**a)**	Explain construction and working of 4/2 DCV with symbol.	**05**
	b)	What are the functions of accumulator? Explain construction and working of Spring loaded accumulator.	**05**
	c)	Explain construction and working of pilot operated pressure relief valve.	**04**
Q.4	**a)**	Explain with neat sketch pressure depending sequence control circuit to operate two double acting cylinders.	**05**
	b)	Explain with neat sketch regenerative circuit for double acting cylinder.	**05**
	c)	Explain meter in circuit with neat sketch.	**04**

Section – II

Q.5	**a)**	Explain construction and working of vane type air motor.	**05**
	b)	Explain construction and working of pneumatic tandem cylinder.	**05**
	c)	Differentiate hydraulic and pneumatic systems.	**04**
Q.6	**a)**	Explain construction and working of double acting reciprocating compressor.	**05**
	b)	Explain construction and working of regulator from FRL unit.	**05**
	c)	Explain with neat sketch working of quick exhaust valve.	**04**
Q.7	**a)**	Explain with neat sketch time delay circuit.	**05**
	b)	Explain with neat sketch pneumatic braking system.	**05**
	c)	Draw and explain pneumatic circuit for actuation of double acting cylinder.	**04**

Seat No.	

Set R

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Industrial Hydraulics & Pneumatics (BTN02516)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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5) Use of nonprogrammable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In case of pneumatic cylinder, cushioning is _____.
a) needed b) not needed at all
c) not possible due to air d) none of the given

2) The time-delay valve consists of _____.
a) throttle valve (flow control valve)
b) direction control valve
c) air chamber/reservoir
d) all of these

3) Mostly FRL unit is used at _____.
a) Compressor outlet b) Compressor inlet
c) At outlet of actuator d) none of the above

4) Pneumatic power tools are typically used because they offer: _____
a) More torque and speed than electric tools
b) Reduced risk of electrical hazards
c) Lighter weight
d) All of the above

5) How is power transmitted in fluid power systems?
a) Power is transmitted instantaneously
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6) Seals are used to avoid _____ in the fluid system.
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d) Control directional flow

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c) Limit maximum system pressure
d) Divert flow to the tank

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13) In a regenerative circuit, flow from the rod end of the cylinder is: _____
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b) Used to assist the pump flow into the piston end
c) Directed to the next actuator in sequence
d) Blocked to build pressure

14) At inlet of air motor, air pressure is _____.
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c) less or more d) none of these

SLR-BD-360

Seat No.		Set	R

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MACHENICAL ENGGINERING
Industrial Hydraulics & Pneumatics (BTN02516)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
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Section – I

Q.2	**a)**	Explain advantages, limitations and applications of hydraulic systems.	**05**
	b)	Explain construction and working of telescopic cylinder.	**05**
	c)	Explain construction and working of gear motor.	**04**
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	b)	What are the functions of accumulator? Explain construction and working of Spring loaded accumulator.	**05**
	c)	Explain construction and working of pilot operated pressure relief valve.	**04**
Q.4	**a)**	Explain with neat sketch pressure depending sequence control circuit to operate two double acting cylinders.	**05**
	b)	Explain with neat sketch regenerative circuit for double acting cylinder.	**05**
	c)	Explain meter in circuit with neat sketch.	**04**

Section – II

Q.5	**a)**	Explain construction and working of vane type air motor.	**05**
	b)	Explain construction and working of pneumatic tandem cylinder.	**05**
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	b)	Explain construction and working of regulator from FRL unit.	**05**
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Q.7	**a)**	Explain with neat sketch time delay circuit.	**05**
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	c)	Draw and explain pneumatic circuit for actuation of double acting cylinder.	**04**

Seat No.		Set	S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Industrial Hydraulics & Pneumatics (BTN02516)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if required & state it clearly.
5) Use of nonprogrammable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A hydraulic intensifier is used to: _____
a) Reduce flow rate in the circuit
b) Increase pressure for specific applications
c) Balance load pressure during lifting
d) Control directional flow

2) An accumulator in a hydraulic circuit is primarily used to: _____
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c) Limit maximum system pressure
d) Divert flow to the tank

3) In a hydraulic synchronizing circuit, equal flow distribution to actuators is achieved using: _____
a) Check valves b) Sequence valves
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13) Pressure relief valve is normally _____ type valve.
a) Open b) Close
c) Open or Close d) none of these

14) What is the function of flow control valve?
a) Flow control valve changes the direction of oil flow
b) Flow control valve can adjust the flow rate of hydraulic oil
c) Both a and b
d) None of the above

SLR-BD-360

Seat No.		Set	S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MACHENICAL ENGGINERING
Industrial Hydraulics & Pneumatics (BTN02516)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if required & state it clearly.
4) Use of nonprogrammable calculator is allowed.

Section – I

Q.2	**a)**	Explain advantages, limitations and applications of hydraulic systems.	**05**
	b)	Explain construction and working of telescopic cylinder.	**05**
	c)	Explain construction and working of gear motor.	**04**
Q.3	**a)**	Explain construction and working of 4/2 DCV with symbol.	**05**
	b)	What are the functions of accumulator? Explain construction and working of Spring loaded accumulator.	**05**
	c)	Explain construction and working of pilot operated pressure relief valve.	**04**
Q.4	**a)**	Explain with neat sketch pressure depending sequence control circuit to operate two double acting cylinders.	**05**
	b)	Explain with neat sketch regenerative circuit for double acting cylinder.	**05**
	c)	Explain meter in circuit with neat sketch.	**04**

Section – II

Q.5	**a)**	Explain construction and working of vane type air motor.	**05**
	b)	Explain construction and working of pneumatic tandem cylinder.	**05**
	c)	Differentiate hydraulic and pneumatic systems.	**04**
Q.6	**a)**	Explain construction and working of double acting reciprocating compressor.	**05**
	b)	Explain construction and working of regulator from FRL unit.	**05**
	c)	Explain with neat sketch working of quick exhaust valve.	**04**
Q.7	**a)**	Explain with neat sketch time delay circuit.	**05**
	b)	Explain with neat sketch pneumatic braking system.	**05**
	c)	Draw and explain pneumatic circuit for actuation of double acting cylinder.	**04**

SLR-BD-361

Seat No.		Set	P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Mechanical Vibrations (BTN02517)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the term used to describe the maximum displacement from the equilibrium position in a vibrating system?
a) Amplitude b) Frequency
c) Period d) Damping

2) Damping in a vibrating system:
a) Increases the amplitude of vibration
b) Decreases the amplitude of vibration
c) Has no effect on the amplitude of vibration
d) Changes the frequency of vibration

3) The critical damping ratio for a single degree of freedom system:
a) Is greater than 1
b) Is less than 1
c) Is equal to 1
d) Can be any value depending on the system

4) The displacement of an undamped free vibrating system with time can be represented by which mathematical function?
a) Exponential function b) Sine function
c) Cosine function d) Linear function

5) In undamped free vibration, what is the relationship between the frequency of vibration and the time period?
a) They are equal
b) Frequency is the reciprocal of time period
c) Frequency is the square of time period
d) There is no relationship between them

6) In forced vibration, the frequency of the external force is typically:
a) Equal to the natural frequency of the system
b) Less than the natural frequency of the system
c) Greater than the natural frequency of the system
d) Unrelated to the natural frequency of the system

7) Which of the following materials is commonly used for isolating vibrations in mechanical systems?
a) Steel b) Rubber
c) Aluminum d) Copper

8) Which of the following systems exhibits principal mode of vibration?
a) Spring-mass system b) Double pendulum
c) Torsional system d) Geared system

9) The natural frequency of a torsional system depends primarily on:
a) Mass b) Stiffness
c) Damping d) Length

10) Holzer's method is primarily used for:
a) Solving linear algebraic equations
b) Analyzing the stability of a vibrating system
c) Finding the mode shapes of a vibrating system
d) Estimating damping ratios of a vibrating system

11) What term describes a system's ability to resist deformation under an applied load?
a) Flexibility b) Stiffness
c) Damping d) Resonance

12) Condition monitoring data collection involves:
a) Continuously monitoring vibration levels
b) Collecting data at regular intervals
c) Recording only when faults are suspected
d) Using manual data entry methods

13) FFT analyzer is used to:
a) Measure displacement
b) Analyze frequency content of signals
c) Determine phase angles
d) Measure damping ratios

14) Which type of accelerometer measures both static and dynamic acceleration?
a) Undamped accelerometer b) Piezoelectric accelerometer
c) Capacitive accelerometer d) Damped accelerometer

SLR-BD-361

Seat No.		Set	P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Mechanical Vibrations (BTN02517)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2	**a)**	Explain the concept of vibration and oscillation. Differentiate between the two phenomena, providing examples for each.	**04**
	b)	Define and differentiate between periodic and non-periodic motion.	**04**
	c)	Define the degree of freedom in the context of vibrating systems. Explain how the number of degrees of freedom influences the complexity of vibration analysis and the behavior of mechanical systems.	**06**
Q.3	**a)**	Discuss the concept of logarithmic decrement as a measure of damping in vibrating systems.	**06**
	b)	Compare and contrast the methods of analysis for undamped free vibration, including D'Alembert's principle	**08**
Q.4	**a)**	Provide an introduction to forced vibration, explaining the concept and distinguishing it from free vibration.	**06**
	b)	Describe typical isolators and mounts used for vibration isolation in mechanical systems. Discuss the characteristics and applications of various types of isolators.	**08**

Section – II

Q.5	**a)**	Explain how the natural frequency is determined by the mass and stiffness properties of the system.	**06**
	b)	Describe the concept of the principal mode of vibration in mechanical systems. Discuss how the principal mode represents the dominant pattern of motion exhibited by a vibrating system and how it influences the system's response to external forces.	**08**
Q.6	**a)**	Discuss the concept of free vibration in multi-degree-of-freedom (DOF) systems.	**06**
	b)	Explain the matrix iteration method for analyzing the free vibration of multi-DOF systems.	**08**

Q.7	**a)**	Discuss the principle of operation of seismic instruments used for measuring vibrations.	**06**
	b)	Describe the different techniques used in condition and vibration monitoring, including vibration analysis, temperature monitoring, oil analysis, and acoustic emission monitoring.	**08**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Mechanical Vibrations (BTN02517)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following systems exhibits principal mode of vibration?
a) Spring-mass system b) Double pendulum
c) Torsional system d) Geared system

2) The natural frequency of a torsional system depends primarily on:
a) Mass b) Stiffness
c) Damping d) Length

3) Holzer's method is primarily used for:
a) Solving linear algebraic equations
b) Analyzing the stability of a vibrating system
c) Finding the mode shapes of a vibrating system
d) Estimating damping ratios of a vibrating system

4) What term describes a system's ability to resist deformation under an applied load?
a) Flexibility b) Stiffness
c) Damping d) Resonance

5) Condition monitoring data collection involves:
a) Continuously monitoring vibration levels
b) Collecting data at regular intervals
c) Recording only when faults are suspected
d) Using manual data entry methods

6) FFT analyzer is used to:
a) Measure displacement
b) Analyze frequency content of signals
c) Determine phase angles
d) Measure damping ratios

7) Which type of accelerometer measures both static and dynamic acceleration?

a) Undamped accelerometer b) Piezoelectric accelerometer
c) Capacitive accelerometer d) Damped accelerometer

8) What is the term used to describe the maximum displacement from the equilibrium position in a vibrating system?

a) Amplitude b) Frequency
c) Period d) Damping

9) Damping in a vibrating system:

a) Increases the amplitude of vibration
b) Decreases the amplitude of vibration
c) Has no effect on the amplitude of vibration
d) Changes the frequency of vibration

10) The critical damping ratio for a single degree of freedom system:

a) Is greater than 1
b) Is less than 1
c) Is equal to 1
d) Can be any value depending on the system

11) The displacement of an undamped free vibrating system with time can be represented by which mathematical function?

a) Exponential function b) Sine function
c) Cosine function d) Linear function

12) In undamped free vibration, what is the relationship between the frequency of vibration and the time period?

a) They are equal
b) Frequency is the reciprocal of time period
c) Frequency is the square of time period
d) There is no relationship between them

13) In forced vibration, the frequency of the external force is typically:

a) Equal to the natural frequency of the system
b) Less than the natural frequency of the system
c) Greater than the natural frequency of the system
d) Unrelated to the natural frequency of the system

14) Which of the following materials is commonly used for isolating vibrations in mechanical systems?

a) Steel b) Rubber
c) Aluminum d) Copper

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Mechanical Vibrations (BTN02517)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2	**a)**	Explain the concept of vibration and oscillation. Differentiate between the two phenomena, providing examples for each.	**04**
	b)	Define and differentiate between periodic and non-periodic motion.	**04**
	c)	Define the degree of freedom in the context of vibrating systems. Explain how the number of degrees of freedom influences the complexity of vibration analysis and the behavior of mechanical systems.	**06**
Q.3	**a)**	Discuss the concept of logarithmic decrement as a measure of damping in vibrating systems.	**06**
	b)	Compare and contrast the methods of analysis for undamped free vibration, including D'Alembert's principle	**08**
Q.4	**a)**	Provide an introduction to forced vibration, explaining the concept and distinguishing it from free vibration.	**06**
	b)	Describe typical isolators and mounts used for vibration isolation in mechanical systems. Discuss the characteristics and applications of various types of isolators.	**08**

Section – II

Q.5	**a)**	Explain how the natural frequency is determined by the mass and stiffness properties of the system.	**06**
	b)	Describe the concept of the principal mode of vibration in mechanical systems. Discuss how the principal mode represents the dominant pattern of motion exhibited by a vibrating system and how it influences the system's response to external forces.	**08**
Q.6	**a)**	Discuss the concept of free vibration in multi-degree-of-freedom (DOF) systems.	**06**
	b)	Explain the matrix iteration method for analyzing the free vibration of multi-DOF systems.	**08**

Q.7	**a)**	Discuss the principle of operation of seismic instruments used for measuring vibrations.	**06**
	b)	Describe the different techniques used in condition and vibration monitoring, including vibration analysis, temperature monitoring, oil analysis, and acoustic emission monitoring.	**08**

Seat No.	

Set R

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Mechanical Vibrations (BTN02517)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What term describes a system's ability to resist deformation under an applied load?
a) Flexibility b) Stiffness
c) Damping d) Resonance

2) Condition monitoring data collection involves:
a) Continuously monitoring vibration levels
b) Collecting data at regular intervals
c) Recording only when faults are suspected
d) Using manual data entry methods

3) FFT analyzer is used to:
a) Measure displacement
b) Analyze frequency content of signals
c) Determine phase angles
d) Measure damping ratios

4) Which type of accelerometer measures both static and dynamic acceleration?
a) Undamped accelerometer b) Piezoelectric accelerometer
c) Capacitive accelerometer d) Damped accelerometer

5) What is the term used to describe the maximum displacement from the equilibrium position in a vibrating system?
a) Amplitude b) Frequency
c) Period d) Damping

6) Damping in a vibrating system:
a) Increases the amplitude of vibration
b) Decreases the amplitude of vibration
c) Has no effect on the amplitude of vibration
d) Changes the frequency of vibration

7) The critical damping ratio for a single degree of freedom system:
a) Is greater than 1
b) Is less than 1
c) Is equal to 1
d) Can be any value depending on the system

8) The displacement of an undamped free vibrating system with time can be represented by which mathematical function?
a) Exponential function b) Sine function
c) Cosine function d) Linear function

9) In undamped free vibration, what is the relationship between the frequency of vibration and the time period?
a) They are equal
b) Frequency is the reciprocal of time period
c) Frequency is the square of time period
d) There is no relationship between them

10) In forced vibration, the frequency of the external force is typically:
a) Equal to the natural frequency of the system
b) Less than the natural frequency of the system
c) Greater than the natural frequency of the system
d) Unrelated to the natural frequency of the system

11) Which of the following materials is commonly used for isolating vibrations in mechanical systems?
a) Steel b) Rubber
c) Aluminum d) Copper

12) Which of the following systems exhibits principal mode of vibration?
a) Spring-mass system b) Double pendulum
c) Torsional system d) Geared system

13) The natural frequency of a torsional system depends primarily on:
a) Mass b) Stiffness
c) Damping d) Length

14) Holzer's method is primarily used for:
a) Solving linear algebraic equations
b) Analyzing the stability of a vibrating system
c) Finding the mode shapes of a vibrating system
d) Estimating damping ratios of a vibrating system

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Mechanical Vibrations (BTN02517)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2	**a)**	Explain the concept of vibration and oscillation. Differentiate between the two phenomena, providing examples for each.	**04**
	b)	Define and differentiate between periodic and non-periodic motion.	**04**
	c)	Define the degree of freedom in the context of vibrating systems. Explain how the number of degrees of freedom influences the complexity of vibration analysis and the behavior of mechanical systems.	**06**
Q.3	**a)**	Discuss the concept of logarithmic decrement as a measure of damping in vibrating systems.	**06**
	b)	Compare and contrast the methods of analysis for undamped free vibration, including D'Alembert's principle	**08**
Q.4	**a)**	Provide an introduction to forced vibration, explaining the concept and distinguishing it from free vibration.	**06**
	b)	Describe typical isolators and mounts used for vibration isolation in mechanical systems. Discuss the characteristics and applications of various types of isolators.	**08**

Section – II

Q.5	**a)**	Explain how the natural frequency is determined by the mass and stiffness properties of the system.	**06**
	b)	Describe the concept of the principal mode of vibration in mechanical systems. Discuss how the principal mode represents the dominant pattern of motion exhibited by a vibrating system and how it influences the system's response to external forces.	**08**
Q.6	**a)**	Discuss the concept of free vibration in multi-degree-of-freedom (DOF) systems.	**06**
	b)	Explain the matrix iteration method for analyzing the free vibration of multi-DOF systems.	**08**

Q.7	**a)**	Discuss the principle of operation of seismic instruments used for measuring vibrations.	**06**
	b)	Describe the different techniques used in condition and vibration monitoring, including vibration analysis, temperature monitoring, oil analysis, and acoustic emission monitoring.	**08**

Seat No.		Set	S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Mechanical Vibrations (BTN02517)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In forced vibration, the frequency of the external force is typically:
a) Equal to the natural frequency of the system
b) Less than the natural frequency of the system
c) Greater than the natural frequency of the system
d) Unrelated to the natural frequency of the system

2) Which of the following materials is commonly used for isolating vibrations in mechanical systems?
a) Steel b) Rubber
c) Aluminum d) Copper

3) Which of the following systems exhibits principal mode of vibration?
a) Spring-mass system b) Double pendulum
c) Torsional system d) Geared system

4) The natural frequency of a torsional system depends primarily on:
a) Mass b) Stiffness
c) Damping d) Length

5) Holzer's method is primarily used for:
a) Solving linear algebraic equations
b) Analyzing the stability of a vibrating system
c) Finding the mode shapes of a vibrating system
d) Estimating damping ratios of a vibrating system

6) What term describes a system's ability to resist deformation under an applied load?
a) Flexibility b) Stiffness
c) Damping d) Resonance

7) Condition monitoring data collection involves:
a) Continuously monitoring vibration levels
b) Collecting data at regular intervals
c) Recording only when faults are suspected
d) Using manual data entry methods

8) FFT analyzer is used to:
a) Measure displacement
b) Analyze frequency content of signals
c) Determine phase angles
d) Measure damping ratios

9) Which type of accelerometer measures both static and dynamic acceleration?
a) Undamped accelerometer b) Piezoelectric accelerometer
c) Capacitive accelerometer d) Damped accelerometer

10) What is the term used to describe the maximum displacement from the equilibrium position in a vibrating system?
a) Amplitude b) Frequency
c) Period d) Damping

11) Damping in a vibrating system:
a) Increases the amplitude of vibration
b) Decreases the amplitude of vibration
c) Has no effect on the amplitude of vibration
d) Changes the frequency of vibration

12) The critical damping ratio for a single degree of freedom system:
a) Is greater than 1
b) Is less than 1
c) Is equal to 1
d) Can be any value depending on the system

13) The displacement of an undamped free vibrating system with time can be represented by which mathematical function?
a) Exponential function b) Sine function
c) Cosine function d) Linear function

14) In undamped free vibration, what is the relationship between the frequency of vibration and the time period?
a) They are equal
b) Frequency is the reciprocal of time period
c) Frequency is the square of time period
d) There is no relationship between them

SLR-BD-361

Seat No.		Set	S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGGINERING
Mechanical Vibrations (BTN02517)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2	**a)**	Explain the concept of vibration and oscillation. Differentiate between the two phenomena, providing examples for each.	**04**
	b)	Define and differentiate between periodic and non-periodic motion.	**04**
	c)	Define the degree of freedom in the context of vibrating systems. Explain how the number of degrees of freedom influences the complexity of vibration analysis and the behavior of mechanical systems.	**06**
Q.3	**a)**	Discuss the concept of logarithmic decrement as a measure of damping in vibrating systems.	**06**
	b)	Compare and contrast the methods of analysis for undamped free vibration, including D'Alembert's principle	**08**
Q.4	**a)**	Provide an introduction to forced vibration, explaining the concept and distinguishing it from free vibration.	**06**
	b)	Describe typical isolators and mounts used for vibration isolation in mechanical systems. Discuss the characteristics and applications of various types of isolators.	**08**

Section – II

Q.5	**a)**	Explain how the natural frequency is determined by the mass and stiffness properties of the system.	**06**
	b)	Describe the concept of the principal mode of vibration in mechanical systems. Discuss how the principal mode represents the dominant pattern of motion exhibited by a vibrating system and how it influences the system's response to external forces.	**08**
Q.6	**a)**	Discuss the concept of free vibration in multi-degree-of-freedom (DOF) systems.	**06**
	b)	Explain the matrix iteration method for analyzing the free vibration of multi-DOF systems.	**08**

Q.7	**a)**	Discuss the principle of operation of seismic instruments used for measuring vibrations.	**06**
	b)	Describe the different techniques used in condition and vibration monitoring, including vibration analysis, temperature monitoring, oil analysis, and acoustic emission monitoring.	**08**

SLR-BD-362

Seat No.	

Set P

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Machine Vision (BTN02518)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select the correct alternative. **14**

1) Zero crossing of Laplacian represents location of corner in an image _____.
a) True b) False

2) Silhouette is obtained with front light source _____.
a) True b) False

3) With Harris comer detector, comer is detected when _____.
a) both eigenvalues of cross correlation matrix are zeros
b) one of the eigenvalues of cross correlation matrix is zero
c) both eigenvalues of cross correlation matrix are significant
d) none of the above

4) The process in which small part of image is compared with large image and located in large image, is called _____.
a) pattern recognition b) template matching
c) region growing d) split and merge technique

5) If path traced by end effector of robot arm is complex and continuous, then robot programming should be done by following approach _____.
a) manual leadthrouh b) powered leadthrouh
c) textual programming method d) none of the above

6) In the context of camera, the term CCD stands for _____.
a) Charge coupled device b) Charge creating device
c) Closed circuit device d) None of the above

7) Charge to voltage converter for Individual pixel is employed in _____.
a) CCD camera b) CMOS camera
c) Vidicon Camera d) None of the above

8) Bin picking application of robot involves _____.
a) Identification and Servoing b) Identification and inspection
c) Inspection and Servoing d) None of the above

9) *Seam tracking in* continuous arc welding is an example of _____.
a) Visual servoing and navigation
b) Inspection
c) Identification
d) Inspection and identification

10) The application in which the purpose of machine vision system is to recognize and classify an object is called _____.
a) Inspection
b) Identification
c) Visual servoing and navigation
d) None of the above

11) Which of the following is a robot programming language?
a) SAIL b) MAIL
c) RAIL d) TAIL

12) An image which contains two distinct intensity levels between black and white is a _____ image.
a) Colour b) Grayscale
c) Binary d) Monochrome

13) The process of _____ is a technique which relates the location of pixels in the image array to the points in the scene.
a) Camera calibration b) Camera orientation
c) Camera adaptation d) Camera adjustment

14) The acronym AGV stands for _____.
a) Automatic Guided Vehicle b) Automated Guided Vehicle
c) Automated Gliding Vehicle d) Automatic Gliding Vehicle

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Machine Vision (BTN02518)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

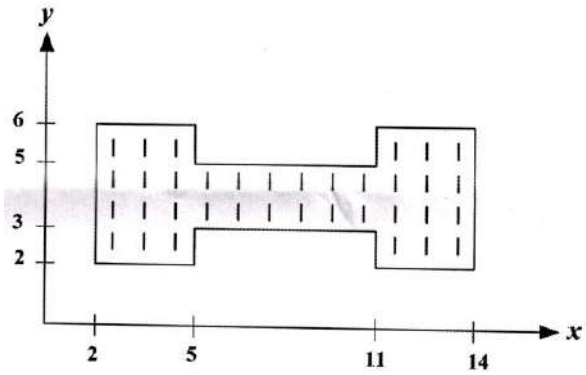
Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 **a)** Draw neat sketch of block diagram of Machine Vision system. **07**
b) Explain with neat sketch flash type AD converter. **07**

Q.3 **a)** What do you understand by image segmentation? Discuss two techniques of image segmentation. **08**
b) Discuss in detail image thresholding. **06**

Q.4 **a)** Determine the area, minimum aspect ratio, the diameter, perimeter, centroid and thinness measures of the image. **10**



b) Why do we need image processing? Explain. **04**

Section – II

Q.5	**a)**	Explain the working of Harris corner detector.	**07**
	b)	Draw neat sketch of CMOS image sensor and explain its working.	**07**
Q.6	**a)**	Explain in detail camera calibration.	**07**
	b)	Explain in brief offline programming, teachthrough method and walkthrough method.	**07**
Q.7		**Write a short note on. (Any Three)**	**14**
	a)	Inspection application of machine vision in robotics	
	b)	Visual servoing and navigation application of machine vision in robotics	
	c)	Template matching	
	d)	Image representation	

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Machine Vision (BTN02518)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select the correct alternative. **14**

1) Bin picking application of robot involves _____.
a) Identification and Servoing b) Identification and inspection
c) Inspection and Servoing d) None of the above

2) *Seam tracking in* continuous arc welding is an example of _____.
a) Visual servoing and navigation
b) Inspection
c) Identification
d) Inspection and identification

3) The application in which the purpose of machine vision system is to recognize and classify an object is called _____.
a) Inspection
b) Identification
c) Visual servoing and navigation
d) None of the above

4) Which of the following is a robot programming language?
a) SAIL b) MAIL
c) RAIL d) TAIL

5) An image which contains two distinct intensity levels between black and white is a _____ image.
a) Colour b) Grayscale
c) Binary d) Monochrome

6) The process of _____ is a technique which relates the location of pixels in the image array to the points in the scene.
a) Camera calibration b) Camera orientation
c) Camera adaptation d) Camera adjustment

7) The acronym AGV stands for _____.
a) Automatic Guided Vehicle b) Automated Guided Vehicle
c) Automated Gliding Vehicle d) Automatic Gliding Vehicle

8) Zero crossing of Laplacian represents location of corner in an image _____.
a) True b) False

9) Silhouette is obtained with front light source _____.
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10) With Harris comer detector, comer is detected when _____.
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c) both eigenvalues of cross correlation matrix are significant
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11) The process in which small part of image is compared with large image and located in large image, is called _____.
a) pattern recognition b) template matching
c) region growing d) split and merge technique

12) If path traced by end effector of robot arm is complex and continuous, then robot programming should be done by following approach _____.
a) manual leadthrouh b) powered leadthrouh
c) textual programming method d) none of the above

13) In the context of camera, the term CCD stands for _____.
a) Charge coupled device b) Charge creating device
c) Closed circuit device d) None of the above

14) Charge to voltage converter for Individual pixel is employed in _____.
a) CCD camera b) CMOS camera
c) Vidicon Camera d) None of the above

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Machine Vision (BTN02518)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

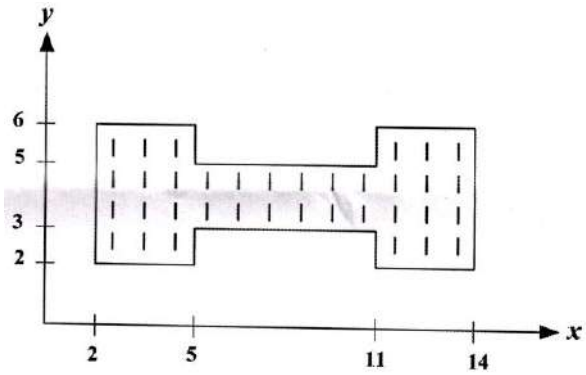
Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 **a)** Draw neat sketch of block diagram of Machine Vision system. **07**
b) Explain with neat sketch flash type AD converter. **07**

Q.3 **a)** What do you understand by image segmentation? Discuss two techniques of image segmentation. **08**
b) Discuss in detail image thresholding. **06**

Q.4 **a)** Determine the area, minimum aspect ratio, the diameter, perimeter, centroid and thinness measures of the image. **10**



b) Why do we need image processing? Explain. **04**

Section – II

Q.5	**a)**	Explain the working of Harris corner detector.	**07**
	b)	Draw neat sketch of CMOS image sensor and explain its working.	**07**
Q.6	**a)**	Explain in detail camera calibration.	**07**
	b)	Explain in brief offline programming, teachthrough method and walkthrough method.	**07**
Q.7		**Write a short note on. (Any Three)**	**14**
	a)	Inspection application of machine vision in robotics	
	b)	Visual servoing and navigation application of machine vision in robotics	
	c)	Template matching	
	d)	Image representation	

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Machine Vision (BTN02518)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select the correct alternative. **14**

1) Which of the following is a robot programming language?
a) SAIL b) MAIL
c) RAIL d) TAIL

2) An image which contains two distinct intensity levels between black and white is a _____ image.
a) Colour b) Grayscale
c) Binary d) Monochrome

3) The process of _____ is a technique which relates the location of pixels in the image array to the points in the scene.
a) Camera calibration b) Camera orientation
c) Camera adaptation d) Camera adjustment

4) The acronym AGV stands for _____.
a) Automatic Guided Vehicle b) Automated Guided Vehicle
c) Automated Gliding Vehicle d) Automatic Gliding Vehicle

5) Zero crossing of Laplacian represents location of corner in an image _____.
a) True b) False

6) Silhouette is obtained with front light source _____.
a) True b) False

7) With Harris comer detector, comer is detected when _____.
a) both eigenvalues of cross correlation matrix are zeros
b) one of the eigenvalues of cross correlation matrix is zero
c) both eigenvalues of cross correlation matrix are significant
d) none of the above

8) The process in which small part of image is compared with large image and located in large image, is called _____.
a) pattern recognition b) template matching
c) region growing d) split and merge technique

9) If path traced by end effector of robot arm is complex and continuous, then robot programming should be done by following approach _____.
a) manual leadthrouh b) powered leadthrouh
c) textual programming method d) none of the above

10) In the context of camera, the term CCD stands for _____.
a) Charge coupled device b) Charge creating device
c) Closed circuit device d) None of the above

11) Charge to voltage converter for Individual pixel is employed in _____.
a) CCD camera b) CMOS camera
c) Vidicon Camera d) None of the above

12) Bin picking application of robot involves _____.
a) Identification and Servoing b) Identification and inspection
c) Inspection and Servoing d) None of the above

13) *Seam tracking in* continuous arc welding is an example of _____.
a) Visual servoing and navigation
b) Inspection
c) Identification
d) Inspection and identification

14) The application in which the purpose of machine vision system is to recognize and classify an object is called _____.
a) Inspection
b) Identification
c) Visual servoing and navigation
d) None of the above

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Machine Vision (BTN02518)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

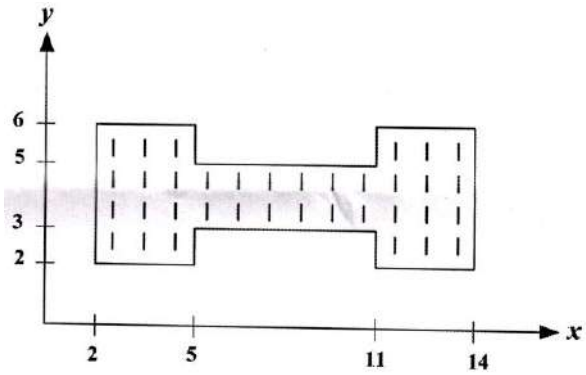
Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 **a)** Draw neat sketch of block diagram of Machine Vision system. **07**
b) Explain with neat sketch flash type AD converter. **07**

Q.3 **a)** What do you understand by image segmentation? Discuss two techniques of image segmentation. **08**
b) Discuss in detail image thresholding. **06**

Q.4 **a)** Determine the area, minimum aspect ratio, the diameter, perimeter, centroid and thinness measures of the image. **10**



b) Why do we need image processing? Explain. **04**

Section – II

Q.5	**a)**	Explain the working of Harris corner detector.	**07**
	b)	Draw neat sketch of CMOS image sensor and explain its working.	**07**
Q.6	**a)**	Explain in detail camera calibration.	**07**
	b)	Explain in brief offline programming, teachthrough method and walkthrough method.	**07**
Q.7		**Write a short note on. (Any Three)**	**14**
	a)	Inspection application of machine vision in robotics	
	b)	Visual servoing and navigation application of machine vision in robotics	
	c)	Template matching	
	d)	Image representation	

SLR-BD-362

Seat No.	

Set S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Machine Vision (BTN02518)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select the correct alternative. **14**

1) In the context of camera, the term CCD stands for _____.
a) Charge coupled device b) Charge creating device
c) Closed circuit device d) None of the above

2) Charge to voltage converter for Individual pixel is employed in _____.
a) CCD camera b) CMOS camera
c) Vidicon Camera d) None of the above

3) Bin picking application of robot involves _____.
a) Identification and Servoing b) Identification and inspection
c) Inspection and Servoing d) None of the above

4) *Seam tracking in* continuous arc welding is an example of _____.
a) Visual servoing and navigation
b) Inspection
c) Identification
d) Inspection and identification

5) The application in which the purpose of machine vision system is to recognize and classify an object is called _____.
a) Inspection
b) Identification
c) Visual servoing and navigation
d) None of the above

6) Which of the following is a robot programming language?
a) SAIL b) MAIL
c) RAIL d) TAIL

7) An image which contains two distinct intensity levels between black and white is a _____ image.
a) Colour b) Grayscale
c) Binary d) Monochrome

8) The process of _____ is a technique which relates the location of pixels in the image array to the points in the scene.
a) Camera calibration b) Camera orientation
c) Camera adaptation d) Camera adjustment

9) The acronym AGV stands for _____.
a) Automatic Guided Vehicle b) Automated Guided Vehicle
c) Automated Gliding Vehicle d) Automatic Gliding Vehicle

10) Zero crossing of Laplacian represents location of corner in an image _____.
a) True b) False

11) Silhouette is obtained with front light source _____.
a) True b) False

12) With Harris comer detector, comer is detected when _____.
a) both eigenvalues of cross correlation matrix are zeros
b) one of the eigenvalues of cross correlation matrix is zero
c) both eigenvalues of cross correlation matrix are significant
d) none of the above

13) The process in which small part of image is compared with large image and located in large image, is called _____.
a) pattern recognition b) template matching
c) region growing d) split and merge technique

14) If path traced by end effector of robot arm is complex and continuous, then robot programming should be done by following approach _____.
a) manual leadthrouh b) powered leadthrouh
c) textual programming method d) none of the above

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Machine Vision (BTN02518)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

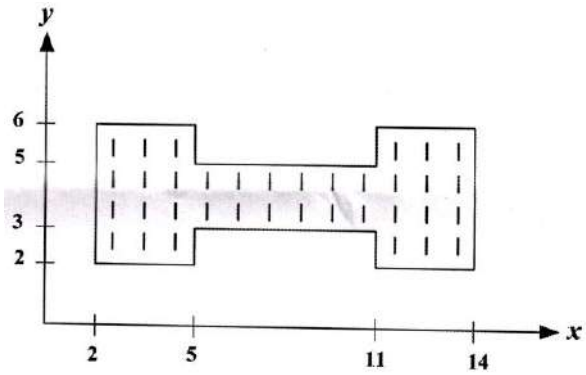
Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 **a)** Draw neat sketch of block diagram of Machine Vision system. **07**
b) Explain with neat sketch flash type AD converter. **07**

Q.3 **a)** What do you understand by image segmentation? Discuss two techniques of image segmentation. **08**
b) Discuss in detail image thresholding. **06**

Q.4 **a)** Determine the area, minimum aspect ratio, the diameter, perimeter, centroid and thinness measures of the image. **10**



b) Why do we need image processing? Explain. **04**

Section – II

Q.5	**a)**	Explain the working of Harris corner detector.	**07**
	b)	Draw neat sketch of CMOS image sensor and explain its working.	**07**
Q.6	**a)**	Explain in detail camera calibration.	**07**
	b)	Explain in brief offline programming, teachthrough method and walkthrough method.	**07**
Q.7		**Write a short note on. (Any Three)**	**14**
	a)	Inspection application of machine vision in robotics	
	b)	Visual servoing and navigation application of machine vision in robotics	
	c)	Template matching	
	d)	Image representation	

SLR-BD-363

Seat No.		Set	P

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
3D Printing Material (BTN02519)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the first step in the design process?
a) Make a prototype
b) Identify the problem or the need
c) Market your idea
d) Test and retest

2) Choose the correct sequence to generate prototype.
a) 3D CAD data - CAD solid model - STL file - RP prototype
b) CAD solid model - 3D CAD data - RP prototype - STL file
c) STL file - 3D CAD data - CAD solid model - RP prototype
d) 3D CAD data - STL file - CAD solid model - RP prototype

3) From following, the alternative name for Rapid Prototyping is ____.
a) Additive Manufacturing b) Layer Manufacturing
c) Direct CAD Manufacturing d) All of the above

4) Process of converting STL file model in to layers is called ____ in RP.
a) Chopping b) Slicing
c) Cutting d) Trimming

5) Full form of STL is ____.
a) Straight-lithography b) Streto-lithography
c) Stereo-lithography d) Straight-lipsography

6) In the ____ process, one starts with a single block of solid material larger than the final size of the desired object and material is removed until the desired shape is reached.
a) Subtractive process b) Additive process
c) Formative process d) All of above

7) Which of the following is typically the most expensive type of 3D printer?
a) SLA b) SLM
c) FDM d) None of the above

8) Which printer melts metal?
a) SLS b) SLM
c) SLA d) FDM

9) SLA printer's package material is in a ____.
a) Chain b) Spool
c) Cartridge d) None of the above

10) What material is not used in 3D printing?
a) Nylon b) ABS
c) PLA d) PVC

11) Which file type is most commonly exported from CAD software?
a) SLDRT b) JPG
c) STL d) X3G

12) Process of forming metal powder by directing molten metal through an orifice after which it is break into small particle using high pressure fluid is known as?
a) Atomization b) Reduction
c) Crushing d) Electrolysis

13) In Fused Deposition Modelling, the raw material is used in the form of ____.
a) Wax b) Wire
c) Powder d) All the above mentioned

14) In the process of Selective Laser Sintering, raw material used is in the form of ____.
a) Machining Wax b) Foam Core
c) Powder d) Rubber

SLR-BD-363

Seat No.	

Set P

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
3D Printing Material (BTN02519)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section – I, Q. 2 is compulsory and attempt any two questions from the remaining questions.
2) In Section – II, Q. 6 is compulsory and attempt any two questions from the remaining questions.
3) Figures to the right indicate full marks.
4) Assume suitable data if requited.
5) Use of scientific calculator is allowed.

Section – I

Q.2	Explain the product design concept with respect to 3D printing.	**10**
Q.3	Compare Conventional Manufacturing v/s Additive Manufacturing.	**09**
Q.4	Enlist different thermo plastic materials used in 3D Printer. Explain in detail applications and characteristics of any 2 materials.	**09**
Q.5	Enlist different metal and alloy materials used in 3D Printer. Explain in detail applications and characteristics of any 03 metal and alloy materials.	**09**

Section – II

Q.6	Discuss various forms of raw material used in 3D Printing.	**10**
Q.7	Enlist the different techniques to generate the powder. And explain with neat sketch any 01 technique.	**09**
Q.8	Explain Selection process of 3d printing machine specification for following Materials: 1) Polymers 2) Composites	**09**
Q.9	Discuss the different applications of 3D printing in the various field.	**09**

SLR-BD-363

Seat No.	

Set Q

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
3D Printing Material (BTN02519)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which printer melts metal?
a) SLS b) SLM
c) SLA d) FDM

2) SLA printer's package material is in a ____.
a) Chain b) Spool
c) Cartridge d) None of the above

3) What material is not used in 3D printing?
a) Nylon b) ABS
c) PLA d) PVC

4) Which file type is most commonly exported from CAD software?
a) SLDRT b) JPG
c) STL d) X3G

5) Process of forming metal powder by directing molten metal through an orifice after which it is break into small particle using high pressure fluid is known as?
a) Atomization b) Reduction
c) Crushing d) Electrolysis

6) In Fused Deposition Modelling, the raw material is used in the form of ____.
a) Wax b) Wire
c) Powder d) All the above mentioned

7) In the process of Selective Laser Sintering, raw material used is in the form of ____.

a) Machining Wax b) Foam Core
c) Powder d) Rubber

8) What is the first step in the design process?

a) Make a prototype
b) Identify the problem or the need
c) Market your idea
d) Test and retest

9) Choose the correct sequence to generate prototype.

a) 3D CAD data - CAD solid model - STL file - RP prototype
b) CAD solid model - 3D CAD data - RP prototype - STL file
c) STL file - 3D CAD data - CAD solid model - RP prototype
d) 3D CAD data - STL file - CAD solid model - RP prototype

10) From following, the alternative name for Rapid Prototyping is ____.

a) Additive Manufacturing b) Layer Manufacturing
c) Direct CAD Manufacturing d) All of the above

11) Process of converting STL file model in to layers is called ____ in RP.

a) Chopping b) Slicing
c) Cutting d) Trimming

12) Full form of STL is ____.

a) Straight-lithography b) Streto-lithography
c) Stereo-lithography d) Straight-lipsography

13) In the ____ process, one starts with a single block of solid material larger than the final size of the desired object and material is removed until the desired shape is reached.

a) Subtractive process b) Additive process
c) Formative process d) All of above

14) Which of the following is typically the most expensive type of 3D printer?

a) SLA b) SLM
c) FDM d) None of the above

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
3D Printing Material (BTN02519)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section – I, Q. 2 is compulsory and attempt any two questions from the remaining questions.
2) In Section – II, Q. 6 is compulsory and attempt any two questions from the remaining questions.
3) Figures to the right indicate full marks.
4) Assume suitable data if requited.
5) Use of scientific calculator is allowed.

Section – I

Q.2	Explain the product design concept with respect to 3D printing.	**10**
Q.3	Compare Conventional Manufacturing v/s Additive Manufacturing.	**09**
Q.4	Enlist different thermo plastic materials used in 3D Printer. Explain in detail applications and characteristics of any 2 materials.	**09**
Q.5	Enlist different metal and alloy materials used in 3D Printer. Explain in detail applications and characteristics of any 03 metal and alloy materials.	**09**

Section – II

Q.6	Discuss various forms of raw material used in 3D Printing.	**10**
Q.7	Enlist the different techniques to generate the powder. And explain with neat sketch any 01 technique.	**09**
Q.8	Explain Selection process of 3d printing machine specification for following Materials: 1) Polymers 2) Composites	**09**
Q.9	Discuss the different applications of 3D printing in the various field.	**09**

Seat No.	

Set R

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
3D Printing Material (BTN02519)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which file type is most commonly exported from CAD software?
a) SLDRT b) JPG
c) STL d) X3G

2) Process of forming metal powder by directing molten metal through an orifice after which it is break into small particle using high pressure fluid is known as?
a) Atomization b) Reduction
c) Crushing d) Electrolysis

3) In Fused Deposition Modelling, the raw material is used in the form of ____.
a) Wax b) Wire
c) Powder d) All the above mentioned

4) In the process of Selective Laser Sintering, raw material used is in the form of ____.
a) Machining Wax b) Foam Core
c) Powder d) Rubber

5) What is the first step in the design process?
a) Make a prototype
b) Identify the problem or the need
c) Market your idea
d) Test and retest

6) Choose the correct sequence to generate prototype.
a) 3D CAD data - CAD solid model - STL file - RP prototype
b) CAD solid model - 3D CAD data - RP prototype - STL file
c) STL file - 3D CAD data - CAD solid model - RP prototype
d) 3D CAD data - STL file - CAD solid model - RP prototype

7) From following, the alternative name for Rapid Prototyping is ____.
a) Additive Manufacturing b) Layer Manufacturing
c) Direct CAD Manufacturing d) All of the above

8) Process of converting STL file model in to layers is called ____ in RP.
a) Chopping b) Slicing
c) Cutting d) Trimming

9) Full form of STL is ____.
a) Straight-lithography b) Streto-lithography
c) Stereo-lithography d) Straight-lipsography

10) In the ____ process, one starts with a single block of solid material larger than the final size of the desired object and material is removed until the desired shape is reached.
a) Subtractive process b) Additive process
c) Formative process d) All of above

11) Which of the following is typically the most expensive type of 3D printer?
a) SLA b) SLM
c) FDM d) None of the above

12) Which printer melts metal?
a) SLS b) SLM
c) SLA d) FDM

13) SLA printer's package material is in a ____.
a) Chain b) Spool
c) Cartridge d) None of the above

14) What material is not used in 3D printing?
a) Nylon b) ABS
c) PLA d) PVC

SLR-BD-363

Seat No.	

Set R

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
3D Printing Material (BTN02519)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section – I, Q. 2 is compulsory and attempt any two questions from the remaining questions.
2) In Section – II, Q. 6 is compulsory and attempt any two questions from the remaining questions.
3) Figures to the right indicate full marks.
4) Assume suitable data if requited.
5) Use of scientific calculator is allowed.

Section – I

Q.2	Explain the product design concept with respect to 3D printing.	**10**
Q.3	Compare Conventional Manufacturing v/s Additive Manufacturing.	**09**
Q.4	Enlist different thermo plastic materials used in 3D Printer. Explain in detail applications and characteristics of any 2 materials.	**09**
Q.5	Enlist different metal and alloy materials used in 3D Printer. Explain in detail applications and characteristics of any 03 metal and alloy materials.	**09**

Section – II

Q.6	Discuss various forms of raw material used in 3D Printing.	**10**
Q.7	Enlist the different techniques to generate the powder. And explain with neat sketch any 01 technique.	**09**
Q.8	Explain Selection process of 3d printing machine specification for following Materials: 1) Polymers 2) Composites	**09**
Q.9	Discuss the different applications of 3D printing in the various field.	**09**

Seat No.		Set	S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
3D Printing Material (BTN02519)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In the ____ process, one starts with a single block of solid material larger than the final size of the desired object and material is removed until the desired shape is reached.
a) Subtractive process b) Additive process
c) Formative process d) All of above

2) Which of the following is typically the most expensive type of 3D printer?
a) SLA b) SLM
c) FDM d) None of the above

3) Which printer melts metal?
a) SLS b) SLM
c) SLA d) FDM

4) SLA printer's package material is in a ____.
a) Chain b) Spool
c) Cartridge d) None of the above

5) What material is not used in 3D printing?
a) Nylon b) ABS
c) PLA d) PVC

6) Which file type is most commonly exported from CAD software?
a) SLDRT b) JPG
c) STL d) X3G

7) Process of forming metal powder by directing molten metal through an orifice after which it is break into small particle using high pressure fluid is known as?

a) Atomization b) Reduction
c) Crushing d) Electrolysis

8) In Fused Deposition Modelling, the raw material is used in the form of ____.

a) Wax b) Wire
c) Powder d) All the above mentioned

9) In the process of Selective Laser Sintering, raw material used is in the form of ____.

a) Machining Wax b) Foam Core
c) Powder d) Rubber

10) What is the first step in the design process?

a) Make a prototype
b) Identify the problem or the need
c) Market your idea
d) Test and retest

11) Choose the correct sequence to generate prototype.

a) 3D CAD data - CAD solid model - STL file - RP prototype
b) CAD solid model - 3D CAD data - RP prototype - STL file
c) STL file - 3D CAD data - CAD solid model - RP prototype
d) 3D CAD data - STL file - CAD solid model - RP prototype

12) From following, the alternative name for Rapid Prototyping is ____.

a) Additive Manufacturing b) Layer Manufacturing
c) Direct CAD Manufacturing d) All of the above

13) Process of converting STL file model in to layers is called ____ in RP.

a) Chopping b) Slicing
c) Cutting d) Trimming

14) Full form of STL is ____.

a) Straight-lithography b) Streto-lithography
c) Stereo-lithography d) Straight-lipsography

SLR-BD-363

Seat No.		Set	S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
3D Printing Material (BTN02519)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section – I, Q. 2 is compulsory and attempt any two questions from the remaining questions.
2) In Section – II, Q. 6 is compulsory and attempt any two questions from the remaining questions.
3) Figures to the right indicate full marks.
4) Assume suitable data if requited.
5) Use of scientific calculator is allowed.

Section – I

Q.2	Explain the product design concept with respect to 3D printing.	**10**
Q.3	Compare Conventional Manufacturing v/s Additive Manufacturing.	**09**
Q.4	Enlist different thermo plastic materials used in 3D Printer. Explain in detail applications and characteristics of any 2 materials.	**09**
Q.5	Enlist different metal and alloy materials used in 3D Printer. Explain in detail applications and characteristics of any 03 metal and alloy materials.	**09**

Section – II

Q.6	Discuss various forms of raw material used in 3D Printing.	**10**
Q.7	Enlist the different techniques to generate the powder. And explain with neat sketch any 01 technique.	**09**
Q.8	Explain Selection process of 3d printing machine specification for following Materials: 1) Polymers 2) Composites	**09**
Q.9	Discuss the different applications of 3D printing in the various field.	**09**

SLR-BD-364

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Conservation, Management and Audit (BTN02520)

Day & Date: Friday, 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which of the following statements are true?
a) Power is proportional to voltage only
b) Power is proportional to current only
c) Power is neither proportional to voltage nor to the current
d) Power is proportional to both the voltage and current

2) The various types of the instruments, which requires during audit need to be _____.
a) Easy to carry b) Easy to operate
c) Inexpensive d) All (a) to (c)

3) Which of the following is a good medium for constant temperature heating?
a) Water b) Steam
c) Coolant d) Diesel

4) What is energy Science?
a) Study of Energy
b) Study of energy conversion
c) Study of energy and its conversion in other forms
d) Study of energy generation

5) Which is not a Primary energy resources?
a) Petroleum products b) Electrical Energy
c) Geothermal Energy d) Biomass like wood

6) Indian per capita energy consumption is _____ of the world average.
a) 4% b) 20%
c) 1% d) 10%

7) Kilowatt-hour(kWh) is a unit of?
a) Current b) Power
c) Energy d) Resistance

8) Acid rain is caused by the release of the following components from combustion of fuels.
a) SOx and NOx b) SOx and CO2
c) CO2 and NOx d) H2O

9) Indian per capita energy consumption is _____ of the world average.
a) 4% b) 20%
c) 1% d) 10%

10) Sunlight, air. soil, and water are examples of ____.
a) Renewable resources b) Non- renewable resources
c) Conventional resources d) Non-natural resources

11) The effectiveness of a heat exchanger depends on _____.
a) Specific heat of hot fluid
b) Specific heat of cold fluid
c) Inlet temperature of hot fluid
d) LMTD

12) Which fuel dominates the energy mix in Indian energy scenario?
a) Oil b) Natural gas
c) Coal d) Nuclear

13) Thermo-compressor is commonly used for _____.
a) Compressing hot air
b) flash steam recovery
c) Distillation
d) reverse compression of CO2

14) Which of the following fuel needs maximum amount of excess air for complete combustion?
a) Furnace oil b) Natural gas
c) Pulverized coal d) Wood

SLR-BD-364

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Conservation, Management and Audit (BTN02520)

Day & Date: Friday, 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Solve:
- **a)** How would you decrease environmental impacts of conventional energy? **07**
- **b)** Why should we conserve energy? What should be the energy strategy for the future of a nation? **07**

Q.3 Solve:
- **a)** How to conduct a detailed energy audit? **07**
- **b)** Explain Preliminary Energy Audit. **07**

Q.4 Answer the following questions. (Any Four) **14**
- **a)** Explain Audit report.
- **b)** Describe Current energy scenario - World.
- **c)** Describe relation between Environment and Energy.
- **d)** Explain Post Energy Audit.
- **e)** Write a short note on Energy action Planning.

Section – II

Q.5 Solve:
- **a)** Explain Energy Conservation opportunities in Compressed Air system. **07**
- **b)** Explain Energy Conservation opportunities in cooling tower. **07**

Q.6 Solve:
- **a)** List the energy saving opportunities in pumping system. **07**
- **b)** What are the direct and indirect benefits of waste heat recovery? **07**

Q.7 Write short notes. (Any Four) **14**
- **a)** Explain different efficient steam distribution systems.
- **b)** Explain Energy Conservation opportunities in Steam System.
- **c)** Explain Energy Performance Assessment of pump.
- **d)** Time Value of Money
- **e)** Simple Payback Period

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Conservation, Management and Audit (BTN02520)

Day & Date: Friday, 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Acid rain is caused by the release of the following components from combustion of fuels.
a) SOx and NOx b) SOx and CO2
c) CO2 and NOx d) H2O

2) Indian per capita energy consumption is _____ of the world average.
a) 4% b) 20%
c) 1% d) 10%

3) Sunlight, air. soil, and water are examples of ____.
a) Renewable resources b) Non- renewable resources
c) Conventional resources d) Non-natural resources

4) The effectiveness of a heat exchanger depends on _____.
a) Specific heat of hot fluid
b) Specific heat of cold fluid
c) Inlet temperature of hot fluid
d) LMTD

5) Which fuel dominates the energy mix in Indian energy scenario?
a) Oil b) Natural gas
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6) Thermo-compressor is commonly used for _____.
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c) Distillation
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7) Which of the following fuel needs maximum amount of excess air for complete combustion?

a) Furnace oil
b) Natural gas
c) Pulverized coal
d) Wood

8) Which of the following statements are true?

a) Power is proportional to voltage only
b) Power is proportional to current only
c) Power is neither proportional to voltage nor to the current
d) Power is proportional to both the voltage and current

9) The various types of the instruments, which requires during audit need to be _____.

a) Easy to carry
b) Easy to operate
c) Inexpensive
d) All (a) to (c)

10) Which of the following is a good medium for constant temperature heating?

a) Water
b) Steam
c) Coolant
d) Diesel

11) What is energy Science?

a) Study of Energy
b) Study of energy conversion
c) Study of energy and its conversion in other forms
d) Study of energy generation

12) Which is not a Primary energy resources?

a) Petroleum products
b) Electrical Energy
c) Geothermal Energy
d) Biomass like wood

13) Indian per capita energy consumption is _____ of the world average.

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b) 20%
c) 1%
d) 10%

14) Kilowatt-hour(kWh) is a unit of?

a) Current
b) Power
c) Energy
d) Resistance

SLR-BD-364

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Conservation, Management and Audit (BTN02520)

Day & Date: Friday, 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
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Section – I

Q.2 Solve:
- **a)** How would you decrease environmental impacts of conventional energy? **07**
- **b)** Why should we conserve energy? What should be the energy strategy for the future of a nation? **07**

Q.3 Solve:
- **a)** How to conduct a detailed energy audit? **07**
- **b)** Explain Preliminary Energy Audit. **07**

Q.4 Answer the following questions. (Any Four) **14**
- **a)** Explain Audit report.
- **b)** Describe Current energy scenario - World.
- **c)** Describe relation between Environment and Energy.
- **d)** Explain Post Energy Audit.
- **e)** Write a short note on Energy action Planning.

Section – II

Q.5 Solve:
- **a)** Explain Energy Conservation opportunities in Compressed Air system. **07**
- **b)** Explain Energy Conservation opportunities in cooling tower. **07**

Q.6 Solve:
- **a)** List the energy saving opportunities in pumping system. **07**
- **b)** What are the direct and indirect benefits of waste heat recovery? **07**

Q.7 Write short notes. (Any Four) **14**
- **a)** Explain different efficient steam distribution systems.
- **b)** Explain Energy Conservation opportunities in Steam System.
- **c)** Explain Energy Performance Assessment of pump.
- **d)** Time Value of Money
- **e)** Simple Payback Period

SLR-BD-364

Seat No.	

Set R

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Conservation, Management and Audit (BTN02520)

Day & Date: Friday, 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) The effectiveness of a heat exchanger depends on _____.
a) Specific heat of hot fluid
b) Specific heat of cold fluid
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2) Which fuel dominates the energy mix in Indian energy scenario?
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SLR-BD-364

Seat No.	

Set R

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Conservation, Management and Audit (BTN02520)

Day & Date: Friday, 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
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Section – I

Q.2 Solve:
- **a)** How would you decrease environmental impacts of conventional energy? **07**
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- **a)** How to conduct a detailed energy audit? **07**
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Q.4 Answer the following questions. (Any Four) **14**
- **a)** Explain Audit report.
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- **c)** Describe relation between Environment and Energy.
- **d)** Explain Post Energy Audit.
- **e)** Write a short note on Energy action Planning.

Section – II

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- **c)** Explain Energy Performance Assessment of pump.
- **d)** Time Value of Money
- **e)** Simple Payback Period

Seat No.	

Set S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Conservation, Management and Audit (BTN02520)

Day & Date: Friday, 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. 14

1) Indian per capita energy consumption is _____ of the world average.
a) 4% b) 20%
c) 1% d) 10%

2) Kilowatt-hour(kWh) is a unit of?
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c) Energy d) Resistance

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c) CO2 and NOx d) H2O

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a) Water
b) Steam
c) Coolant
d) Diesel

13) What is energy Science?
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b) Study of energy conversion
c) Study of energy and its conversion in other forms
d) Study of energy generation

14) Which is not a Primary energy resources?
a) Petroleum products
b) Electrical Energy
c) Geothermal Energy
d) Biomass like wood

SLR-BD-364

Seat No.	

Set S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Conservation, Management and Audit (BTN02520)

Day & Date: Friday, 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Solve:
- **a)** How would you decrease environmental impacts of conventional energy? **07**
- **b)** Why should we conserve energy? What should be the energy strategy for the future of a nation? **07**

Q.3 Solve:
- **a)** How to conduct a detailed energy audit? **07**
- **b)** Explain Preliminary Energy Audit. **07**

Q.4 Answer the following questions. (Any Four) **14**
- **a)** Explain Audit report.
- **b)** Describe Current energy scenario - World.
- **c)** Describe relation between Environment and Energy.
- **d)** Explain Post Energy Audit.
- **e)** Write a short note on Energy action Planning.

Section – II

Q.5 Solve:
- **a)** Explain Energy Conservation opportunities in Compressed Air system. **07**
- **b)** Explain Energy Conservation opportunities in cooling tower. **07**

Q.6 Solve:
- **a)** List the energy saving opportunities in pumping system. **07**
- **b)** What are the direct and indirect benefits of waste heat recovery? **07**

Q.7 Write short notes. (Any Four) **14**
- **a)** Explain different efficient steam distribution systems.
- **b)** Explain Energy Conservation opportunities in Steam System.
- **c)** Explain Energy Performance Assessment of pump.
- **d)** Time Value of Money
- **e)** Simple Payback Period

SLR-BD-365

Seat No.		Set	P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Introduction to Electric and Hybrid Electric Vehicles (BTN02521)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Gravitational energy density is best defined as:
a) Energy stored per unit mass due to gravity.
b) Energy stored per unit volume in a battery.
c) Energy required overcoming aerodynamic drag.
d) Energy required maintaining vehicle speed.

2) What is the primary purpose of using a Variable Frequency Drive (VFD)?
a) To regulate the torque produced by the motor
b) To control the speed of an AC motor by varying the input frequency
c) To convert DC power to AC
d) To reduce the energy consumption of a motor

3) What is the function of an inverter in a motor drive system?
a) To convert DC to AC
b) To convert AC to DC
c) To convert high voltage to low voltage AC
d) To control the torque in the motor

4) What is Primary byproduct of a Hydrogen Fuel Cell when generating electricity?
a) CO_2 b) NO_X
c) H_2O d) CH_4

5) In Series -Parallel Hybrid Vehicle during low-speed driving which mode is employed typically ____.
a) Parallel b) Series
c) Complex d) Hybrid

6) Which of the following challenges limit the widespread adoption of electric vehicles across PAN India?
a) Insufficient electricity supply and unstable grid
b) Low cost of Gasoline and Diesel
c) Absence of electric vehicle Manufacturers
d) High demand for public transport

7) In the context of EV Charging stations, what role does the Battery Management system play?
a) It monitors battery performance and ensures safety
b) It generates electricity from renewable energy sources
c) It converts AC to DC Power
d) It Provides connections between charging station and grid.

8) Which of the following statements best describe the concept of slip in an induction motor?
a) The difference between synchronous speed and rotor speed
b) The Speed at which motor operates at its maximum speed
c) The amount of electrical energy lost as heat
d) The speed of magnetic field in the stator

9) Which government initiative is primarily aimed at boosting electric vehicle adoption in India?
a) FAME-I & II
b) National Electric Mobility Mission Plan (NEMMP)
c) E-AMRIT
d) All of above

10) Braking and idling losses are ____ in Urban driving even higher in more congested driving.
a) Extremely High
b) Extremely Low
c) Both a & b
d) Neither a or b

11) Which of the following is a concern related to EV batteries that could impact the economics of owning an EV?
a) The speed at which the EV can charge
b) Battery degradation over time
c) The variety of charging station connectors available
d) The availability of autonomous driving features

12) Which of the following blocks in an Electronic Control Unit (ECU) is responsible for gathering data from sensors within a vehicle system?
a) Actuating
b) Acquisition
c) Computing/Control
d) Communication Bus

13) What is the typical percentage distribution between the ICE and the electric motor during start-up or full throttle acceleration in PHEVs?

a) 60-40%
b) 70-30%
c) 80-20%
d) 90-10%

14) If you frequently fast charge your EV battery, which of the following effects are most likely?

a) The battery's lifespan will increase
b) The battery’s capacity will expand
c) The battery will generate excessive heat and degrade faster
d) There will be no effect on the battery

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Introduction to Electric and Hybrid Electric Vehicles (BTN02521)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2	**a)**	Describe the history of electric vehicles from their inception to the present day. How have technological advances and changing market conditions influenced the adoption of EVs over time?	**08**
	b)	Compare and contrast the operational and capital costs of EV batteries. Suggest strategies for reducing these costs.	**06**
Q.3	**a)**	Discuss the basic parameters of vehicle performance with the help of tractive effort Vs Vehicle Speed diagram.	**08**
	b)	Describe the Conceptual Illustration of the general EV Configuration.	**06**
Q.4	**a)**	Explain how a Plug-In Hybrid Electric Vehicle (PHEV), What are the benefits and challenges of PHEVs in terms of vehicle operation and energy management?	**08**
	b)	In the context of hybrid electric vehicles, explain the significance of Powertrain Sizing and how it affects the design of hybrid systems.	**06**

Section – II

Q.5	**a)**	Describe the construction and working principle of a Brushless DC (BLDC) motor. How does the absence of brushes affect the motor's efficiency and maintenance compared to a conventional DC motor? Discuss the role of the electronic controller in BLDC motors.	**08**
	b)	Explain the working principle of an AC induction motor. Describe how the rotor of an induction motor interacts with the rotating magnetic field of the stator to induce current and produce mechanical motion.	**06**
Q.6	**a)**	Discuss the principle of operation of a Variable Frequency Drive (VFD). What are the key components of a VFD system?	**08**
	b)	Explain the working principle of a DC chopper. How does it vary the output voltage?	**06**

Q.7	**a)**	Explain the MIDC (Modified Indian Drive Cycle), how does different driving conditions, such as city traffic and highway driving, impact the energy consumption?	**08**
	b)	Describe the concept of a "drive cycle". Discuss the significance of using standard drive cycles in real-world vehicle performance evaluation.	**06**

SLR-BD-365

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Introduction to Electric and Hybrid Electric Vehicles (BTN02521)

Day & Date: Friday 23-05-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

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Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Introduction to Electric and Hybrid Electric Vehicles (BTN02521)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – II

Q.5	**a)**	Describe the construction and working principle of a Brushless DC (BLDC) motor. How does the absence of brushes affect the motor's efficiency and maintenance compared to a conventional DC motor? Discuss the role of the electronic controller in BLDC motors.	**08**
	b)	Explain the working principle of an AC induction motor. Describe how the rotor of an induction motor interacts with the rotating magnetic field of the stator to induce current and produce mechanical motion.	**06**
Q.6	**a)**	Discuss the principle of operation of a Variable Frequency Drive (VFD). What are the key components of a VFD system?	**08**
	b)	Explain the working principle of a DC chopper. How does it vary the output voltage?	**06**

Q.7	**a)**	Explain the MIDC (Modified Indian Drive Cycle), how does different driving conditions, such as city traffic and highway driving, impact the energy consumption?	**08**
	b)	Describe the concept of a "drive cycle". Discuss the significance of using standard drive cycles in real-world vehicle performance evaluation.	**06**

Seat No.	

Set R

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Introduction to Electric and Hybrid Electric Vehicles (BTN02521)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following is a concern related to EV batteries that could impact the economics of owning an EV?
a) The speed at which the EV can charge
b) Battery degradation over time
c) The variety of charging station connectors available
d) The availability of autonomous driving features

2) Which of the following blocks in an Electronic Control Unit (ECU) is responsible for gathering data from sensors within a vehicle system?
a) Actuating b) Acquisition
c) Computing/Control d) Communication Bus

3) What is the typical percentage distribution between the ICE and the electric motor during start-up or full throttle acceleration in PHEVs?
a) 60-40% b) 70-30%
c) 80-20% d) 90-10%

4) If you frequently fast charge your EV battery, which of the following effects are most likely?
a) The battery's lifespan will increase
b) The battery's capacity will expand
c) The battery will generate excessive heat and degrade faster
d) There will be no effect on the battery

5) Gravitational energy density is best defined as:
a) Energy stored per unit mass due to gravity.
b) Energy stored per unit volume in a battery.
c) Energy required overcoming aerodynamic drag.
d) Energy required maintaining vehicle speed.

6) What is the primary purpose of using a Variable Frequency Drive (VFD)?
a) To regulate the torque produced by the motor
b) To control the speed of an AC motor by varying the input frequency
c) To convert DC power to AC
d) To reduce the energy consumption of a motor

7) What is the function of an inverter in a motor drive system?
a) To convert DC to AC
b) To convert AC to DC
c) To convert high voltage to low voltage AC
d) To control the torque in the motor

8) What is Primary byproduct of a Hydrogen Fuel Cell when generating electricity?
a) CO_2 b) NO_X
c) H_2O d) CH_4

9) In Series -Parallel Hybrid Vehicle during low-speed driving which mode is employed typically ____.
a) Parallel b) Series
c) Complex d) Hybrid

10) Which of the following challenges limit the widespread adoption of electric vehicles across PAN India?
a) Insufficient electricity supply and unstable grid
b) Low cost of Gasoline and Diesel
c) Absence of electric vehicle Manufacturers
d) High demand for public transport

11) In the context of EV Charging stations, what role does the Battery Management system play?
a) It monitors battery performance and ensures safety
b) It generates electricity from renewable energy sources
c) It converts AC to DC Power
d) It Provides connections between charging station and grid.

12) Which of the following statements best describe the concept of slip in an induction motor?
a) The difference between synchronous speed and rotor speed
b) The Speed at which motor operates at its maximum speed
c) The amount of electrical energy lost as heat
d) The speed of magnetic field in the stator

13) Which government initiative is primarily aimed at boosting electric vehicle adoption in India?
a) FAME-I & II
b) National Electric Mobility Mission Plan (NEMMP)
c) E-AMRIT
d) All of above

14) Braking and idling losses are ____ in Urban driving even higher in more congested driving.

a) Extremely High
b) Extremely Low
c) Both a & b
d) Neither a or b

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Introduction to Electric and Hybrid Electric Vehicles (BTN02521)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2	**a)**	Describe the history of electric vehicles from their inception to the present day. How have technological advances and changing market conditions influenced the adoption of EVs over time?	**08**
	b)	Compare and contrast the operational and capital costs of EV batteries. Suggest strategies for reducing these costs.	**06**
Q.3	**a)**	Discuss the basic parameters of vehicle performance with the help of tractive effort Vs Vehicle Speed diagram.	**08**
	b)	Describe the Conceptual Illustration of the general EV Configuration.	**06**
Q.4	**a)**	Explain how a Plug-In Hybrid Electric Vehicle (PHEV), What are the benefits and challenges of PHEVs in terms of vehicle operation and energy management?	**08**
	b)	In the context of hybrid electric vehicles, explain the significance of Powertrain Sizing and how it affects the design of hybrid systems.	**06**

Section – II

Q.5	**a)**	Describe the construction and working principle of a Brushless DC (BLDC) motor. How does the absence of brushes affect the motor's efficiency and maintenance compared to a conventional DC motor? Discuss the role of the electronic controller in BLDC motors.	**08**
	b)	Explain the working principle of an AC induction motor. Describe how the rotor of an induction motor interacts with the rotating magnetic field of the stator to induce current and produce mechanical motion.	**06**
Q.6	**a)**	Discuss the principle of operation of a Variable Frequency Drive (VFD). What are the key components of a VFD system?	**08**
	b)	Explain the working principle of a DC chopper. How does it vary the output voltage?	**06**

Q.7	**a)**	Explain the MIDC (Modified Indian Drive Cycle), how does different driving conditions, such as city traffic and highway driving, impact the energy consumption?	**08**
	b)	Describe the concept of a "drive cycle". Discuss the significance of using standard drive cycles in real-world vehicle performance evaluation.	**06**

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Introduction to Electric and Hybrid Electric Vehicles (BTN02521)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following challenges limit the widespread adoption of electric vehicles across PAN India?
a) Insufficient electricity supply and unstable grid
b) Low cost of Gasoline and Diesel
c) Absence of electric vehicle Manufacturers
d) High demand for public transport

2) In the context of EV Charging stations, what role does the Battery Management system play?
a) It monitors battery performance and ensures safety
b) It generates electricity from renewable energy sources
c) It converts AC to DC Power
d) It Provides connections between charging station and grid.

3) Which of the following statements best describe the concept of slip in an induction motor?
a) The difference between synchronous speed and rotor speed
b) The Speed at which motor operates at its maximum speed
c) The amount of electrical energy lost as heat
d) The speed of magnetic field in the stator

4) Which government initiative is primarily aimed at boosting electric vehicle adoption in India?
a) FAME-I & II
b) National Electric Mobility Mission Plan (NEMMP)
c) E-AMRIT
d) All of above

5) Braking and idling losses are ____ in Urban driving even higher in more congested driving.

a) Extremely High
b) Extremely Low
c) Both a & b
d) Neither a or b

6) Which of the following is a concern related to EV batteries that could impact the economics of owning an EV?

a) The speed at which the EV can charge
b) Battery degradation over time
c) The variety of charging station connectors available
d) The availability of autonomous driving features

7) Which of the following blocks in an Electronic Control Unit (ECU) is responsible for gathering data from sensors within a vehicle system?

a) Actuating
b) Acquisition
c) Computing/Control
d) Communication Bus

8) What is the typical percentage distribution between the ICE and the electric motor during start-up or full throttle acceleration in PHEVs?

a) 60-40%
b) 70-30%
c) 80-20%
d) 90-10%

9) If you frequently fast charge your EV battery, which of the following effects are most likely?

a) The battery's lifespan will increase
b) The battery’s capacity will expand
c) The battery will generate excessive heat and degrade faster
d) There will be no effect on the battery

10) Gravitational energy density is best defined as:

a) Energy stored per unit mass due to gravity.
b) Energy stored per unit volume in a battery.
c) Energy required overcoming aerodynamic drag.
d) Energy required maintaining vehicle speed.

11) What is the primary purpose of using a Variable Frequency Drive (VFD)?

a) To regulate the torque produced by the motor
b) To control the speed of an AC motor by varying the input frequency
c) To convert DC power to AC
d) To reduce the energy consumption of a motor

12) What is the function of an inverter in a motor drive system?

a) To convert DC to AC
b) To convert AC to DC
c) To convert high voltage to low voltage AC
d) To control the torque in the motor

13) What is Primary byproduct of a Hydrogen Fuel Cell when generating electricity?

a) CO_2 b) NO_X

c) H_2O d) CH_4

14) In Series -Parallel Hybrid Vehicle during low-speed driving which mode is employed typically ____.

a) Parallel b) Series

c) Complex d) Hybrid

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Introduction to Electric and Hybrid Electric Vehicles (BTN02521)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2	**a)**	Describe the history of electric vehicles from their inception to the present day. How have technological advances and changing market conditions influenced the adoption of EVs over time?	**08**
	b)	Compare and contrast the operational and capital costs of EV batteries. Suggest strategies for reducing these costs.	**06**
Q.3	**a)**	Discuss the basic parameters of vehicle performance with the help of tractive effort Vs Vehicle Speed diagram.	**08**
	b)	Describe the Conceptual Illustration of the general EV Configuration.	**06**
Q.4	**a)**	Explain how a Plug-In Hybrid Electric Vehicle (PHEV), What are the benefits and challenges of PHEVs in terms of vehicle operation and energy management?	**08**
	b)	In the context of hybrid electric vehicles, explain the significance of Powertrain Sizing and how it affects the design of hybrid systems.	**06**

Section – II

Q.5	**a)**	Describe the construction and working principle of a Brushless DC (BLDC) motor. How does the absence of brushes affect the motor's efficiency and maintenance compared to a conventional DC motor? Discuss the role of the electronic controller in BLDC motors.	**08**
	b)	Explain the working principle of an AC induction motor. Describe how the rotor of an induction motor interacts with the rotating magnetic field of the stator to induce current and produce mechanical motion.	**06**
Q.6	**a)**	Discuss the principle of operation of a Variable Frequency Drive (VFD). What are the key components of a VFD system?	**08**
	b)	Explain the working principle of a DC chopper. How does it vary the output voltage?	**06**

Q.7	**a)**	Explain the MIDC (Modified Indian Drive Cycle), how does different driving conditions, such as city traffic and highway driving, impact the energy consumption?	**08**
	b)	Describe the concept of a "drive cycle". Discuss the significance of using standard drive cycles in real-world vehicle performance evaluation.	**06**

SLR-BD-366

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Economics (BTN02508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive b) Monopoly
c) Oligopoly d) Monopolistic

2) Average revenue is _____
a) Total revenue divided by the number of units sold
b) Revenue earned by all the units of the output
c) Revenue earned by the average sized firm in the industry
d) Net addition made to the total revenue by selling one more unit of a commodity

3) Which of these is an economic activity?
a) Father teaching his son at home instead of spending on coaching
b) A housewife making food for the family on her own
c) A hair dresser doing hair cut designing on payment
d) A singer giving a show on his son's wedding anniversary

4) Which of the following is NOT an account in the Balance of Payments?
a) Current Account b) Capital Account
c) Financial Account d) Future Account

5) Which of the following is not a regulatory institution in Indian financial system?
a) RBI b) CIBIL
c) SEBI d) IRDA

6) In a mixed economy which sector (s) is 1 are found _____

a) Private only
b) Public only
c) None
d) Both (a) Private and (b)Public

7) Who is known as father of economics?

a) Adam Smith
b) Prof. A. Samulson
c) Alfred Marshall
d) J. R. Hicks

8) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False
b) True
c) Partly true
d) Partly False

9) Which one of the following is not the function of money?

a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

10) Which one of the following cost can never become zero?

a) Average cost
b) Fixed cost
c) Marginal cost
d) Variable cost

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Economics (BTN02508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Economics (BTN02508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) In a mixed economy which sector (s) is 1 are found _____
a) Private only b) Public only
c) None d) Both (a) Private and (b)Public

1) Who is known as father of economics?
a) Adam Smith b) Prof. A. Samulson
c) Alfred Marshall d) J. R. Hicks

3) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

4) Which one of the following is not the function of money?
a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

5) Which one of the following cost can never become zero?
a) Average cost b) Fixed cost
c) Marginal cost d) Variable cost

6) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive b) Monopoly
c) Oligopoly d) Monopolistic

7) Average revenue is _____
   a) Total revenue divided by the number of units sold
   b) Revenue earned by all the units of the output
   c) Revenue earned by the average sized firm in the industry
   d) Net addition made to the total revenue by selling one more unit of a commodity

8) Which of these is an economic activity?
   a) Father teaching his son at home instead of spending on coaching
   b) A housewife making food for the family on her own
   c) A hair dresser doing hair cut designing on payment
   d) A singer giving a show on his son's wedding anniversary

9) Which of the following is NOT an account in the Balance of Payments?
   a) Current Account
   b) Capital Account
   c) Financial Account
   d) Future Account

10) Which of the following is not a regulatory institution in Indian financial system?
   a) RBI
   b) CIBIL
   c) SEBI
   d) IRDA

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Economics (BTN02508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Economics (BTN02508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which one of the following is not the function of money?
a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

2) Which one of the following cost can never become zero?
a) Average cost b) Fixed cost
c) Marginal cost d) Variable cost

3) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive b) Monopoly
c) Oligopoly d) Monopolistic

4) Average revenue is _____
a) Total revenue divided by the number of units sold
b) Revenue earned by all the units of the output
c) Revenue earned by the average sized firm in the industry
d) Net addition made to the total revenue by selling one more unit of a commodity

5) Which of these is an economic activity?
a) Father teaching his son at home instead of spending on coaching
b) A housewife making food for the family on her own
c) A hair dresser doing hair cut designing on payment
d) A singer giving a show on his son's wedding anniversary

6) Which of the following is NOT an account in the Balance of Payments?

a) Current Account b) Capital Account
c) Financial Account d) Future Account

7) Which of the following is not a regulatory institution in Indian financial system?

a) RBI b) CIBIL
c) SEBI d) IRDA

8) In a mixed economy which sector (s) is 1 are found _____

a) Private only b) Public only
c) None d) Both (a) Private and (b)Public

9) Who is known as father of economics?

a) Adam Smith b) Prof. A. Samulson
c) Alfred Marshall d) J. R. Hicks

10) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False b) True
c) Partly true d) Partly False

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Economics (BTN02508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Economics (BTN02508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which of these is an economic activity?
a) Father teaching his son at home instead of spending on coaching
b) A housewife making food for the family on her own
c) A hair dresser doing hair cut designing on payment
d) A singer giving a show on his son's wedding anniversary

2) Which of the following is NOT an account in the Balance of Payments?
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7) Which one of the following is not the function of money?
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b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

8) Which one of the following cost can never become zero?
a) Average cost
b) Fixed cost
c) Marginal cost
d) Variable cost

9) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive
b) Monopoly
c) Oligopoly
d) Monopolistic

10) Average revenue is _____
a) Total revenue divided by the number of units sold
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c) Revenue earned by the average sized firm in the industry
d) Net addition made to the total revenue by selling one more unit of a commodity

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Economics (BTN02508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

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Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN02509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) What protects the intellectual property created by artists?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

2) If a company develops a new technology that improves its main product, what type of intellectual property can they use to stop others from copying their invention?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

3) All of the following are examples of intellectual property protections except _____.
a) Copyrights b) Patents
c) Contracts d) Trademarks

4) The first Patent Law was enacted in India in the year _____
a) 1856 b) 1880
c) 1905 d) 1850

5) How long does intellectual property last? (after the death of the author)
a) 10 yrs b) 30 yrs
c) 60 yrs d) 70 yrs

6) Which of the following can you copyright?
a) Literary work b) Ideas
c) Choreographic work d) Fashion

7) Which of the following identifies as a trademark?

a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

8) What is the subject matter of a patent?

a) Art b) Invention
c) Goods d) Ideas

9) What is copyright meant for?

a) Film work b) Books
c) Essay d) All of these

10) In which article is intellectual property rights outlined?

a) Article 15 b) Article 27
c) Article 13 d) Article 20

SLR-BD-367

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN02509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?
b) Explain Outlines concepts of confidentiality and information security.
c) Explain the Comparison of the Indian IPR system with international IPR frameworks.

Q.3 Solve any Four: **20**

a) Explain the role of Engineers and Managers in technology development in project commercialization.
b) Write a short note on the shifting paradigms of R&D and their linkage to IPR.
c) Explain Copyright issues in creative works.
d) Discuss the importance of Law on Industrial designs.
e) Explain commercial exploitation and infringement.
f) Write a short note on IPR and Electronic Commerce.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN02509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Which of the following can you copyright?
a) Literary work b) Ideas
c) Choreographic work d) Fashion

2) Which of the following identifies as a trademark?
a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

3) What is the subject matter of a patent?
a) Art b) Invention
c) Goods d) Ideas

4) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

5) In which article is intellectual property rights outlined?
a) Article 15 b) Article 27
c) Article 13 d) Article 20

6) What protects the intellectual property created by artists?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

7) If a company develops a new technology that improves its main product, what type of intellectual property can they use to stop others from copying their invention?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

8) All of the following are examples of intellectual property protections except _____.

a) Copyrights b) Patents
c) Contracts d) Trademarks

9) The first Patent Law was enacted in India in the year _____

a) 1856 b) 1880
c) 1905 d) 1850

10) How long does intellectual property last? (after the death of the author)

a) 10 yrs b) 30 yrs
c) 60 yrs d) 70 yrs

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN02509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?
b) Explain Outlines concepts of confidentiality and information security.
c) Explain the Comparison of the Indian IPR system with international IPR frameworks.

Q.3 Solve any Four: **20**

a) Explain the role of Engineers and Managers in technology development in project commercialization.
b) Write a short note on the shifting paradigms of R&D and their linkage to IPR.
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e) Explain commercial exploitation and infringement.
f) Write a short note on IPR and Electronic Commerce.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN02509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

2) In which article is intellectual property rights outlined?
a) Article 15 b) Article 27
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SLR-BD-367

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN02509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
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Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?
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f) Write a short note on IPR and Electronic Commerce.

SLR-BD-367

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN02509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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1) All of the following are examples of intellectual property protections except _____.
a) Copyrights b) Patents
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2) The first Patent Law was enacted in India in the year _____
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a) 10 yrs b) 30 yrs
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a) Name, symbol b) Symbol, logo
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SLR-BD-367

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
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Intellectual Property Rights for Technology Development and Management (BTN02509)

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f) Write a short note on IPR and Electronic Commerce.

SLR-BD-368

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Introduction to Sociology (BTN02510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) Name of state having highest percentage of literacy level.
a) West Bengal b) Punjab
c) Kerala d) Maharashtra

2) Functions of Social Institutes is ____.
a) To meet fundamental needs of society
b) To improve the Society
c) To meet the needs of Family
d) None of above

3) Social change is change in ____.
a) Society b) Community
c) Individual d) Education

4) Which is recognized as one of the first environmental movements in country?
a) Chipko Movement
b) Kisan Movement
c) Lok satta Movement
d) Naramada Bachao Andolan

5) Science that deals with the relationship between living organism with their physical environment and each other is called ____.
a) Ecosystem b) Biodiversity
c) Environment d) Ecology

6) In which year the term sociology was coined?

a) 1798 b) 1815
c) 1839 d) 1857

7) The word sociology is made up of two words. These are ____.

a) Societies and logy b) Societia and logistia
c) Socious and logos d) Socia and logos

8) Who is the father of Sociology?

a) Karl Max b) Herbert Spencer
c) Auguste Comte d) Charles Darwin

9) The major component of demography are:

a) Mortality b) Fertility
c) Migration d) All of these

10) India occupies _____ rank among the population of the different countries of world.

a) Third b) First
c) Forth d) Second

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Introduction to Sociology (BTN02510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a) What is Sociology? And explain with concept like social structure, role, norms, values etc. **10**

b) Explain with detail trends of Urbanization in developing countries and world. **10**

c) Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development. **10**

d) Explain with detail social movements like protest, reformist, radical in India. **10**

e) Explain in detail demographic change in India & world along with Human Ecology. **10**

f) Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Introduction to Sociology (BTN02510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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7) Functions of Social Institutes is ____.
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b) To improve the Society
c) To meet the needs of Family
d) None of above

8) Social change is change in ____.

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c) Individual d) Education

9) Which is recognized as one of the first environmental movements in country?

a) Chipko Movement
b) Kisan Movement
c) Lok satta Movement
d) Naramada Bachao Andolan

10) Science that deals with the relationship between living organism with their physical environment and each other is called ____.

a) Ecosystem b) Biodiversity
c) Environment d) Ecology

SLR-BD-368

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Introduction to Sociology (BTN02510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a)	What is Sociology? And explain with concept like social structure, role, norms, values etc.	**10**
b)	Explain with detail trends of Urbanization in developing countries and world.	**10**
c)	Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development.	**10**
d)	Explain with detail social movements like protest, reformist, radical in India.	**10**
e)	Explain in detail demographic change in India & world along with Human Ecology.	**10**
f)	Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization.	**10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Introduction to Sociology (BTN02510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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c) Migration d) All of these

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Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Introduction to Sociology (BTN02510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a) What is Sociology? And explain with concept like social structure, role, norms, values etc. **10**

b) Explain with detail trends of Urbanization in developing countries and world. **10**

c) Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development. **10**

d) Explain with detail social movements like protest, reformist, radical in India. **10**

e) Explain in detail demographic change in India & world along with Human Ecology. **10**

f) Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization. **10**

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Introduction to Sociology (BTN02510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Social change is change in ____.
a) Society b) Community
c) Individual d) Education

2) Which is recognized as one of the first environmental movements in country?
a) Chipko Movement
b) Kisan Movement
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9) Name of state having highest percentage of literacy level.

a) West Bengal b) Punjab
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10) Functions of Social Institutes is ____.

a) To meet fundamental needs of society
b) To improve the Society
c) To meet the needs of Family
d) None of above

SLR-BD-368

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Introduction to Sociology (BTN02510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a) What is Sociology? And explain with concept like social structure, role, norms, values etc. **10**

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SLR-BD-369

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Stress and Coping (BTN02511)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) What is stress?
a) A state of physical tiredness
b) The body's response to a demand or challenge
c) A type of exercise
d) A form of relaxation

2) Which of the following is a healthy way to cope with stress?
a) Concentrating the stressor
b) Engaging in regular physical activity
c) Investing time on social media
d) Consuming excessive amounts of caffeine

3) Which of the following is a relaxation technique often used for stress management?
a) Procrastination b) Meditation
c) Caffeine consumption d) Multitasking

4) What is the purpose of time management in stress reduction?
a) To increase stress by overloading schedules
b) To create a sense of urgency
c) To prioritize tasks and reduce overwhelm
d) To eliminate breaks and relaxation time

5) Which of the following is a potential source of social support?
a) Isolation from friends and family
b) Engaging in negative self-talk
c) Seeking help from friends, family, or support groups
d) Avoiding all forms of communication

6) When a task appears overwhelming, it is best to _____
a) Put it aside till later
b) Drink alcohol to relax
c) Break it down into smaller task
d) Avoid the task

7) Anxiety can cause the following moods _____
a) Irritable
b) Nervous
c) Anxious
d) All of the above

8) The following are the characteristics of Positive Stress.
a) It improves performance
b) It feels exciting
c) It motivates
d) All of the above

9) A good way to prevent stress is _____
a) Drinking beverages high in caffeine
b) Sitting ideal doing nothing
c) Overeating
d) Taking time out for relaxation

10) Absenteeism, turnover and less productivity are _____ symptoms of stress.
a) Medical
b) Psychological
c) Behavioral
d) None of these

SLR-BD-369

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Stress and Coping (BTN02511)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Stress and Coping (BTN02511)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) When a task appears overwhelming, it is best to _____
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b) Drink alcohol to relax
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d) Avoid the task

2) Anxiety can cause the following moods _____
a) Irritable b) Nervous
c) Anxious d) All of the above

3) The following are the characteristics of Positive Stress.
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a) Medical b) Psychological
c) Behavioral d) None of these

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a) Concentrating the stressor
b) Engaging in regular physical activity
c) Investing time on social media
d) Consuming excessive amounts of caffeine

8) Which of the following is a relaxation technique often used for stress management?
a) Procrastination
b) Meditation
c) Caffeine consumption
d) Multitasking

9) What is the purpose of time management in stress reduction?
a) To increase stress by overloading schedules
b) To create a sense of urgency
c) To prioritize tasks and reduce overwhelm
d) To eliminate breaks and relaxation time

10) Which of the following is a potential source of social support?
a) Isolation from friends and family
b) Engaging in negative self-talk
c) Seeking help from friends, family, or support groups
d) Avoiding all forms of communication

SLR-BD-369

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Stress and Coping (BTN02511)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Stress and Coping (BTN02511)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) A good way to prevent stress is _____
a) Drinking beverages high in caffeine
b) Sitting ideal doing nothing
c) Overeating
d) Taking time out for relaxation

2) Absenteeism, turnover and less productivity are _____ symptoms of stress.
a) Medical b) Psychological
c) Behavioral d) None of these

3) What is stress?
a) A state of physical tiredness
b) The body's response to a demand or challenge
c) A type of exercise
d) A form of relaxation

4) Which of the following is a healthy way to cope with stress?
a) Concentrating the stressor
b) Engaging in regular physical activity
c) Investing time on social media
d) Consuming excessive amounts of caffeine

5) Which of the following is a relaxation technique often used for stress management?
a) Procrastination b) Meditation
c) Caffeine consumption d) Multitasking

6) What is the purpose of time management in stress reduction?
a) To increase stress by overloading schedules
b) To create a sense of urgency
c) To prioritize tasks and reduce overwhelm
d) To eliminate breaks and relaxation time

7) Which of the following is a potential source of social support?
a) Isolation from friends and family
b) Engaging in negative self-talk
c) Seeking help from friends, family, or support groups
d) Avoiding all forms of communication

8) When a task appears overwhelming, it is best to _____
a) Put it aside till later
b) Drink alcohol to relax
c) Break it down into smaller task
d) Avoid the task

9) Anxiety can cause the following moods _____
a) Irritable b) Nervous
c) Anxious d) All of the above

10) The following are the characteristics of Positive Stress.
a) It improves performance
b) It feels exciting
c) It motivates
d) All of the above

SLR-BD-369

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Stress and Coping (BTN02511)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

Seat No.	

Set | S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Stress and Coping (BTN02511)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) Which of the following is a relaxation technique often used for stress management?
a) Procrastination b) Meditation
c) Caffeine consumption d) Multitasking

2) What is the purpose of time management in stress reduction?
a) To increase stress by overloading schedules
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a) It improves performance
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c) Behavioral
d) None of these

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a) A state of physical tiredness
b) The body's response to a demand or challenge
c) A type of exercise
d) A form of relaxation

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b) Engaging in regular physical activity
c) Investing time on social media
d) Consuming excessive amounts of caffeine

SLR-BD-369

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Stress and Coping (BTN02511)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

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Q.3 Describe various consequences due to stress. **10**

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Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

SLR-BD-370

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Professional Ethics and Human Value (BTN02512)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values, and beliefs
c) Only Values d) Psychology

2) Word ethichs is definded as a _____
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

3) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) Authority

4) The study on ethics helps to know the people's _____.
a) Learn good or bad things
b) Copyright
c) Morality
d) Beliefs, values, and morals

5) The objectives of professional ethics in engineering are _____.
a) To understand the moral values that ought to guide the Engineering profession
b) To resolve the moral issues in the profession, and
c) To justify the moral judgment concerning the profession
d) All the above

6) The main core human values are _____.

a) Right conduct b) Peace
c) Both a & b d) None of these

7) Preconditioning is ____.

a) Assuming without knowing b) Knowing without assuming
c) Only assuming d) Only knowing

8) Value education deals with ____.

a) What is universally valuable to all of us
b) What is conductive to our individual and collective of us
c) Enables to be in harmony with ourselves, other and rest of nature
d) All of the above

9) Courage is the tendency to accept and face ____.

a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

10) Human life is lived at four levels individuals, family, society and ____.

a) Nature b) Nurture
c) World d) Universe

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Professional Ethics and Human Value (BTN02512)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

SLR-BD-370

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Professional Ethics and Human Value (BTN02512)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) The main core human values are _____.
a) Right conduct b) Peace
c) Both a & b d) None of these

2) Preconditioning is ____.
a) Assuming without knowing b) Knowing without assuming
c) Only assuming d) Only knowing

3) Value education deals with ____.
a) What is universally valuable to all of us
b) What is conductive to our individual and collective of us
c) Enables to be in harmony with ourselves, other and rest of nature
d) All of the above

4) Courage is the tendency to accept and face ____.
a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

5) Human life is lived at four levels individuals, family, society and ____.
a) Nature b) Nurture
c) World d) Universe

6) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values, and beliefs
c) Only Values d) Psychology

7) Word ethichs is definded as a _____
   a) Motivation
   b) Set of attitudes concerned with the value of work
   c) Attitude
   d) Values

8) _____ is defined as the duty, obligation or even authority.
   a) Work
   b) Responsibility
   c) Democracy
   d) Authority

9) The study on ethics helps to know the people's _____.
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   b) Copyright
   c) Morality
   d) Beliefs, values, and morals

10) The objectives of professional ethics in engineering are _____.
   a) To understand the moral values that ought to guide the Engineering profession
   b) To resolve the moral issues in the profession, and
   c) To justify the moral judgment concerning the profession
   d) All the above

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Professional Ethics and Human Value (BTN02512)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Professional Ethics and Human Value (BTN02512)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) Courage is the tendency to accept and face ____.
a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

2) Human life is lived at four levels individuals, family, society and ____.
a) Nature b) Nurture
c) World d) Universe

3) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values, and beliefs
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   a) Right conduct b) Peace
   c) Both a & b d) None of these

9) Preconditioning is ____.
   a) Assuming without knowing b) Knowing without assuming
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10) Value education deals with ____.
   a) What is universally valuable to all of us
   b) What is conductive to our individual and collective of us
   c) Enables to be in harmony with ourselves, other and rest of nature
   d) All of the above

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Professional Ethics and Human Value (BTN02512)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Professional Ethics and Human Value (BTN02512)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) Authority

2) The study on ethics helps to know the people's _____.
a) Learn good or bad things
b) Copyright
c) Morality
d) Beliefs, values, and morals

3) The objectives of professional ethics in engineering are _____.
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4) The main core human values are _____.
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   a) What is universally valuable to all of us
   b) What is conductive to our individual and collective of us
   c) Enables to be in harmony with ourselves, other and rest of nature
   d) All of the above

7) Courage is the tendency to accept and face ____.
   a) Self-confidence
   b) Risks and difficult tasks in rational ways
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8) Human life is lived at four levels individuals, family, society and ____.
   a) Nature b) Nurture
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9) Ethics is the word that refers to _____.
   a) Human tendency b) Morals, values, and beliefs
   c) Only Values d) Psychology

10) Word ethichs is definded as a _____
   a) Motivation
   b) Set of attitudes concerned with the value of work
   c) Attitude
   d) Values

SLR-BD-370

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
MECHANICAL ENGINEERING
Professional Ethics and Human Value (BTN02512)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

SLR-BD-371

Seat No.	

Set P

T.Y (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Transmission System Design (BTN02601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. 14

1) Wear strength of spur gear tooth depends upon _____.
a) Face width b) Number of teeth
c) Surface hardness d) All of the above

2) In a bearing no. 6312, the digit 3 designates _____.
a) Bore size b) Series of bearing
c) Type of bearing d) None of these

3) The breakdown of the oil film in gear causes _____.
a) Abrasive wear b) Destructive pitting
c) Scoring d) Creep

4) The bevel factor is given as _____.
a) b/L b) $b/2L$
c) $1 - b/2L$ d) $1 - b/L$

5) In helical gears, the distance between similar faces of adjacent teeth along a helix on the pitch cylinders normal to the teeth, is called _____.
a) Normal pitch b) Axial pitch
c) Diametric pitch d) Module

6) If Z is the actual no. of teeth on helical gear and β is a helix angle for the teeth, the formative no. of teeth is written as _____.
a) $Z \sec^3\beta$ b) $Z \sec^2\beta$
c) $Z/\sec^3\beta$ d) $Z \operatorname{cosec} \beta$

7) When bevel gears having equal teeth and equal pitch angles connect two shafts intersecting at 90° then they are known as _____.
a) Angular bevel gears b) Crown bevel gears
c) Internal bevel gears d) Mitre gears

8) Which of the following gear is used for the self-locking condition?
a) Spur gears b) Helical gears
c) Bevel gears d) Worm gears

9) When length of bearing is equal to the diameter of the journal it is called as _____.
a) Short bearing b) Long bearing
c) Square bearing d) All of these

10) The worm wheel should be _____.
a) Embeddable and conformable
b) Hard and conformable
c) Hard and embeddable
d) None of the above

11) Brake is used to _____ the energy possessed by a moving system or mechanism by means of friction.
a) absorb b) release
c) minimize d) maximize

12) If the lead angle $[\lambda]$ of worm is 10°, then the helix angle $[\Psi]$ will be _____.
a) 80^0 b) 70^0
c) 10^0 d) 100^0

13) Boundary lubricated bearings are _____.
a) Thick film bearing b) Hydrodynamic bearing
c) Thin film bearing d) Hydrostatic bearing

14) The ____ type of clutch is used in truck.
a) Cone clutch b) Electric clutch
c) Single plate clutch d) None of the above

Seat No.	

Set **P**

T.Y (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Transmission System Design (BTN02601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2 **a)** Define Beam Strength and Wear Strength of Spur Gears. **03**

b) Enlist the various types of gear tooth failures and explain the causes and remedies for any three failures. **04**

c) A pair of spur gears with 20° full-depth involute teeth consists of a 20 teeth pinion meshing with a 41 teeth gear. The module is 3 mm while the face width is 40 mm. The material for pinion as well as gear is steel with an ultimate tensile strength of 600 N/mm^2. The gears are heat treated to a surface hardness of 400 BHN. The pinion rotates at 1450 rpm and the service factor for the application is 1.75. Assume that velocity factor accounts for the dynamic load and the factor of safety is 1.5. Determine the rated power that the gears can transmit. Take Cv = 3/(3 + V), Y for 20 teeth = 0.32 **07**

Q.3 **a)** A 5-kW power at 720 rpm is supplied to the pinion A of helical gear through its shaft. The normal module is 5 mm and the normal pressure angle is 20°. The pinion has right-hand teeth, while the gear has left-hand teeth. The helix angle is 30°. The number of teeth on pinion and gear are 20 and 30, respectively. The pinion rotates in the clockwise direction when seen from the left side of the page. Determine the components of the tooth force and draw a free-body diagram showing the forces acting on the pinion and the gear. **07**

b) Worm gear box with an effective surface area of 1.5 m^2 is operating in still air with a heat transfer coefficient of 15 $W/m^{2}°C$. The temperature rise of the lubricating oil above the atmospheric temperature is limited to 50°C. The worm gears are designated as, 1/30/10/8. The worm shaft is rotating at 1440 rpm and the normal pressure angle is 20°. Take the coefficient of friction as 0.024. Calculate the power transmitting capacity based on the thermal considerations. **07**

Q.4	**a)**	A pair of worm and worm wheel is designated as 3/60/10/6. The worm is transmitting 5 kW power at 1440 rpm to the worm wheel. The coefficient of friction is 0.1 and the normal pressure angle is 20°. Determine the components of the gear tooth force acting on the worm and the worm wheel.	**07**
	b)	Explain the Virtual number of teeth for helical gears.	**04**
	c)	Differentiate between spur and helical gears.	**03**

Section – II

Q.5	**a)**	A pair of bevel gears transmitting 7.5 kW at 300 rpm having pitch circle diameters of pinion and gear as 200 mm and 150 mm. The face width is 40 mm. The pressure angle is 20°. The Determine the components of the resultant gear tooth force and draw a free-body diagram of forces acting on the pinion and the gear.	**07**
	b)	Explain the Bevel Gear Terminology.	**04**
	c)	Explain the Working principle of Hydrostatic Bearing.	**03**
Q.6	**a)**	Explain the procedure for selection of a bearing from the Manufacturer's Catalogue.	**07**
	b)	A ball bearing is operating on a work cycle consisting of three parts – a radial load of 3000 N at 1440 rpm for one quarter cycle, a radial load of 5000 N at 720 rpm for one half cycle, and radial load of 2500 N at 1440 rpm for the remaining cycle. The expected life of the bearing is 10000 h. Calculate the dynamic load carrying capacity of the bearing.	**07**
Q.7	**a)**	A plate clutch consists of one pair of contacting surfaces. The inner and outer diameters of the friction disk are 100 and 200 mm respectively. The coefficient of friction is 0.2 and the permissible intensity of pressure is 1 N/mm^2. Assuming uniform-wear theory, calculate the power-transmitting capacity of the clutch at 750 rpm.	**06**
	b)	Define Brake and Explain the classification of brakes.	**04**
	c)	A solid cast iron disk, 1 m in diameter and 0.2 m thick, is used as a flywheel. It is rotating at 350 rpm. It is brought to rest in 1.5 s by means of a brake. Calculate i) the energy absorbed by the brake; and ii) the torque capacity of the brake	**04**

Seat No.	

Set **Q**

T.Y (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Transmission System Design (BTN02601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which of the following gear is used for the self-locking condition?
a) Spur gears b) Helical gears
c) Bevel gears d) Worm gears

2) When length of bearing is equal to the diameter of the journal it is called as _____.
a) Short bearing b) Long bearing
c) Square bearing d) All of these

3) The worm wheel should be _____.
a) Embeddable and conformable
b) Hard and conformable
c) Hard and embeddable
d) None of the above

4) Brake is used to _____ the energy possessed by a moving system or mechanism by means of friction.
a) absorb b) release
c) minimize d) maximize

5) If the lead angle [λ] of worm is 10°, then the helix angle [Ψ] will be _____.
a) 80^0 b) 70^0
c) 10^0 d) 100^0

6) Boundary lubricated bearings are _____.
a) Thick film bearing b) Hydrodynamic bearing
c) Thin film bearing d) Hydrostatic bearing

7) The ____ type of clutch is used in truck.
a) Cone clutch b) Electric clutch
c) Single plate clutch d) None of the above

8) Wear strength of spur gear tooth depends upon _____.
a) Face width b) Number of teeth
c) Surface hardness d) All of the above

9) In a bearing no. 6312, the digit 3 designates _____.
a) Bore size b) Series of bearing
c) Type of bearing d) None of these

10) The breakdown of the oil film in gear causes _____.
a) Abrasive wear b) Destructive pitting
c) Scoring d) Creep

11) The bevel factor is given as _____.
a) $\mathrm{b/L}$ b) $\mathrm{b/2L}$
c) $1 - \mathrm{b/2L}$ d) $1 - \mathrm{b/L}$

12) In helical gears, the distance between similar faces of adjacent teeth along a helix on the pitch cylinders normal to the teeth, is called _____.
a) Normal pitch b) Axial pitch
c) Diametric pitch d) Module

13) If Z is the actual no. of teeth on helical gear and β is a helix angle for the teeth, the formative no. of teeth is written as _____.
a) $\mathrm{Z}\sec^3\beta$ b) $\mathrm{Z}\sec^2\beta$
c) $\mathrm{Z}/\sec^3\beta$ d) $\mathrm{Z}\,\mathrm{cosec}\,\beta$

14) When bevel gears having equal teeth and equal pitch angles connect two shafts intersecting at 90° then they are known as _____.
a) Angular bevel gears b) Crown bevel gears
c) Internal bevel gears d) Mitre gears

Seat No.	

Set **Q**

T.Y (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Transmission System Design (BTN02601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2 **a)** Define Beam Strength and Wear Strength of Spur Gears. **03**

b) Enlist the various types of gear tooth failures and explain the causes and remedies for any three failures. **04**

c) A pair of spur gears with 20° full-depth involute teeth consists of a 20 teeth pinion meshing with a 41 teeth gear. The module is 3 mm while the face width is 40 mm. The material for pinion as well as gear is steel with an ultimate tensile strength of 600 N/mm^2. The gears are heat treated to a surface hardness of 400 BHN. The pinion rotates at 1450 rpm and the service factor for the application is 1.75. Assume that velocity factor accounts for the dynamic load and the factor of safety is 1.5. Determine the rated power that the gears can transmit. Take Cv = 3/(3 + V), Y for 20 teeth = 0.32 **07**

Q.3 **a)** A 5-kW power at 720 rpm is supplied to the pinion A of helical gear through its shaft. The normal module is 5 mm and the normal pressure angle is 20°. The pinion has right-hand teeth, while the gear has left-hand teeth. The helix angle is 30°. The number of teeth on pinion and gear are 20 and 30, respectively. The pinion rotates in the clockwise direction when seen from the left side of the page. Determine the components of the tooth force and draw a free-body diagram showing the forces acting on the pinion and the gear. **07**

b) Worm gear box with an effective surface area of 1.5 m^2 is operating in still air with a heat transfer coefficient of 15 $W/m^{2}°C$. The temperature rise of the lubricating oil above the atmospheric temperature is limited to 50°C. The worm gears are designated as, 1/30/10/8. The worm shaft is rotating at 1440 rpm and the normal pressure angle is 20°. Take the coefficient of friction as 0.024. Calculate the power transmitting capacity based on the thermal considerations. **07**

Q.4	**a)**	A pair of worm and worm wheel is designated as 3/60/10/6. The worm is transmitting 5 kW power at 1440 rpm to the worm wheel. The coefficient of friction is 0.1 and the normal pressure angle is 20°. Determine the components of the gear tooth force acting on the worm and the worm wheel.	**07**
	b)	Explain the Virtual number of teeth for helical gears.	**04**
	c)	Differentiate between spur and helical gears.	**03**

Section – II

Q.5	**a)**	A pair of bevel gears transmitting 7.5 kW at 300 rpm having pitch circle diameters of pinion and gear as 200 mm and 150 mm. The face width is 40 mm. The pressure angle is 20°. The Determine the components of the resultant gear tooth force and draw a free-body diagram of forces acting on the pinion and the gear.	**07**
	b)	Explain the Bevel Gear Terminology.	**04**
	c)	Explain the Working principle of Hydrostatic Bearing.	**03**
Q.6	**a)**	Explain the procedure for selection of a bearing from the Manufacturer's Catalogue.	**07**
	b)	A ball bearing is operating on a work cycle consisting of three parts – a radial load of 3000 N at 1440 rpm for one quarter cycle, a radial load of 5000 N at 720 rpm for one half cycle, and radial load of 2500 N at 1440 rpm for the remaining cycle. The expected life of the bearing is 10000 h. Calculate the dynamic load carrying capacity of the bearing.	**07**
Q.7	**a)**	A plate clutch consists of one pair of contacting surfaces. The inner and outer diameters of the friction disk are 100 and 200 mm respectively. The coefficient of friction is 0.2 and the permissible intensity of pressure is 1 N/mm^2. Assuming uniform-wear theory, calculate the power-transmitting capacity of the clutch at 750 rpm.	**06**
	b)	Define Brake and Explain the classification of brakes.	**04**
	c)	A solid cast iron disk, 1 m in diameter and 0.2 m thick, is used as a flywheel. It is rotating at 350 rpm. It is brought to rest in 1.5 s by means of a brake. Calculate i) the energy absorbed by the brake; and ii) the torque capacity of the brake	**04**

Seat No.	

Set **R**

T.Y (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Transmission System Design (BTN02601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one marks.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Brake is used to _____ the energy possessed by a moving system or mechanism by means of friction.
a) absorb b) release
c) minimize d) maximize

2) If the lead angle $[\lambda]$ of worm is 10°, then the helix angle $[\Psi]$ will be _____.
a) 80^0 b) 70^0
c) 10^0 d) 100^0

3) Boundary lubricated bearings are _____.
a) Thick film bearing b) Hydrodynamic bearing
c) Thin film bearing d) Hydrostatic bearing

4) The ____ type of clutch is used in truck.
a) Cone clutch b) Electric clutch
c) Single plate clutch d) None of the above

5) Wear strength of spur gear tooth depends upon _____.
a) Face width b) Number of teeth
c) Surface hardness d) All of the above

6) In a bearing no. 6312, the digit 3 designates _____.
a) Bore size b) Series of bearing
c) Type of bearing d) None of these

7) The breakdown of the oil film in gear causes _____.
a) Abrasive wear b) Destructive pitting
c) Scoring d) Creep

8) The bevel factor is given as _____.
a) b/L b) $b/2L$
c) $1 - b/2L$ d) $1 - b/L$

9) In helical gears, the distance between similar faces of adjacent teeth along a helix on the pitch cylinders normal to the teeth, is called _____.
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c) Diametric pitch d) Module

10) If Z is the actual no. of teeth on helical gear and β is a helix angle for the teeth, the formative no. of teeth is written as _____.
a) $Z \sec^3\beta$ b) $Z \sec^2\beta$
c) $Z/\sec^3\beta$ d) $Z \operatorname{cosec} \beta$

11) When bevel gears having equal teeth and equal pitch angles connect two shafts intersecting at 90° then they are known as _____.
a) Angular bevel gears b) Crown bevel gears
c) Internal bevel gears d) Mitre gears

12) Which of the following gear is used for the self-locking condition?
a) Spur gears b) Helical gears
c) Bevel gears d) Worm gears

13) When length of bearing is equal to the diameter of the journal it is called as _____.
a) Short bearing b) Long bearing
c) Square bearing d) All of these

14) The worm wheel should be _____.
a) Embeddable and conformable
b) Hard and conformable
c) Hard and embeddable
d) None of the above

Seat No.	

Set **R**

T.Y (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Transmission System Design (BTN02601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2 **a)** Define Beam Strength and Wear Strength of Spur Gears. **03**

b) Enlist the various types of gear tooth failures and explain the causes and remedies for any three failures. **04**

c) A pair of spur gears with 20° full-depth involute teeth consists of a 20 teeth pinion meshing with a 41 teeth gear. The module is 3 mm while the face width is 40 mm. The material for pinion as well as gear is steel with an ultimate tensile strength of 600 N/mm^2. The gears are heat treated to a surface hardness of 400 BHN. The pinion rotates at 1450 rpm and the service factor for the application is 1.75. Assume that velocity factor accounts for the dynamic load and the factor of safety is 1.5. Determine the rated power that the gears can transmit. Take Cv = 3/(3 + V), Y for 20 teeth = 0.32 **07**

Q.3 **a)** A 5-kW power at 720 rpm is supplied to the pinion A of helical gear through its shaft. The normal module is 5 mm and the normal pressure angle is 20°. The pinion has right-hand teeth, while the gear has left-hand teeth. The helix angle is 30°. The number of teeth on pinion and gear are 20 and 30, respectively. The pinion rotates in the clockwise direction when seen from the left side of the page. Determine the components of the tooth force and draw a free-body diagram showing the forces acting on the pinion and the gear. **07**

b) Worm gear box with an effective surface area of 1.5 m^2 is operating in still air with a heat transfer coefficient of 15 W/m^2°C. The temperature rise of the lubricating oil above the atmospheric temperature is limited to 50°C. The worm gears are designated as, 1/30/10/8. The worm shaft is rotating at 1440 rpm and the normal pressure angle is 20°. Take the coefficient of friction as 0.024. Calculate the power transmitting capacity based on the thermal considerations. **07**

Q.4	**a)**	A pair of worm and worm wheel is designated as 3/60/10/6. The worm is transmitting 5 kW power at 1440 rpm to the worm wheel. The coefficient of friction is 0.1 and the normal pressure angle is 20°. Determine the components of the gear tooth force acting on the worm and the worm wheel.	**07**
	b)	Explain the Virtual number of teeth for helical gears.	**04**
	c)	Differentiate between spur and helical gears.	**03**

Section – II

Q.5	**a)**	A pair of bevel gears transmitting 7.5 kW at 300 rpm having pitch circle diameters of pinion and gear as 200 mm and 150 mm. The face width is 40 mm. The pressure angle is 20°. The Determine the components of the resultant gear tooth force and draw a free-body diagram of forces acting on the pinion and the gear.	**07**
	b)	Explain the Bevel Gear Terminology.	**04**
	c)	Explain the Working principle of Hydrostatic Bearing.	**03**
Q.6	**a)**	Explain the procedure for selection of a bearing from the Manufacturer's Catalogue.	**07**
	b)	A ball bearing is operating on a work cycle consisting of three parts – a radial load of 3000 N at 1440 rpm for one quarter cycle, a radial load of 5000 N at 720 rpm for one half cycle, and radial load of 2500 N at 1440 rpm for the remaining cycle. The expected life of the bearing is 10000 h. Calculate the dynamic load carrying capacity of the bearing.	**07**
Q.7	**a)**	A plate clutch consists of one pair of contacting surfaces. The inner and outer diameters of the friction disk are 100 and 200 mm respectively. The coefficient of friction is 0.2 and the permissible intensity of pressure is 1 N/mm^2. Assuming uniform-wear theory, calculate the power-transmitting capacity of the clutch at 750 rpm.	**06**
	b)	Define Brake and Explain the classification of brakes.	**04**
	c)	A solid cast iron disk, 1 m in diameter and 0.2 m thick, is used as a flywheel. It is rotating at 350 rpm. It is brought to rest in 1.5 s by means of a brake. Calculate i) the energy absorbed by the brake; and ii) the torque capacity of the brake	**04**

SLR-BD-371

Seat No.	

Set S

T.Y (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Transmission System Design (BTN02601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one marks.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. 14

1) If Z is the actual no. of teeth on helical gear and β is a helix angle for the teeth, the formative no. of teeth is written as _____.
a) $Z\sec^3\beta$ b) $Z\sec^2\beta$
c) $Z/\sec^3\beta$ d) $Z\,\mathrm{cosec}\,\beta$

2) When bevel gears having equal teeth and equal pitch angles connect two shafts intersecting at 90° then they are known as _____.
a) Angular bevel gears b) Crown bevel gears
c) Internal bevel gears d) Mitre gears

3) Which of the following gear is used for the self-locking condition?
a) Spur gears b) Helical gears
c) Bevel gears d) Worm gears

4) When length of bearing is equal to the diameter of the journal it is called as _____.
a) Short bearing b) Long bearing
c) Square bearing d) All of these

5) The worm wheel should be _____.
a) Embeddable and conformable
b) Hard and conformable
c) Hard and embeddable
d) None of the above

6) Brake is used to _____ the energy possessed by a moving system or mechanism by means of friction.
a) absorb b) release
c) minimize d) maximize

7) If the lead angle $[\lambda]$ of worm is 10°, then the helix angle $[\Psi]$ will be _____.

a) 80^0 b) 70^0

c) 10^0 d) 100^0

8) Boundary lubricated bearings are _____.

a) Thick film bearing b) Hydrodynamic bearing

c) Thin film bearing d) Hydrostatic bearing

9) The ____ type of clutch is used in truck.

a) Cone clutch b) Electric clutch

c) Single plate clutch d) None of the above

10) Wear strength of spur gear tooth depends upon _____.

a) Face width b) Number of teeth

c) Surface hardness d) All of the above

11) In a bearing no. 6312, the digit 3 designates _____.

a) Bore size b) Series of bearing

c) Type of bearing d) None of these

12) The breakdown of the oil film in gear causes _____.

a) Abrasive wear b) Destructive pitting

c) Scoring d) Creep

13) The bevel factor is given as _____.

a) $\mathrm{b/L}$ b) $\mathrm{b/2L}$

c) $1 - \mathrm{b/2L}$ d) $1 - \mathrm{b/L}$

14) In helical gears, the distance between similar faces of adjacent teeth along a helix on the pitch cylinders normal to the teeth, is called _____.

a) Normal pitch b) Axial pitch

c) Diametric pitch d) Module

Seat No.	

Set **S**

T.Y (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Transmission System Design (BTN02601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2 **a)** Define Beam Strength and Wear Strength of Spur Gears. **03**

b) Enlist the various types of gear tooth failures and explain the causes and remedies for any three failures. **04**

c) A pair of spur gears with 20° full-depth involute teeth consists of a 20 teeth pinion meshing with a 41 teeth gear. The module is 3 mm while the face width is 40 mm. The material for pinion as well as gear is steel with an ultimate tensile strength of 600 N/mm^2. The gears are heat treated to a surface hardness of 400 BHN. The pinion rotates at 1450 rpm and the service factor for the application is 1.75. Assume that velocity factor accounts for the dynamic load and the factor of safety is 1.5. Determine the rated power that the gears can transmit. Take Cv = 3/(3 + V), Y for 20 teeth = 0.32 **07**

Q.3 **a)** A 5-kW power at 720 rpm is supplied to the pinion A of helical gear through its shaft. The normal module is 5 mm and the normal pressure angle is 20°. The pinion has right-hand teeth, while the gear has left-hand teeth. The helix angle is 30°. The number of teeth on pinion and gear are 20 and 30, respectively. The pinion rotates in the clockwise direction when seen from the left side of the page. Determine the components of the tooth force and draw a free-body diagram showing the forces acting on the pinion and the gear. **07**

b) Worm gear box with an effective surface area of 1.5 m^2 is operating in still air with a heat transfer coefficient of 15 W/m^2°C. The temperature rise of the lubricating oil above the atmospheric temperature is limited to 50°C. The worm gears are designated as, 1/30/10/8. The worm shaft is rotating at 1440 rpm and the normal pressure angle is 20°. Take the coefficient of friction as 0.024. Calculate the power transmitting capacity based on the thermal considerations. **07**

Q.4 **a)** A pair of worm and worm wheel is designated as 3/60/10/6. The worm is transmitting 5 kW power at 1440 rpm to the worm wheel. The coefficient of friction is 0.1 and the normal pressure angle is 20°. Determine the components of the gear tooth force acting on the worm and the worm wheel. **07**

b) Explain the Virtual number of teeth for helical gears. **04**

c) Differentiate between spur and helical gears. **03**

Section – II

Q.5 **a)** A pair of bevel gears transmitting 7.5 kW at 300 rpm having pitch circle diameters of pinion and gear as 200 mm and 150 mm. The face width is 40 mm. The pressure angle is 20°. The Determine the components of the resultant gear tooth force and draw a free-body diagram of forces acting on the pinion and the gear. **07**

b) Explain the Bevel Gear Terminology. **04**

c) Explain the Working principle of Hydrostatic Bearing. **03**

Q.6 **a)** Explain the procedure for selection of a bearing from the Manufacturer's Catalogue. **07**

b) A ball bearing is operating on a work cycle consisting of three parts – a radial load of 3000 N at 1440 rpm for one quarter cycle, a radial load of 5000 N at 720 rpm for one half cycle, and radial load of 2500 N at 1440 rpm for the remaining cycle. The expected life of the bearing is 10000 h. Calculate the dynamic load carrying capacity of the bearing. **07**

Q.7 **a)** A plate clutch consists of one pair of contacting surfaces. The inner and outer diameters of the friction disk are 100 and 200 mm respectively. The coefficient of friction is 0.2 and the permissible intensity of pressure is 1 N/mm^2. Assuming uniform-wear theory, calculate the power-transmitting capacity of the clutch at 750 rpm. **06**

b) Define Brake and Explain the classification of brakes. **04**

c) A solid cast iron disk, 1 m in diameter and 0.2 m thick, is used as a flywheel. It is rotating at 350 rpm. It is brought to rest in 1.5 s by means of a brake. **04**

Calculate

i) the energy absorbed by the brake; and

ii) the torque capacity of the brake

SLR-BD-372

Seat No.	

Set P

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Instrumentation and Control Engineering (BTN02602)

Day & Date: Thursday 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) The dynamic characteristics of the instrument are _____.
a) Measuring lag b) Calibration
c) Overshoot d) Resolution

2) Mechanical strain gauges can measure _____.
a) Static strains
b) Dynamic strains
c) Quasi-static strains
d) Both static and dynamic strains

3) Following substances can be used as thermometric substances for temperature measurements below -40°C
a) Rockel b) Pentane
c) Mercury d) Creosote

4) Which of the following is a self-generating type instrument?
a) Piezo-electricpickup
b) Thermištor
c) Potentiometric device
d) linear variable differential transformer

5) Indicate the externally powered type of instrument transducer _____.
a) Spring balance b) Centrifugal Tachometer
c) thermocouple or thermopile d) photo emissive cell

6) The uncertainty in the measurement is expressed in terms of _____.
a) Accuracy b) Error
c) Acceleration d) None of above

7) A hot wire anemometer is used to measure _____.
a) Pressure in gases b) Liquid discharge
c) Gas velocities d) Current meter

8) A person driving car and required to maintain speed the car at 60 km/hr is an example of _____.
a) Manual open loop system b) Manual closed loop system
c) Closed loop system d) Open loop system

9) In a block diagram algebra, the closed loop transfer function is usually given by _____.
a) H(S)/R(S) b) G(S)/1±G(S)H(S)
c) G(S)H(S) d) E(S)/C(S)

10) Control action which is never used alone is _____.
a) P - action b) D- action
c) ON/OFF action d) I – action

11) In first column of Routh's table containing the integers 2, 4,-5, 3. The system is _____.
a) Stable b) Unstable
c) Marginally Stable d) None

12) Angles of arrival are needed in a root locus if a system has _____.
a) Real poles b) Real zeros
c) complex conjugate zeros d) complex conjugate poles

13) Angle condition is used to determine _____.
a) The value of K for a point on root locus
b) The breakaway points in root locus
c) The existence of a point on the root locus
d) The centroid of asymptotes of root locus

14) For a control system on the verge of instability _____.
a) G.M. is positive b) P.M. is positive
c) G.M. and P.M. are zero d) G.M. and P.M. are negative

SLR-BD-372

Seat No.	

Set P

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Instrumentation and Control Engineering (BTN02602)

Day & Date: Thursday 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

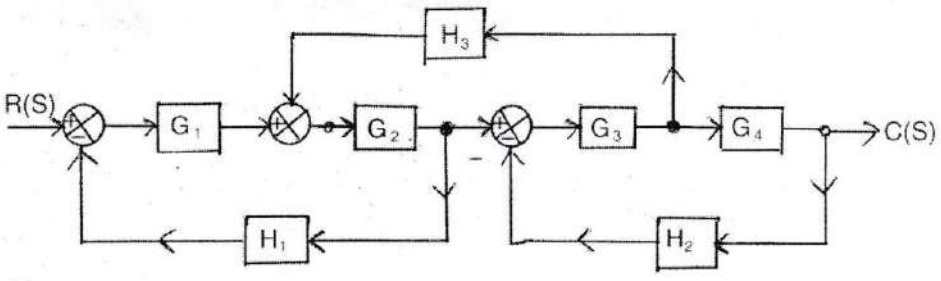
Instructions: 1) Solve any two questions from Section-I and Section- II
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Explain with block diagram generalized measurement system and its functional elements.	**05**
	b)	Compare thermocouple and thermistor as regards to working principle, material, temperature range and applications.	**05**
	c)	Distinguish between static and dynamic characteristics of measuring instruments.	**04**
Q.3	**a)**	Explain with neat sketch drag-cup tachometer.	**05**
	b)	Draw a neat sketch and explain the working of Rotameter for flow measurement.	**05**
	c)	Explain with neat sketch McLeod pressure gauge.	**04**
Q.4	**a)**	Derive an expression for the gauge factor.	**05**
	b)	Explain the use of strain gauge for torque measurement.	**05**
	c)	Explain Wheatstone's bridge network in detail.	**04**

Section – II

Q.5	**a)**	Differentiate between open loop and closed loop method system.	**04**
	b)	Write a note on modern control systems.	**04**
	c)	For the block diagram of a feedback control system as shown in Fig, obtain the closed loop transfer function C(S)/R(S).	**06**



Q.6 **a)** Explain significance of root locus. **04**

b) Explain angle and magnitude conditions for a point on the root locus. **04**

c) Draw complete root locus and comment on the stability of a feedback control system with $G(S)H(S) = K/[S(S+2)\ (S+68+13)]$ **06**

Q.7 **a)** Explain Bode plot for: **04**

i) System gain

ii) Poles and Zeros at origin

iii) simple poles and Zeros

b) Explain gain margin and phase margin. Gain cross over margin and phase cross over frequency in detail. **04**

c) For a unity feedback system with $G(s) = \frac{100}{S(1+0.1s)(1+0.2s)}$ sketch Bode plots and comment on system stability. **06**

Seat No.	

Set **Q**

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Instrumentation and Control Engineering (BTN02602)

Day & Date: Thursday 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) A person driving car and required to maintain speed the car at 60 km/hr is an example of _____.
a) Manual open loop system b) Manual closed loop system
c) Closed loop system d) Open loop system

2) In a block diagram algebra, the closed loop transfer function is usually given by _____.
a) H(S)/R(S) b) G(S)/1±G(S)H(S)
c) G(S)H(S) d) E(S)/C(S)

3) Control action which is never used alone is _____.
a) P - action b) D- action
c) ON/OFF action d) I – action

4) In first column of Routh's table containing the integers 2, 4,-5, 3. The system is _____.
a) Stable b) Unstable
c) Marginally Stable d) None

5) Angles of arrival are needed in a root locus if a system has _____.
a) Real poles b) Real zeros
c) complex conjugate zeros d) complex conjugate poles

6) Angle condition is used to determine _____.
a) The value of K for a point on root locus
b) The breakaway points in root locus
c) The existence of a point on the root locus
d) The centroid of asymptotes of root locus

7) For a control system on the verge of instability _____.
a) G.M. is positive b) P.M. is positive
c) G.M. and P.M. are zero d) G.M. and P.M. are negative

8) The dynamic characteristics of the instrument are _____.
a) Measuring lag b) Calibration
c) Overshoot d) Resolution

9) Mechanical strain gauges can measure _____.
a) Static strains
b) Dynamic strains
c) Quasi-static strains
d) Both static and dynamic strains

10) Following substances can be used as thermometric substances for temperature measurements below -40°C
a) Rockel b) Pentane
c) Mercury d) Creosote

11) Which of the following is a self-generating type instrument?
a) Piezo-electricpickup
b) Thermištor
c) Potentiometric device
d) linear variable differential transformer

12) Indicate the externally powered type of instrument transducer _____.
a) Spring balance b) Centrifugal Tachometer
c) thermocouple or thermopile d) photo emissive cell

13) The uncertainty in the measurement is expressed in terms of _____.
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14) A hot wire anemometer is used to measure _____.
a) Pressure in gases b) Liquid discharge
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Seat No.	

Set **Q**

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Instrumentation and Control Engineering (BTN02602)

Day & Date: Thursday 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

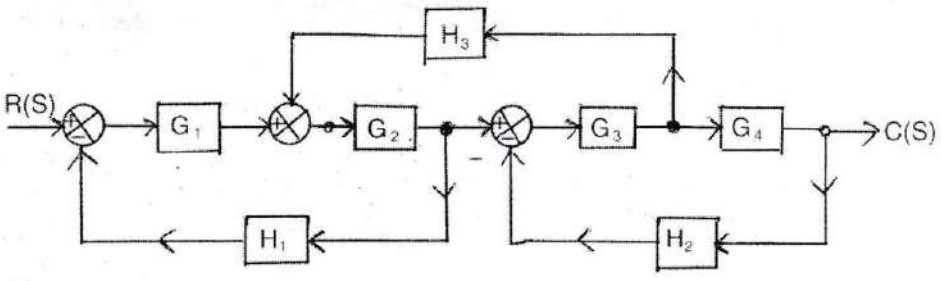
Instructions: 1) Solve any two questions from Section-I and Section- II
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Explain with block diagram generalized measurement system and its functional elements.	**05**
	b)	Compare thermocouple and thermistor as regards to working principle, material, temperature range and applications.	**05**
	c)	Distinguish between static and dynamic characteristics of measuring instruments.	**04**
Q.3	**a)**	Explain with neat sketch drag-cup tachometer.	**05**
	b)	Draw a neat sketch and explain the working of Rotameter for flow measurement.	**05**
	c)	Explain with neat sketch McLeod pressure gauge.	**04**
Q.4	**a)**	Derive an expression for the gauge factor.	**05**
	b)	Explain the use of strain gauge for torque measurement.	**05**
	c)	Explain Wheatstone's bridge network in detail.	**04**

Section – II

Q.5	**a)**	Differentiate between open loop and closed loop method system.	**04**
	b)	Write a note on modern control systems.	**04**
	c)	For the block diagram of a feedback control system as shown in Fig, obtain the closed loop transfer function C(S)/R(S).	**06**



Q.6 **a)** Explain significance of root locus. **04**

b) Explain angle and magnitude conditions for a point on the root locus. **04**

c) Draw complete root locus and comment on the stability of a feedback control system with $G(S)H(S) = K/[S(S+2)\ (S+68+13)]$ **06**

Q.7 **a)** Explain Bode plot for: **04**

i) System gain

ii) Poles and Zeros at origin

iii) simple poles and Zeros

b) Explain gain margin and phase margin. Gain cross over margin and phase cross over frequency in detail. **04**

c) For a unity feedback system with $G(s) = \frac{100}{S(1+0.1s)(1+0.2s)}$ sketch Bode plots and comment on system stability. **06**

Seat No.	

Set R

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Instrumentation and Control Engineering (BTN02602)

Day & Date: Thursday 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. 14

1) In first column of Routh's table containing the integers 2, 4,-5, 3. The system is _____.
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2) Angles of arrival are needed in a root locus if a system has _____.
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Seat No.	

Set **R**

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Instrumentation and Control Engineering (BTN02602)

Day & Date: Thursday 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section-I and Section- II
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Section – I

Q.2	**a)**	Explain with block diagram generalized measurement system and its functional elements.	**05**
	b)	Compare thermocouple and thermistor as regards to working principle, material, temperature range and applications.	**05**
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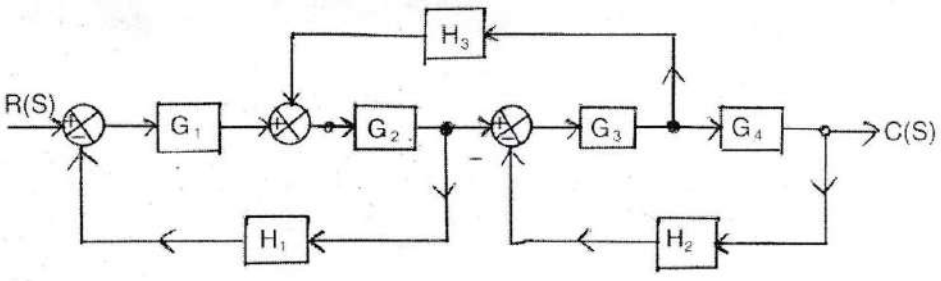
Q.3	**a)**	Explain with neat sketch drag-cup tachometer.	**05**
	b)	Draw a neat sketch and explain the working of Rotameter for flow measurement.	**05**
	c)	Explain with neat sketch McLeod pressure gauge.	**04**
Q.4	**a)**	Derive an expression for the gauge factor.	**05**
	b)	Explain the use of strain gauge for torque measurement.	**05**
	c)	Explain Wheatstone's bridge network in detail.	**04**

Section – II

Q.5	**a)**	Differentiate between open loop and closed loop method system.	**04**
	b)	Write a note on modern control systems.	**04**
	c)	For the block diagram of a feedback control system as shown in Fig, obtain the closed loop transfer function C(S)/R(S).	**06**



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b) Explain angle and magnitude conditions for a point on the root locus. **04**

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b) Explain gain margin and phase margin. Gain cross over margin and phase cross over frequency in detail. **04**

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Seat No.	

Set **S**

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Instrumentation and Control Engineering (BTN02602)

Day & Date: Thursday 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

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Seat No.	

Set **S**

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Instrumentation and Control Engineering (BTN02602)

Day & Date: Thursday 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section-I and Section- II
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Explain with block diagram generalized measurement system and its functional elements.	**05**
	b)	Compare thermocouple and thermistor as regards to working principle, material, temperature range and applications.	**05**
	c)	Distinguish between static and dynamic characteristics of measuring instruments.	**04**
Q.3	**a)**	Explain with neat sketch drag-cup tachometer.	**05**
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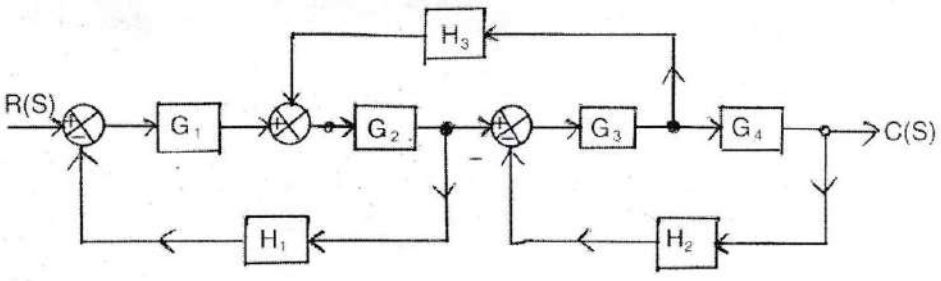
	c)	Explain with neat sketch McLeod pressure gauge.	**04**
Q.4	**a)**	Derive an expression for the gauge factor.	**05**
	b)	Explain the use of strain gauge for torque measurement.	**05**
	c)	Explain Wheatstone's bridge network in detail.	**04**

Section – II

Q.5	**a)**	Differentiate between open loop and closed loop method system.	**04**
	b)	Write a note on modern control systems.	**04**
	c)	For the block diagram of a feedback control system as shown in Fig, obtain the closed loop transfer function C(S)/R(S).	**06**



Q.6 **a)** Explain significance of root locus. **04**

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c) Draw complete root locus and comment on the stability of a feedback control system with $G(S)H(S) = K/[S(S+2)\ (S+68+13)]$ **06**

Q.7 **a)** Explain Bode plot for: **04**

i) System gain

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b) Explain gain margin and phase margin. Gain cross over margin and phase cross over frequency in detail. **04**

c) For a unity feedback system with $G(s) = \frac{100}{S(1+0.1s)(1+0.2s)}$ sketch Bode plots and comment on system stability. **06**

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Seat No.	

Set P

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April -2025
MECHANICAL ENGINEERING
Heat Transfer (BTN02603)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) The unit of thermal conductivity is _____.
a) W/mK b) W/ms
c) W/mkg d) W/m^2K

2) The critical radius of a hollow sphere having thermal conductivity k and h_0 as convective heat transfer coefficient of outer fluid is given by _____.
a) $h_0 \,/\, k$ b) $k \,/\, h_0$
c) $2k \,/\, h_0$ d) $h_0 \,/\, 2k$

3) In which of the following cases most unsteady heat flow occurs?
a) Through the walls of a furnace
b) Through lagged pipes carrying steam
c) Through the wall of a refrigerator
d) During annealing of castings

4) What is the purpose of using fins in a particular heat transfer system?
a) To decrease rate of heat transfer
b) To increase rate of heat transfer
c) To maintain rate of heat transfer at a constant rate
d) cannot say

5) The emissive power of a black body depends on _____.
a) Physical nature b) Nature of a body
c) Temperature of a body d) All of above

6) What is the relation between reflectivity (ρ), absorptivity $(\alpha)$and transmissivity (τ)?

a) $\rho - \alpha + \tau = 1$ b) $\rho + \alpha - \tau = 1$
c) $\rho + \alpha + \tau = 1$ d) $\rho - \alpha - \tau = 1$

7) Unit of thermal diffusivity _____.

a) m/s^2 b) m^2/s
c) J/s d) None of the above

8) A _____ body reflects entire radiation incident on it.

a) Transparent b) Black
c) Gray d) White

9) In a film condensation, the vertical plate temperature should be _____.

a) more than the saturation temperature of the vapour
b) less than the saturation temperature of the vapour
c) equal to the saturation temperature of the vapour
d) none of the above

10) _____ number is generally associated with only natural convection heat transfer.

a) Prandtl b) Weber
c) Nusselt d) Grashoff

11) The thickness of thermal boundary layer is equal to that of hydrodynamic boundary layer when Prandtl number is _____.

a) 0 b) 0.1
c) 0.5 d) 1.0

12) An automobile radiator is _____ type of heat exchanger.

a) cross-flow b) regenerator
c) counter-flow d) recuperator

13) For the same heat transfer Q and same overall heat transfer coefficient U_o, surface area required for counter flow operation is always _____.

a) less than parallel flow b) more than parallel flow
c) same as parallel flow d) unpredictable

14) Multipass heat exchangers are used _____.

a) To obtain high heat transfer coefficient
b) To increase the manufacturing cost of the heat exchanger
c) To reduce pressure drop
d) None of above

Seat No.	

Set **P**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April -2025
MECHANICAL ENGINEERING
Heat Transfer (BTN02603)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Attempt the following questions.

a) Explain modes of heat transfer with governing laws. **04**

b) Derive the general heat conduction equation in three dimensions in Cartesian coordinates. **05**

c) A thick walled tube of stainless steel with 20 mm inner diameter & 40 mm outer diameter is covered with 30 mm layer of asbestos insulation (K = 0.2 W/m ^{0}C), if the inside wall temperature of the pipe is maintained at 600^{0}C and outside insulation at 1000 ^{0}C. Calculate the heat loss per meter of the length. **05**

Q.3 Attempt the following questions.

a) Derive an expression for temperature distribution and heat flow rate for infinitely long fin. **04**

b) Find out the amount of heat transferred through an iron fin of length 50 mm width 100 mm & thickness 5 mm Assume k = 210 W/m ^{0}C & h = 42 W/m^2 ^{0}C for the material of fin and the temperature at the base of fin as 80^{0}C. Also determine the temperature at the tip of fin when atmospheric temperature 20^{0}C. **05**

c) A small electrical heating application uses wire of 2mm diameter with 0.8 mm thick insulation (k = 0.12 W/m °C). The heat transfer coefficient on the insulation surface is 35 W/m^2 ^{o}C. Determine the critical thickness of insulation in this case & the percentage change in the heat transfer rate if the critical thickness is used. Assuming that the temperature difference between the surface of the wire and surrounding air remains unchanged. **05**

Q.4 Attempt the following questions. **04**

a) Explain the following terms:
i) Emissivity
ii) Radiosity
iii) Irradiation

b) State Plank's law of radiation. Hence derive Wien's displacement law. **05**

c) Determine the rate of heat loss by radiation from a steel tube of outside diameter 70 mm and 3 m long at the temperature of 227°C. If the tube is located in a square brick conduit of 0.3 m side and 27°C. Take $\varepsilon_{(\text{Steel})} = 0.79$ & $\varepsilon_{(\text{brick})} = 0.93$ **05**

Section – II

Q.5 Attempt the following questions.

a) Show by dimensional analysis, Nu = f (Re.Pr) for forced Convection. **04**

b) Explain with neat sketch velocity and thermal boundary layer. **05**

c) The Crankcase of an I.C. Engine measuring 80cm X 20cm may be idealized as a flat plate. The engine runs at 90 Km/hr & the crankcase is cooled by the air flowing past it at the same speed. Calculate the heat loss from the crank surface maintained at 85°C to the ambient air at 15°C. Due to road induced vibration the boundary layer becomes turbulent from the leading edge itself. **05**

The Properties of air at 50°C are:

$\text{K} = 0.02824\ \text{w/m°C}, \gamma = 17.95\ \times 10^{-6}\text{m/s}^2, \text{Pr} = 0.698$

Use

$Nu = 0.036(\text{Re})^{0.8}(\text{Pr})^{0.333}$

Q.6 Attempt the following questions.

a) Define Condensation and explain its types. **04**

b) Draw typical pool boiling curve and explain various regimes of pool boiling. **05**

c) A counter flow double pipe heat exchanger using hot water at the rate of 10500 kg/h. the steam enters the heat exchanger at 180°C & leaves at 130°C. The inlet & exit temperatures of water are 30°C and 80°Cresp. if overall heat transfer coefficient from steam to water is 814 W/m^2 °C. Calculate the heat transfer area. What would be the increase in area if fluid flow were parallel. Take specific heat of water 4.187 KJ/Kg K. **05**

Q.7 Attempt the following questions.

a) Explain Classification of the heat exchanger with neat sketch. **04**

b) Derive an expression for determining the LMTD of parallel flow heat exchanger. **05**

c) A chemical having specific heat of 3.3 KJ/KgK flowing at the rate of 20000 Kg/hr. enters the parallel flow heat exchanger at 120°C. The flow rate of cooling water is 50000 Kg/hr having specific heat of 4.186 KJ/KgK with an inlet temperature 20°C. The heat transfer area is 10 m^2 and the overall heat transfer coefficient is 1050 W/m^{2}K. Find: **05**

i) The effectiveness of heat exchanger

ii) The outlet temperature of water and chemical

Seat No.	

Set **Q**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April -2025
MECHANICAL ENGINEERING
Heat Transfer (BTN02603)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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14) Unit of thermal diffusivity _____.
a) m/s^2
b) m^2/s
c) J/s
d) None of the above

Seat No.	

Set **Q**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April -2025
MECHANICAL ENGINEERING
Heat Transfer (BTN02603)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Attempt the following questions.

a) Explain modes of heat transfer with governing laws. **04**

b) Derive the general heat conduction equation in three dimensions in Cartesian coordinates. **05**

c) A thick walled tube of stainless steel with 20 mm inner diameter & 40 mm outer diameter is covered with 30 mm layer of asbestos insulation (K = 0.2 W/m ^{0}C), if the inside wall temperature of the pipe is maintained at 600^{0}C and outside insulation at 1000 ^{0}C. Calculate the heat loss per meter of the length. **05**

Q.3 Attempt the following questions.

a) Derive an expression for temperature distribution and heat flow rate for infinitely long fin. **04**

b) Find out the amount of heat transferred through an iron fin of length 50 mm width 100 mm & thickness 5 mm Assume k = 210 W/m ^{0}C & h = 42 W/m^2 ^{0}C for the material of fin and the temperature at the base of fin as 80^{0}C. Also determine the temperature at the tip of fin when atmospheric temperature 20^{0}C. **05**

c) A small electrical heating application uses wire of 2mm diameter with 0.8 mm thick insulation (k = 0.12 W/m °C). The heat transfer coefficient on the insulation surface is 35 W/m^2 ^{o}C. Determine the critical thickness of insulation in this case & the percentage change in the heat transfer rate if the critical thickness is used. Assuming that the temperature difference between the surface of the wire and surrounding air remains unchanged. **05**

Q.4 Attempt the following questions. **04**

a) Explain the following terms:
i) Emissivity
ii) Radiosity
iii) Irradiation

b) State Plank's law of radiation. Hence derive Wien's displacement law. **05**

c) Determine the rate of heat loss by radiation from a steel tube of outside diameter 70 mm and 3 m long at the temperature of 227°C. If the tube is located in a square brick conduit of 0.3 m side and 27°C. Take $\varepsilon_{(\text{Steel})} = 0.79$ & $\varepsilon_{(\text{brick})} = 0.93$ **05**

Section – II

Q.5 Attempt the following questions.

a) Show by dimensional analysis, Nu = f (Re.Pr) for forced Convection. **04**

b) Explain with neat sketch velocity and thermal boundary layer. **05**

c) The Crankcase of an I.C. Engine measuring 80cm X 20cm may be idealized as a flat plate. The engine runs at 90 Km/hr & the crankcase is cooled by the air flowing past it at the same speed. Calculate the heat loss from the crank surface maintained at 85°C to the ambient air at 15°C. Due to road induced vibration the boundary layer becomes turbulent from the leading edge itself. **05**

The Properties of air at 50°C are:

$\text{K} = 0.02824\ \text{w/m°C}, \gamma = 17.95\ \times 10^{-6}\text{m/s}^2, \text{Pr} = 0.698$

Use

$Nu = 0.036(\text{Re})^{0.8}(\text{Pr})^{0.333}$

Q.6 Attempt the following questions.

a) Define Condensation and explain its types. **04**

b) Draw typical pool boiling curve and explain various regimes of pool boiling. **05**

c) A counter flow double pipe heat exchanger using hot water at the rate of 10500 kg/h. the steam enters the heat exchanger at 180°C & leaves at 130°C. The inlet & exit temperatures of water are 30°C and 80°Cresp. if overall heat transfer coefficient from steam to water is 814 W/m^2 °C. Calculate the heat transfer area. What would be the increase in area if fluid flow were parallel. Take specific heat of water 4.187 KJ/Kg K. **05**

Q.7 Attempt the following questions.

a) Explain Classification of the heat exchanger with neat sketch. **04**

b) Derive an expression for determining the LMTD of parallel flow heat exchanger. **05**

c) A chemical having specific heat of 3.3 KJ/KgK flowing at the rate of 20000 Kg/hr. enters the parallel flow heat exchanger at 120°C. The flow rate of cooling water is 50000 Kg/hr having specific heat of 4.186 KJ/KgK with an inlet temperature 20°C. The heat transfer area is 10 m^2 and the overall heat transfer coefficient is 1050 W/m^{2}K. Find: **05**

i) The effectiveness of heat exchanger

ii) The outlet temperature of water and chemical

Seat No.	

Set R

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April -2025
MECHANICAL ENGINEERING
Heat Transfer (BTN02603)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) The thickness of thermal boundary layer is equal to that of hydrodynamic boundary layer when Prandtl number is _____.
a) 0 b) 0.1
c) 0.5 d) 1.0

2) An automobile radiator is _____ type of heat exchanger.
a) cross-flow b) regenerator
c) counter-flow d) recuperator

3) For the same heat transfer Q and same overall heat transfer coefficient U_o, surface area required for counter flow operation is always _____.
a) less than parallel flow b) more than parallel flow
c) same as parallel flow d) unpredictable

4) Multipass heat exchangers are used _____.
a) To obtain high heat transfer coefficient
b) To increase the manufacturing cost of the heat exchanger
c) To reduce pressure drop
d) None of above

5) The unit of thermal conductivity is _____.
a) W/mK b) W/ms
c) W/mkg d) W/m^2K

6) The critical radius of a hollow sphere having thermal conductivity k and h_0 as convective heat transfer coefficient of outer fluid is given by _____.
a) h_0 / k b) k / h_0
c) $2k / h_0$ d) $h_0 / 2k$

7) In which of the following cases most unsteady heat flow occurs?
a) Through the walls of a furnace
b) Through lagged pipes carrying steam
c) Through the wall of a refrigerator
d) During annealing of castings

8) What is the purpose of using fins in a particular heat transfer system?
a) To decrease rate of heat transfer
b) To increase rate of heat transfer
c) To maintain rate of heat transfer at a constant rate
d) cannot say

9) The emissive power of a black body depends on _____.
a) Physical nature
b) Nature of a body
c) Temperature of a body
d) All of above

10) What is the relation between reflectivity (ρ), absorptivity $(\alpha)$and transmissivity (τ)?
a) $\rho - \alpha + \tau = 1$
b) $\rho + \alpha - \tau = 1$
c) $\rho + \alpha + \tau = 1$
d) $\rho - \alpha - \tau = 1$

11) Unit of thermal diffusivity _____.
a) m/s^2
b) m^2/s
c) J/s
d) None of the above

12) A _____ body reflects entire radiation incident on it.
a) Transparent
b) Black
c) Gray
d) White

13) In a film condensation, the vertical plate temperature should be _____.
a) more than the saturation temperature of the vapour
b) less than the saturation temperature of the vapour
c) equal to the saturation temperature of the vapour
d) none of the above

14) _____ number is generally associated with only natural convection heat transfer.
a) Prandtl
b) Weber
c) Nusselt
d) Grashoff

SLR-BD-373

Seat No.	

Set R

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April -2025
MECHANICAL ENGINEERING
Heat Transfer (BTN02603)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Attempt the following questions.

a) Explain modes of heat transfer with governing laws. **04**

b) Derive the general heat conduction equation in three dimensions in Cartesian coordinates. **05**

c) A thick walled tube of stainless steel with 20 mm inner diameter & 40 mm outer diameter is covered with 30 mm layer of asbestos insulation (K = 0.2 W/m ^{0}C), if the inside wall temperature of the pipe is maintained at 600^{0}C and outside insulation at 1000 ^{0}C. Calculate the heat loss per meter of the length. **05**

Q.3 Attempt the following questions.

a) Derive an expression for temperature distribution and heat flow rate for infinitely long fin. **04**

b) Find out the amount of heat transferred through an iron fin of length 50 mm width 100 mm & thickness 5 mm Assume k = 210 W/m ^{0}C & h = 42 W/m^2 ^{0}C for the material of fin and the temperature at the base of fin as 80^{0}C. Also determine the temperature at the tip of fin when atmospheric temperature 20^{0}C. **05**

c) A small electrical heating application uses wire of 2mm diameter with 0.8 mm thick insulation (k = 0.12 W/m °C). The heat transfer coefficient on the insulation surface is 35 W/m^2 ^{o}C. Determine the critical thickness of insulation in this case & the percentage change in the heat transfer rate if the critical thickness is used. Assuming that the temperature difference between the surface of the wire and surrounding air remains unchanged. **05**

Q.4 Attempt the following questions. **04**

a) Explain the following terms:
i) Emissivity
ii) Radiosity
iii) Irradiation

b) State Plank's law of radiation. Hence derive Wien's displacement law. **05**

c) Determine the rate of heat loss by radiation from a steel tube of outside diameter 70 mm and 3 m long at the temperature of 227°C. If the tube is located in a square brick conduit of 0.3 m side and 27°C. Take $\varepsilon_{(\text{Steel})} = 0.79$ & $\varepsilon_{(\text{brick})} = 0.93$ **05**

Section – II

Q.5 Attempt the following questions.

a) Show by dimensional analysis, Nu = f (Re.Pr) for forced Convection. **04**

b) Explain with neat sketch velocity and thermal boundary layer. **05**

c) The Crankcase of an I.C. Engine measuring 80cm X 20cm may be idealized as a flat plate. The engine runs at 90 Km/hr & the crankcase is cooled by the air flowing past it at the same speed. Calculate the heat loss from the crank surface maintained at 85°C to the ambient air at 15°C. Due to road induced vibration the boundary layer becomes turbulent from the leading edge itself. **05**

The Properties of air at 50°C are:

$\text{K} = 0.02824\ \text{w/m°C}, \gamma = 17.95\ \times 10^{-6}\text{m/s}^2, \text{Pr} = 0.698$

Use

$Nu = 0.036(\text{Re})^{0.8}(\text{Pr})^{0.333}$

Q.6 Attempt the following questions.

a) Define Condensation and explain its types. **04**

b) Draw typical pool boiling curve and explain various regimes of pool boiling. **05**

c) A counter flow double pipe heat exchanger using hot water at the rate of 10500 kg/h. the steam enters the heat exchanger at 180°C & leaves at 130°C. The inlet & exit temperatures of water are 30°C and 80°Cresp. if overall heat transfer coefficient from steam to water is 814 W/m^2 °C. Calculate the heat transfer area. What would be the increase in area if fluid flow were parallel. Take specific heat of water 4.187 KJ/Kg K. **05**

Q.7 Attempt the following questions.

a) Explain Classification of the heat exchanger with neat sketch. **04**

b) Derive an expression for determining the LMTD of parallel flow heat exchanger. **05**

c) A chemical having specific heat of 3.3 KJ/KgK flowing at the rate of 20000 Kg/hr. enters the parallel flow heat exchanger at 120°C. The flow rate of cooling water is 50000 Kg/hr having specific heat of 4.186 KJ/KgK with an inlet temperature 20°C. The heat transfer area is 10 m^2 and the overall heat transfer coefficient is 1050 W/m^{2}K. Find: **05**

i) The effectiveness of heat exchanger

ii) The outlet temperature of water and chemical

Seat No.	

Set S

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April -2025
MECHANICAL ENGINEERING
Heat Transfer (BTN02603)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. 14

1) What is the relation between reflectivity (ρ), absorptivity $(\alpha)$and transmissivity (τ)?
a) $\rho - \alpha + \tau = 1$ b) $\rho + \alpha - \tau = 1$
c) $\rho + \alpha + \tau = 1$ d) $\rho - \alpha - \tau = 1$

2) Unit of thermal diffusivity _____.
a) m/s^2 b) m^2/s
c) J/s d) None of the above

3) A _____ body reflects entire radiation incident on it.
a) Transparent b) Black
c) Gray d) White

4) In a film condensation, the vertical plate temperature should be _____.
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5) _____ number is generally associated with only natural convection heat transfer.
a) Prandtl b) Weber
c) Nusselt d) Grashoff

6) The thickness of thermal boundary layer is equal to that of hydrodynamic boundary layer when Prandtl number is _____.
a) 0 b) 0.1
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10) The unit of thermal conductivity is _____.
a) W/mK b) W/ms
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a) $h_0 \,/\, k$ b) $k \,/\, h_0$
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14) The emissive power of a black body depends on _____.
a) Physical nature b) Nature of a body
c) Temperature of a body d) All of above

SLR-BD-373

Seat No.		Set	S

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April -2025
MECHANICAL ENGINEERING
Heat Transfer (BTN02603)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Attempt the following questions.

a) Explain modes of heat transfer with governing laws. **04**

b) Derive the general heat conduction equation in three dimensions in Cartesian coordinates. **05**

c) A thick walled tube of stainless steel with 20 mm inner diameter & 40 mm outer diameter is covered with 30 mm layer of asbestos insulation (K = 0.2 W/m ^{0}C), if the inside wall temperature of the pipe is maintained at 600^{0}C and outside insulation at 1000 ^{0}C. Calculate the heat loss per meter of the length. **05**

Q.3 Attempt the following questions.

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b) Find out the amount of heat transferred through an iron fin of length 50 mm width 100 mm & thickness 5 mm Assume k = 210 W/m ^{0}C & h = 42 W/m^2 ^{0}C for the material of fin and the temperature at the base of fin as 80^{0}C. Also determine the temperature at the tip of fin when atmospheric temperature 20^{0}C. **05**

c) A small electrical heating application uses wire of 2mm diameter with 0.8 mm thick insulation (k = 0.12 W/m °C). The heat transfer coefficient on the insulation surface is 35 W/m^2 ^{o}C. Determine the critical thickness of insulation in this case & the percentage change in the heat transfer rate if the critical thickness is used. Assuming that the temperature difference between the surface of the wire and surrounding air remains unchanged. **05**

Q.4 Attempt the following questions. **04**

a) Explain the following terms:
i) Emissivity
ii) Radiosity
iii) Irradiation

b) State Plank's law of radiation. Hence derive Wien's displacement law. **05**

c) Determine the rate of heat loss by radiation from a steel tube of outside diameter 70 mm and 3 m long at the temperature of 227°C. If the tube is located in a square brick conduit of 0.3 m side and 27°C. Take $\varepsilon_{(\text{Steel})} = 0.79$ & $\varepsilon_{(\text{brick})} = 0.93$ **05**

Section – II

Q.5 Attempt the following questions.

a) Show by dimensional analysis, Nu = f (Re.Pr) for forced Convection. **04**

b) Explain with neat sketch velocity and thermal boundary layer. **05**

c) The Crankcase of an I.C. Engine measuring 80cm X 20cm may be idealized as a flat plate. The engine runs at 90 Km/hr & the crankcase is cooled by the air flowing past it at the same speed. Calculate the heat loss from the crank surface maintained at 85°C to the ambient air at 15°C. Due to road induced vibration the boundary layer becomes turbulent from the leading edge itself. **05**

The Properties of air at 50°C are:

$\text{K} = 0.02824\ \text{w/m°C}, \gamma = 17.95\ \times 10^{-6}\text{m/s}^2, \text{Pr} = 0.698$

Use

$Nu = 0.036(\text{Re})^{0.8}(\text{Pr})^{0.333}$

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a) Define Condensation and explain its types. **04**

b) Draw typical pool boiling curve and explain various regimes of pool boiling. **05**

c) A counter flow double pipe heat exchanger using hot water at the rate of 10500 kg/h. the steam enters the heat exchanger at 180°C & leaves at 130°C. The inlet & exit temperatures of water are 30°C and 80°Cresp. if overall heat transfer coefficient from steam to water is 814 W/m^2 °C. Calculate the heat transfer area. What would be the increase in area if fluid flow were parallel. Take specific heat of water 4.187 KJ/Kg K. **05**

Q.7 Attempt the following questions.

a) Explain Classification of the heat exchanger with neat sketch. **04**

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c) A chemical having specific heat of 3.3 KJ/KgK flowing at the rate of 20000 Kg/hr. enters the parallel flow heat exchanger at 120°C. The flow rate of cooling water is 50000 Kg/hr having specific heat of 4.186 KJ/KgK with an inlet temperature 20°C. The heat transfer area is 10 m^2 and the overall heat transfer coefficient is 1050 W/m^{2}K. Find: **05**

i) The effectiveness of heat exchanger

ii) The outlet temperature of water and chemical

SLR-BD-374

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial & Quality Management (BTN02604)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable fata if necessary.
5) Draw neat - labelled diagrams wherever necessary.
6) Use of log table and calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. (1 mark each) 14

1) Management is _____
a) a science b) an art
c) science as well as an art d) a commerce

2) 'Span of control' is decided under _____
a) Controlling function b) Budget control
c) Planning for project d) Organizing

3) Strategic planning is done by _____
a) top managers of the firm b) middle managers
c) supervisory managers d) non-supervisory employees

4) LTPD stands for _____
a) Lot Tolerance Perfect Defective
b) Lot Tolerance Percent Defective
c) Lot Tolerable Percent Defective
d) Lot Tolerance Piece Defective

5) Appraisal costs are _____
a) Cost of preventing defects before they occur
b) Cost of quality inspection and testing
c) The costs arising from a failure to meet quality standards
d) All of the above

6) Full form of CEO is ____
a) Chief Extreme Officer b) Chief Executive Officer
c) Chief Excise Officer d) None of the above

7) The chart that aggregates poor quality outcomes to show management which are the most problems is the _____

a) C chart b) Pareto chart
c) R chart d) X-bar chart

8) Controlling is needed at which level of management?

a) Top level b) Middle level
c) Lower level d) All level

9) 'C Chart' applies to the number of ____ in a subgroup of constant size.

a) Defectives b) Defects
c) Preciseness d) None of these

10) Benchmarking is used extensively in _____

a) Manufacturing organizations only
b) Service organizations only
c) Manufacturing and service organizations
d) Government institutions only

11) Which of the following is not concerned with staffing?

a) Recruitment b) Selection
c) Training d) Publicity

12) Quality is defined as the _____ for use.

a) Fitness b) Standard
c) Requirement d) Availability

13) Leadership may be defined as _____

a) the ability to motivate people to work towards a common goal
b) the ability to command people to work towards a common goal
c) the ability to discipline people
d) None of These

14) Total quality management (TQM) is the continuous improvement in _____ obtained by establishing management responsibility for processes as well as output.

a) Quality b) Productivity
c) Effectiveness d) All of the above

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial & Quality Management (BTN02604)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 3 is compulsory and attempt any two questions remaining of the questions. (Q. No. 2, 4 & 5)
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions. (Q. No. 7, 8 & 9)
3) Assume suitable fata if necessary.
4) Draw neat - labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

Section – I

Q.2 Attempt the following
a) Define Management. Explain Nature of Management. **05**
b) Explain the functions of Financial Management. **04**

Q.3 Attempt the following
a) Explain the selection process of staffing in details. **05**
b) What is planning? Explain steps in planning. **05**

Q.4 Attempt the following
a) Define communication. List its types. Differentiate between oral communication and written communication. **05**
b) Explain the process of controlling. **04**

Q.5 Write short note on (Any Three) **09**
a) Marketing Management
b) Carrot and Stick theory
c) Function of Manager
d) Controlling Techniques
e) Centralized and decentralized Organization

Section – II

Q.6 Attempt the following
a) Define various meanings of quality. Explain in detail quality specifications. **05**
b) Explain the different quality costs associated with quality. **05**

Q.7 Attempt the following
a) List the tools of quality control. Explain any two tools of quality control. **05**
b) Explain customer satisfaction. **04**

Q.8 Attempt the following

a) A single sampling plan uses a sample size of 15, and an acceptance number 1. Using the hyper geometric probabilities, compute the probability of acceptance of lots of 50 articles with 2% defective. **05**

b) Write short note on X bar chart and R chart. **04**

Q.9 Write short note on (Any Three) **09**

a) P chart

b) Quality Management systems

c) Continuous Process Improvement

d) Acceptance sampling

e) Cause and effect diagram with suitable example

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial & Quality Management (BTN02604)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. (1 mark each) 14

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a) C chart
b) Pareto chart
c) R chart
d) X-bar chart

SLR-BD-374

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial & Quality Management (BTN02604)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 3 is compulsory and attempt any two questions remaining of the questions. (Q. No. 2, 4 & 5)
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions. (Q. No. 7, 8 & 9)
3) Assume suitable fata if necessary.
4) Draw neat - labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

Section – I

Q.2 Attempt the following
a) Define Management. Explain Nature of Management. **05**
b) Explain the functions of Financial Management. **04**

Q.3 Attempt the following
a) Explain the selection process of staffing in details. **05**
b) What is planning? Explain steps in planning. **05**

Q.4 Attempt the following
a) Define communication. List its types. Differentiate between oral communication and written communication. **05**
b) Explain the process of controlling. **04**

Q.5 Write short note on (Any Three) **09**
a) Marketing Management
b) Carrot and Stick theory
c) Function of Manager
d) Controlling Techniques
e) Centralized and decentralized Organization

Section – II

Q.6 Attempt the following
a) Define various meanings of quality. Explain in detail quality specifications. **05**
b) Explain the different quality costs associated with quality. **05**

Q.7 Attempt the following
a) List the tools of quality control. Explain any two tools of quality control. **05**
b) Explain customer satisfaction. **04**

Q.8 Attempt the following

a) A single sampling plan uses a sample size of 15, and an acceptance number 1. Using the hyper geometric probabilities, compute the probability of acceptance of lots of 50 articles with 2% defective. **05**

b) Write short note on X bar chart and R chart. **04**

Q.9 Write short note on (Any Three) **09**

a) P chart

b) Quality Management systems

c) Continuous Process Improvement

d) Acceptance sampling

e) Cause and effect diagram with suitable example

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial & Quality Management (BTN02604)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable fata if necessary.
5) Draw neat - labelled diagrams wherever necessary.
6) Use of log table and calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. (1 mark each) 14

1) Which of the following is not concerned with staffing?
a) Recruitment b) Selection
c) Training d) Publicity

2) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

3) Leadership may be defined as _____
a) the ability to motivate people to work towards a common goal
b) the ability to command people to work towards a common goal
c) the ability to discipline people
d) None of These

4) Total quality management (TQM) is the continuous improvement in _____ obtained by establishing management responsibility for processes as well as output.
a) Quality b) Productivity
c) Effectiveness d) All of the above

5) Management is _____
a) a science b) an art
c) science as well as an art d) a commerce

6) 'Span of control' is decided under _____
a) Controlling function b) Budget control
c) Planning for project d) Organizing

7) Strategic planning is done by _____

a) top managers of the firm b) middle managers
c) supervisory managers d) non-supervisory employees

8) LTPD stands for _____

a) Lot Tolerance Perfect Defective
b) Lot Tolerance Percent Defective
c) Lot Tolerable Percent Defective
d) Lot Tolerance Piece Defective

9) Appraisal costs are _____

a) Cost of preventing defects before they occur
b) Cost of quality inspection and testing
c) The costs arising from a failure to meet quality standards
d) All of the above

10) Full form of CEO is ____

a) Chief Extreme Officer b) Chief Executive Officer
c) Chief Excise Officer d) None of the above

11) The chart that aggregates poor quality outcomes to show management which are the most problems is the _____

a) C chart b) Pareto chart
c) R chart d) X-bar chart

12) Controlling is needed at which level of management?

a) Top level b) Middle level
c) Lower level d) All level

13) 'C Chart' applies to the number of ____ in a subgroup of constant size.

a) Defectives b) Defects
c) Preciseness d) None of these

14) Benchmarking is used extensively in _____

a) Manufacturing organizations only
b) Service organizations only
c) Manufacturing and service organizations
d) Government institutions only

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial & Quality Management (BTN02604)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 3 is compulsory and attempt any two questions remaining of the questions. (Q. No. 2, 4 & 5)
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions. (Q. No. 7, 8 & 9)
3) Assume suitable fata if necessary.
4) Draw neat - labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

Section – I

Q.2 Attempt the following
- **a)** Define Management. Explain Nature of Management. **05**
- **b)** Explain the functions of Financial Management. **04**

Q.3 Attempt the following
- **a)** Explain the selection process of staffing in details. **05**
- **b)** What is planning? Explain steps in planning. **05**

Q.4 Attempt the following
- **a)** Define communication. List its types. Differentiate between oral communication and written communication. **05**
- **b)** Explain the process of controlling. **04**

Q.5 Write short note on (Any Three) **09**
- **a)** Marketing Management
- **b)** Carrot and Stick theory
- **c)** Function of Manager
- **d)** Controlling Techniques
- **e)** Centralized and decentralized Organization

Section – II

Q.6 Attempt the following
- **a)** Define various meanings of quality. Explain in detail quality specifications. **05**
- **b)** Explain the different quality costs associated with quality. **05**

Q.7 Attempt the following
- **a)** List the tools of quality control. Explain any two tools of quality control. **05**
- **b)** Explain customer satisfaction. **04**

Q.8 Attempt the following

a) A single sampling plan uses a sample size of 15, and an acceptance number 1. Using the hyper geometric probabilities, compute the probability of acceptance of lots of 50 articles with 2% defective. **05**

b) Write short note on X bar chart and R chart. **04**

Q.9 Write short note on (Any Three) **09**

a) P chart

b) Quality Management systems

c) Continuous Process Improvement

d) Acceptance sampling

e) Cause and effect diagram with suitable example

Seat No.	

Set | S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial & Quality Management (BTN02604)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable fata if necessary.
5) Draw neat - labelled diagrams wherever necessary.
6) Use of log table and calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. (1 mark each) 14

1) Full form of CEO is ____
a) Chief Extreme Officer b) Chief Executive Officer
c) Chief Excise Officer d) None of the above

2) The chart that aggregates poor quality outcomes to show management which are the most problems is the _____
a) C chart b) Pareto chart
c) R chart d) X-bar chart

3) Controlling is needed at which level of management?
a) Top level b) Middle level
c) Lower level d) All level

4) 'C Chart' applies to the number of ____ in a subgroup of constant size.
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c) Preciseness d) None of these

5) Benchmarking is used extensively in _____
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c) Manufacturing and service organizations
d) Government institutions only

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c) Requirement d) Availability

8) Leadership may be defined as _____
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b) the ability to command people to work towards a common goal
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9) Total quality management (TQM) is the continuous improvement in _____ obtained by establishing management responsibility for processes as well as output.
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a) a science b) an art
c) science as well as an art d) a commerce

11) 'Span of control' is decided under _____
a) Controlling function b) Budget control
c) Planning for project d) Organizing

12) Strategic planning is done by _____
a) top managers of the firm b) middle managers
c) supervisory managers d) non-supervisory employees

13) LTPD stands for _____
a) Lot Tolerance Perfect Defective
b) Lot Tolerance Percent Defective
c) Lot Tolerable Percent Defective
d) Lot Tolerance Piece Defective

14) Appraisal costs are _____
a) Cost of preventing defects before they occur
b) Cost of quality inspection and testing
c) The costs arising from a failure to meet quality standards
d) All of the above

SLR-BD-374

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial & Quality Management (BTN02604)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 3 is compulsory and attempt any two questions remaining of the questions. (Q. No. 2, 4 & 5)
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions. (Q. No. 7, 8 & 9)
3) Assume suitable fata if necessary.
4) Draw neat - labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

Section – I

Q.2 Attempt the following
a) Define Management. Explain Nature of Management. **05**
b) Explain the functions of Financial Management. **04**

Q.3 Attempt the following
a) Explain the selection process of staffing in details. **05**
b) What is planning? Explain steps in planning. **05**

Q.4 Attempt the following
a) Define communication. List its types. Differentiate between oral communication and written communication. **05**
b) Explain the process of controlling. **04**

Q.5 Write short note on (Any Three) **09**
a) Marketing Management
b) Carrot and Stick theory
c) Function of Manager
d) Controlling Techniques
e) Centralized and decentralized Organization

Section – II

Q.6 Attempt the following
a) Define various meanings of quality. Explain in detail quality specifications. **05**
b) Explain the different quality costs associated with quality. **05**

Q.7 Attempt the following
a) List the tools of quality control. Explain any two tools of quality control. **05**
b) Explain customer satisfaction. **04**

Q.8 Attempt the following

a) A single sampling plan uses a sample size of 15, and an acceptance number 1. Using the hyper geometric probabilities, compute the probability of acceptance of lots of 50 articles with 2% defective. **05**

b) Write short note on X bar chart and R chart. **04**

Q.9 Write short note on (Any Three) **09**

a) P chart

b) Quality Management systems

c) Continuous Process Improvement

d) Acceptance sampling

e) Cause and effect diagram with suitable example

SLR-BD-375

Seat No.	

Set P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
Mechanical Engineering
Project Management (BTN02608)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) Which of the following is NOT a characteristic of a project?
a) Temporary in nature b) Unique output
c) Performed repeatedly d) Defined timeline

2) Who is primarily responsible for achieving project objectives?
a) Team members b) Project Manager
c) Stakeholders d) Sponsors

3) What does the term "deliverable" refer to in Project Management?
a) A project report
b) The desired result or outcome of a project
c) A list of resources
d) A stakeholder agreement

4) What is the main benefit of project performance evaluation?
a) Identifies cost-saving opportunities
b) Ensures project deliverables are met
c) Reduces project risks
d) Improves employee satisfaction

5) The payback period is the period _____
a) a project takes to pay back the loan taken to purchase the capital assets
b) equal to the useful life of the machines
c) a project takes to recover its initial cash outflow
d) over which the project will be getting operating cash inflows

6) What is the first step in Risk Management?
a) Risk Mitigation b) Risk Transfer
c) Risk Assessment d) Risk Identification

7) Which phase of the Project Lifecycle involves executing project plans?
a) Initiation b) Closure
c) Execution d) Planning

8) Which model considers both qualitative and quantitative criteria for project selection?
a) Scoring Model b) Payback Period Model
c) Break-Even Model d) Monte Carlo Model

9) Which of the following methods is based on the time required to recover the initial investment?
a) NPV b) IRR
c) Payback Period d) Add duration to each unit

10) In the initial stage of the project the probability of completing the project is _____.
a) Zero b) Low
c) High d) Medium

11) Which model is used to estimate the variability of project completion time?
a) CPM b) PERT
c) Network Diagram d) Resource Levelling

12) What is the primary function of MS Project?
a) Budget forecasting
b) Quality control
c) Risk analysis
d) Project planning and scheduling

13) What is a Gantt Chart primarily used for in project management?
a) Resource allocation b) Risk identification
c) Schedule visualization d) Cost estimation

14) What does Monte Carlo Simulation primarily address in project estimation?
a) Workforce allocation b) Budgeting
c) Resource levelling d) Risk and uncertainty

Seat No.	

Set | P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
Mechanical Engineering
Project Management (BTN02608)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2	**a)**	Explain the role and responsibilities of a Project Manager throughout the project lifecycle.	**05**
	b)	Compare the Payback Period and Net Present Value (NPV) methods for project feasibility analysis.	**05**
	c)	Explain the various benefits of adopting a structured Project Management process.	**04**
Q.3	**a)**	Explain the concept of Break-Even Analysis with an example and its application in project feasibility studies.	**05**
	b)	Describe the project lifecycle and its importance in achieving project objectives.	**05**
	c)	Explain the concept of the Bottom-Up Estimating technique and its applications.	**04**
Q.4	**a)**	How can Scoring Models be used for project selection? Illustrate with an example.	**05**
	b)	Differentiate between Analogous Estimating and Parametric Estimating methods with examples	**05**
	c)	Explain the terms Jobbing and Factoring in the context of cost estimating.	**04**

Section – II

Q.5 **a)** Why is project planning necessary? Explain the components of the project planning process. **05**

b) A R & D project has a list of tasks to be performed whose time estimates are given in the Table as follows. **05**

Activity	A	B	C	D	E	F	G
Predecessors	-	-	A	A,B	D	C,E	E
Expected Time (Weeks)	7	9	12	8	9	6	5

i) Construct a project network
ii) Perform forward and backward passes
iii) State the critical path
iv) Determine Project completion time

c) What is a Work Breakdown Structure (WBS)? How does it aid in project planning? **04**

Q.6 **a)** Discuss the steps involved in monitoring and controlling a project effectively. **05**

b) What are the key features of a Project Management Information System (PMIS)? **05**

c) Describe the Project Control Process and its importance during project execution. **04**

Q.7 **a)** What is resource levelling, and how can it be implemented using MS Project? **05**

b) Define productivity in the context of Project Management. How can it be measured? **05**

c) Write a short note on Gantt chart. **04**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
Mechanical Engineering
Project Management (BTN02608)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which model considers both qualitative and quantitative criteria for project selection?
a) Scoring Model b) Payback Period Model
c) Break-Even Model d) Monte Carlo Model

2) Which of the following methods is based on the time required to recover the initial investment?
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c) Payback Period d) Add duration to each unit

3) In the initial stage of the project the probability of completing the project is _____.
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c) High d) Medium

4) Which model is used to estimate the variability of project completion time?
a) CPM b) PERT
c) Network Diagram d) Resource Levelling

5) What is the primary function of MS Project?
a) Budget forecasting
b) Quality control
c) Risk analysis
d) Project planning and scheduling

6) What is a Gantt Chart primarily used for in project management?
a) Resource allocation b) Risk identification
c) Schedule visualization d) Cost estimation

7) What does Monte Carlo Simulation primarily address in project estimation?

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b) Budgeting
c) Resource levelling
d) Risk and uncertainty

8) Which of the following is NOT a characteristic of a project?

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b) Unique output
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d) Defined timeline

9) Who is primarily responsible for achieving project objectives?

a) Team members
b) Project Manager
c) Stakeholders
d) Sponsors

10) What does the term "deliverable" refer to in Project Management?

a) A project report
b) The desired result or outcome of a project
c) A list of resources
d) A stakeholder agreement

11) What is the main benefit of project performance evaluation?

a) Identifies cost-saving opportunities
b) Ensures project deliverables are met
c) Reduces project risks
d) Improves employee satisfaction

12) The payback period is the period _____

a) a project takes to pay back the loan taken to purchase the capital assets
b) equal to the useful life of the machines
c) a project takes to recover its initial cash outflow
d) over which the project will be getting operating cash inflows

13) What is the first step in Risk Management?

a) Risk Mitigation
b) Risk Transfer
c) Risk Assessment
d) Risk Identification

14) Which phase of the Project Lifecycle involves executing project plans?

a) Initiation
b) Closure
c) Execution
d) Planning

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
Mechanical Engineering
Project Management (BTN02608)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2	**a)**	Explain the role and responsibilities of a Project Manager throughout the project lifecycle.	**05**
	b)	Compare the Payback Period and Net Present Value (NPV) methods for project feasibility analysis.	**05**
	c)	Explain the various benefits of adopting a structured Project Management process.	**04**
Q.3	**a)**	Explain the concept of Break-Even Analysis with an example and its application in project feasibility studies.	**05**
	b)	Describe the project lifecycle and its importance in achieving project objectives.	**05**
	c)	Explain the concept of the Bottom-Up Estimating technique and its applications.	**04**
Q.4	**a)**	How can Scoring Models be used for project selection? Illustrate with an example.	**05**
	b)	Differentiate between Analogous Estimating and Parametric Estimating methods with examples	**05**
	c)	Explain the terms Jobbing and Factoring in the context of cost estimating.	**04**

Section – II

Q.5 **a)** Why is project planning necessary? Explain the components of the project planning process. **05**

b) A R & D project has a list of tasks to be performed whose time estimates are given in the Table as follows. **05**

Activity	A	B	C	D	E	F	G
Predecessors	-	-	A	A,B	D	C,E	E
Expected Time (Weeks)	7	9	12	8	9	6	5

i) Construct a project network
ii) Perform forward and backward passes
iii) State the critical path
iv) Determine Project completion time

c) What is a Work Breakdown Structure (WBS)? How does it aid in project planning? **04**

Q.6 **a)** Discuss the steps involved in monitoring and controlling a project effectively. **05**

b) What are the key features of a Project Management Information System (PMIS)? **05**

c) Describe the Project Control Process and its importance during project execution. **04**

Q.7 **a)** What is resource levelling, and how can it be implemented using MS Project? **05**

b) Define productivity in the context of Project Management. How can it be measured? **05**

c) Write a short note on Gantt chart. **04**

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
Mechanical Engineering
Project Management (BTN02608)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which model is used to estimate the variability of project completion time?
a) CPM b) PERT
c) Network Diagram d) Resource Levelling

2) What is the primary function of MS Project?
a) Budget forecasting
b) Quality control
c) Risk analysis
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3) What is a Gantt Chart primarily used for in project management?
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4) What does Monte Carlo Simulation primarily address in project estimation?
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6) Who is primarily responsible for achieving project objectives?
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8) What is the main benefit of project performance evaluation?
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11) Which phase of the Project Lifecycle involves executing project plans?
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13) Which of the following methods is based on the time required to recover the initial investment?
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c) Payback Period
d) Add duration to each unit

14) In the initial stage of the project the probability of completing the project is _____.
a) Zero
b) Low
c) High
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Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
Mechanical Engineering
Project Management (BTN02608)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
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Section – I

Q.2	**a)**	Explain the role and responsibilities of a Project Manager throughout the project lifecycle.	**05**
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Q.4	**a)**	How can Scoring Models be used for project selection? Illustrate with an example.	**05**
	b)	Differentiate between Analogous Estimating and Parametric Estimating methods with examples	**05**
	c)	Explain the terms Jobbing and Factoring in the context of cost estimating.	**04**

Section – II

Q.5 **a)** Why is project planning necessary? Explain the components of the project planning process. **05**

b) A R & D project has a list of tasks to be performed whose time estimates are given in the Table as follows. **05**

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c) Describe the Project Control Process and its importance during project execution. **04**

Q.7 **a)** What is resource levelling, and how can it be implemented using MS Project? **05**

b) Define productivity in the context of Project Management. How can it be measured? **05**

c) Write a short note on Gantt chart. **04**

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
Mechanical Engineering
Project Management (BTN02608)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the first step in Risk Management?
a) Risk Mitigation b) Risk Transfer
c) Risk Assessment d) Risk Identification

2) Which phase of the Project Lifecycle involves executing project plans?
a) Initiation b) Closure
c) Execution d) Planning

3) Which model considers both qualitative and quantitative criteria for project selection?
a) Scoring Model b) Payback Period Model
c) Break-Even Model d) Monte Carlo Model

4) Which of the following methods is based on the time required to recover the initial investment?
a) NPV b) IRR
c) Payback Period d) Add duration to each unit

5) In the initial stage of the project the probability of completing the project is _____.
a) Zero b) Low
c) High d) Medium

6) Which model is used to estimate the variability of project completion time?
a) CPM b) PERT
c) Network Diagram d) Resource Levelling

7) What is the primary function of MS Project?
a) Budget forecasting
b) Quality control
c) Risk analysis
d) Project planning and scheduling

8) What is a Gantt Chart primarily used for in project management?
a) Resource allocation
b) Risk identification
c) Schedule visualization
d) Cost estimation

9) What does Monte Carlo Simulation primarily address in project estimation?
a) Workforce allocation
b) Budgeting
c) Resource levelling
d) Risk and uncertainty

10) Which of the following is NOT a characteristic of a project?
a) Temporary in nature
b) Unique output
c) Performed repeatedly
d) Defined timeline

11) Who is primarily responsible for achieving project objectives?
a) Team members
b) Project Manager
c) Stakeholders
d) Sponsors

12) What does the term "deliverable" refer to in Project Management?
a) A project report
b) The desired result or outcome of a project
c) A list of resources
d) A stakeholder agreement

13) What is the main benefit of project performance evaluation?
a) Identifies cost-saving opportunities
b) Ensures project deliverables are met
c) Reduces project risks
d) Improves employee satisfaction

14) The payback period is the period _____
a) a project takes to pay back the loan taken to purchase the capital assets
b) equal to the useful life of the machines
c) a project takes to recover its initial cash outflow
d) over which the project will be getting operating cash inflows

SLR-BD-375

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
Mechanical Engineering
Project Management (BTN02608)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2	**a)**	Explain the role and responsibilities of a Project Manager throughout the project lifecycle.	**05**
	b)	Compare the Payback Period and Net Present Value (NPV) methods for project feasibility analysis.	**05**
	c)	Explain the various benefits of adopting a structured Project Management process.	**04**
Q.3	**a)**	Explain the concept of Break-Even Analysis with an example and its application in project feasibility studies.	**05**
	b)	Describe the project lifecycle and its importance in achieving project objectives.	**05**
	c)	Explain the concept of the Bottom-Up Estimating technique and its applications.	**04**
Q.4	**a)**	How can Scoring Models be used for project selection? Illustrate with an example.	**05**
	b)	Differentiate between Analogous Estimating and Parametric Estimating methods with examples	**05**
	c)	Explain the terms Jobbing and Factoring in the context of cost estimating.	**04**

Section – II

Q.5 **a)** Why is project planning necessary? Explain the components of the project planning process. **05**

b) A R & D project has a list of tasks to be performed whose time estimates are given in the Table as follows. **05**

Activity	A	B	C	D	E	F	G
Predecessors	-	-	A	A,B	D	C,E	E
Expected Time (Weeks)	7	9	12	8	9	6	5

i) Construct a project network
ii) Perform forward and backward passes
iii) State the critical path
iv) Determine Project completion time

c) What is a Work Breakdown Structure (WBS)? How does it aid in project planning? **04**

Q.6 **a)** Discuss the steps involved in monitoring and controlling a project effectively. **05**

b) What are the key features of a Project Management Information System (PMIS)? **05**

c) Describe the Project Control Process and its importance during project execution. **04**

Q.7 **a)** What is resource levelling, and how can it be implemented using MS Project? **05**

b) Define productivity in the context of Project Management. How can it be measured? **05**

c) Write a short note on Gantt chart. **04**

SLR-BD-376

Seat No.		Set	P

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Product Design (BTN02609)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the primary purpose of a prototype in product design?
a) To showcase the final product to stakeholder
b) To test and validate design concepts
c) To expedite the mass production process
d) None of the above

2) What is the significance of the concept of "Design Thinking" in product design?
a) It emphasizes a linear and structured design process
b) It prioritizes cost efficiency over innovation
c) It focuses on understanding user needs and generating creative solutions
d) None of the above

3) What does TAM stand for?
a) Total Accessible Market b) Total Acquired Market
c) Total Achievable Market d) Total Available Market

4) What role does the psychology of scene play in industrial product design?
a) It has no relevance to product design
b) It helps create appealing visuals
c) It influences user perceptions and emotions
d) It affects production costs

5) The principles of good design are _____.
a) color, depth, form, line, shape, space, texture, and value
b) balance, contrast, emphasis, proportion, repetition, simplicity, space, and unity
c) All of the above
d) None of the above

6) Aesthetic requirements in industrial design are concerned with:
a) The cost of raw materials
b) The functionality and usability of the product
c) The environmental impact of production
d) The visual and sensory appeal of the product

7) What does the term "Design for Manufacturability" refer to in product design?
a) Designing products that are easy to manufacture
b) Designing products for a specific market
c) Designing products with complex features
d) None of the above

8) The colour of an object is influenced by:
a) The shape and form of the object
b) The colour of light it emits or reflects
c) The size of the object
d) The type of material used in production

9) How does the concept of purpose affect product design?
a) It determines the aesthetic choices in the design
b) It focuses on the price of materials
c) It guides the functionality and usability of the product
d) It ensures the product is mass-produced

10) _____ is a three-dimensional area enclosed by a surface.
a) Shape b) Form
c) Line d) None of the above

11) What is additive manufacturing commonly known as?
a) Subtractive manufacturing b) 3D printing
c) Injection molding d) Die casting

12) Design Thinking is: _____.
a) Thinking about design
b) Designing ways in which people think
c) Defining, framing and solving problems from users' perspectives
d) Asking users to solve problems

13) What role does ergonomics play in product design?
a) Enhancing aesthetics
b) Improving functionality
c) Ensuring environmental sustainability
d) None of the above

14) The necessity to know the environment in which the product will be used is termed as _____.
a) Ergonomics b) Design Analysis
c) Aesthetics d) Design Situation

SLR-BD-376

Seat No.		Set	P

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Product Design (BTN02609)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume additional suitable data, if necessary and mention it clearly.
4) Use of calculator is allowed.

Section – I

Q.2 Solve:
a) Explain the concept Mechanics of seeing with suitable examples. **07**
b) Explain the concept of Unit and concept of order with suitable examples. **07**

Q.3 Solve:
a) Define Ergonomics. Explain the fundamental factors for designing Automobiles. **07**
b) What factors are considered when choosing colours for Engineering Equipment? **07**

Q.4 Write short note (Any Two)
a) Aesthetics of Design **07**
b) General Inferences of Line, Light and Colour combinations **07**
c) Concept of Style, Environment, Aspiration **07**

Section – II

Q.5 Solve:
a) Explain role of setting specification and market requirements in Product Design. **07**
b) What are the Types of Market Survey influencing industrial Design & Production? **07**

Q.6 Solve:
a) Explain the concept of Quality Function Deployment and Business Model Canvas. **07**
b) What is Design Thinking? Explain steps in Design Thinking process. **07**

Q.7 Write short note (Any Two)
a) Additive Manufacturing **07**
b) Prototyping **07**
c) Design for Manufacturing and Design for Assembly **07**

Seat No.		Set	Q

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Product Design (BTN02609)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume additional suitable data, if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The colour of an object is influenced by:
a) The shape and form of the object
b) The colour of light it emits or reflects
c) The size of the object
d) The type of material used in production

2) How does the concept of purpose affect product design?
a) It determines the aesthetic choices in the design
b) It focuses on the price of materials
c) It guides the functionality and usability of the product
d) It ensures the product is mass-produced

3) _____ is a three-dimensional area enclosed by a surface.
a) Shape b) Form
c) Line d) None of the above

4) What is additive manufacturing commonly known as?
a) Subtractive manufacturing b) 3D printing
c) Injection molding d) Die casting

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a) Thinking about design
b) Designing ways in which people think
c) Defining, framing and solving problems from users' perspectives
d) Asking users to solve problems

6) What role does ergonomics play in product design?
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c) Ensuring environmental sustainability
d) None of the above

7) The necessity to know the environment in which the product will be used is termed as _____.

a) Ergonomics
b) Design Analysis
c) Aesthetics
d) Design Situation

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d) None of the above

10) What does TAM stand for?

a) Total Accessible Market
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11) What role does the psychology of scene play in industrial product design?

a) It has no relevance to product design
b) It helps create appealing visuals
c) It influences user perceptions and emotions
d) It affects production costs

12) The principles of good design are _____.

a) color, depth, form, line, shape, space, texture, and value
b) balance, contrast, emphasis, proportion, repetition, simplicity, space, and unity
c) All of the above
d) None of the above

13) Aesthetic requirements in industrial design are concerned with:

a) The cost of raw materials
b) The functionality and usability of the product
c) The environmental impact of production
d) The visual and sensory appeal of the product

14) What does the term "Design for Manufacturability" refer to in product design?

a) Designing products that are easy to manufacture
b) Designing products for a specific market
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d) None of the above

SLR-BD-376

Seat No.		Set	Q

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Product Design (BTN02609)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
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4) Use of calculator is allowed.

Section – I

Q.2 Solve:
a) Explain the concept Mechanics of seeing with suitable examples. **07**
b) Explain the concept of Unit and concept of order with suitable examples. **07**

Q.3 Solve:
a) Define Ergonomics. Explain the fundamental factors for designing Automobiles. **07**
b) What factors are considered when choosing colours for Engineering Equipment? **07**

Q.4 Write short note (Any Two)
a) Aesthetics of Design **07**
b) General Inferences of Line, Light and Colour combinations **07**
c) Concept of Style, Environment, Aspiration **07**

Section – II

Q.5 Solve:
a) Explain role of setting specification and market requirements in Product Design. **07**
b) What are the Types of Market Survey influencing industrial Design & Production? **07**

Q.6 Solve:
a) Explain the concept of Quality Function Deployment and Business Model Canvas. **07**
b) What is Design Thinking? Explain steps in Design Thinking process. **07**

Q.7 Write short note (Any Two)
a) Additive Manufacturing **07**
b) Prototyping **07**
c) Design for Manufacturing and Design for Assembly **07**

Seat No.	

Set **R**

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Product Design (BTN02609)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

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c) Line
d) None of the above

SLR-BD-376

Seat No.		Set	R

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Product Design (BTN02609)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
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Section – I

Q.2 Solve:
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c) Concept of Style, Environment, Aspiration **07**

Section – II

Q.5 Solve:
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b) What are the Types of Market Survey influencing industrial Design & Production? **07**

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b) What is Design Thinking? Explain steps in Design Thinking process. **07**

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a) Additive Manufacturing **07**
b) Prototyping **07**
c) Design for Manufacturing and Design for Assembly **07**

Seat No.		Set	S

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Product Design (BTN02609)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

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b) balance, contrast, emphasis, proportion, repetition, simplicity, space, and unity
c) All of the above
d) None of the above

SLR-BD-376

Seat No.		Set	S

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Product Design (BTN02609)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume additional suitable data, if necessary and mention it clearly.
4) Use of calculator is allowed.

Section – I

Q.2 Solve:
a) Explain the concept Mechanics of seeing with suitable examples. **07**
b) Explain the concept of Unit and concept of order with suitable examples. **07**

Q.3 Solve:
a) Define Ergonomics. Explain the fundamental factors for designing Automobiles. **07**
b) What factors are considered when choosing colours for Engineering Equipment? **07**

Q.4 Write short note (Any Two)
a) Aesthetics of Design **07**
b) General Inferences of Line, Light and Colour combinations **07**
c) Concept of Style, Environment, Aspiration **07**

Section – II

Q.5 Solve:
a) Explain role of setting specification and market requirements in Product Design. **07**
b) What are the Types of Market Survey influencing industrial Design & Production? **07**

Q.6 Solve:
a) Explain the concept of Quality Function Deployment and Business Model Canvas. **07**
b) What is Design Thinking? Explain steps in Design Thinking process. **07**

Q.7 Write short note (Any Two)
a) Additive Manufacturing **07**
b) Prototyping **07**
c) Design for Manufacturing and Design for Assembly **07**

SLR-BD-377

Seat No.	

Set P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Plastic Engineering (BTN02610)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In addition, polymerization reaction the polymer is formed in a _____ step.
a) Single b) Three
c) Double d) None

2) Epoxy resin is example of _____ plastic.
a) Thermoplastics b) Thermosetting
c) Elastomers d) None

3) Which of the following is an additive used for saving base plastic material?
a) Fillers b) Plasticizers
c) Pigments d) None of these

4) _____ is the most of commonly used manufacturing process for the plastic component.
a) Injection molding b) Blow Molding
c) Transfer Molding d) Rotational Molding

5) The Rotational Molding is _____ plastic forming process.
a) High Temperature
b) Low Temperature, High Pressure
c) Low Pressure
d) High Temperature, Low Pressure

6) For the more precise dimensional stability of Thermosets, _____ is used.
a) Transfer moulding b) Compression moulding
c) Any moulding process d) Calendering

7) In _____ welding method, the workpiece s to be joined are irradiated with a steam of neutron.

a) Infrared b) Hot gas
c) Nuclear d) Heated tool

8) Materials having a _____ shrinkage allowance can be molded with close tolerance.

a) Low b) Medium
c) High d) None

9) The ratio of volume of loose plastic powder to the volume of moulding is known as _____.

a) Clamping force b) Density factor
c) Bulk factor d) None

10) The depth of loading chamber is _____.

a) Inversely proportional to projected area
b) Inversely proportional to change in volume of plastic material
c) Directly proportional to projected area
d) None of the above

11) The heat to be removed by cooling circuits depend on _____.

a) Specific heat of material
b) Injection temperature of material
c) Latent heat of material
d) All of the above

12) The properties of the polymer will also depend on the _____ available for cooling.

a) Time b) Area
c) Peed d) Momentum

13) Polymers can be very _____ to chemicals

a) Resistant b) Similar
c) Opposite d) None

14) It is the _____ operation that sets the shape of thermoplastics.

a) heating b) grinding
c) cutting d) cooling speed

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Plastic Engineering (BTN02610)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Draw neat sketches wherever necessary.
3) Figures to the right indicate full marks.

Section – I

Q.2 Solve the following questions.

a) Explain the process of Injection molding with a neat diagram. **05**

b) Differentiate between addition and condensation polymerization. **05**

c) Explain the different tests carried out on plastic material explain anyone. **04**

Q.3 Attempt the following.

a) What are different types of injection mould? Explain one of them with neat sketch. **05**

b) Explain design rules related to Ribs for plastic parts. **04**

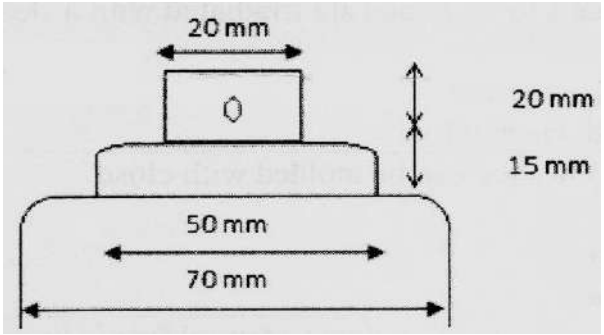
c) Explain with neat sketch hot gas welding. **05**

Q.4 Solve the following questions.

a) Explain the additives used in the plastics. **03**

b) Explain various tolerances and allowances considered for plastics parts design. **04**

c) A product has to be designed for an assembly of body of spray bottle. The body of spray bottle has the dimensions as shown in the figure below. The plastic body of spray bottle cap has to be designed to fit on the top of the bottle. The top end of the bottle is having diameter of 50 mm and its nozzle 20 mm. **07**



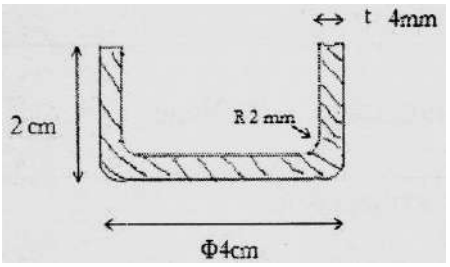
Section – II

Q.5 Solve the following questions.

a) Explain main parts of compression mould with neat sketch. **04**

b) Explain types transfer moulds and their main parts with neat sketch. **03**

c) Design a compression mold for the component shown in figure below which is made up of melamine material. Take K=2; compression pressure=90 kg/cm^2; density=1.7 gm./cm^3. **07**



Q.6 Solve the following questions.

a) Explain Ejection System for Injection mould with neat sketch. **04**

b) Explain different types of gates used in injection moulding. **05**

c) Write short note on. **05**

i) Design of loading chamber

ii) Design of punch

Q.7 Solve the following questions.

a) Find out the cooling time required for a mould with heaviest wall thickness 40 mm, for polypropylene material with following properties- **05**

Thermal conductivity = 0.22 w/m K

Density = 0.545 gm/cm^3

Specific heat = 1.68 kJ /kg k

b) Water entering at 400°C to the cooling system provided to mould is leaving at 600°C. If the total heat absorbed per hour is 20000kJ, then find out the amount of water circulated per hour (k=30.5) **05**

c) Explain cooling system for injection mould with neat sketch. **04**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Plastic Engineering (BTN02610)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Materials having a _____ shrinkage allowance can be molded with close tolerance.
a) Low b) Medium
c) High d) None

2) The ratio of volume of loose plastic powder to the volume of moulding is known as _____.
a) Clamping force b) Density factor
c) Bulk factor d) None

3) The depth of loading chamber is _____.
a) Inversely proportional to projected area
b) Inversely proportional to change in volume of plastic material
c) Directly proportional to projected area
d) None of the above

4) The heat to be removed by cooling circuits depend on _____.
a) Specific heat of material
b) Injection temperature of material
c) Latent heat of material
d) All of the above

5) The properties of the polymer will also depend on the _____ available for cooling.
a) Time b) Area
c) Peed d) Momentum

6) Polymers can be very _____ to chemicals
a) Resistant b) Similar
c) Opposite d) None

7) It is the _____ operation that sets the shape of thermoplastics.
a) heating b) grinding
c) cutting d) cooling speed

8) In addition, polymerization reaction the polymer is formed in a _____ step.
a) Single b) Three
c) Double d) None

9) Epoxy resin is example of _____ plastic.
a) Thermoplastics b) Thermosetting
c) Elastomers d) None

10) Which of the following is an additive used for saving base plastic material?
a) Fillers b) Plasticizers
c) Pigments d) None of these

11) _____ is the most of commonly used manufacturing process for the plastic component.
a) Injection molding b) Blow Molding
c) Transfer Molding d) Rotational Molding

12) The Rotational Molding is _____ plastic forming process.
a) High Temperature
b) Low Temperature, High Pressure
c) Low Pressure
d) High Temperature, Low Pressure

13) For the more precise dimensional stability of Thermosets, _____ is used.
a) Transfer moulding b) Compression moulding
c) Any moulding process d) Calendering

14) In _____ welding method, the workpiece s to be joined are irradiated with a steam of neutron.
a) Infrared b) Hot gas
c) Nuclear d) Heated tool

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Plastic Engineering (BTN02610)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Draw neat sketches wherever necessary.
3) Figures to the right indicate full marks.

Section – I

Q.2 Solve the following questions.

a) Explain the process of Injection molding with a neat diagram. **05**

b) Differentiate between addition and condensation polymerization. **05**

c) Explain the different tests carried out on plastic material explain anyone. **04**

Q.3 Attempt the following.

a) What are different types of injection mould? Explain one of them with neat sketch. **05**

b) Explain design rules related to Ribs for plastic parts. **04**

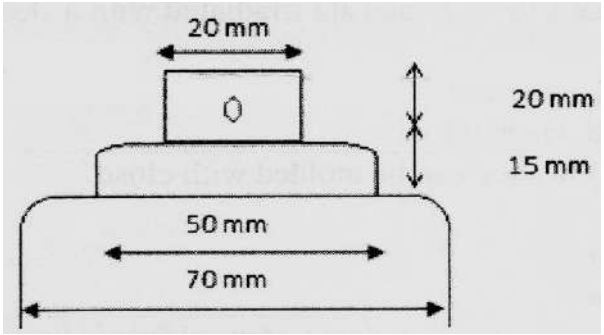
c) Explain with neat sketch hot gas welding. **05**

Q.4 Solve the following questions.

a) Explain the additives used in the plastics. **03**

b) Explain various tolerances and allowances considered for plastics parts design. **04**

c) A product has to be designed for an assembly of body of spray bottle. The body of spray bottle has the dimensions as shown in the figure below. The plastic body of spray bottle cap has to be designed to fit on the top of the bottle. The top end of the bottle is having diameter of 50 mm and its nozzle 20 mm. **07**



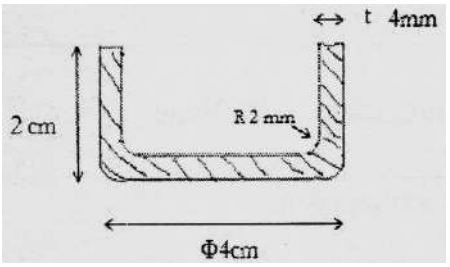
Section – II

Q.5 Solve the following questions.

a) Explain main parts of compression mould with neat sketch. **04**

b) Explain types transfer moulds and their main parts with neat sketch. **03**

c) Design a compression mold for the component shown in figure below which is made up of melamine material. Take K=2; compression pressure=90 kg/cm^2; density=1.7 gm./cm^3. **07**



Q.6 Solve the following questions.

a) Explain Ejection System for Injection mould with neat sketch. **04**

b) Explain different types of gates used in injection moulding. **05**

c) Write short note on. **05**

i) Design of loading chamber

ii) Design of punch

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a) Find out the cooling time required for a mould with heaviest wall thickness 40 mm, for polypropylene material with following properties- **05**

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Specific heat = 1.68 kJ /kg k

b) Water entering at 400°C to the cooling system provided to mould is leaving at 600°C. If the total heat absorbed per hour is 20000kJ, then find out the amount of water circulated per hour (k=30.5) **05**

c) Explain cooling system for injection mould with neat sketch. **04**

Seat No.		Set	R

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Plastic Engineering (BTN02610)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The heat to be removed by cooling circuits depend on _____.
a) Specific heat of material
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a) Time b) Area
c) Peed d) Momentum

3) Polymers can be very _____ to chemicals
a) Resistant b) Similar
c) Opposite d) None

4) It is the _____ operation that sets the shape of thermoplastics.
a) heating b) grinding
c) cutting d) cooling speed

5) In addition, polymerization reaction the polymer is formed in a _____ step.
a) Single b) Three
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6) Epoxy resin is example of _____ plastic.
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7) Which of the following is an additive used for saving base plastic material?

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a) Injection molding
b) Blow Molding
c) Transfer Molding
d) Rotational Molding

9) The Rotational Molding is _____ plastic forming process.

a) High Temperature
b) Low Temperature, High Pressure
c) Low Pressure
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10) For the more precise dimensional stability of Thermosets, _____ is used.

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11) In _____ welding method, the workpiece s to be joined are irradiated with a steam of neutron.

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12) Materials having a _____ shrinkage allowance can be molded with close tolerance.

a) Low
b) Medium
c) High
d) None

13) The ratio of volume of loose plastic powder to the volume of moulding is known as _____.

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b) Density factor
c) Bulk factor
d) None

14) The depth of loading chamber is _____.

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b) Inversely proportional to change in volume of plastic material
c) Directly proportional to projected area
d) None of the above

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Plastic Engineering (BTN02610)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Draw neat sketches wherever necessary.
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Section – I

Q.2 Solve the following questions.

a) Explain the process of Injection molding with a neat diagram. **05**

b) Differentiate between addition and condensation polymerization. **05**

c) Explain the different tests carried out on plastic material explain anyone. **04**

Q.3 Attempt the following.

a) What are different types of injection mould? Explain one of them with neat sketch. **05**

b) Explain design rules related to Ribs for plastic parts. **04**

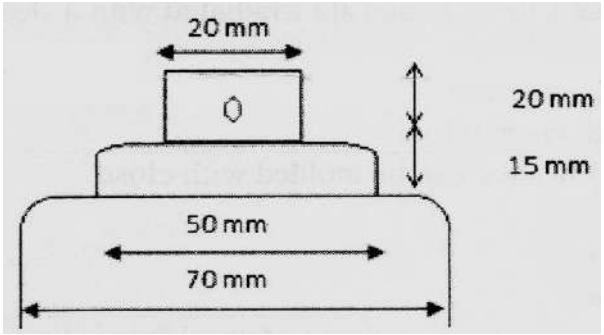
c) Explain with neat sketch hot gas welding. **05**

Q.4 Solve the following questions.

a) Explain the additives used in the plastics. **03**

b) Explain various tolerances and allowances considered for plastics parts design. **04**

c) A product has to be designed for an assembly of body of spray bottle. The body of spray bottle has the dimensions as shown in the figure below. The plastic body of spray bottle cap has to be designed to fit on the top of the bottle. The top end of the bottle is having diameter of 50 mm and its nozzle 20 mm. **07**



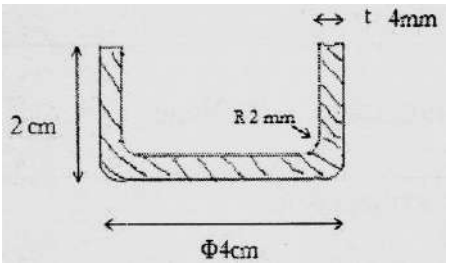
Section – II

Q.5 Solve the following questions.

a) Explain main parts of compression mould with neat sketch. **04**

b) Explain types transfer moulds and their main parts with neat sketch. **03**

c) Design a compression mold for the component shown in figure below which is made up of melamine material. Take K=2; compression pressure=90 kg/cm^2; density=1.7 gm./cm^3. **07**



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a) Explain Ejection System for Injection mould with neat sketch. **04**

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c) Write short note on. **05**

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ii) Design of punch

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Specific heat = 1.68 kJ /kg k

b) Water entering at 400°C to the cooling system provided to mould is leaving at 600°C. If the total heat absorbed per hour is 20000kJ, then find out the amount of water circulated per hour (k=30.5) **05**

c) Explain cooling system for injection mould with neat sketch. **04**

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Plastic Engineering (BTN02610)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) For the more precise dimensional stability of Thermosets, _____ is used.
a) Transfer moulding b) Compression moulding
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2) In _____ welding method, the workpiece s to be joined are irradiated with a steam of neutron.
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3) Materials having a _____ shrinkage allowance can be molded with close tolerance.
a) Low b) Medium
c) High d) None

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5) The depth of loading chamber is _____.
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Seat No.	

Set **S**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Plastic Engineering (BTN02610)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Draw neat sketches wherever necessary.
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Section – I

Q.2 Solve the following questions.

a) Explain the process of Injection molding with a neat diagram. **05**

b) Differentiate between addition and condensation polymerization. **05**

c) Explain the different tests carried out on plastic material explain anyone. **04**

Q.3 Attempt the following.

a) What are different types of injection mould? Explain one of them with neat sketch. **05**

b) Explain design rules related to Ribs for plastic parts. **04**

c) Explain with neat sketch hot gas welding. **05**

Q.4 Solve the following questions.

a) Explain the additives used in the plastics. **03**

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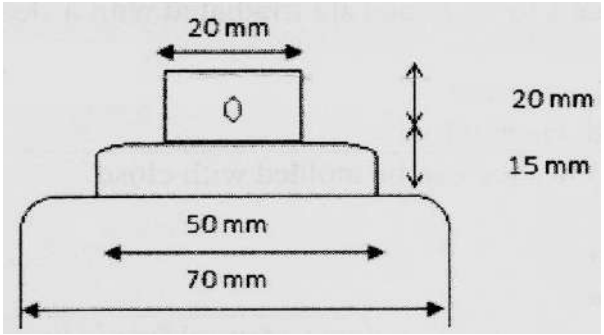
c) A product has to be designed for an assembly of body of spray bottle. The body of spray bottle has the dimensions as shown in the figure below. The plastic body of spray bottle cap has to be designed to fit on the top of the bottle. The top end of the bottle is having diameter of 50 mm and its nozzle 20 mm. **07**



Section – II

Q.5 Solve the following questions.

a) Explain main parts of compression mould with neat sketch. **04**

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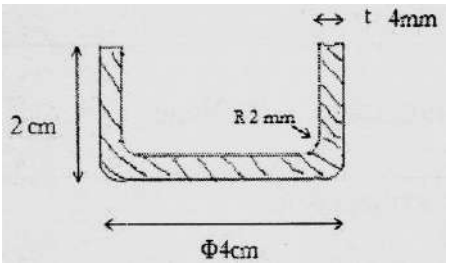
c) Design a compression mold for the component shown in figure below which is made up of melamine material. Take K=2; compression pressure=90 kg/cm^2; density=1.7 gm./cm^3. **07**



Q.6 Solve the following questions.

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ii) Design of punch

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b) Water entering at 400°C to the cooling system provided to mould is leaving at 600°C. If the total heat absorbed per hour is 20000kJ, then find out the amount of water circulated per hour (k=30.5) **05**

c) Explain cooling system for injection mould with neat sketch. **04**

SLR-BD-378

Seat No.	

Set P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Railway Transportation System (BTN02611)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Weight of the car body is categorized in _____.
a) sprung mass b) unsprung mass
c) non-sprung mass d) dummy mass

2) Which of the following is not a component of the rail?
a) Head b) Web
c) Ballast d) Foot

3) Weight of the wheels is categorized in _____
a) sprung mass b) unsprung mass
c) non-sprung mass d) dummy mass

4) Cant deficiency occurs when a vehicle travels around a curve at _____
a) Equilibrium speed
b) Speeds higher than equilibrium speed
c) Speeds lower than equilibrium speed
d) Booked speed

5) The grip between wheel and the rail is known as _____.
a) Traction b) Adhesion
c) Braking d) Acceleration

6) The longitudinal movement of the rails in a track is technically known as _____
a) Buckling b) Hogging
c) Creeping d) Cracking

7) The rail is designed by its _____
a) Length b) Weight
c) Cross-section d) Weight per unit length

8) Which of the following is not a type of force acting on the track?
a) Vertical load
b) Lateral force
c) Magnetic force
d) Contact stresses

9) Why is the value of dynamic load much more than that of static load?
a) Due to impact of speed and rail vibrations
b) Additional live load during motion
c) More traffic
d) Both loads are same

10) Which is the major force developed due to revolving masses like pins and coupling rods in the wheel?
a) Centrifugal force
b) Vertical force
c) Lateral force
d) Centripetal force

11) How is the lateral displacement of rail balanced?
a) By coning of wheels
b) By friction between rail and sleeper
c) By manual means
d) By electrical equipment

12) What is Photo-elastic method used for?
a) For measuring stresses on the rail
b) For measuring strain of the rail
c) For calculating depth of ballast
d) For Reconnaissance survey

13) Why the railway track is made resilient and elastic?
a) To make it economic
b) So that it absorbs shocks
c) It can be adjusted easily
d) Easy fixing

14) Which one of the following is used as extra rail to prevent derailment?
a) Stock rail
b) Guard rail
c) Tongue rail
d) Wing rail

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Railway Transportation System (BTN02611)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Solve:
a) State and explain components of railway transportation systems. **07**
b) Explain the lateral behavior of vehicle with conventional bogies. **07**

Q.3 Solve:
a) Define the term derailment of railway vehicle. Explain factors affecting derailment. **07**
b) Explain behavior of single railway wheel set moving on straight path. **07**

Q.4 Solve:
a) Explain behavior of single railway wheel set moving in curves. **07**
b) Describe the term derailment with wheel climb. **07**

Section – II

Q.5 Solve:
a) Explain the term daily traffic loads acting on the track. **07**
b) Classify transversal loads on the track. Explain gravitational force in brief. **07**

Q.6 Solve:
a) Enlist quasi-static loads acting on the track. Explain any one in brief. **07**
b) Explain the with neat sketch transversal cross wind forces acting on track. Also state how to avoid it. **07**

Q.7 Solve:
a) Write short note on design loads on bridges. **07**
b) Explain the following terms. **07**
i) Creep forces when vehicle running on straight path
ii) Creep forces when vehicle running in curves

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Railway Transportation System (BTN02611)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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9) Which of the following is not a component of the rail?
a) Head b) Web
c) Ballast d) Foot

10) Weight of the wheels is categorized in _____
a) sprung mass b) unsprung mass
c) non-sprung mass d) dummy mass

11) Cant deficiency occurs when a vehicle travels around a curve at _____
a) Equilibrium speed
b) Speeds higher than equilibrium speed
c) Speeds lower than equilibrium speed
d) Booked speed

12) The grip between wheel and the rail is known as _____.
a) Traction b) Adhesion
c) Braking d) Acceleration

13) The longitudinal movement of the rails in a track is technically known as _____
a) Buckling b) Hogging
c) Creeping d) Cracking

14) The rail is designed by its _____
a) Length b) Weight
c) Cross-section d) Weight per unit length

SLR-BD-378

Seat No.		Set	Q

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Railway Transportation System (BTN02611)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Solve:
a) State and explain components of railway transportation systems. **07**
b) Explain the lateral behavior of vehicle with conventional bogies. **07**

Q.3 Solve:
a) Define the term derailment of railway vehicle. Explain factors affecting derailment. **07**
b) Explain behavior of single railway wheel set moving on straight path. **07**

Q.4 Solve:
a) Explain behavior of single railway wheel set moving in curves. **07**
b) Describe the term derailment with wheel climb. **07**

Section – II

Q.5 Solve:
a) Explain the term daily traffic loads acting on the track. **07**
b) Classify transversal loads on the track. Explain gravitational force in brief. **07**

Q.6 Solve:
a) Enlist quasi-static loads acting on the track. Explain any one in brief. **07**
b) Explain the with neat sketch transversal cross wind forces acting on track. Also state how to avoid it. **07**

Q.7 Solve:
a) Write short note on design loads on bridges. **07**
b) Explain the following terms. **07**
i) Creep forces when vehicle running on straight path
ii) Creep forces when vehicle running in curves

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Railway Transportation System (BTN02611)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) How is the lateral displacement of rail balanced?
a) By coning of wheels
b) By friction between rail and sleeper
c) By manual means
d) By electrical equipment

2) What is Photo-elastic method used for?
a) For measuring stresses on the rail
b) For measuring strain of the rail
c) For calculating depth of ballast
d) For Reconnaissance survey

3) Why the railway track is made resilient and elastic?
a) To make it economic b) So that it absorbs shocks
c) It can be adjusted easily d) Easy fixing

4) Which one of the following is used as extra rail to prevent derailment?
a) Stock rail b) Guard rail
c) Tongue rail d) Wing rail

5) Weight of the car body is categorized in _____.
a) sprung mass b) unsprung mass
c) non-sprung mass d) dummy mass

6) Which of the following is not a component of the rail?
a) Head b) Web
c) Ballast d) Foot

7) Weight of the wheels is categorized in _____
a) sprung mass b) unsprung mass
c) non-sprung mass d) dummy mass

8) Cant deficiency occurs when a vehicle travels around a curve at _____
a) Equilibrium speed
b) Speeds higher than equilibrium speed
c) Speeds lower than equilibrium speed
d) Booked speed

9) The grip between wheel and the rail is known as _____.
a) Traction b) Adhesion
c) Braking d) Acceleration

10) The longitudinal movement of the rails in a track is technically known as _____
a) Buckling b) Hogging
c) Creeping d) Cracking

11) The rail is designed by its _____
a) Length b) Weight
c) Cross-section d) Weight per unit length

12) Which of the following is not a type of force acting on the track?
a) Vertical load b) Lateral force
c) Magnetic force d) Contact stresses

13) Why is the value of dynamic load much more than that of static load?
a) Due to impact of speed and rail vibrations
b) Additional live load during motion
c) More traffic
d) Both loads are same

14) Which is the major force developed due to revolving masses like pins and coupling rods in the wheel?
a) Centrifugal force b) Vertical force
c) Lateral force d) Centripetal force

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Railway Transportation System (BTN02611)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Solve:
a) State and explain components of railway transportation systems. **07**
b) Explain the lateral behavior of vehicle with conventional bogies. **07**

Q.3 Solve:
a) Define the term derailment of railway vehicle. Explain factors affecting derailment. **07**
b) Explain behavior of single railway wheel set moving on straight path. **07**

Q.4 Solve:
a) Explain behavior of single railway wheel set moving in curves. **07**
b) Describe the term derailment with wheel climb. **07**

Section – II

Q.5 Solve:
a) Explain the term daily traffic loads acting on the track. **07**
b) Classify transversal loads on the track. Explain gravitational force in brief. **07**

Q.6 Solve:
a) Enlist quasi-static loads acting on the track. Explain any one in brief. **07**
b) Explain the with neat sketch transversal cross wind forces acting on track. Also state how to avoid it. **07**

Q.7 Solve:
a) Write short note on design loads on bridges. **07**
b) Explain the following terms. **07**
i) Creep forces when vehicle running on straight path
ii) Creep forces when vehicle running in curves

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Railway Transportation System (BTN02611)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The longitudinal movement of the rails in a track is technically known as _____
a) Buckling b) Hogging
c) Creeping d) Cracking

2) The rail is designed by its _____
a) Length b) Weight
c) Cross-section d) Weight per unit length

3) Which of the following is not a type of force acting on the track?
a) Vertical load b) Lateral force
c) Magnetic force d) Contact stresses

4) Why is the value of dynamic load much more than that of static load?
a) Due to impact of speed and rail vibrations
b) Additional live load during motion
c) More traffic
d) Both loads are same

5) Which is the major force developed due to revolving masses like pins and coupling rods in the wheel?
a) Centrifugal force b) Vertical force
c) Lateral force d) Centripetal force

6) How is the lateral displacement of rail balanced?
a) By coning of wheels
b) By friction between rail and sleeper
c) By manual means
d) By electrical equipment

7) What is Photo-elastic method used for?
a) For measuring stresses on the rail
b) For measuring strain of the rail
c) For calculating depth of ballast
d) For Reconnaissance survey

8) Why the railway track is made resilient and elastic?
a) To make it economic
b) So that it absorbs shocks
c) It can be adjusted easily
d) Easy fixing

9) Which one of the following is used as extra rail to prevent derailment?
a) Stock rail
b) Guard rail
c) Tongue rail
d) Wing rail

10) Weight of the car body is categorized in _____.
a) sprung mass
b) unsprung mass
c) non-sprung mass
d) dummy mass

11) Which of the following is not a component of the rail?
a) Head
b) Web
c) Ballast
d) Foot

12) Weight of the wheels is categorized in _____
a) sprung mass
b) unsprung mass
c) non-sprung mass
d) dummy mass

13) Cant deficiency occurs when a vehicle travels around a curve at _____
a) Equilibrium speed
b) Speeds higher than equilibrium speed
c) Speeds lower than equilibrium speed
d) Booked speed

14) The grip between wheel and the rail is known as _____.
a) Traction
b) Adhesion
c) Braking
d) Acceleration

SLR-BD-378

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Railway Transportation System (BTN02611)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Solve:
a) State and explain components of railway transportation systems. **07**
b) Explain the lateral behavior of vehicle with conventional bogies. **07**

Q.3 Solve:
a) Define the term derailment of railway vehicle. Explain factors affecting derailment. **07**
b) Explain behavior of single railway wheel set moving on straight path. **07**

Q.4 Solve:
a) Explain behavior of single railway wheel set moving in curves. **07**
b) Describe the term derailment with wheel climb. **07**

Section – II

Q.5 Solve:
a) Explain the term daily traffic loads acting on the track. **07**
b) Classify transversal loads on the track. Explain gravitational force in brief. **07**

Q.6 Solve:
a) Enlist quasi-static loads acting on the track. Explain any one in brief. **07**
b) Explain the with neat sketch transversal cross wind forces acting on track. Also state how to avoid it. **07**

Q.7 Solve:
a) Write short note on design loads on bridges. **07**
b) Explain the following terms. **07**
i) Creep forces when vehicle running on straight path
ii) Creep forces when vehicle running in curves

Seat No.		Set	P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Networks and Controllers (BTN02612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) A block diagram is a graphical representation of:
a) Internal components b) Random errors
c) External disturbances d) System performance

2) A mathematical model of a system can be used to:
a) Analyze existing data b) Control the system
c) Predict system behavior d) None of the above

3) _____ response is the part of time response which remains after complete transient response vanishes from the system output.
a) Untransient b) Steady state
c) Variant d) All of the above

4) Integral (I) control helps to:
a) Reduce steady-state error
b) Respond quickly to changes
c) Limit control signal magnitude
d) Simplify controller design

5) Derivative (D) control anticipates future errors by considering _____.
a) Only the current error value
b) The rate of change of the error
c) The integral of the error over time
d) A pre-defined threshold value

6) Joint space schemes in trajectory planning involve
a) Planning trajectories based on Cartesian coordinates
b) Planning trajectories based on joint angles
c) Planning trajectories based on polar coordinates
d) Planning trajectories based on velocity

7) The simplest polynomial that ensures a continuous velocity and acceleration between given initial and final points is _____.

a) Cubic
b) Linear
c) Quintic
d) None of the above

8) Which type of actuator is most commonly used in applications requiring high force?

a) Hydraulic
b) Pneumatic
c) Electric
d) All of the above

9) Power screws are often used for:

a) Linear motion
b) Rotary motion
c) Both Linear and Rotary motion
d) None of the above

10) The speed of an AC motor is determined by

a) No. of stator windings
b) The frequency of AC supply
c) The voltage of AC supply
d) The size of rotor

11) Workcell control involves:

a) Setting up physical barriers
b) Integrating safety systems
c) Optimizing robot performance
d) Installing lighting fixtures

12) Walk-through programming is commonly used when:

a) Precise path control is required
b) The programming needs to be done quickly and efficiently
c) The programming task is complex and requires detailed instructions
d) The robot needs to be programmed remotely from a different location

13) In autonomous navigation, obstacle avoidance is typically achieved using:

a) Gyroscopes
b) GPS signals
c) Compass sensors
d) Proximity Sensor

14) Wheeled robots are commonly used for:

a) Uneven terrain
b) Smooth surfaces
c) Rail transport
d) None of these

Seat No.		Set	P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Networks and Controllers (BTN02612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).
4) Use of non-programmable scientific calculator is allowed.

Section – I

Q.2 **a)** Discuss the significance of transfer functions in control systems. How are they derived from differential equations? Provide an example to illustrate their application. **07**

b) Derive the model equation of a mechanical system with spring, mass and damper. **07**

Q.3 **a)** Explain with block diagram PI control mode with advantages and disadvantages. **07**

b) Explain the importance of control system analysis in the design and optimization of feedback control systems. Discuss the key performance metrics used to evaluate control system performance, such as transient response, steady-state error, and stability. **07**

Q.4 **a)** Derive the trajectory equation of Cubic Trajectory in Joint Space Scheme. **07**

b) Discuss in detail the working of Bug algorithm. **07**

Section – II

Q.5 **a)** Distinguish between hydraulic and pneumatic actuators. **07**

b) Describe the basic components and working principle of an electric motor. Draw a block diagram illustrating the components of a DC motor and explain how it converts electrical energy into mechanical energy. **07**

Q.6 **a)** How are the robot cell layouts classified? Discuss each of them. **07**

b) Compare and contrast different programming methodologies for industrial robots, including lead-through programming, walk-through programming, and offline programming. **07**

Q.7	**a)**	Define AGVs. Discuss the classification of AGVs.	**07**
	b)	Compare and contrast the applications of wheeled and tracked mobile robots in different scenarios.	**07**

Seat No.		Set	Q

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Networks and Controllers (BTN02612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which type of actuator is most commonly used in applications requiring high force?
a) Hydraulic b) Pneumatic
c) Electric d) All of the above

2) Power screws are often used for:
a) Linear motion
b) Rotary motion
c) Both Linear and Rotary motion
d) None of the above

3) The speed of an AC motor is determined by
a) No. of stator windings
b) The frequency of AC supply
c) The voltage of AC supply
d) The size of rotor

4) Workcell control involves:
a) Setting up physical barriers
b) Integrating safety systems
c) Optimizing robot performance
d) Installing lighting fixtures

5) Walk-through programming is commonly used when:
a) Precise path control is required
b) The programming needs to be done quickly and efficiently
c) The programming task is complex and requires detailed instructions
d) The robot needs to be programmed remotely from a different location

6) In autonomous navigation, obstacle avoidance is typically achieved using:

a) Gyroscopes b) GPS signals
c) Compass sensors d) Proximity Sensor

7) Wheeled robots are commonly used for:

a) Uneven terrain b) Smooth surfaces
c) Rail transport d) None of these

8) A block diagram is a graphical representation of:

a) Internal components b) Random errors
c) External disturbances d) System performance

9) A mathematical model of a system can be used to:

a) Analyze existing data b) Control the system
c) Predict system behavior d) None of the above

10) _____ response is the part of time response which remains after complete transient response vanishes from the system output.

a) Untransient b) Steady state
c) Variant d) All of the above

11) Integral (I) control helps to:

a) Reduce steady-state error
b) Respond quickly to changes
c) Limit control signal magnitude
d) Simplify controller design

12) Derivative (D) control anticipates future errors by considering _____.

a) Only the current error value
b) The rate of change of the error
c) The integral of the error over time
d) A pre-defined threshold value

13) Joint space schemes in trajectory planning involve

a) Planning trajectories based on Cartesian coordinates
b) Planning trajectories based on joint angles
c) Planning trajectories based on polar coordinates
d) Planning trajectories based on velocity

14) The simplest polynomial that ensures a continuous velocity and acceleration between given initial and final points is _____.

a) Cubic b) Linear
c) Quintic d) None of the above

Seat No.		Set	Q

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Networks and Controllers (BTN02612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).
4) Use of non-programmable scientific calculator is allowed.

Section – I

Q.2 **a)** Discuss the significance of transfer functions in control systems. How are they derived from differential equations? Provide an example to illustrate their application. **07**

b) Derive the model equation of a mechanical system with spring, mass and damper. **07**

Q.3 **a)** Explain with block diagram PI control mode with advantages and disadvantages. **07**

b) Explain the importance of control system analysis in the design and optimization of feedback control systems. Discuss the key performance metrics used to evaluate control system performance, such as transient response, steady-state error, and stability. **07**

Q.4 **a)** Derive the trajectory equation of Cubic Trajectory in Joint Space Scheme. **07**

b) Discuss in detail the working of Bug algorithm. **07**

Section – II

Q.5 **a)** Distinguish between hydraulic and pneumatic actuators. **07**

b) Describe the basic components and working principle of an electric motor. Draw a block diagram illustrating the components of a DC motor and explain how it converts electrical energy into mechanical energy. **07**

Q.6 **a)** How are the robot cell layouts classified? Discuss each of them. **07**

b) Compare and contrast different programming methodologies for industrial robots, including lead-through programming, walk-through programming, and offline programming. **07**

Q.7	**a)**	Define AGVs. Discuss the classification of AGVs.	**07**
	b)	Compare and contrast the applications of wheeled and tracked mobile robots in different scenarios.	**07**

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Networks and Controllers (BTN02612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Workcell control involves:
a) Setting up physical barriers
b) Integrating safety systems
c) Optimizing robot performance
d) Installing lighting fixtures

2) Walk-through programming is commonly used when:
a) Precise path control is required
b) The programming needs to be done quickly and efficiently
c) The programming task is complex and requires detailed instructions
d) The robot needs to be programmed remotely from a different location

3) In autonomous navigation, obstacle avoidance is typically achieved using:
a) Gyroscopes b) GPS signals
c) Compass sensors d) Proximity Sensor

4) Wheeled robots are commonly used for:
a) Uneven terrain b) Smooth surfaces
c) Rail transport d) None of these

5) A block diagram is a graphical representation of:
a) Internal components b) Random errors
c) External disturbances d) System performance

6) A mathematical model of a system can be used to:
a) Analyze existing data b) Control the system
c) Predict system behavior d) None of the above

7) _____ response is the part of time response which remains after complete transient response vanishes from the system output.
a) Untransient
b) Steady state
c) Variant
d) All of the above

8) Integral (I) control helps to:
a) Reduce steady-state error
b) Respond quickly to changes
c) Limit control signal magnitude
d) Simplify controller design

9) Derivative (D) control anticipates future errors by considering _____.
a) Only the current error value
b) The rate of change of the error
c) The integral of the error over time
d) A pre-defined threshold value

10) Joint space schemes in trajectory planning involve
a) Planning trajectories based on Cartesian coordinates
b) Planning trajectories based on joint angles
c) Planning trajectories based on polar coordinates
d) Planning trajectories based on velocity

11) The simplest polynomial that ensures a continuous velocity and acceleration between given initial and final points is _____.
a) Cubic
b) Linear
c) Quintic
d) None of the above

12) Which type of actuator is most commonly used in applications requiring high force?
a) Hydraulic
b) Pneumatic
c) Electric
d) All of the above

13) Power screws are often used for:
a) Linear motion
b) Rotary motion
c) Both Linear and Rotary motion
d) None of the above

14) The speed of an AC motor is determined by
a) No. of stator windings
b) The frequency of AC supply
c) The voltage of AC supply
d) The size of rotor

Seat No.		Set	R

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Networks and Controllers (BTN02612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).
4) Use of non-programmable scientific calculator is allowed.

Section – I

Q.2 **a)** Discuss the significance of transfer functions in control systems. How are they derived from differential equations? Provide an example to illustrate their application. **07**

b) Derive the model equation of a mechanical system with spring, mass and damper. **07**

Q.3 **a)** Explain with block diagram PI control mode with advantages and disadvantages. **07**

b) Explain the importance of control system analysis in the design and optimization of feedback control systems. Discuss the key performance metrics used to evaluate control system performance, such as transient response, steady-state error, and stability. **07**

Q.4 **a)** Derive the trajectory equation of Cubic Trajectory in Joint Space Scheme. **07**

b) Discuss in detail the working of Bug algorithm. **07**

Section – II

Q.5 **a)** Distinguish between hydraulic and pneumatic actuators. **07**

b) Describe the basic components and working principle of an electric motor. Draw a block diagram illustrating the components of a DC motor and explain how it converts electrical energy into mechanical energy. **07**

Q.6 **a)** How are the robot cell layouts classified? Discuss each of them. **07**

b) Compare and contrast different programming methodologies for industrial robots, including lead-through programming, walk-through programming, and offline programming. **07**

Q.7	**a)**	Define AGVs. Discuss the classification of AGVs.	**07**
	b)	Compare and contrast the applications of wheeled and tracked mobile robots in different scenarios.	**07**

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Networks and Controllers (BTN02612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Joint space schemes in trajectory planning involve
a) Planning trajectories based on Cartesian coordinates
b) Planning trajectories based on joint angles
c) Planning trajectories based on polar coordinates
d) Planning trajectories based on velocity

2) The simplest polynomial that ensures a continuous velocity and acceleration between given initial and final points is _____.
a) Cubic b) Linear
c) Quintic d) None of the above

3) Which type of actuator is most commonly used in applications requiring high force?
a) Hydraulic b) Pneumatic
c) Electric d) All of the above

4) Power screws are often used for:
a) Linear motion
b) Rotary motion
c) Both Linear and Rotary motion
d) None of the above

5) The speed of an AC motor is determined by
a) No. of stator windings
b) The frequency of AC supply
c) The voltage of AC supply
d) The size of rotor

6) Workcell control involves:
a) Setting up physical barriers
b) Integrating safety systems
c) Optimizing robot performance
d) Installing lighting fixtures

7) Walk-through programming is commonly used when:
a) Precise path control is required
b) The programming needs to be done quickly and efficiently
c) The programming task is complex and requires detailed instructions
d) The robot needs to be programmed remotely from a different location

8) In autonomous navigation, obstacle avoidance is typically achieved using:
a) Gyroscopes b) GPS signals
c) Compass sensors d) Proximity Sensor

9) Wheeled robots are commonly used for:
a) Uneven terrain b) Smooth surfaces
c) Rail transport d) None of these

10) A block diagram is a graphical representation of:
a) Internal components b) Random errors
c) External disturbances d) System performance

11) A mathematical model of a system can be used to:
a) Analyze existing data b) Control the system
c) Predict system behavior d) None of the above

12) _____ response is the part of time response which remains after complete transient response vanishes from the system output.
a) Untransient b) Steady state
c) Variant d) All of the above

13) Integral (I) control helps to:
a) Reduce steady-state error
b) Respond quickly to changes
c) Limit control signal magnitude
d) Simplify controller design

14) Derivative (D) control anticipates future errors by considering _____.
a) Only the current error value
b) The rate of change of the error
c) The integral of the error over time
d) A pre-defined threshold value

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Industrial Networks and Controllers (BTN02612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).
4) Use of non-programmable scientific calculator is allowed.

Section – I

Q.2 **a)** Discuss the significance of transfer functions in control systems. How are they derived from differential equations? Provide an example to illustrate their application. **07**

b) Derive the model equation of a mechanical system with spring, mass and damper. **07**

Q.3 **a)** Explain with block diagram PI control mode with advantages and disadvantages. **07**

b) Explain the importance of control system analysis in the design and optimization of feedback control systems. Discuss the key performance metrics used to evaluate control system performance, such as transient response, steady-state error, and stability. **07**

Q.4 **a)** Derive the trajectory equation of Cubic Trajectory in Joint Space Scheme. **07**

b) Discuss in detail the working of Bug algorithm. **07**

Section – II

Q.5 **a)** Distinguish between hydraulic and pneumatic actuators. **07**

b) Describe the basic components and working principle of an electric motor. Draw a block diagram illustrating the components of a DC motor and explain how it converts electrical energy into mechanical energy. **07**

Q.6 **a)** How are the robot cell layouts classified? Discuss each of them. **07**

b) Compare and contrast different programming methodologies for industrial robots, including lead-through programming, walk-through programming, and offline programming. **07**

Q.7	**a)**	Define AGVs. Discuss the classification of AGVs.	**07**
	b)	Compare and contrast the applications of wheeled and tracked mobile robots in different scenarios.	**07**

SLR-BD-380

Seat No.		Set	P

T. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
MECHANICAL ENGINEERING
3D Printing Hardware & Software (BTN02613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Assume suitable data required.
4) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which technology is used to create digital models for 3D printing?
a) Computer-Aided Design (CAD)
b) Virtual Reality (VR)
c) Augmented Reality (AR)
d) Artificial Intelligence (AI)

2) What is the main advantage of using layers in 3D printing?
a) It makes the printing process faster
b) It allows for more precise and complex designs
c) It reduces the cost of materials
d) It allows for a smoother surface finish

3) How are 3D printing processes classified?
a) By the type of material used
b) By the size of the object being printed
c) By the number of colors in the design
d) By the speed of the printing process

4) What is the purpose of software in 3D printing?
a) To create a physical object from a digital design
b) To choose the color and texture of the final product
c) To determine the size and shape of the final product
d) To program the printer's hardware

5) What is an STL file?
a) A file format used in 2D printing
b) A file format used in 3D printing
c) A file format used in video editing
d) A file format used in music production

6) Which additive manufacturing technology uses a UV laser to cure photopolymer resin layer by layer?
a) Stereolithography (SLA)
b) Digital Light Processing (DLP)
c) Fused Deposition Modeling (FDM)
d) Selective Laser Sintering (SLS)

7) Which additive manufacturing technology uses a digital light projector to cure liquid resin layer by layer?
a) Stereolithography (SLA)
b) Digital Light Processing (DLP)
c) Fused Deposition Modeling (FDM)
d) Selective Laser Sintering (SLS)

8) Which additive manufacturing technology extrudes thermoplastic filament layer by layer to build a 3D object?
a) Stereolithography (SLA)
b) Digital Light Processing (DLP)
c) Fused Deposition Modeling (FDM)
d) Selective Laser Sintering (SLS)

9) Which design approach focuses on optimizing the design for efficient manufacturing and assembly?
a) Design for 3D Printing
b) Design for Manufacturing and Assembly
c) Core DFM for 3D Printing
d) Design Tools for 3D Printing

10) What is one of the objectives of Design for 3D Printing?
a) Maximizing production planning and control
b) Minimizing the use of additive manufacturing technologies
c) Optimizing design for efficient manufacturing and assembly
d) Implementing traditional manufacturing techniques in 3D printing

11) Which type of software is used for creating the 3D models that will be printed?
a) Slicing/CAM software
b) Printer Control/Client software
c) 3D Modeling/CAD software
d) Rendering software

12) What is the purpose of slicing software in 3D printing?
a) Creating 3D models
b) Controlling the 3D printer
c) Transforming 3D models into printable instructions
d) Visualizing the final printed object

13) Which software is responsible for controlling the 3D printer during the printing process?

a) Slicing/CAM software
b) Printer Control/Client software
c) 3D Modeling/CAD software
d) Simulation software

14) What is the purpose of 3D scanning?

a) Creating 3D models for virtual reality
b) Capturing real-world objects and converting them into digital 3D models
c) Controlling the 3D printer during the printing process
d) Transforming 2D images into 3D representations

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
MECHANICAL ENGINEERING
3D Printing Hardware & Software (BTN02613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory; answer any two from remaining questions from Section - I.
2) Q.6 is compulsory; answer any two from remaining questions from Section - II.
3) Figures to the right indicate full marks.
4) Assume suitable data if required and mention it clearly.
5) Use of scientific calculator is allowed.

Section – I

Q.2	Discuss CAD and Associated technology used in 3d printer.	**10**
Q.3	Illustrate Classification of 3d printing processes.	**09**
Q.4	Enlist different 3D Printing Technologies and describe any 01 with application.	**09**
Q.5	Explain the concept of Design for Manufacturing and Assembly (DFMA) and explain its significance in the context of 3D printing.	**09**

Section - II

Q.6	Discuss the significance of 3D modeling/CAD software in the 3D printing workflow.	**10**
Q.7	Explain the key steps involved in preparing a 3D model for printing using slicing/CAM software.	**09**
Q.8	Describe the basic principles behind 3D scanning technology and the process involved in creating digital 3D models.	**09**
Q.9	Illustrate the importance of cleaning and repairing 3D scans before 3D printing.	**09**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
MECHANICAL ENGINEERING
3D Printing Hardware & Software (BTN02613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Assume suitable data required.
4) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:14

Q.1 Choose the correct answer. 14

1) Which additive manufacturing technology extrudes thermoplastic filament layer by layer to build a 3D object?
a) Stereolithography (SLA)
b) Digital Light Processing (DLP)
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d) Selective Laser Sintering (SLS)

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a) Creating 3D models
b) Controlling the 3D printer
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a) Creating 3D models for virtual reality
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c) Controlling the 3D printer during the printing process
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a) By the type of material used
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a) A file format used in 2D printing
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a) Stereolithography (SLA)
b) Digital Light Processing (DLP)
c) Fused Deposition Modeling (FDM)
d) Selective Laser Sintering (SLS)

14) Which additive manufacturing technology uses a digital light projector to cure liquid resin layer by layer?
a) Stereolithography (SLA)
b) Digital Light Processing (DLP)
c) Fused Deposition Modeling (FDM)
d) Selective Laser Sintering (SLS)

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
MECHANICAL ENGINEERING
3D Printing Hardware & Software (BTN02613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory; answer any two from remaining questions from Section - I.
2) Q.6 is compulsory; answer any two from remaining questions from Section - II.
3) Figures to the right indicate full marks.
4) Assume suitable data if required and mention it clearly.
5) Use of scientific calculator is allowed.

Section – I

Q.2	Discuss CAD and Associated technology used in 3d printer.	**10**
Q.3	Illustrate Classification of 3d printing processes.	**09**
Q.4	Enlist different 3D Printing Technologies and describe any 01 with application.	**09**
Q.5	Explain the concept of Design for Manufacturing and Assembly (DFMA) and explain its significance in the context of 3D printing.	**09**

Section - II

Q.6	Discuss the significance of 3D modeling/CAD software in the 3D printing workflow.	**10**
Q.7	Explain the key steps involved in preparing a 3D model for printing using slicing/CAM software.	**09**
Q.8	Describe the basic principles behind 3D scanning technology and the process involved in creating digital 3D models.	**09**
Q.9	Illustrate the importance of cleaning and repairing 3D scans before 3D printing.	**09**

SLR-BD-380

Seat No.		Set	R

T. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
MECHANICAL ENGINEERING
3D Printing Hardware & Software (BTN02613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Assume suitable data required.
4) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which type of software is used for creating the 3D models that will be printed?
a) Slicing/CAM software
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c) 3D Modeling/CAD software
d) Rendering software

2) What is the purpose of slicing software in 3D printing?
a) Creating 3D models
b) Controlling the 3D printer
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b) Design for Manufacturing and Assembly
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d) Design Tools for 3D Printing

14) What is one of the objectives of Design for 3D Printing?
a) Maximizing production planning and control
b) Minimizing the use of additive manufacturing technologies
c) Optimizing design for efficient manufacturing and assembly
d) Implementing traditional manufacturing techniques in 3D printing

SLR-BD-380

Seat No.	

Set R

T. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
MECHANICAL ENGINEERING
3D Printing Hardware & Software (BTN02613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory; answer any two from remaining questions from Section - I.
2) Q.6 is compulsory; answer any two from remaining questions from Section - II.
3) Figures to the right indicate full marks.
4) Assume suitable data if required and mention it clearly.
5) Use of scientific calculator is allowed.

Section – I

Q.2 Discuss CAD and Associated technology used in 3d printer. **10**

Q.3 Illustrate Classification of 3d printing processes. **09**

Q.4 Enlist different 3D Printing Technologies and describe any 01 with application. **09**

Q.5 Explain the concept of Design for Manufacturing and Assembly (DFMA) and explain its significance in the context of 3D printing. **09**

Section - II

Q.6 Discuss the significance of 3D modeling/CAD software in the 3D printing workflow. **10**

Q.7 Explain the key steps involved in preparing a 3D model for printing using slicing/CAM software. **09**

Q.8 Describe the basic principles behind 3D scanning technology and the process involved in creating digital 3D models. **09**

Q.9 Illustrate the importance of cleaning and repairing 3D scans before 3D printing. **09**

SLR-BD-380

Seat No.		Set	S

T. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
MECHANICAL ENGINEERING
3D Printing Hardware & Software (BTN02613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Assume suitable data required.
4) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which additive manufacturing technology uses a UV laser to cure photopolymer resin layer by layer?
a) Stereolithography (SLA)
b) Digital Light Processing (DLP)
c) Fused Deposition Modeling (FDM)
d) Selective Laser Sintering (SLS)

2) Which additive manufacturing technology uses a digital light projector to cure liquid resin layer by layer?
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b) Digital Light Processing (DLP)
c) Fused Deposition Modeling (FDM)
d) Selective Laser Sintering (SLS)

3) Which additive manufacturing technology extrudes thermoplastic filament layer by layer to build a 3D object?
a) Stereolithography (SLA)
b) Digital Light Processing (DLP)
c) Fused Deposition Modeling (FDM)
d) Selective Laser Sintering (SLS)

4) Which design approach focuses on optimizing the design for efficient manufacturing and assembly?
a) Design for 3D Printing
b) Design for Manufacturing and Assembly
c) Core DFM for 3D Printing
d) Design Tools for 3D Printing

5) What is one of the objectives of Design for 3D Printing?
a) Maximizing production planning and control
b) Minimizing the use of additive manufacturing technologies
c) Optimizing design for efficient manufacturing and assembly
d) Implementing traditional manufacturing techniques in 3D printing

6) Which type of software is used for creating the 3D models that will be printed?
a) Slicing/CAM software
b) Printer Control/Client software
c) 3D Modeling/CAD software
d) Rendering software

7) What is the purpose of slicing software in 3D printing?
a) Creating 3D models
b) Controlling the 3D printer
c) Transforming 3D models into printable instructions
d) Visualizing the final printed object

8) Which software is responsible for controlling the 3D printer during the printing process?
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a) To create a physical object from a digital design
b) To choose the color and texture of the final product
c) To determine the size and shape of the final product
d) To program the printer's hardware

14) What is an STL file?
a) A file format used in 2D printing
b) A file format used in 3D printing
c) A file format used in video editing
d) A file format used in music production

SLR-BD-380

Seat No.	

Set S

T. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
MECHANICAL ENGINEERING
3D Printing Hardware & Software (BTN02613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory; answer any two from remaining questions from Section - I.
2) Q.6 is compulsory; answer any two from remaining questions from Section - II.
3) Figures to the right indicate full marks.
4) Assume suitable data if required and mention it clearly.
5) Use of scientific calculator is allowed.

Section – I

Q.2	Discuss CAD and Associated technology used in 3d printer.	**10**
Q.3	Illustrate Classification of 3d printing processes.	**09**
Q.4	Enlist different 3D Printing Technologies and describe any 01 with application.	**09**
Q.5	Explain the concept of Design for Manufacturing and Assembly (DFMA) and explain its significance in the context of 3D printing.	**09**

Section - II

Q.6	Discuss the significance of 3D modeling/CAD software in the 3D printing workflow.	**10**
Q.7	Explain the key steps involved in preparing a 3D model for printing using slicing/CAM software.	**09**
Q.8	Describe the basic principles behind 3D scanning technology and the process involved in creating digital 3D models.	**09**
Q.9	Illustrate the importance of cleaning and repairing 3D scans before 3D printing.	**09**

SLR-BD-381

Seat No.	

Set P

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Conversion Systems (BTN02614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Operation of thermocouple is governed by _____.
a) Peltier effect b) Seebeck effect
c) Thomson effect d) All of the mentioned

2) The amount of photo generated current increases slightly with an increase in _____.
a) Temperature b) Photons
c) Diode current d) Shunt current

3) Solar cells are made from bulk materials that are cut into wafer of _____ thickness.
a) 120-180μm b) 120-220μm
c) 180-220μm d) 180-240μm

4) Chemical energy is converted to _____ energy by a fuel cell.
a) solar b) electrical
c) potential d) mechanical

5) Which of the following element is used as a thermocouple in nuclear reactor?
a) Boron b) Platinum
c) Copper d) Iron

6) Which of the following does not affect the reactions in a fuel cell?
a) Electrolyte composition
b) Electrode composition
c) A combination of fuel and oxidizer
d) Catalytic effect of the reaction container

7) Thermo couple cannot be used to measure _____.
a) Temperature of gas
b) Temperature of liquid
c) IR radiation
d) None of the mentioned

8) Quantum dot solar cells are based on _____.
a) Gratzel cell
b) Solar cell
c) Voltaic cell
d) Galvanic cell

9) The Otto cycle consists of _____.
a) two reversible isotherms and two reversible isobars
b) two reversible isochores and two reversible adiabatics
c) two reversible isotherms and two reversible isochores
d) two reversible isobars and two reversible adiabatics

10) The Diesel cycle consists of _____.
a) two reversible isotherms and two reversible isobars
b) one reversible isochore and two reversible adiabatics and one reversible isobar
c) one reversible isotherm and two reversible isochores and one reversible isobar
d) two reversible isobars and two reversible adiabatics

11) The efficiency of Diesel cycle is _____ the efficiency of Otto cycle.
a) less than
b) greater than
c) equal to
d) none of the mentioned

12) A gas turbine power plant uses _____.
a) Otto cycle
b) Rankine cycle
c) Brayton cycle
d) Diesel cycle

13) The Brayton cycle consists of _____.
a) two reversible isotherms and two reversible isobars
b) two reversible isochores and two reversible adiabatics
c) two reversible isotherms and two reversible isochores
d) two reversible isobars and two reversible adiabatics

14) For a Rankine cycle, which of the following is true?
a) a reversible constant pressure heating process happens in steam boiler
b) reversible adiabatic expansion of steam in turbine
c) reversible constant pressure heat rejection in condenser
d) all of the mentioned

Seat No.	

Set **P**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Conversion Systems (BTN02614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions form Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Solve:
a) Drive an expression of Otto cycle. **07**
b) Drive an expression of Diesel cycle. **07**

Q.3 Solve:
a) Describe the Magneto hydrodynamic convertor with neat Sketches. **07**
b) Explain in details the types of convertors. **07**

Q.4 Solve:
a) Elaborate Performance governing parameters of Batteries in details. **07**
b) Write a short note on Different types of Batteries. **07**

Section – II

Q.5 Solve:
a) Describe Thermodynamics and kinetics processes of fuel Fuel cells. **07**
b) Write in details of types of Fuel cells. **07**

Q.6 Solve:
a) Explain Electrical & Thermal energy storage technology with neat sketch. **07**
b) Describe in details of Chemical energy storage. **07**

Q.7 Solve:
a) Explain in details of solar photovoltaic systems. **07**
b) Describe in details Construction and working of solar cell. **07**

Seat No.	

Set **Q**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Conversion Systems (BTN02614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Quantum dot solar cells are based on _____.
a) Gratzel cell b) Solar cell
c) Voltaic cell d) Galvanic cell

2) The Otto cycle consists of _____.
a) two reversible isotherms and two reversible isobars
b) two reversible isochores and two reversible adiabatics
c) two reversible isotherms and two reversible isochores
d) two reversible isobars and two reversible adiabatics

3) The Diesel cycle consists of _____.
a) two reversible isotherms and two reversible isobars
b) one reversible isochore and two reversible adiabatics and one reversible isobar
c) one reversible isotherm and two reversible isochores and one reversible isobar
d) two reversible isobars and two reversible adiabatics

4) The efficiency of Diesel cycle is _____ the efficiency of Otto cycle.
a) less than b) greater than
c) equal to d) none of the mentioned

5) A gas turbine power plant uses _____.
a) Otto cycle b) Rankine cycle
c) Brayton cycle d) Diesel cycle

6) The Brayton cycle consists of _____.
a) two reversible isotherms and two reversible isobars
b) two reversible isochores and two reversible adiabatics
c) two reversible isotherms and two reversible isochores
d) two reversible isobars and two reversible adiabatics

7) For a Rankine cycle, which of the following is true?
a) a reversible constant pressure heating process happens in steam boiler
b) reversible adiabatic expansion of steam in turbine
c) reversible constant pressure heat rejection in condenser
d) all of the mentioned

8) Operation of thermocouple is governed by _____.
a) Peltier effect
b) Seebeck effect
c) Thomson effect
d) All of the mentioned

9) The amount of photo generated current increases slightly with an increase in _____.
a) Temperature
b) Photons
c) Diode current
d) Shunt current

10) Solar cells are made from bulk materials that are cut into wafer of _____ thickness.
a) 120-180μm
b) 120-220μm
c) 180-220μm
d) 180-240μm

11) Chemical energy is converted to _____ energy by a fuel cell.
a) solar
b) electrical
c) potential
d) mechanical

12) Which of the following element is used as a thermocouple in nuclear reactor?
a) Boron
b) Platinum
c) Copper
d) Iron

13) Which of the following does not affect the reactions in a fuel cell?
a) Electrolyte composition
b) Electrode composition
c) A combination of fuel and oxidizer
d) Catalytic effect of the reaction container

14) Thermo couple cannot be used to measure _____.
a) Temperature of gas
b) Temperature of liquid
c) IR radiation
d) None of the mentioned

SLR-BD-381

Seat No.	

Set Q

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Conversion Systems (BTN02614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions form Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Solve:
a) Drive an expression of Otto cycle. **07**
b) Drive an expression of Diesel cycle. **07**

Q.3 Solve:
a) Describe the Magneto hydrodynamic convertor with neat Sketches. **07**
b) Explain in details the types of convertors. **07**

Q.4 Solve:
a) Elaborate Performance governing parameters of Batteries in details. **07**
b) Write a short note on Different types of Batteries. **07**

Section – II

Q.5 Solve:
a) Describe Thermodynamics and kinetics processes of fuel Fuel cells. **07**
b) Write in details of types of Fuel cells. **07**

Q.6 Solve:
a) Explain Electrical & Thermal energy storage technology with neat sketch. **07**
b) Describe in details of Chemical energy storage. **07**

Q.7 Solve:
a) Explain in details of solar photovoltaic systems. **07**
b) Describe in details Construction and working of solar cell. **07**

Seat No.	

Set **R**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Conversion Systems (BTN02614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The efficiency of Diesel cycle is _____ the efficiency of Otto cycle.
a) less than b) greater than
c) equal to d) none of the mentioned

2) A gas turbine power plant uses _____.
a) Otto cycle b) Rankine cycle
c) Brayton cycle d) Diesel cycle

3) The Brayton cycle consists of _____.
a) two reversible isotherms and two reversible isobars
b) two reversible isochores and two reversible adiabatics
c) two reversible isotherms and two reversible isochores
d) two reversible isobars and two reversible adiabatics

4) For a Rankine cycle, which of the following is true?
a) a reversible constant pressure heating process happens in steam boiler
b) reversible adiabatic expansion of steam in turbine
c) reversible constant pressure heat rejection in condenser
d) all of the mentioned

5) Operation of thermocouple is governed by _____.
a) Peltier effect b) Seebeck effect
c) Thomson effect d) All of the mentioned

6) The amount of photo generated current increases slightly with an increase in _____.
a) Temperature b) Photons
c) Diode current d) Shunt current

7) Solar cells are made from bulk materials that are cut into wafer of _____ thickness.
a) 120-180μm
b) 120-220μm
c) 180-220μm
d) 180-240μm

8) Chemical energy is converted to _____ energy by a fuel cell.
a) solar
b) electrical
c) potential
d) mechanical

9) Which of the following element is used as a thermocouple in nuclear reactor?
a) Boron
b) Platinum
c) Copper
d) Iron

10) Which of the following does not affect the reactions in a fuel cell?
a) Electrolyte composition
b) Electrode composition
c) A combination of fuel and oxidizer
d) Catalytic effect of the reaction container

11) Thermo couple cannot be used to measure _____.
a) Temperature of gas
b) Temperature of liquid
c) IR radiation
d) None of the mentioned

12) Quantum dot solar cells are based on _____.
a) Gratzel cell
b) Solar cell
c) Voltaic cell
d) Galvanic cell

13) The Otto cycle consists of _____.
a) two reversible isotherms and two reversible isobars
b) two reversible isochores and two reversible adiabatics
c) two reversible isotherms and two reversible isochores
d) two reversible isobars and two reversible adiabatics

14) The Diesel cycle consists of _____.
a) two reversible isotherms and two reversible isobars
b) one reversible isochore and two reversible adiabatics and one reversible isobar
c) one reversible isotherm and two reversible isochores and one reversible isobar
d) two reversible isobars and two reversible adiabatics

Seat No.	

Set **R**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Conversion Systems (BTN02614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions form Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Solve:
a) Drive an expression of Otto cycle. **07**
b) Drive an expression of Diesel cycle. **07**

Q.3 Solve:
a) Describe the Magneto hydrodynamic convertor with neat Sketches. **07**
b) Explain in details the types of convertors. **07**

Q.4 Solve:
a) Elaborate Performance governing parameters of Batteries in details. **07**
b) Write a short note on Different types of Batteries. **07**

Section – II

Q.5 Solve:
a) Describe Thermodynamics and kinetics processes of fuel Fuel cells. **07**
b) Write in details of types of Fuel cells. **07**

Q.6 Solve:
a) Explain Electrical & Thermal energy storage technology with neat sketch. **07**
b) Describe in details of Chemical energy storage. **07**

Q.7 Solve:
a) Explain in details of solar photovoltaic systems. **07**
b) Describe in details Construction and working of solar cell. **07**

Seat No.	

Set **S**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Conversion Systems (BTN02614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which of the following does not affect the reactions in a fuel cell?
a) Electrolyte composition
b) Electrode composition
c) A combination of fuel and oxidizer
d) Catalytic effect of the reaction container

2) Thermo couple cannot be used to measure _____.
a) Temperature of gas b) Temperature of liquid
c) IR radiation d) None of the mentioned

3) Quantum dot solar cells are based on _____.
a) Gratzel cell b) Solar cell
c) Voltaic cell d) Galvanic cell

4) The Otto cycle consists of _____.
a) two reversible isotherms and two reversible isobars
b) two reversible isochores and two reversible adiabatics
c) two reversible isotherms and two reversible isochores
d) two reversible isobars and two reversible adiabatics

5) The Diesel cycle consists of _____.
a) two reversible isotherms and two reversible isobars
b) one reversible isochore and two reversible adiabatics and one reversible isobar
c) one reversible isotherm and two reversible isochores and one reversible isobar
d) two reversible isobars and two reversible adiabatics

6) The efficiency of Diesel cycle is _____ the efficiency of Otto cycle.
a) less than b) greater than
c) equal to d) none of the mentioned

7) A gas turbine power plant uses _____.
a) Otto cycle b) Rankine cycle
c) Brayton cycle d) Diesel cycle

8) The Brayton cycle consists of _____.
a) two reversible isotherms and two reversible isobars
b) two reversible isochores and two reversible adiabatics
c) two reversible isotherms and two reversible isochores
d) two reversible isobars and two reversible adiabatics

9) For a Rankine cycle, which of the following is true?
a) a reversible constant pressure heating process happens in steam boiler
b) reversible adiabatic expansion of steam in turbine
c) reversible constant pressure heat rejection in condenser
d) all of the mentioned

10) Operation of thermocouple is governed by _____.
a) Peltier effect b) Seebeck effect
c) Thomson effect d) All of the mentioned

11) The amount of photo generated current increases slightly with an increase in _____.
a) Temperature b) Photons
c) Diode current d) Shunt current

12) Solar cells are made from bulk materials that are cut into wafer of _____ thickness.
a) 120-180μm b) 120-220μm
c) 180-220μm d) 180-240μm

13) Chemical energy is converted to _____ energy by a fuel cell.
a) solar b) electrical
c) potential d) mechanical

14) Which of the following element is used as a thermocouple in nuclear reactor?
a) Boron b) Platinum
c) Copper d) Iron

SLR-BD-381

Seat No.		Set	S

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Conversion Systems (BTN02614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Solve:
a) Drive an expression of Otto cycle. **07**
b) Drive an expression of Diesel cycle. **07**

Q.3 Solve:
a) Describe the Magneto hydrodynamic convertor with neat Sketches. **07**
b) Explain in details the types of convertors. **07**

Q.4 Solve:
a) Elaborate Performance governing parameters of Batteries in details. **07**
b) Write a short note on Different types of Batteries. **07**

Section – II

Q.5 Solve:
a) Describe Thermodynamics and kinetics processes of fuel Fuel cells. **07**
b) Write in details of types of Fuel cells. **07**

Q.6 Solve:
a) Explain Electrical & Thermal energy storage technology with neat sketch. **07**
b) Describe in details of Chemical energy storage. **07**

Q.7 Solve:
a) Explain in details of solar photovoltaic systems. **07**
b) Describe in details Construction and working of solar cell. **07**

SLR-BD-382

Seat No.	

Set P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Battery Technology and Charging Infrastructure (BTN02615)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3)Answer cannot be changed once it is marked.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which charging standard is widely used in Europe for fast Charging?
a) CHAdeMOC)
b) Tesla Supercharger
c) CCS (Combined Charging System)
d) GB/T

2) What is the main barrier to widespread EV adoption regarding charging Infrastructure?
a) Lack of Public interest
b) Limited Battery Lifespan
c) Inadequate number of Charging Stations
d) High Charging Station maintenance cost

3) Which type of Battery is most commonly used in EV?
a) Laid acid b) Solid State
c) Lithium Ion d) Nickel-Metal hybrid

4) What property of lithium -ion batteries makes them ideal for EV?
a) Low Cost
b) High Energy Density
c) Short Recharge Time
d) Wide Operating Temperature Range

5) What is Purpose of a Battery Management System _____.
a) To increase vehicle speed
b) To monitor and Optimize battery Performance
c) To regulate Regenerative Breaking
d) To charge Battery Faster

6) What is the typical Lifespan of a Lithium-Ion battery used in EV?
a) 2-4 Years b) 5-8 Years
c) 10-15 Years d) 20-25 Year

7) Which Material is commonly used to reduce vehicle weight in EV?
a) Steel b) Brass
c) Cast Iron d) Aluminum

8) Number of cells connected in series provide a _____.
a) High current carrying capacity
b) Higher Voltage
c) Higher power
d) None of the above

9) The capacity of a battery is expressed in terms of _____.
a) Current rating b) Voltage rating
c) Ampere hour rating d) None of the above

10) _____ avoids the direct contact of the positive and negative plate in a lithium-ion battery?
a) Separator b) Electrolyte
c) Load d) Rectifier

11) Which is the electrolyte used in Li-ion battery?
a) Lead dioxide b) Lithium-based gel
c) Sulfur dioxide d) Cobalt

12) Which of the following material is used as separator material in Lithium-ion battery?
a) Brass b) Metal sheet
c) Paper d) Plastic

13) The electrode for a battery must be _____.
a) a semi conductor
b) An insulator
c) A good conductor of electricity
d) A bad conductor of electricity

14) Which of the following statement is true for the movement of electrons concerning the direction of current?
a) Same as the direction of current
b) Opposite direction of current
c) Does not depend on the direction of current
d) No movement of electrons

SLR-BD-382

Seat No.	

Set P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Battery Technology and Charging Infrastructure (BTN02615)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions form Section I and Section II.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 a) Define the following: **07**
1) State of charge
2) C-Rate
3) Specific Energy Density
4) Life cycles
5) Depth of Discharge
6) Usable capacity
7) Energy capacity

b) Explain significance of energy density and cycle life of EV Battery. **07**

Q.3 a) Describe the construction and working of a Li-ion battery with a clear diagram. **07**

b) Describe the safety concerns associated with Li-ion batteries. **07**

Q.4 a) Explain Solid-state Lithium with neat sketch. **07**

b) Explain Lithium Sulphur Battery with neat sketch. **07**

Section – II

Q.5 a) Explain stages of battery pack design. **07**

b) Explain Electrical Design of battery pack. **07**

Q.6 a) Explain the role of thermal interface material. **07**

b) Describe the concepts of Active and Passive Thermal Management. **07**

Q.7 a) Explain Charger Architecture. **07**

b) Explain Charging standards and protocols. **07**

Seat No.	

Set **Q**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Battery Technology and Charging Infrastructure (BTN02615)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3)Answer cannot be changed once it is marked.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Number of cells connected in series provide a _____.
a) High current carrying capacity
b) Higher Voltage
c) Higher power
d) None of the above

2) The capacity of a battery is expressed in terms of _____.
a) Current rating b) Voltage rating
c) Ampere hour rating d) None of the above

3) _____ avoids the direct contact of the positive and negative plate in a lithium-ion battery?
a) Separator b) Electrolyte
c) Load d) Rectifier

4) Which is the electrolyte used in Li-ion battery?
a) Lead dioxide b) Lithium-based gel
c) Sulfur dioxide d) Cobalt

5) Which of the following material is used as separator material in Lithium-ion battery?
a) Brass b) Metal sheet
c) Paper d) Plastic

6) The electrode for a battery must be _____.
a) a semi conductor
b) An insulator
c) A good conductor of electricity
d) A bad conductor of electricity

7) Which of the following statement is true for the movement of electrons concerning the direction of current?
a) Same as the direction of current
b) Opposite direction of current
c) Does not depend on the direction of current
d) No movement of electrons

8) Which charging standard is widely used in Europe for fast Charging?
a) CHAdeMOC)
b) Tesla Supercharger
c) CCS (Combined Charging System)
d) GB/T

9) What is the main barrier to widespread EV adoption regarding charging Infrastructure?
a) Lack of Public interest
b) Limited Battery Lifespan
c) Inadequate number of Charging Stations
d) High Charging Station maintenance cost

10) Which type of Battery is most commonly used in EV?
a) Laid acid
b) Solid State
c) Lithium Ion
d) Nickel-Metal hybrid

11) What property of lithium -ion batteries makes them ideal for EV?
a) Low Cost
b) High Energy Density
c) Short Recharge Time
d) Wide Operating Temperature Range

12) What is Purpose of a Battery Management System _____.
a) To increase vehicle speed
b) To monitor and Optimize battery Performance
c) To regulate Regenerative Breaking
d) To charge Battery Faster

13) What is the typical Lifespan of a Lithium-Ion battery used in EV?
a) 2-4 Years
b) 5-8 Years
c) 10-15 Years
d) 20-25 Year

14) Which Material is commonly used to reduce vehicle weight in EV?
a) Steel
b) Brass
c) Cast Iron
d) Aluminum

SLR-BD-382

Seat No.		Set	Q

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Battery Technology and Charging Infrastructure (BTN02615)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions form Section I and Section II.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 a) Define the following: **07**
1) State of charge
2) C-Rate
3) Specific Energy Density
4) Life cycles
5) Depth of Discharge
6) Usable capacity
7) Energy capacity

b) Explain significance of energy density and cycle life of EV Battery. **07**

Q.3 a) Describe the construction and working of a Li-ion battery with a clear diagram. **07**

b) Describe the safety concerns associated with Li-ion batteries. **07**

Q.4 a) Explain Solid-state Lithium with neat sketch. **07**

b) Explain Lithium Sulphur Battery with neat sketch. **07**

Section – II

Q.5 a) Explain stages of battery pack design. **07**

b) Explain Electrical Design of battery pack. **07**

Q.6 a) Explain the role of thermal interface material. **07**

b) Describe the concepts of Active and Passive Thermal Management. **07**

Q.7 a) Explain Charger Architecture. **07**

b) Explain Charging standards and protocols. **07**

Seat No.	

Set **R**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Battery Technology and Charging Infrastructure (BTN02615)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3)Answer cannot be changed once it is marked.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which is the electrolyte used in Li-ion battery?
a) Lead dioxide b) Lithium-based gel
c) Sulfur dioxide d) Cobalt

2) Which of the following material is used as separator material in Lithium-ion battery?
a) Brass b) Metal sheet
c) Paper d) Plastic

3) The electrode for a battery must be _____.
a) a semi conductor
b) An insulator
c) A good conductor of electricity
d) A bad conductor of electricity

4) Which of the following statement is true for the movement of electrons concerning the direction of current?
a) Same as the direction of current
b) Opposite direction of current
c) Does not depend on the direction of current
d) No movement of electrons

5) Which charging standard is widely used in Europe for fast Charging?
a) CHAdeMOC)
b) Tesla Supercharger
c) CCS (Combined Charging System)
d) GB/T

6) What is the main barrier to widespread EV adoption regarding charging Infrastructure?
a) Lack of Public interest
b) Limited Battery Lifespan
c) Inadequate number of Charging Stations
d) High Charging Station maintenance cost

7) Which type of Battery is most commonly used in EV?
a) Laid acid
b) Solid State
c) Lithium Ion
d) Nickel-Metal hybrid

8) What property of lithium -ion batteries makes them ideal for EV?
a) Low Cost
b) High Energy Density
c) Short Recharge Time
d) Wide Operating Temperature Range

9) What is Purpose of a Battery Management System _____.
a) To increase vehicle speed
b) To monitor and Optimize battery Performance
c) To regulate Regenerative Breaking
d) To charge Battery Faster

10) What is the typical Lifespan of a Lithium-Ion battery used in EV?
a) 2-4 Years
b) 5-8 Years
c) 10-15 Years
d) 20-25 Year

11) Which Material is commonly used to reduce vehicle weight in EV?
a) Steel
b) Brass
c) Cast Iron
d) Aluminum

12) Number of cells connected in series provide a _____.
a) High current carrying capacity
b) Higher Voltage
c) Higher power
d) None of the above

13) The capacity of a battery is expressed in terms of _____.
a) Current rating
b) Voltage rating
c) Ampere hour rating
d) None of the above

14) _____ avoids the direct contact of the positive and negative plate in a lithium-ion battery?
a) Separator
b) Electrolyte
c) Load
d) Rectifier

SLR-BD-382

Seat No.	

Set R

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Battery Technology and Charging Infrastructure (BTN02615)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions form Section I and Section II.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 a) Define the following: **07**
1) State of charge
2) C-Rate
3) Specific Energy Density
4) Life cycles
5) Depth of Discharge
6) Usable capacity
7) Energy capacity

b) Explain significance of energy density and cycle life of EV Battery. **07**

Q.3 a) Describe the construction and working of a Li-ion battery with a clear diagram. **07**

b) Describe the safety concerns associated with Li-ion batteries. **07**

Q.4 a) Explain Solid-state Lithium with neat sketch. **07**

b) Explain Lithium Sulphur Battery with neat sketch. **07**

Section – II

Q.5 a) Explain stages of battery pack design. **07**

b) Explain Electrical Design of battery pack. **07**

Q.6 a) Explain the role of thermal interface material. **07**

b) Describe the concepts of Active and Passive Thermal Management. **07**

Q.7 a) Explain Charger Architecture. **07**

b) Explain Charging standards and protocols. **07**

SLR-BD-382

Seat No.	

Set S

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Battery Technology and Charging Infrastructure (BTN02615)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3)Answer cannot be changed once it is marked.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) What is the typical Lifespan of a Lithium-Ion battery used in EV?
a) 2-4 Years b) 5-8 Years
c) 10-15 Years d) 20-25 Year

2) Which Material is commonly used to reduce vehicle weight in EV?
a) Steel b) Brass
c) Cast Iron d) Aluminum

3) Number of cells connected in series provide a _____.
a) High current carrying capacity
b) Higher Voltage
c) Higher power
d) None of the above

4) The capacity of a battery is expressed in terms of _____.
a) Current rating b) Voltage rating
c) Ampere hour rating d) None of the above

5) _____ avoids the direct contact of the positive and negative plate in a lithium-ion battery?
a) Separator b) Electrolyte
c) Load d) Rectifier

6) Which is the electrolyte used in Li-ion battery?
a) Lead dioxide b) Lithium-based gel
c) Sulfur dioxide d) Cobalt

7) Which of the following material is used as separator material in Lithium-ion battery?

a) Brass
b) Metal sheet
c) Paper
d) Plastic

8) The electrode for a battery must be _____.

a) a semi conductor
b) An insulator
c) A good conductor of electricity
d) A bad conductor of electricity

9) Which of the following statement is true for the movement of electrons concerning the direction of current?

a) Same as the direction of current
b) Opposite direction of current
c) Does not depend on the direction of current
d) No movement of electrons

10) Which charging standard is widely used in Europe for fast Charging?

a) CHAdeMOC)
b) Tesla Supercharger
c) CCS (Combined Charging System)
d) GB/T

11) What is the main barrier to widespread EV adoption regarding charging Infrastructure?

a) Lack of Public interest
b) Limited Battery Lifespan
c) Inadequate number of Charging Stations
d) High Charging Station maintenance cost

12) Which type of Battery is most commonly used in EV?

a) Laid acid
b) Solid State
c) Lithium Ion
d) Nickel-Metal hybrid

13) What property of lithium -ion batteries makes them ideal for EV?

a) Low Cost
b) High Energy Density
c) Short Recharge Time
d) Wide Operating Temperature Range

14) What is Purpose of a Battery Management System _____.

a) To increase vehicle speed
b) To monitor and Optimize battery Performance
c) To regulate Regenerative Breaking
d) To charge Battery Faster

SLR-BD-382

Seat No.		Set	S

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Battery Technology and Charging Infrastructure (BTN02615)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions form Section I and Section II.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 a) Define the following: **07**
1) State of charge
2) C-Rate
3) Specific Energy Density
4) Life cycles
5) Depth of Discharge
6) Usable capacity
7) Energy capacity

b) Explain significance of energy density and cycle life of EV Battery. **07**

Q.3 a) Describe the construction and working of a Li-ion battery with a clear diagram. **07**

b) Describe the safety concerns associated with Li-ion batteries. **07**

Q.4 a) Explain Solid-state Lithium with neat sketch. **07**

b) Explain Lithium Sulphur Battery with neat sketch. **07**

Section – II

Q.5 a) Explain stages of battery pack design. **07**

b) Explain Electrical Design of battery pack. **07**

Q.6 a) Explain the role of thermal interface material. **07**

b) Describe the concepts of Active and Passive Thermal Management. **07**

Q.7 a) Explain Charger Architecture. **07**

b) Explain Charging standards and protocols. **07**

SLR-BD-383

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
Mechanical Engineering
Joining Technologies for Metals (197041615)

Day & Date: Tuesday, 27-05-2025 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Neat sketches must be drawn wherever necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions **10**

1) What is the fundamental mechanism involved in most metal joining processes?
a) Cutting and shearing b) Heat and pressure
c) Cooling and condensation d) Abrasion and polishing

2) Which of the following best describes the classification of joining processes?
a) Temporary and permanent b) Fast and slow
c) Welded and non-welded d) Mechanical and Electrical

3) Why is weld metal protection important during the welding process?
a) To reduce the welding speed
b) To prevent contamination and maintain weld quality
c) To increase the melting point of the metal
d) To ensure uniform cooling

4) What is the primary mechanism of arc heat generation in fusion welding?
a) Friction between the electrode and base metal
b) Chemical reaction of shielding gases
c) Electrical discharge creating an arc between the electrode and base metal
d) Pressure applied by the welding torch

5) Which of the following welding processes uses a non-consumable electrode and shielding gas?
a) Shielded Metal Arc Welding (SMAW)
b) Submerged Arc Welding (SAW)
c) Gas Tungsten Arc Welding (GTAW)
d) Electro-slag Welding

6) In Shielded Metal Arc Welding (SMAW), what is the effect of using direct current electrode positive (DCEP)?

a) Decreases penetration and increases melting rate
b) Increases penetration and decreases melting rate
c) Increases penetration and electrode melting rate
d) Decreases penetration and electrode melting rate

7) What is the Heat Affected Zone (HAZ) in welding?

a) The area where the base metal is entirely melted
b) The zone adjacent to the weld metal where the microstructure and properties are altered due to heat
c) The area of the base metal unaffected by the welding process
d) The region where the shielding gas protects the weld pool

8) What is the purpose of the Schaeffer diagram in the weldability of stainless steels?

a) To predict the thermal cycle during welding
b) To determine the corrosion resistance of stainless steels
c) To predict the phase transformations and microstructure in the weld and heat- affected zone
d) To calculate the cooling rate during welding9.Which of the following is not the welding position?

9) What is a common issue encountered when welding aluminum alloys that can affect weld quality?

a) HAZ hardening
b) Porosity due to gas entrapment
c) Excessive spatter formation
d) Formation of martensite

10) Which type of cracking in welded joints is associated with the rapid cooling of the weld metal?

a) Liquation cracking
b) Solidification cracking
c) Cold cracking
d) HAZ softening

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
Mechanical Engineering
Joining Technologies for Metals (197041615)

Day & Date: Tuesday, 27-05-2025 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Neat sketches must be drawn wherever necessary.

SECTION – I

Q.2 Attempt four from following questions.

a) Explain the basic mechanisms involved in metal joining. State role do heat and pressure play in joining processes? **05**

b) Provide a classification of metal joining processes with examples for each category. Discuss the advantages of using heat and power density concepts in welding. **05**

c) What are the different approaches to protecting weld metal during the welding process? Analyze the effects of gases on weld properties and suggest ways to mitigate negative impacts. **05**

d) Explain the principles of oxy-fuel gas welding and describe its key applications. Define different types of welds, joint types, and welding positions used in fusion welding. **05**

e) Discuss how arc heat is generated, maintained, and its role in welding processes. Describe the factors affecting electrode melting rate and the impact of electrode polarity on SMAW. **05**

f) Compare Gas Tungsten Arc Welding (GTAW) and Gas Metal Arc Welding (GMAW), highlighting their key differences. Briefly describe the working principles of submerged arc welding, electro-slag welding, and laser beam welding. **05**

SECTION – II

Q.3 Attempt four from following questions.

a)	Define the weld thermal cycle and explain its significance in welding. What is the heat-affected zone (HAZ), and how does it influence the mechanical properties of a weld?	**05**
b)	Discuss the solidification process of weld metal and the factors that affect it. Explain the fundamentals of weldability and describe how the Fe-C phase diagram and continuous cooling transformation (CCT) curves are used to assess the weldability of carbon and alloy steels.	**05**
c)	Explain the Schaeffer diagram and its application in determining the weldability of stainless steels. Describe the metallurgical transformations that occur in the weld and heat-affected zone of steels during the welding process.	**05**
d)	Discuss the common weldability issues in aluminium alloys, such as porosity, HAZ softening, and PMZ problems. Explain the factors that contribute to solidification and cracking in aluminium welds and suggest methods to control them.	**05**
e)	Define residual stresses in welded joints and explain their effect on joint performance. What methods can be used to control or reduce residual stresses in welded joints?	**05**
f)	Describe the types of cracks that can occur in welded joints, including solidification cracks, liquation cracks, and cold cracking. Discuss the factors contributing to each type of crack and propose techniques to prevent or minimize cracking during welding.	**05**

SLR-BD-383

Seat No.		Set	Q

T. Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
Mechanical Engineering
Joining Technologies for Metals (197041615)

Day & Date: Tuesday, 27-05-2025 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Neat sketches must be drawn wherever necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions **10**

1) In Shielded Metal Arc Welding (SMAW), what is the effect of using direct current electrode positive (DCEP)?
a) Decreases penetration and increases melting rate
b) Increases penetration and decreases melting rate
c) Increases penetration and electrode melting rate
d) Decreases penetration and electrode melting rate

2) What is the Heat Affected Zone (HAZ) in welding?
a) The area where the base metal is entirely melted
b) The zone adjacent to the weld metal where the microstructure and properties are altered due to heat
c) The area of the base metal unaffected by the welding process
d) The region where the shielding gas protects the weld pool

3) What is the purpose of the Schaeffer diagram in the weldability of stainless steels?
a) To predict the thermal cycle during welding
b) To determine the corrosion resistance of stainless steels
c) To predict the phase transformations and microstructure in the weld and heat- affected zone
d) To calculate the cooling rate during welding9.Which of the following is not the welding position?

4) What is a common issue encountered when welding aluminum alloys that can affect weld quality?
a) HAZ hardening b) Porosity due to gas entrapment
c) Excessive spatter formation d) Formation of martensite

5) Which type of cracking in welded joints is associated with the rapid cooling of the weld metal?

a) Liquation cracking
b) Solidification cracking
c) Cold cracking
d) HAZ softening

6) What is the fundamental mechanism involved in most metal joining processes?

a) Cutting and shearing
b) Heat and pressure
c) Cooling and condensation
d) Abrasion and polishing

7) Which of the following best describes the classification of joining processes?

a) Temporary and permanent
b) Fast and slow
c) Welded and non-welded
d) Mechanical and Electrical

8) Why is weld metal protection important during the welding process?

a) To reduce the welding speed
b) To prevent contamination and maintain weld quality
c) To increase the melting point of the metal
d) To ensure uniform cooling

9) What is the primary mechanism of arc heat generation in fusion welding?

a) Friction between the electrode and base metal
b) Chemical reaction of shielding gases
c) Electrical discharge creating an arc between the electrode and base metal
d) Pressure applied by the welding torch

10) Which of the following welding processes uses a non-consumable electrode and shielding gas?

a) Shielded Metal Arc Welding (SMAW)
b) Submerged Arc Welding (SAW)
c) Gas Tungsten Arc Welding (GTAW)
d) Electro-slag Welding

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
Mechanical Engineering
Joining Technologies for Metals (197041615)

Day & Date: Tuesday, 27-05-2025 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Neat sketches must be drawn wherever necessary.

SECTION – I

Q.2 Attempt four from following questions.

a) Explain the basic mechanisms involved in metal joining. State role do heat and pressure play in joining processes? **05**

b) Provide a classification of metal joining processes with examples for each category. Discuss the advantages of using heat and power density concepts in welding. **05**

c) What are the different approaches to protecting weld metal during the welding process? Analyze the effects of gases on weld properties and suggest ways to mitigate negative impacts. **05**

d) Explain the principles of oxy-fuel gas welding and describe its key applications. Define different types of welds, joint types, and welding positions used in fusion welding. **05**

e) Discuss how arc heat is generated, maintained, and its role in welding processes. Describe the factors affecting electrode melting rate and the impact of electrode polarity on SMAW. **05**

f) Compare Gas Tungsten Arc Welding (GTAW) and Gas Metal Arc Welding (GMAW), highlighting their key differences. Briefly describe the working principles of submerged arc welding, electro-slag welding, and laser beam welding. **05**

SECTION – II

Q.3 Attempt four from following questions.

a)	Define the weld thermal cycle and explain its significance in welding. What is the heat-affected zone (HAZ), and how does it influence the mechanical properties of a weld?	**05**
b)	Discuss the solidification process of weld metal and the factors that affect it. Explain the fundamentals of weldability and describe how the Fe-C phase diagram and continuous cooling transformation (CCT) curves are used to assess the weldability of carbon and alloy steels.	**05**
c)	Explain the Schaeffer diagram and its application in determining the weldability of stainless steels. Describe the metallurgical transformations that occur in the weld and heat-affected zone of steels during the welding process.	**05**
d)	Discuss the common weldability issues in aluminium alloys, such as porosity, HAZ softening, and PMZ problems. Explain the factors that contribute to solidification and cracking in aluminium welds and suggest methods to control them.	**05**
e)	Define residual stresses in welded joints and explain their effect on joint performance. What methods can be used to control or reduce residual stresses in welded joints?	**05**
f)	Describe the types of cracks that can occur in welded joints, including solidification cracks, liquation cracks, and cold cracking. Discuss the factors contributing to each type of crack and propose techniques to prevent or minimize cracking during welding.	**05**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
Mechanical Engineering
Joining Technologies for Metals (197041615)

Day & Date: Tuesday, 27-05-2025 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Neat sketches must be drawn wherever necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions **10**

1) What is a common issue encountered when welding aluminum alloys that can affect weld quality?
a) HAZ hardening b) Porosity due to gas entrapment
c) Excessive spatter formation d) Formation of martensite

2) Which type of cracking in welded joints is associated with the rapid cooling of the weld metal?
a) Liquation cracking b) Solidification cracking
c) Cold cracking d) HAZ softening

3) What is the fundamental mechanism involved in most metal joining processes?
a) Cutting and shearing b) Heat and pressure
c) Cooling and condensation d) Abrasion and polishing

4) Which of the following best describes the classification of joining processes?
a) Temporary and permanent b) Fast and slow
c) Welded and non-welded d) Mechanical and Electrical

5) Why is weld metal protection important during the welding process?
a) To reduce the welding speed
b) To prevent contamination and maintain weld quality
c) To increase the melting point of the metal
d) To ensure uniform cooling

6) What is the primary mechanism of arc heat generation in fusion welding?
- a) Friction between the electrode and base metal
- b) Chemical reaction of shielding gases
- c) Electrical discharge creating an arc between the electrode and base metal
- d) Pressure applied by the welding torch

7) Which of the following welding processes uses a non-consumable electrode and shielding gas?
- a) Shielded Metal Arc Welding (SMAW)
- b) Submerged Arc Welding (SAW)
- c) Gas Tungsten Arc Welding (GTAW)
- d) Electro-slag Welding

8) In Shielded Metal Arc Welding (SMAW), what is the effect of using direct current electrode positive (DCEP)?
- a) Decreases penetration and increases melting rate
- b) Increases penetration and decreases melting rate
- c) Increases penetration and electrode melting rate
- d) Decreases penetration and electrode melting rate

9) What is the Heat Affected Zone (HAZ) in welding?
- a) The area where the base metal is entirely melted
- b) The zone adjacent to the weld metal where the microstructure and properties are altered due to heat
- c) The area of the base metal unaffected by the welding process
- d) The region where the shielding gas protects the weld pool

10) What is the purpose of the Schaeffer diagram in the weldability of stainless steels?
- a) To predict the thermal cycle during welding
- b) To determine the corrosion resistance of stainless steels
- c) To predict the phase transformations and microstructure in the weld and heat- affected zone
- d) To calculate the cooling rate during welding9.Which of the following is not the welding position?

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
Mechanical Engineering
Joining Technologies for Metals (197041615)

Day & Date: Tuesday, 27-05-2025 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Neat sketches must be drawn wherever necessary.

SECTION – I

Q.2 Attempt four from following questions.

a) Explain the basic mechanisms involved in metal joining. State role do heat and pressure play in joining processes? **05**

b) Provide a classification of metal joining processes with examples for each category. Discuss the advantages of using heat and power density concepts in welding. **05**

c) What are the different approaches to protecting weld metal during the welding process? Analyze the effects of gases on weld properties and suggest ways to mitigate negative impacts. **05**

d) Explain the principles of oxy-fuel gas welding and describe its key applications. Define different types of welds, joint types, and welding positions used in fusion welding. **05**

e) Discuss how arc heat is generated, maintained, and its role in welding processes. Describe the factors affecting electrode melting rate and the impact of electrode polarity on SMAW. **05**

f) Compare Gas Tungsten Arc Welding (GTAW) and Gas Metal Arc Welding (GMAW), highlighting their key differences. Briefly describe the working principles of submerged arc welding, electro-slag welding, and laser beam welding. **05**

SECTION – II

Q.3 Attempt four from following questions.

a)	Define the weld thermal cycle and explain its significance in welding. What is the heat-affected zone (HAZ), and how does it influence the mechanical properties of a weld?	**05**
b)	Discuss the solidification process of weld metal and the factors that affect it. Explain the fundamentals of weldability and describe how the Fe-C phase diagram and continuous cooling transformation (CCT) curves are used to assess the weldability of carbon and alloy steels.	**05**
c)	Explain the Schaeffer diagram and its application in determining the weldability of stainless steels. Describe the metallurgical transformations that occur in the weld and heat-affected zone of steels during the welding process.	**05**
d)	Discuss the common weldability issues in aluminium alloys, such as porosity, HAZ softening, and PMZ problems. Explain the factors that contribute to solidification and cracking in aluminium welds and suggest methods to control them.	**05**
e)	Define residual stresses in welded joints and explain their effect on joint performance. What methods can be used to control or reduce residual stresses in welded joints?	**05**
f)	Describe the types of cracks that can occur in welded joints, including solidification cracks, liquation cracks, and cold cracking. Discuss the factors contributing to each type of crack and propose techniques to prevent or minimize cracking during welding.	**05**

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
Mechanical Engineering
Joining Technologies for Metals (197041615)

Day & Date: Tuesday, 27-05-2025 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Neat sketches must be drawn wherever necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions **10**

1) Why is weld metal protection important during the welding process?
a) To reduce the welding speed
b) To prevent contamination and maintain weld quality
c) To increase the melting point of the metal
d) To ensure uniform cooling

2) What is the primary mechanism of arc heat generation in fusion welding?
a) Friction between the electrode and base metal
b) Chemical reaction of shielding gases
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3) Which of the following welding processes uses a non-consumable electrode and shielding gas?
a) Shielded Metal Arc Welding (SMAW)
b) Submerged Arc Welding (SAW)
c) Gas Tungsten Arc Welding (GTAW)
d) Electro-slag Welding

4) In Shielded Metal Arc Welding (SMAW), what is the effect of using direct current electrode positive (DCEP)?
a) Decreases penetration and increases melting rate
b) Increases penetration and decreases melting rate
c) Increases penetration and electrode melting rate
d) Decreases penetration and electrode melting rate

5) What is the Heat Affected Zone (HAZ) in welding?
a) The area where the base metal is entirely melted
b) The zone adjacent to the weld metal where the microstructure and properties are altered due to heat
c) The area of the base metal unaffected by the welding process
d) The region where the shielding gas protects the weld pool

6) What is the purpose of the Schaeffer diagram in the weldability of stainless steels?
a) To predict the thermal cycle during welding
b) To determine the corrosion resistance of stainless steels
c) To predict the phase transformations and microstructure in the weld and heat- affected zone
d) To calculate the cooling rate during welding9.Which of the following is not the welding position?

7) What is a common issue encountered when welding aluminum alloys that can affect weld quality?
a) HAZ hardening
b) Porosity due to gas entrapment
c) Excessive spatter formation
d) Formation of martensite

8) Which type of cracking in welded joints is associated with the rapid cooling of the weld metal?
a) Liquation cracking
b) Solidification cracking
c) Cold cracking
d) HAZ softening

9) What is the fundamental mechanism involved in most metal joining processes?
a) Cutting and shearing
b) Heat and pressure
c) Cooling and condensation
d) Abrasion and polishing

10) Which of the following best describes the classification of joining processes?
a) Temporary and permanent
b) Fast and slow
c) Welded and non-welded
d) Mechanical and Electrical

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
Mechanical Engineering
Joining Technologies for Metals (197041615)

Day & Date: Tuesday, 27-05-2025 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Neat sketches must be drawn wherever necessary.

SECTION – I

Q.2 Attempt four from following questions.

a) Explain the basic mechanisms involved in metal joining. State role do heat and pressure play in joining processes? **05**

b) Provide a classification of metal joining processes with examples for each category. Discuss the advantages of using heat and power density concepts in welding. **05**

c) What are the different approaches to protecting weld metal during the welding process? Analyze the effects of gases on weld properties and suggest ways to mitigate negative impacts. **05**

d) Explain the principles of oxy-fuel gas welding and describe its key applications. Define different types of welds, joint types, and welding positions used in fusion welding. **05**

e) Discuss how arc heat is generated, maintained, and its role in welding processes. Describe the factors affecting electrode melting rate and the impact of electrode polarity on SMAW. **05**

f) Compare Gas Tungsten Arc Welding (GTAW) and Gas Metal Arc Welding (GMAW), highlighting their key differences. Briefly describe the working principles of submerged arc welding, electro-slag welding, and laser beam welding. **05**

SECTION – II

Q.3 Attempt four from following questions.

a)	Define the weld thermal cycle and explain its significance in welding. What is the heat-affected zone (HAZ), and how does it influence the mechanical properties of a weld?	**05**
b)	Discuss the solidification process of weld metal and the factors that affect it. Explain the fundamentals of weldability and describe how the Fe-C phase diagram and continuous cooling transformation (CCT) curves are used to assess the weldability of carbon and alloy steels.	**05**
c)	Explain the Schaeffer diagram and its application in determining the weldability of stainless steels. Describe the metallurgical transformations that occur in the weld and heat-affected zone of steels during the welding process.	**05**
d)	Discuss the common weldability issues in aluminium alloys, such as porosity, HAZ softening, and PMZ problems. Explain the factors that contribute to solidification and cracking in aluminium welds and suggest methods to control them.	**05**
e)	Define residual stresses in welded joints and explain their effect on joint performance. What methods can be used to control or reduce residual stresses in welded joints?	**05**
f)	Describe the types of cracks that can occur in welded joints, including solidification cracks, liquation cracks, and cold cracking. Discuss the factors contributing to each type of crack and propose techniques to prevent or minimize cracking during welding.	**05**

SLR-BD-384

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
Mechanical Engineering
Steam Power Engineering (197041616)

Day & Date: Tuesday, 27-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions **10**

1) The ideal Carnot cycle is more efficient than the Rankine cycle because ____
a) It operates at a higher pressure
b) It has reversible processes
c) It uses a perfect fluid
d) It operates at a lower temperature

2) Superheating the steam in a Rankine cycle results in: _____.
a) Reduced thermal efficiency
b) Increased work output from the turbine
c) Decreased turbine work
d) Reduced condenser temperature

3) Cogeneration systems are particularly useful in industries where _____.
a) Only electricity is required
b) Heat is needed for industrial processes
c) The energy demand fluctuates drastically
d) The fuel cost is very high

4) The critical pressure is the pressure at which _____
a) Water changes from liquid to gas at a constant temperature
b) Steam and water become indistinguishable
c) The boiling point of water is zero degrees Celsius
d) Heat transfer efficiency is maximized

5) Supercritical steam conditions are typically achieved at: _____
a) Pressures above 22 MPa and temperatures above 374°C
b) Pressures below 10 MPa and temperatures below 300°C'
c) Pressures around 15 MPa and temperatures around 200°C
d) Pressures below 1 MPa and temperatures below 100°C

6) Which of the following is a primary advantage of Fluidized Bed Combustion (FBC) boilers?
   a) High fuel efficiency at low temperatures
   b) Low capital cost and maintenance
   c) Capability to burn a wide range of fuels, including low-grade coal and biomass
   d) Reduced production of pollutants such as nitrogen oxides (NOx)

7) In a reaction steam turbine, the steam expands: _____
   a) Only in the nozzles
   b) Only in the stationary blades
   c) Only in the moving blades
   d) Partly in the nozzles and partly in the moving blades

8) The velocity-compounding of steam in a steam turbine is achieved by _____
   a) Dividing the steam flow into multiple stages and expanding it at each stage
   b) Using multiple sets of blades that change the direction and velocity of steam
   c) Increasing the steam flow rate through the turbine
   d) Decreasing the number of turbine blades to increase the velocity of steam

9) In a counterflow cooling tower, the air flows _____.
   a) Horizontally across the tower while water flows vertically
   b) Vertically downward while water flows vertically upward
   c) Vertically upward while water flows vertically downward
   d) In a circular motion around the tower

10) Scaling in cooling towers is caused by _____.
   a) The high pressure of water inside the tower
   b) The deposition of minerals from the water as it evaporates
   c) The flow of air in the tower
   d) The cooling of water below the dew point

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
Mechanical Engineering
Steam Power Engineering (197041616)

Day & Date: Tuesday, 27-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from question no.2 & 3.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 solve any two questions from following

a) Discuss the Rankine Cycle as the ideal vapor power cycle. Explain its working principle, components, and Also, discuss the advantages and limitations of the Rankine cycle and how its efficiency can be improved **10**

b) Discuss the steam cycle used in a nuclear power plant. Explain the working principle, key components, and safety measures associated with the steam cycle in nuclear reactors. Additionally, highlight the advantages and limitations of using the steam cycle in nuclear power generation. **10**

c) Compare and contrast subcritical and supercritical boilers in terms of their design, operation, efficiency, and applications in power plants. Discuss the advantages and disadvantages of each type **10**

d) Explain the boiler mountings and accessories in detail. Discuss their functions, types, and importance in ensuring safe and efficient boiler operation. **10**

SECTION – II

Q.3 solve any two questions from following

a) Explain the impulse and reaction turbines with respect to their working principles, design, components, and applications. Compare their advantages and disadvantages **10**

b) Explain the concepts of velocity compounding and pressure compounding in turbines. Discuss their principles, advantages, and applications in improving the performance and efficiency of steam turbines. **10**

c) Explain the principle, design, types, and applications of cooling towers. Discuss their working, advantages, disadvantages, and their role in improving the efficiency of thermal power plants. **10**

d) Explain the concepts of hygrometry and psychrometry. Discuss the principles, terms, and various parameters related to these concepts. Illustrate how a psychrometric chart is used to analyze air properties in various processes. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
Mechanical Engineering
Steam Power Engineering (197041616)

Day & Date: Tuesday, 27-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions **10**

1) Which of the following is a primary advantage of Fluidized Bed Combustion (FBC) boilers?
a) High fuel efficiency at low temperatures
b) Low capital cost and maintenance
c) Capability to burn a wide range of fuels, including low-grade coal and biomass
d) Reduced production of pollutants such as nitrogen oxides (NOx)

2) In a reaction steam turbine, the steam expands: _____
a) Only in the nozzles
b) Only in the stationary blades
c) Only in the moving blades
d) Partly in the nozzles and partly in the moving blades

3) The velocity-compounding of steam in a steam turbine is achieved by _____
a) Dividing the steam flow into multiple stages and expanding it at each stage
b) Using multiple sets of blades that change the direction and velocity of steam
c) Increasing the steam flow rate through the turbine
d) Decreasing the number of turbine blades to increase the velocity of steam

4) In a counterflow cooling tower, the air flows _____.
a) Horizontally across the tower while water flows vertically
b) Vertically downward while water flows vertically upward
c) Vertically upward while water flows vertically downward
d) In a circular motion around the tower

5) Scaling in cooling towers is caused by _____.
a) The high pressure of water inside the tower
b) The deposition of minerals from the water as it evaporates
c) The flow of air in the tower
d) The cooling of water below the dew point

6) The ideal Carnot cycle is more efficient than the Rankine cycle because ____
a) It operates at a higher pressure
b) It has reversible processes
c) It uses a perfect fluid
d) It operates at a lower temperature

7) Superheating the steam in a Rankine cycle results in: _____.
a) Reduced thermal efficiency
b) Increased work output from the turbine
c) Decreased turbine work
d) Reduced condenser temperature

8) Cogeneration systems are particularly useful in industries where _____.
a) Only electricity is required
b) Heat is needed for industrial processes
c) The energy demand fluctuates drastically
d) The fuel cost is very high

9) The critical pressure is the pressure at which _____
a) Water changes from liquid to gas at a constant temperature
b) Steam and water become indistinguishable
c) The boiling point of water is zero degrees Celsius
d) Heat transfer efficiency is maximized

10) Supercritical steam conditions are typically achieved at: _____
a) Pressures above 22 MPa and temperatures above 374°C
b) Pressures below 10 MPa and temperatures below 300°C'
c) Pressures around 15 MPa and temperatures around 200°C
d) Pressures below 1 MPa and temperatures below 100°C

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
Mechanical Engineering
Steam Power Engineering (197041616)

Day & Date: Tuesday, 27-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from question no.2 & 3.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 solve any two questions from following

a) Discuss the Rankine Cycle as the ideal vapor power cycle. Explain its working principle, components, and Also, discuss the advantages and limitations of the Rankine cycle and how its efficiency can be improved **10**

b) Discuss the steam cycle used in a nuclear power plant. Explain the working principle, key components, and safety measures associated with the steam cycle in nuclear reactors. Additionally, highlight the advantages and limitations of using the steam cycle in nuclear power generation. **10**

c) Compare and contrast subcritical and supercritical boilers in terms of their design, operation, efficiency, and applications in power plants. Discuss the advantages and disadvantages of each type **10**

d) Explain the boiler mountings and accessories in detail. Discuss their functions, types, and importance in ensuring safe and efficient boiler operation. **10**

SECTION – II

Q.3 solve any two questions from following

a) Explain the impulse and reaction turbines with respect to their working principles, design, components, and applications. Compare their advantages and disadvantages **10**

b) Explain the concepts of velocity compounding and pressure compounding in turbines. Discuss their principles, advantages, and applications in improving the performance and efficiency of steam turbines. **10**

c) Explain the principle, design, types, and applications of cooling towers. Discuss their working, advantages, disadvantages, and their role in improving the efficiency of thermal power plants. **10**

d) Explain the concepts of hygrometry and psychrometry. Discuss the principles, terms, and various parameters related to these concepts. Illustrate how a psychrometric chart is used to analyze air properties in various processes. **10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
Mechanical Engineering
Steam Power Engineering (197041616)

Day & Date: Tuesday, 27-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions **10**

1) In a counterflow cooling tower, the air flows _____.
a) Horizontally across the tower while water flows vertically
b) Vertically downward while water flows vertically upward
c) Vertically upward while water flows vertically downward
d) In a circular motion around the tower

2) Scaling in cooling towers is caused by _____.
a) The high pressure of water inside the tower
b) The deposition of minerals from the water as it evaporates
c) The flow of air in the tower
d) The cooling of water below the dew point

3) The ideal Carnot cycle is more efficient than the Rankine cycle because ____
a) It operates at a higher pressure
b) It has reversible processes
c) It uses a perfect fluid
d) It operates at a lower temperature

4) Superheating the steam in a Rankine cycle results in: _____.
a) Reduced thermal efficiency
b) Increased work output from the turbine
c) Decreased turbine work
d) Reduced condenser temperature

5) Cogeneration systems are particularly useful in industries where _____.
a) Only electricity is required
b) Heat is needed for industrial processes
c) The energy demand fluctuates drastically
d) The fuel cost is very high

6) The critical pressure is the pressure at which _____
   a) Water changes from liquid to gas at a constant temperature
   b) Steam and water become indistinguishable
   c) The boiling point of water is zero degrees Celsius
   d) Heat transfer efficiency is maximized

7) Supercritical steam conditions are typically achieved at: _____
   a) Pressures above 22 MPa and temperatures above 374°C
   b) Pressures below 10 MPa and temperatures below 300°C'
   c) Pressures around 15 MPa and temperatures around 200°C
   d) Pressures below 1 MPa and temperatures below 100°C

8) Which of the following is a primary advantage of Fluidized Bed Combustion (FBC) boilers?
   a) High fuel efficiency at low temperatures
   b) Low capital cost and maintenance
   c) Capability to burn a wide range of fuels, including low-grade coal and biomass
   d) Reduced production of pollutants such as nitrogen oxides (NOx)

9) In a reaction steam turbine, the steam expands: _____
   a) Only in the nozzles
   b) Only in the stationary blades
   c) Only in the moving blades
   d) Partly in the nozzles and partly in the moving blades

10) The velocity-compounding of steam in a steam turbine is achieved by _____
   a) Dividing the steam flow into multiple stages and expanding it at each stage
   b) Using multiple sets of blades that change the direction and velocity of steam
   c) Increasing the steam flow rate through the turbine
   d) Decreasing the number of turbine blades to increase the velocity of steam

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
Mechanical Engineering
Steam Power Engineering (197041616)

Day & Date: Tuesday, 27-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from question no.2 & 3.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 solve any two questions from following

a) Discuss the Rankine Cycle as the ideal vapor power cycle. Explain its working principle, components, and Also, discuss the advantages and limitations of the Rankine cycle and how its efficiency can be improved **10**

b) Discuss the steam cycle used in a nuclear power plant. Explain the working principle, key components, and safety measures associated with the steam cycle in nuclear reactors. Additionally, highlight the advantages and limitations of using the steam cycle in nuclear power generation. **10**

c) Compare and contrast subcritical and supercritical boilers in terms of their design, operation, efficiency, and applications in power plants. Discuss the advantages and disadvantages of each type **10**

d) Explain the boiler mountings and accessories in detail. Discuss their functions, types, and importance in ensuring safe and efficient boiler operation. **10**

SECTION – II

Q.3 solve any two questions from following

a) Explain the impulse and reaction turbines with respect to their working principles, design, components, and applications. Compare their advantages and disadvantages **10**

b) Explain the concepts of velocity compounding and pressure compounding in turbines. Discuss their principles, advantages, and applications in improving the performance and efficiency of steam turbines. **10**

c) Explain the principle, design, types, and applications of cooling towers. Discuss their working, advantages, disadvantages, and their role in improving the efficiency of thermal power plants. **10**

d) Explain the concepts of hygrometry and psychrometry. Discuss the principles, terms, and various parameters related to these concepts. Illustrate how a psychrometric chart is used to analyze air properties in various processes. **10**

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
Mechanical Engineering
Steam Power Engineering (197041616)

Day & Date: Tuesday, 27-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions **10**

1) Cogeneration systems are particularly useful in industries where _____.
a) Only electricity is required
b) Heat is needed for industrial processes
c) The energy demand fluctuates drastically
d) The fuel cost is very high

2) The critical pressure is the pressure at which _____
a) Water changes from liquid to gas at a constant temperature
b) Steam and water become indistinguishable
c) The boiling point of water is zero degrees Celsius
d) Heat transfer efficiency is maximized

3) Supercritical steam conditions are typically achieved at: _____
a) Pressures above 22 MPa and temperatures above 374°C
b) Pressures below 10 MPa and temperatures below 300°C'
c) Pressures around 15 MPa and temperatures around 200°C
d) Pressures below 1 MPa and temperatures below 100°C

4) Which of the following is a primary advantage of Fluidized Bed Combustion (FBC) boilers?
a) High fuel efficiency at low temperatures
b) Low capital cost and maintenance
c) Capability to burn a wide range of fuels, including low-grade coal and biomass
d) Reduced production of pollutants such as nitrogen oxides (NOx)

5) In a reaction steam turbine, the steam expands: _____
a) Only in the nozzles
b) Only in the stationary blades
c) Only in the moving blades
d) Partly in the nozzles and partly in the moving blades

6) The velocity-compounding of steam in a steam turbine is achieved by _____
a) Dividing the steam flow into multiple stages and expanding it at each stage
b) Using multiple sets of blades that change the direction and velocity of steam
c) Increasing the steam flow rate through the turbine
d) Decreasing the number of turbine blades to increase the velocity of steam

7) In a counterflow cooling tower, the air flows _____.
a) Horizontally across the tower while water flows vertically
b) Vertically downward while water flows vertically upward
c) Vertically upward while water flows vertically downward
d) In a circular motion around the tower

8) Scaling in cooling towers is caused by _____.
a) The high pressure of water inside the tower
b) The deposition of minerals from the water as it evaporates
c) The flow of air in the tower
d) The cooling of water below the dew point

9) The ideal Carnot cycle is more efficient than the Rankine cycle because ____
a) It operates at a higher pressure
b) It has reversible processes
c) It uses a perfect fluid
d) It operates at a lower temperature

10) Superheating the steam in a Rankine cycle results in: _____.
a) Reduced thermal efficiency
b) Increased work output from the turbine
c) Decreased turbine work
d) Reduced condenser temperature

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Seat No.		Set	S

T. Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
Mechanical Engineering
Steam Power Engineering (197041616)

Day & Date: Tuesday, 27-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from question no.2 & 3.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 solve any two questions from following

a) Discuss the Rankine Cycle as the ideal vapor power cycle. Explain its working principle, components, and Also, discuss the advantages and limitations of the Rankine cycle and how its efficiency can be improved **10**

b) Discuss the steam cycle used in a nuclear power plant. Explain the working principle, key components, and safety measures associated with the steam cycle in nuclear reactors. Additionally, highlight the advantages and limitations of using the steam cycle in nuclear power generation. **10**

c) Compare and contrast subcritical and supercritical boilers in terms of their design, operation, efficiency, and applications in power plants. Discuss the advantages and disadvantages of each type **10**

d) Explain the boiler mountings and accessories in detail. Discuss their functions, types, and importance in ensuring safe and efficient boiler operation. **10**

SECTION – II

Q.3 solve any two questions from following

a) Explain the impulse and reaction turbines with respect to their working principles, design, components, and applications. Compare their advantages and disadvantages **10**

b) Explain the concepts of velocity compounding and pressure compounding in turbines. Discuss their principles, advantages, and applications in improving the performance and efficiency of steam turbines. **10**

c) Explain the principle, design, types, and applications of cooling towers. Discuss their working, advantages, disadvantages, and their role in improving the efficiency of thermal power plants. **10**

d) Explain the concepts of hygrometry and psychrometry. Discuss the principles, terms, and various parameters related to these concepts. Illustrate how a psychrometric chart is used to analyze air properties in various processes. **10**

SLR-BD-385

Seat No.	

Set P

Fourth Y (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (BTN02701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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

1) Which of these refrigerants is highly flammable and toxic?
a) R-12 b) Sulphur dioxide
c) Carbon dioxide d) Ammonia

2) On which of the following cycle the air conditioning systems are based in transport aviation?
a) Reversed Joule's cycle b) Otto cycle
c) Reversed Carnot cycle d) Reversed Brayton cycle

3) Why is the evaporator used?
a) To absorb heat
b) To decrease the refrigeration effect
c) To reject heat
d) To improve C.O.P.

4) In which of the following capillary tube is used as an expansion device?
a) Room air conditioners b) Water coolers
c) Domestic refrigerators d) All of the mentioned

5) How is the cascade system achieved?
a) VCR system in a parallel combination
b) VCR system in a series combination
c) VAR system in a series combination
d) VAR system in a parallel combination

6) Which of these increases during the process of humidification?
a) Specific humidity b) Dry bulb temperature
c) Relative humidity d) Wet-bulb temperature

7) On the psychrometric chart, the marking of the alignment circle will be at _____.

a) 50% RH and 20°C DBT
b) 50% RH and 26°C DBT
c) 60% RH and 20°C DBT
d) 60% RH and 26°C DBT

8) When moisture is added to air at constant dry bulb temperature, the process is known as _____.

a) Sensible cooling
b) Humidification
c) Dehumidification
d) Chilling

9) Which of the following process is used in summer air conditioning?

a) Heating and Humidification
b) Cooling and Dehumidification
c) Humidification
d) Dehumidification

10) What is the value of optimum effective temperature in winter?

a) 17
b) 18
c) 19
d) 20

11) A person with heavy clothing needs _____ optimum temperature as compared to a person with light clothing.

a) Higher
b) Lesser
c) Zero
d) Same

12) Which of the following type of refrigerants take a direct part in the refrigeration system?

a) Primary
b) Secondary
c) Tertiary
d) Mixed

13) Cryogenics deals with which type of product?

a) Low-temperature
b) Low-pressure
c) High-temperature
d) High-pressure

14) What does a vapour absorption refrigerator use in the form of a refrigerant?

a) Aqua-ammonia
b) Freon
c) Ammonia
d) Water

Seat No.	

Set **P**

Fourth Y (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (BTN02701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicates full marks.
3) Assume suitable data if required.
4) Use of refrigerant property tables, psychrometric charts, and scientific non- programmable calculators are allowed.

Section – I

Q.2 **a)** Explain the properties of refrigerants. **05**
b) Explain the effect on Ozone depletion and Global warming. **05**
c) Explain Reversed Carnot cycle with neat sketch. **04**

Q.3 **a)** What is the effect of suction and discharge pressure on performance of VCC. **05**
b) Explain working of simple VCRS with P-h chart. **05**
c) What are the advantages of cryogenics, and explain a simple Linde system. **04**

Q.4 **a)** A vapour compression refrigerator uses methyl chloride R40 & operates between temperature limits of -10°C & 45°C. At the entry to the compressor, the refrigerant is dry saturated & after compression, it acquires a temperature of 60°C. Find COP of refrigerator. **08**
Data:

Saturation temp. (°C)	Sp. Enthalpy (kJ/kg)		Sp. Entropy (kJ/kg k)	
	Liquid	Vapour	Liquid	Vapour
-10	45.4	460.7	0.183	1.637
45	133.0	483.6	0.485	1.587

b) What are the limitations of VCRS and explain the practical VARS. **06**

Section – II

Q.5 **a)** Define the following terms: **05**

i) Saturated air
ii) Relative humidity
iii) DBT
iv) WBT
v) DPT

b) The readings from a sling psychrometer are as follows: **05**
Dry bulb temperature = 30°C, Wet bulb temperature = 20°C, Barometer reading = 740 mm of Hg. Using steam tables, determine:

i) Dew point temperature
ii) Relative humidity and
iii) Specific humidity

c) Explain the factors affecting human comfort. **04**

Q.6 **a)** Explain the comfort chart in detail. **05**

b) Explain the factors forming load on refrigeration & air conditioning systems. **05**

c) Explain air washer with neat sketch. **04**

Q.7 **a)** A hall is to be maintained at 24^0C DBT and 60 % RH under the following conditions: **08**
Outdoor conditions = 38°C DBT and 28°C WBT
Sensible heat load in room = 46.4 KW
Latent heat load in room = 11.6 KW
Total infiltration air = 1200 m^3 /h
Apparatus dew point temperature = 10°C
Quantity of recirculated air from the hall = 60%
If the quantity of recirculated air is mixed with the conditioned air after the cooling coil, find the following:

i) Conditions of air leaving the conditioner coil and before mixing with the recirculated air;
ii) The condition of air before entering the hall.
iii) The mass of air entering the cooler.

b) Classify duct design methods. Explain any one in detail. **06**

Seat No.	

Set **Q**

Fourth Y (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (BTN02701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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

1) When moisture is added to air at constant dry bulb temperature, the process is known as _____.
a) Sensible cooling b) Humidification
c) Dehumidification d) Chilling

2) Which of the following process is used in summer air conditioning?
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c) 60% RH and 20°C DBT
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Seat No.	

Set **Q**

Fourth Y (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (BTN02701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicates full marks.
3) Assume suitable data if required.
4) Use of refrigerant property tables, psychrometric charts, and scientific non- programmable calculators are allowed.

Section – I

Q.2 **a)** Explain the properties of refrigerants. **05**
b) Explain the effect on Ozone depletion and Global warming. **05**
c) Explain Reversed Carnot cycle with neat sketch. **04**

Q.3 **a)** What is the effect of suction and discharge pressure on performance of VCC. **05**
b) Explain working of simple VCRS with P-h chart. **05**
c) What are the advantages of cryogenics, and explain a simple Linde system. **04**

Q.4 **a)** A vapour compression refrigerator uses methyl chloride R40 & operates between temperature limits of -10°C & 45°C. At the entry to the compressor, the refrigerant is dry saturated & after compression, it acquires a temperature of 60°C. Find COP of refrigerator. **08**
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	Liquid	Vapour	Liquid	Vapour
-10	45.4	460.7	0.183	1.637
45	133.0	483.6	0.485	1.587

b) What are the limitations of VCRS and explain the practical VARS. **06**

Section – II

Q.5 **a)** Define the following terms: **05**
i) Saturated air
ii) Relative humidity
iii) DBT
iv) WBT
v) DPT

b) The readings from a sling psychrometer are as follows: **05**
Dry bulb temperature = 30°C, Wet bulb temperature = 20°C, Barometer reading = 740 mm of Hg. Using steam tables, determine:
i) Dew point temperature
ii) Relative humidity and
iii) Specific humidity

c) Explain the factors affecting human comfort. **04**

Q.6 **a)** Explain the comfort chart in detail. **05**

b) Explain the factors forming load on refrigeration & air conditioning systems. **05**

c) Explain air washer with neat sketch. **04**

Q.7 **a)** A hall is to be maintained at 24^0C DBT and 60 % RH under the following conditions: **08**
Outdoor conditions = 38°C DBT and 28°C WBT
Sensible heat load in room = 46.4 KW
Latent heat load in room = 11.6 KW
Total infiltration air = 1200 m^3 /h
Apparatus dew point temperature = 10°C
Quantity of recirculated air from the hall = 60%
If the quantity of recirculated air is mixed with the conditioned air after the cooling coil, find the following:
i) Conditions of air leaving the conditioner coil and before mixing with the recirculated air;
ii) The condition of air before entering the hall.
iii) The mass of air entering the cooler.

b) Classify duct design methods. Explain any one in detail. **06**

Seat No.	

Set R

Fourth Y (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (BTN02701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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

1) A person with heavy clothing needs _____ optimum temperature as compared to a person with light clothing.
a) Higher b) Lesser
c) Zero d) Same

2) Which of the following type of refrigerants take a direct part in the refrigeration system?
a) Primary b) Secondary
c) Tertiary d) Mixed

3) Cryogenics deals with which type of product?
a) Low-temperature b) Low-pressure
c) High-temperature d) High-pressure

4) What does a vapour absorption refrigerator use in the form of a refrigerant?
a) Aqua-ammonia b) Freon
c) Ammonia d) Water

5) Which of these refrigerants is highly flammable and toxic?
a) R-12 b) Sulphur dioxide
c) Carbon dioxide d) Ammonia

6) On which of the following cycle the air conditioning systems are based in transport aviation?
a) Reversed Joule's cycle b) Otto cycle
c) Reversed Carnot cycle d) Reversed Brayton cycle

7) Why is the evaporator used?
a) To absorb heat
b) To decrease the refrigeration effect
c) To reject heat
d) To improve C.O.P.

8) In which of the following capillary tube is used as an expansion device?
a) Room air conditioners
b) Water coolers
c) Domestic refrigerators
d) All of the mentioned

9) How is the cascade system achieved?
a) VCR system in a parallel combination
b) VCR system in a series combination
c) VAR system in a series combination
d) VAR system in a parallel combination

10) Which of these increases during the process of humidification?
a) Specific humidity
b) Dry bulb temperature
c) Relative humidity
d) Wet-bulb temperature

11) On the psychrometric chart, the marking of the alignment circle will be at _____.
a) 50% RH and 20°C DBT
b) 50% RH and 26°C DBT
c) 60% RH and 20°C DBT
d) 60% RH and 26°C DBT

12) When moisture is added to air at constant dry bulb temperature, the process is known as _____.
a) Sensible cooling
b) Humidification
c) Dehumidification
d) Chilling

13) Which of the following process is used in summer air conditioning?
a) Heating and Humidification
b) Cooling and Dehumidification
c) Humidification
d) Dehumidification

14) What is the value of optimum effective temperature in winter?
a) 17
b) 18
c) 19
d) 20

Seat No.	

Set **R**

Fourth Y (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (BTN02701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicates full marks.
3) Assume suitable data if required.
4) Use of refrigerant property tables, psychrometric charts, and scientific non- programmable calculators are allowed.

Section – I

Q.2 **a)** Explain the properties of refrigerants. **05**
b) Explain the effect on Ozone depletion and Global warming. **05**
c) Explain Reversed Carnot cycle with neat sketch. **04**

Q.3 **a)** What is the effect of suction and discharge pressure on performance of VCC. **05**
b) Explain working of simple VCRS with P-h chart. **05**
c) What are the advantages of cryogenics, and explain a simple Linde system. **04**

Q.4 **a)** A vapour compression refrigerator uses methyl chloride R40 & operates between temperature limits of -10°C & 45°C. At the entry to the compressor, the refrigerant is dry saturated & after compression, it acquires a temperature of 60°C. Find COP of refrigerator. **08**
Data:

Saturation temp. (°C)	Sp. Enthalpy (kJ/kg)		Sp. Entropy (kJ/kg k)	
	Liquid	Vapour	Liquid	Vapour
-10	45.4	460.7	0.183	1.637
45	133.0	483.6	0.485	1.587

b) What are the limitations of VCRS and explain the practical VARS. **06**

Section – II

Q.5 **a)** Define the following terms: **05**
- i) Saturated air
- ii) Relative humidity
- iii) DBT
- iv) WBT
- v) DPT

b) The readings from a sling psychrometer are as follows: **05**
Dry bulb temperature = 30°C, Wet bulb temperature = 20°C, Barometer reading = 740 mm of Hg. Using steam tables, determine:
- i) Dew point temperature
- ii) Relative humidity and
- iii) Specific humidity

c) Explain the factors affecting human comfort. **04**

Q.6 **a)** Explain the comfort chart in detail. **05**

b) Explain the factors forming load on refrigeration & air conditioning systems. **05**

c) Explain air washer with neat sketch. **04**

Q.7 **a)** A hall is to be maintained at 24^0C DBT and 60 % RH under the following conditions: **08**
Outdoor conditions = 38°C DBT and 28°C WBT
Sensible heat load in room = 46.4 KW
Latent heat load in room = 11.6 KW
Total infiltration air = 1200 m^3 /h
Apparatus dew point temperature = 10°C
Quantity of recirculated air from the hall = 60%
If the quantity of recirculated air is mixed with the conditioned air after the cooling coil, find the following:
- i) Conditions of air leaving the conditioner coil and before mixing with the recirculated air;
- ii) The condition of air before entering the hall.
- iii) The mass of air entering the cooler.

b) Classify duct design methods. Explain any one in detail. **06**

Seat No.	

Set **S**

Fourth Y (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (BTN02701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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

1) Which of these increases during the process of humidification?
a) Specific humidity b) Dry bulb temperature
c) Relative humidity d) Wet-bulb temperature

2) On the psychrometric chart, the marking of the alignment circle will be at _____.
a) 50% RH and 20°C DBT b) 50% RH and 26°C DBT
c) 60% RH and 20°C DBT d) 60% RH and 26°C DBT

3) When moisture is added to air at constant dry bulb temperature, the process is known as _____.
a) Sensible cooling b) Humidification
c) Dehumidification d) Chilling

4) Which of the following process is used in summer air conditioning?
a) Heating and Humidification
b) Cooling and Dehumidification
c) Humidification
d) Dehumidification

5) What is the value of optimum effective temperature in winter?
a) 17 b) 18
c) 19 d) 20

6) A person with heavy clothing needs _____ optimum temperature as compared to a person with light clothing.
a) Higher b) Lesser
c) Zero d) Same

7) Which of the following type of refrigerants take a direct part in the refrigeration system?
a) Primary
b) Secondary
c) Tertiary
d) Mixed

8) Cryogenics deals with which type of product?
a) Low-temperature
b) Low-pressure
c) High-temperature
d) High-pressure

9) What does a vapour absorption refrigerator use in the form of a refrigerant?
a) Aqua-ammonia
b) Freon
c) Ammonia
d) Water

10) Which of these refrigerants is highly flammable and toxic?
a) R-12
b) Sulphur dioxide
c) Carbon dioxide
d) Ammonia

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a) Reversed Joule's cycle
b) Otto cycle
c) Reversed Carnot cycle
d) Reversed Brayton cycle

12) Why is the evaporator used?
a) To absorb heat
b) To decrease the refrigeration effect
c) To reject heat
d) To improve C.O.P.

13) In which of the following capillary tube is used as an expansion device?
a) Room air conditioners
b) Water coolers
c) Domestic refrigerators
d) All of the mentioned

14) How is the cascade system achieved?
a) VCR system in a parallel combination
b) VCR system in a series combination
c) VAR system in a series combination
d) VAR system in a parallel combination

SLR-BD-385

Seat No.		Set	S

Fourth Y (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (BTN02701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicates full marks.
3) Assume suitable data if required.
4) Use of refrigerant property tables, psychrometric charts, and scientific non- programmable calculators are allowed.

Section – I

Q.2 **a)** Explain the properties of refrigerants. **05**
b) Explain the effect on Ozone depletion and Global warming. **05**
c) Explain Reversed Carnot cycle with neat sketch. **04**

Q.3 **a)** What is the effect of suction and discharge pressure on performance of VCC. **05**
b) Explain working of simple VCRS with P-h chart. **05**
c) What are the advantages of cryogenics, and explain a simple Linde system. **04**

Q.4 **a)** A vapour compression refrigerator uses methyl chloride R40 & operates between temperature limits of -10°C & 45°C. At the entry to the compressor, the refrigerant is dry saturated & after compression, it acquires a temperature of 60°C. Find COP of refrigerator. **08**
Data:

Saturation temp. (°C)	Sp. Enthalpy (kJ/kg)		Sp. Entropy (kJ/kg k)	
	Liquid	Vapour	Liquid	Vapour
-10	45.4	460.7	0.183	1.637
45	133.0	483.6	0.485	1.587

b) What are the limitations of VCRS and explain the practical VARS. **06**

Section – II

Q.5 **a)** Define the following terms: **05**
- i) Saturated air
- ii) Relative humidity
- iii) DBT
- iv) WBT
- v) DPT

b) The readings from a sling psychrometer are as follows: **05**
Dry bulb temperature = 30°C, Wet bulb temperature = 20°C, Barometer reading = 740 mm of Hg. Using steam tables, determine:
- i) Dew point temperature
- ii) Relative humidity and
- iii) Specific humidity

c) Explain the factors affecting human comfort. **04**

Q.6 **a)** Explain the comfort chart in detail. **05**

b) Explain the factors forming load on refrigeration & air conditioning systems. **05**

c) Explain air washer with neat sketch. **04**

Q.7 **a)** A hall is to be maintained at 24^0C DBT and 60 % RH under the following conditions: **08**
Outdoor conditions = 38°C DBT and 28°C WBT
Sensible heat load in room = 46.4 KW
Latent heat load in room = 11.6 KW
Total infiltration air = 1200 m^3 /h
Apparatus dew point temperature = 10°C
Quantity of recirculated air from the hall = 60%
If the quantity of recirculated air is mixed with the conditioned air after the cooling coil, find the following:
- i) Conditions of air leaving the conditioner coil and before mixing with the recirculated air;
- ii) The condition of air before entering the hall.
- iii) The mass of air entering the cooler.

b) Classify duct design methods. Explain any one in detail. **06**

SLR-BD-386

Seat No.		Set	P

Fourth. Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Automobile Engineering (BTN02702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).
5) Use of a non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The loads supported by an automobile frame are _____.
a) Weight of the body, passengers and cargo loads
b) Torque from engine and transmission
c) Sudden impacts from collisions
d) All of the mentioned

2) The basic purpose of a four wheel drive (4WD) system is that it _____.
a) Delivers improved cornering on dry road surfaces
b) Eliminates the need of snow tyres, tyre chains, etc
c) Ensures effective transmission of engine torque to all four wheels, even on slippery road surfaces
d) Ensures that effective braking can be performed, even on slippery surfaces

3) Transfer case is located next to the gearbox in _____.
a) Four wheel drive b) Rear wheel drive
c) Front wheel drive d) All of the above

4) The force available at the contact between road and driving wheel is called _____.
a) Brake power b) Friction power
c) Engine torque d) Tractive effort

5) If 'V' is vehicle speed (in meters/min) and 'R' is radius of driving wheel (in meters) then the rpm of the driving wheel is given by _____.
a) $\mathrm{rpm} = \mathrm{V}/2\pi\mathrm{R}$ b) $\mathrm{rpm} = 2\pi\mathrm{V}/\mathrm{R}$
c) $\mathrm{rpm} = \pi\mathrm{R}/\mathrm{V}$ d) $\mathrm{rpm} = \pi\mathrm{V}/\mathrm{R}$

6) The force that opposes the motion of a vehicle is _____.
a) Rolling resistance b) Gradient resistance
c) Wind or air resistance d) All of the above

7) The component of the torque converter that allows multiplication of torque is the _____.
a) Turbine b) Impeller
c) Pump d) Stator

8) The purpose of transmission in an automobile is _____.
a) to vary the speed of automobile
b) to vary the torque at the road wheel
c) to vary the power of automobile
d) none of above

9) Which of the following factors affect the wheel alignment?
a) Factors pertaining to wheel
b) Steering geometry
c) Steering linkages
d) All of the above

10) The included angle is the sum of the _____.
a) Camber and Caster b) Caster and S.A.I.
c) Camber and S.A.I. d) Camber and Toe-in

11) The function of master cylinder is _____.
a) to increase pressure unequally in all cylinders
b) to increase pressure equally in all cylinders
c) to decrease pressure unequally in all cylinders
d) to decrease power equally in all cylinders

12) The _____ system of an automobile is one which separates the wheel/axle assembly from the body.
a) auxiliary system b) transmission system
c) suspension system d) None of these

13) The unsprung weight is weight of the _____.
a) weight of passenger carriage
b) weight of the wheel axle system
c) weight of leaf spring
d) none of these

14) Spring shackles are used to join _____.
a) Spring and Axle b) Chassis frame and spring
c) Chassis frame and axle d) All of the above

Seat No.	

Set **P**

Fourth. Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Automobile Engineering (BTN02702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).
4) Use of a non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain with a neat sketch of front engine front wheel drive. **06**

b) Define the following. **04**
1) Air Resistance
2) Rolling Resistance
3) Gradient Resistance
4) Traction and Tractive effort

c) Draw a neat sketch of a centrifugal type clutch. Explain its working. **04**

Q.3 **a)** For a typical motor car the road resistance is given by 23N per 1000N, the air resistance by expression $0.0827V^2$, transmission efficiency 88% in top speed, and the car weighs 19934N when fully loaded. Calculate. **10**
1) The brake power (kW) required for a top speed of 144 km/hr.
2) The acceleration in m/s^2 at 48 km/hr, assuming the torque at 48 km/hr in top gear is 25% more than at 144 km/hr.
3) The BP in KW required to drive the car up a gradient of 1 in 5 at 48 km/hr, transmission efficiency 80% in bottom gear. The resistance is in N and speed (V) is in km/hr. Take acceleration due to gravity (g) = 9.81 m/s^2.

b) Explain in brief Gradeability and draw bar pull. **04**

Q.4 **a)** Explain with a neat sketch working of a sliding mesh gear box. **06**

b) Write a short note on the final drive and its types. **04**

c) Write a short note on overdrive. **04**

Section – II

Q.5 **a)** Explain the power steering system with a neat sketch and state its advantages over manual steering. **06**

b) Explain in brief the following terms with figures: **04**

1) Caster angle
2) Camber angle

c) Explain with a schematic Anti-lock Braking System (ABS). **04**

Q.6 **a)** A motor car has a wheel base of 2.64 m, the height of its C.G above the ground is 0.61 m and it is 1.2 m in front of the rear axle. If the car is traveling at 40 km/hr on a level track. Determine the minimum stopping distance in which the car may be stopped, when **06**

1) Rear wheels are braked
2) Front wheels are braked
3) All wheels are braked

The coefficient of friction between tyre and road may be taken as 0.6.

b) Draw a neat sketch of a master cylinder and explain its construction and working. **04**

c) Write short notes on Disc Brake. **04**

Q.7 **a)** Explain in detail the functions and requirements of automobile suspension systems. **06**

b) Compare conventional and independent suspension systems. **04**

c) Write a short note on the MacPherson strut assembly. **04**

Seat No.		Set	Q

Fourth. Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Automobile Engineering (BTN02702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).
5) Use of a non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The purpose of transmission in an automobile is _____.
a) to vary the speed of automobile
b) to vary the torque at the road wheel
c) to vary the power of automobile
d) none of above

2) Which of the following factors affect the wheel alignment?
a) Factors pertaining to wheel
b) Steering geometry
c) Steering linkages
d) All of the above

3) The included angle is the sum of the _____.
a) Camber and Caster b) Caster and S.A.I.
c) Camber and S.A.I. d) Camber and Toe-in

4) The function of master cylinder is _____.
a) to increase pressure unequally in all cylinders
b) to increase pressure equally in all cylinders
c) to decrease pressure unequally in all cylinders
d) to decrease power equally in all cylinders

5) The _____ system of an automobile is one which separates the wheel/axle assembly from the body.
a) auxiliary system b) transmission system
c) suspension system d) None of these

6) The unsprung weight is weight of the _____.
   a) weight of passenger carriage
   b) weight of the wheel axle system
   c) weight of leaf spring
   d) none of these

7) Spring shackles are used to join _____.
   a) Spring and Axle
   b) Chassis frame and spring
   c) Chassis frame and axle
   d) All of the above

8) The loads supported by an automobile frame are _____.
   a) Weight of the body, passengers and cargo loads
   b) Torque from engine and transmission
   c) Sudden impacts from collisions
   d) All of the mentioned

9) The basic purpose of a four wheel drive (4WD) system is that it _____.
   a) Delivers improved cornering on dry road surfaces
   b) Eliminates the need of snow tyres, tyre chains, etc
   c) Ensures effective transmission of engine torque to all four wheels, even on slippery road surfaces
   d) Ensures that effective braking can be performed, even on slippery surfaces

10) Transfer case is located next to the gearbox in _____.
   a) Four wheel drive
   b) Rear wheel drive
   c) Front wheel drive
   d) All of the above

11) The force available at the contact between road and driving wheel is called _____.
   a) Brake power
   b) Friction power
   c) Engine torque
   d) Tractive effort

12) If 'V' is vehicle speed (in meters/min) and 'R' is radius of driving wheel (in meters) then the rpm of the driving wheel is given by _____.
   a) $\mathrm{rpm} = \mathrm{V}/2\pi\mathrm{R}$
   b) $\mathrm{rpm} = 2\pi\mathrm{V}/\mathrm{R}$
   c) $\mathrm{rpm} = \pi\mathrm{R}/\mathrm{V}$
   d) $\mathrm{rpm} = \pi\mathrm{V}/\mathrm{R}$

13) The force that opposes the motion of a vehicle is _____.
   a) Rolling resistance
   b) Gradient resistance
   c) Wind or air resistance
   d) All of the above

14) The component of the torque converter that allows multiplication of torque is the _____.
   a) Turbine
   b) Impeller
   c) Pump
   d) Stator

Seat No.	

Set **Q**

Fourth. Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Automobile Engineering (BTN02702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).
4) Use of a non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain with a neat sketch of front engine front wheel drive. **06**

b) Define the following. **04**
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4) Traction and Tractive effort

c) Draw a neat sketch of a centrifugal type clutch. Explain its working. **04**

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1) The brake power (kW) required for a top speed of 144 km/hr.
2) The acceleration in m/s^2 at 48 km/hr, assuming the torque at 48 km/hr in top gear is 25% more than at 144 km/hr.
3) The BP in KW required to drive the car up a gradient of 1 in 5 at 48 km/hr, transmission efficiency 80% in bottom gear. The resistance is in N and speed (V) is in km/hr. Take acceleration due to gravity (g) = 9.81 m/s^2.

b) Explain in brief Gradeability and draw bar pull. **04**

Q.4 **a)** Explain with a neat sketch working of a sliding mesh gear box. **06**

b) Write a short note on the final drive and its types. **04**

c) Write a short note on overdrive. **04**

Section – II

Q.5	**a)**	Explain the power steering system with a neat sketch and state its advantages over manual steering.	**06**
	b)	Explain in brief the following terms with figures: 1) Caster angle 2) Camber angle	**04**
	c)	Explain with a schematic Anti-lock Braking System (ABS).	**04**
Q.6	**a)**	A motor car has a wheel base of 2.64 m, the height of its C.G above the ground is 0.61 m and it is 1.2 m in front of the rear axle. If the car is traveling at 40 km/hr on a level track. Determine the minimum stopping distance in which the car may be stopped, when 1) Rear wheels are braked 2) Front wheels are braked 3) All wheels are braked The coefficient of friction between tyre and road may be taken as 0.6.	**06**
	b)	Draw a neat sketch of a master cylinder and explain its construction and working.	**04**
	c)	Write short notes on Disc Brake.	**04**
Q.7	**a)**	Explain in detail the functions and requirements of automobile suspension systems.	**06**
	b)	Compare conventional and independent suspension systems.	**04**
	c)	Write a short note on the MacPherson strut assembly.	**04**

Seat No.		Set	R

Fourth. Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Automobile Engineering (BTN02702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions (if necessary and state them clearly).
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The function of master cylinder is _____.
a) to increase pressure unequally in all cylinders
b) to increase pressure equally in all cylinders
c) to decrease pressure unequally in all cylinders
d) to decrease power equally in all cylinders

2) The _____ system of an automobile is one which separates the wheel/axle assembly from the body.
a) auxiliary system b) transmission system
c) suspension system d) None of these

3) The unsprung weight is weight of the _____.
a) weight of passenger carriage
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c) weight of leaf spring
d) none of these

4) Spring shackles are used to join _____.
a) Spring and Axle b) Chassis frame and spring
c) Chassis frame and axle d) All of the above

5) The loads supported by an automobile frame are _____.
a) Weight of the body, passengers and cargo loads
b) Torque from engine and transmission
c) Sudden impacts from collisions
d) All of the mentioned

6) The basic purpose of a four wheel drive (4WD) system is that it _____.
a) Delivers improved cornering on dry road surfaces
b) Eliminates the need of snow tyres, tyre chains, etc
c) Ensures effective transmission of engine torque to all four wheels, even on slippery road surfaces
d) Ensures that effective braking can be performed, even on slippery surfaces

7) Transfer case is located next to the gearbox in _____.
a) Four wheel drive
b) Rear wheel drive
c) Front wheel drive
d) All of the above

8) The force available at the contact between road and driving wheel is called _____.
a) Brake power
b) Friction power
c) Engine torque
d) Tractive effort

9) If 'V' is vehicle speed (in meters/min) and 'R' is radius of driving wheel (in meters) then the rpm of the driving wheel is given by _____.
a) $\mathrm{rpm} = \mathrm{V}/2\pi\mathrm{R}$
b) $\mathrm{rpm} = 2\pi\mathrm{V}/\mathrm{R}$
c) $\mathrm{rpm} = \pi\mathrm{R}/\mathrm{V}$
d) $\mathrm{rpm} = \pi\mathrm{V}/\mathrm{R}$

10) The force that opposes the motion of a vehicle is _____.
a) Rolling resistance
b) Gradient resistance
c) Wind or air resistance
d) All of the above

11) The component of the torque converter that allows multiplication of torque is the _____.
a) Turbine
b) Impeller
c) Pump
d) Stator

12) The purpose of transmission in an automobile is _____.
a) to vary the speed of automobile
b) to vary the torque at the road wheel
c) to vary the power of automobile
d) none of above

13) Which of the following factors affect the wheel alignment?
a) Factors pertaining to wheel
b) Steering geometry
c) Steering linkages
d) All of the above

14) The included angle is the sum of the _____.
a) Camber and Caster
b) Caster and S.A.I.
c) Camber and S.A.I.
d) Camber and Toe-in

Seat No.	

Set **R**

Fourth. Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Automobile Engineering (BTN02702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).
4) Use of a non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain with a neat sketch of front engine front wheel drive. **06**

b) Define the following. **04**
1) Air Resistance
2) Rolling Resistance
3) Gradient Resistance
4) Traction and Tractive effort

c) Draw a neat sketch of a centrifugal type clutch. Explain its working. **04**

Q.3 **a)** For a typical motor car the road resistance is given by 23N per 1000N, the air resistance by expression $0.0827V^2$, transmission efficiency 88% in top speed, and the car weighs 19934N when fully loaded. Calculate. **10**
1) The brake power (kW) required for a top speed of 144 km/hr.
2) The acceleration in m/s^2 at 48 km/hr, assuming the torque at 48 km/hr in top gear is 25% more than at 144 km/hr.
3) The BP in KW required to drive the car up a gradient of 1 in 5 at 48 km/hr, transmission efficiency 80% in bottom gear. The resistance is in N and speed (V) is in km/hr. Take acceleration due to gravity (g) = 9.81 m/s^2.

b) Explain in brief Gradeability and draw bar pull. **04**

Q.4 **a)** Explain with a neat sketch working of a sliding mesh gear box. **06**

b) Write a short note on the final drive and its types. **04**

c) Write a short note on overdrive. **04**

Section – II

Q.5 **a)** Explain the power steering system with a neat sketch and state its advantages over manual steering. **06**

b) Explain in brief the following terms with figures: **04**
1) Caster angle
2) Camber angle

c) Explain with a schematic Anti-lock Braking System (ABS). **04**

Q.6 **a)** A motor car has a wheel base of 2.64 m, the height of its C.G above the ground is 0.61 m and it is 1.2 m in front of the rear axle. If the car is traveling at 40 km/hr on a level track. Determine the minimum stopping distance in which the car may be stopped, when **06**
1) Rear wheels are braked
2) Front wheels are braked
3) All wheels are braked

The coefficient of friction between tyre and road may be taken as 0.6.

b) Draw a neat sketch of a master cylinder and explain its construction and working. **04**

c) Write short notes on Disc Brake. **04**

Q.7 **a)** Explain in detail the functions and requirements of automobile suspension systems. **06**

b) Compare conventional and independent suspension systems. **04**

c) Write a short note on the MacPherson strut assembly. **04**

Seat No.		Set	S

Fourth. Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Automobile Engineering (BTN02702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).
5) Use of a non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The force that opposes the motion of a vehicle is _____.
a) Rolling resistance b) Gradient resistance
c) Wind or air resistance d) All of the above

2) The component of the torque converter that allows multiplication of torque is the _____.
a) Turbine b) Impeller
c) Pump d) Stator

3) The purpose of transmission in an automobile is _____.
a) to vary the speed of automobile
b) to vary the torque at the road wheel
c) to vary the power of automobile
d) none of above

4) Which of the following factors affect the wheel alignment?
a) Factors pertaining to wheel
b) Steering geometry
c) Steering linkages
d) All of the above

5) The included angle is the sum of the _____.
a) Camber and Caster b) Caster and S.A.I.
c) Camber and S.A.I. d) Camber and Toe-in

6) The function of master cylinder is _____.
   a) to increase pressure unequally in all cylinders
   b) to increase pressure equally in all cylinders
   c) to decrease pressure unequally in all cylinders
   d) to decrease power equally in all cylinders

7) The _____ system of an automobile is one which separates the wheel/axle assembly from the body.
   a) auxiliary system b) transmission system
   c) suspension system d) None of these

8) The unsprung weight is weight of the _____.
   a) weight of passenger carriage
   b) weight of the wheel axle system
   c) weight of leaf spring
   d) none of these

9) Spring shackles are used to join _____.
   a) Spring and Axle b) Chassis frame and spring
   c) Chassis frame and axle d) All of the above

10) The loads supported by an automobile frame are _____.
   a) Weight of the body, passengers and cargo loads
   b) Torque from engine and transmission
   c) Sudden impacts from collisions
   d) All of the mentioned

11) The basic purpose of a four wheel drive (4WD) system is that it _____.
   a) Delivers improved cornering on dry road surfaces
   b) Eliminates the need of snow tyres, tyre chains, etc
   c) Ensures effective transmission of engine torque to all four wheels, even on slippery road surfaces
   d) Ensures that effective braking can be performed, even on slippery surfaces

12) Transfer case is located next to the gearbox in _____.
   a) Four wheel drive b) Rear wheel drive
   c) Front wheel drive d) All of the above

13) The force available at the contact between road and driving wheel is called _____.
   a) Brake power b) Friction power
   c) Engine torque d) Tractive effort

14) If 'V' is vehicle speed (in meters/min) and 'R' is radius of driving wheel (in meters) then the rpm of the driving wheel is given by _____.
   a) $\mathrm{rpm} = \mathrm{V}/2\pi\mathrm{R}$ b) $\mathrm{rpm} = 2\pi\mathrm{V}/\mathrm{R}$
   c) $\mathrm{rpm} = \pi\mathrm{R}/\mathrm{V}$ d) $\mathrm{rpm} = \pi\mathrm{V}/\mathrm{R}$

Seat No.	

Set **S**

Fourth. Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Automobile Engineering (BTN02702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).
4) Use of a non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain with a neat sketch of front engine front wheel drive. **06**

b) Define the following. **04**
1) Air Resistance
2) Rolling Resistance
3) Gradient Resistance
4) Traction and Tractive effort

c) Draw a neat sketch of a centrifugal type clutch. Explain its working. **04**

Q.3 **a)** For a typical motor car the road resistance is given by 23N per 1000N, the air resistance by expression $0.0827V^2$, transmission efficiency 88% in top speed, and the car weighs 19934N when fully loaded. Calculate. **10**
1) The brake power (kW) required for a top speed of 144 km/hr.
2) The acceleration in m/s^2 at 48 km/hr, assuming the torque at 48 km/hr in top gear is 25% more than at 144 km/hr.
3) The BP in KW required to drive the car up a gradient of 1 in 5 at 48 km/hr, transmission efficiency 80% in bottom gear. The resistance is in N and speed (V) is in km/hr. Take acceleration due to gravity (g) = 9.81 m/s^2.

b) Explain in brief Gradeability and draw bar pull. **04**

Q.4 **a)** Explain with a neat sketch working of a sliding mesh gear box. **06**

b) Write a short note on the final drive and its types. **04**

c) Write a short note on overdrive. **04**

Section – II

Q.5	**a)**	Explain the power steering system with a neat sketch and state its advantages over manual steering.	**06**
	b)	Explain in brief the following terms with figures: 1) Caster angle 2) Camber angle	**04**
	c)	Explain with a schematic Anti-lock Braking System (ABS).	**04**
Q.6	**a)**	A motor car has a wheel base of 2.64 m, the height of its C.G above the ground is 0.61 m and it is 1.2 m in front of the rear axle. If the car is traveling at 40 km/hr on a level track. Determine the minimum stopping distance in which the car may be stopped, when 1) Rear wheels are braked 2) Front wheels are braked 3) All wheels are braked The coefficient of friction between tyre and road may be taken as 0.6.	**06**
	b)	Draw a neat sketch of a master cylinder and explain its construction and working.	**04**
	c)	Write short notes on Disc Brake.	**04**
Q.7	**a)**	Explain in detail the functions and requirements of automobile suspension systems.	**06**
	b)	Compare conventional and independent suspension systems.	**04**
	c)	Write a short note on the MacPherson strut assembly.	**04**

SLR-BD-387

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Automation and Robotics (BTN02703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which type of robot used for assembly purpose?
a) Jointed arm b) PUMA
c) SCARA d) None of this

2) A _____ motors provides output in the form of discrete angular motion increment.
a) Steeper b) Shunt
c) Synchronous d) None of these

3) Spot welding and Arc welding are the examples of ____
a) Point-to-point tasks
b) Continuous path tasks
c) Point-to-point and continuous path tasks, respectively
d) Continuous path task and point-to-point tasks, respectively

4) A tactile array sensor is special type of _____ sensor.
a) Range b) Electrical
c) Force d) None of These

5) Forward kinematics and Inverse kinematics of a serial manipulator will have _____
a) Multiple solutions and unique solution, respectively
b) Unique solution and Multiple solutions, respectively
c) Unique solution only
d) Multiple solutions only

6) The term CCD with regards to "CCD Camera" stands for _____
a) Charged Coupled Device b) Coupled Charged Device
c) Charged Calibrated Device d) Calibrated Charged Device

7) _____ deals with finding the joint parameters for given position and orientation of robots.

a) Direct Kinematics b) Forward Dynamics
c) Inverse Kinematics d) Inverse Dynamics

8) The input and output of image processing are?

a) Signal and image b) Signal only
c) Image only d) Depends on input

9) The _____ technique is currently investigated as the approach that helps in automatic programming.

a) Specification by example b) Generative CAI
c) Non-hierarchical planning d) All of the above

10) In which of the following operations Continuous Path System is used?

a) Pick and Place b) Loading and Unloading
c) Continuous welding d) All of the above

11) From the following which is the benefits of AS/RS?

a) Less product damage
b) Good and easy housekeeping in FMS
c) Reduce labour cost
d) All of the above

12) Which of the following is not a programming language for computer controlled robot?

a) AMU b) VAL
c) RAIL d) HELP

13) _____ is the name for space inside which a robot unit operates?

a) Environment b) Spatial base
c) Exclusion zone d) Work envelope

14) A technology for the application of mechanical, electronics, and computer -based systems to control and operate the systems is called _____

a) PLC b) Sequential controller
c) Microprocessor-based systems d) Automation

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Automation and Robotics (BTN02703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figure to the right indicate full marks.
3) Use of non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Attempt the following.
a) Explain navigation techniques used in AGVs. **07**
b) Explain various components used in industrial robot. **07**

Q.3 Attempt the following.
a) Explain working principle of DC motor with neat sketch and application. **07**
b) Explain mechanical and vacuum griper with neat sketch. **07**

Q.4 Attempt the following.
a) Explain forward kinematics of 2DOF & 3DOF planar manipulator robot with diagram. **07**
b) Explain with neat sketch adaptive control techniques. **07**

Section – II

Q.5 Attempt the following.
a) Explain the various components of machine vision system with neat sketch. **07**
b) Differentiate between CCD & CMOS **07**

Q.6 Attempt the following.
a) Discuss robot centered and In-line workcell layout with neat sketch. **07**
b) Explain lead through programming and walk through programming. **07**

Q.7 Attempt the following.
a) Explain continuous arc welding application of robot with neat sketch. **07**
b) Discuss general considerations for selecting robot for material handling. **07**

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Automation and Robotics (BTN02703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The input and output of image processing are?
a) Signal and image b) Signal only
c) Image only d) Depends on input

2) The _____ technique is currently investigated as the approach that helps in automatic programming.
a) Specification by example b) Generative CAI
c) Non-hierarchical planning d) All of the above

3) In which of the following operations Continuous Path System is used?
a) Pick and Place b) Loading and Unloading
c) Continuous welding d) All of the above

4) From the following which is the benefits of AS/RS?
a) Less product damage
b) Good and easy housekeeping in FMS
c) Reduce labour cost
d) All of the above

5) Which of the following is not a programming language for computer controlled robot?
a) AMU b) VAL
c) RAIL d) HELP

6) _____ is the name for space inside which a robot unit operates?
a) Environment b) Spatial base
c) Exclusion zone d) Work envelope

7) A technology for the application of mechanical, electronics, and computer -based systems to control and operate the systems is called _____

a) PLC
b) Sequential controller
c) Microprocessor-based systems
d) Automation

8) Which type of robot used for assembly purpose?

a) Jointed arm
b) PUMA
c) SCARA
d) None of this

9) A _____ motors provides output in the form of discrete angular motion increment.

a) Steeper
b) Shunt
c) Synchronous
d) None of these

10) Spot welding and Arc welding are the examples of ____

a) Point-to-point tasks
b) Continuous path tasks
c) Point-to-point and continuous path tasks, respectively
d) Continuous path task and point-to-point tasks, respectively

11) A tactile array sensor is special type of _____ sensor.

a) Range
b) Electrical
c) Force
d) None of These

12) Forward kinematics and Inverse kinematics of a serial manipulator will have _____

a) Multiple solutions and unique solution, respectively
b) Unique solution and Multiple solutions, respectively
c) Unique solution only
d) Multiple solutions only

13) The term CCD with regards to "CCD Camera" stands for _____

a) Charged Coupled Device
b) Coupled Charged Device
c) Charged Calibrated Device
d) Calibrated Charged Device

14) _____ deals with finding the joint parameters for given position and orientation of robots.

a) Direct Kinematics
b) Forward Dynamics
c) Inverse Kinematics
d) Inverse Dynamics

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Automation and Robotics (BTN02703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figure to the right indicate full marks.
3) Use of non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Attempt the following.
a) Explain navigation techniques used in AGVs. **07**
b) Explain various components used in industrial robot. **07**

Q.3 Attempt the following.
a) Explain working principle of DC motor with neat sketch and application. **07**
b) Explain mechanical and vacuum griper with neat sketch. **07**

Q.4 Attempt the following.
a) Explain forward kinematics of 2DOF & 3DOF planar manipulator robot with diagram. **07**
b) Explain with neat sketch adaptive control techniques. **07**

Section – II

Q.5 Attempt the following.
a) Explain the various components of machine vision system with neat sketch. **07**
b) Differentiate between CCD & CMOS **07**

Q.6 Attempt the following.
a) Discuss robot centered and In-line workcell layout with neat sketch. **07**
b) Explain lead through programming and walk through programming. **07**

Q.7 Attempt the following.
a) Explain continuous arc welding application of robot with neat sketch. **07**
b) Discuss general considerations for selecting robot for material handling. **07**

Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Automation and Robotics (BTN02703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) From the following which is the benefits of AS/RS?
a) Less product damage
b) Good and easy housekeeping in FMS
c) Reduce labour cost
d) All of the above

2) Which of the following is not a programming language for computer controlled robot?
a) AMU b) VAL
c) RAIL d) HELP

3) _____ is the name for space inside which a robot unit operates?
a) Environment b) Spatial base
c) Exclusion zone d) Work envelope

4) A technology for the application of mechanical, electronics, and computer -based systems to control and operate the systems is called _____
a) PLC b) Sequential controller
c) Microprocessor-based systems d) Automation

5) Which type of robot used for assembly purpose?
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6) A _____ motors provides output in the form of discrete angular motion increment.
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7) Spot welding and Arc welding are the examples of ____

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b) Continuous path tasks
c) Point-to-point and continuous path tasks, respectively
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8) A tactile array sensor is special type of _____ sensor.

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b) Electrical
c) Force
d) None of These

9) Forward kinematics and Inverse kinematics of a serial manipulator will have _____

a) Multiple solutions and unique solution, respectively
b) Unique solution and Multiple solutions, respectively
c) Unique solution only
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10) The term CCD with regards to "CCD Camera" stands for _____

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11) _____ deals with finding the joint parameters for given position and orientation of robots.

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12) The input and output of image processing are?

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c) Image only
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13) The _____ technique is currently investigated as the approach that helps in automatic programming.

a) Specification by example
b) Generative CAI
c) Non-hierarchical planning
d) All of the above

14) In which of the following operations Continuous Path System is used?

a) Pick and Place
b) Loading and Unloading
c) Continuous welding
d) All of the above

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Automation and Robotics (BTN02703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figure to the right indicate full marks.
3) Use of non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Attempt the following.
a) Explain navigation techniques used in AGVs. **07**
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Q.4 Attempt the following.
a) Explain forward kinematics of 2DOF & 3DOF planar manipulator robot with diagram. **07**
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Section – II

Q.5 Attempt the following.
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Q.7 Attempt the following.
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b) Discuss general considerations for selecting robot for material handling. **07**

SLR-BD-387

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Automation and Robotics (BTN02703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks:14

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

1) The term CCD with regards to "CCD Camera" stands for _____
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2) _____ deals with finding the joint parameters for given position and orientation of robots.
a) Direct Kinematics b) Forward Dynamics
c) Inverse Kinematics d) Inverse Dynamics

3) The input and output of image processing are?
a) Signal and image b) Signal only
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6) From the following which is the benefits of AS/RS?
a) Less product damage
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7) Which of the following is not a programming language for computer controlled robot?

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b) Continuous path tasks
c) Point-to-point and continuous path tasks, respectively
d) Continuous path task and point-to-point tasks, respectively

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a) Range
b) Electrical
c) Force
d) None of These

14) Forward kinematics and Inverse kinematics of a serial manipulator will have _____

a) Multiple solutions and unique solution, respectively
b) Unique solution and Multiple solutions, respectively
c) Unique solution only
d) Multiple solutions only

SLR-BD-387

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Automation and Robotics (BTN02703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figure to the right indicate full marks.
3) Use of non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Attempt the following.
a) Explain navigation techniques used in AGVs. **07**
b) Explain various components used in industrial robot. **07**

Q.3 Attempt the following.
a) Explain working principle of DC motor with neat sketch and application. **07**
b) Explain mechanical and vacuum griper with neat sketch. **07**

Q.4 Attempt the following.
a) Explain forward kinematics of 2DOF & 3DOF planar manipulator robot with diagram. **07**
b) Explain with neat sketch adaptive control techniques. **07**

Section – II

Q.5 Attempt the following.
a) Explain the various components of machine vision system with neat sketch. **07**
b) Differentiate between CCD & CMOS **07**

Q.6 Attempt the following.
a) Discuss robot centered and In-line workcell layout with neat sketch. **07**
b) Explain lead through programming and walk through programming. **07**

Q.7 Attempt the following.
a) Explain continuous arc welding application of robot with neat sketch. **07**
b) Discuss general considerations for selecting robot for material **07**

handling.

SLR-BD-388

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Production and Operations Management (BTN02706)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which kind of labor force is required in case of Job-shop Production?
a) Highly Skilled b) Semi-skilled
c) Unskilled d) Any of the above

2) Sales forecasts are based on estimates of ____.
a) Demand b) Supply
c) Demand and supply d) None of the above

3) Payback Period Criteria is used for ____.
a) Capacity planning b) Forecasting
c) Production control d) Investment decisions

4) The correct sequence of operations in production planning and control is ____.
a) Routing-Scheduling-Dispatching-Follow up
b) Scheduling-Routing-Dispatching-Follow up
c) Dispatching-Routing-Scheduling-Follow up
d) Routing-Scheduling-Follow up-Dispatching

5) TPM Means ____.
a) Total Production Management
b) Total Process Management
c) Total Productive Maintenance
d) None of these

6) JIT is targeted for ____.
a) Average inventory b) Zero inventory
c) High inventory d) None of the above

7) Who has developed Economic lot size (EOQ) model?
a) F. B. Gilbreth b) F. W. Harris
c) T. H. C. Tippett d) None of the above

8) Which of the following statement is correct?
a) A-B-C analysis is based on pareto's principle
b) Simulation can be used for inventory control
c) Economic order quality formula ignores variations in demand pattern
d) All of the above

9) Regression method of forecasting is applicable mainly for ____.
a) Casual models b) Qualitative forecasting
c) Delphi method d) Time-sense model

10) Systematic plant maintenance is called ____.
a) Corrective maintenance b) Break-down maintenance
c) Operational maintenance d) Preventive maintenance

11) Short term forecasting involves period of ____.
a) Less than one year b) One of three year
c) Above three years d) None of the above

12) Gantt chart is mostly used for ____.
a) Routing b) Scheduling
c) Forecasting d) Inspection and quality control

13) Just-In-Time was successfully implemented by ____.
a) Toyota b) Honda
c) Suzuki d) Volkswagen

14) "ABC" analysis is done by arranging items in decreasing order of ____.
a) Total Inventory costs b) Item value
c) Annual usage valued d) Item demand

SLR-BD-388

Seat No.

Set P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Production and Operations Management (BTN02706)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Draw neat diagram whenever necessary.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** Explain different types of forecasting & also a brief on qualitative forecasting. **07**

b) Following data gives the sales of the company for the various years of the company. **07**
Using 3 yearly moving average method, forecast the sales for the next three years,

Year:	2001	2002	2003	2004	2005	2006	2007
Sale(000units):	80	90	92	83	94	99	92

Q.3 **a)** Explain procedure for capacity planning. **07**

b) Discuss different measures and measurements in capacity planning. **07**

Q.4 **Attempt the following: (Any Two)**

a) Aggregate Planning **07**

b) Co-ordination of PPC with another Department **07**

c) Discuss Follow up, Evolution in PPC **07**

Section – II

Q.5 **a)** With neat sketch explain in brief about inventory cost relationship also state various cost associated with inventory. **07**

b) ABC corporation has got a demand for particular part at 10,000 units per year. The cost unit is Rs. 2 and it costa Rs. 36 to place an order and to process the delivery. The inventory carrying cost is estimated at 9 percent of average inventory investment. Determine: **07**
i) EOQ,
ii) Optimum number of orders to be placed per annum.
iii) Minimum total cost of inventory per annum.

Q.6	**a)**	Explain with block diagram value analysis procedure.	**07**
	b)	Explain in details term JIT and KAIZEN.	**07**
Q.7	**Attempt the following: (Any Two)**		
	a)	ABC Analysis	**07**
	b)	Preventive and break down maintenance.	**07**
	c)	TPM	**07**

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Production and Operations Management (BTN02706)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which of the following statement is correct?
a) A-B-C analysis is based on pareto's principle
b) Simulation can be used for inventory control
c) Economic order quality formula ignores variations in demand pattern
d) All of the above

2) Regression method of forecasting is applicable mainly for ____.
a) Casual models b) Qualitative forecasting
c) Delphi method d) Time-sense model

3) Systematic plant maintenance is called ____.
a) Corrective maintenance b) Break-down maintenance
c) Operational maintenance d) Preventive maintenance

4) Short term forecasting involves period of ____.
a) Less than one year b) One of three year
c) Above three years d) None of the above

5) Gantt chart is mostly used for ____.
a) Routing b) Scheduling
c) Forecasting d) Inspection and quality control

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c) Suzuki d) Volkswagen

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c) Annual usage valued d) Item demand

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c) Unskilled d) Any of the above

9) Sales forecasts are based on estimates of ____.
a) Demand b) Supply
c) Demand and supply d) None of the above

10) Payback Period Criteria is used for ____.
a) Capacity planning b) Forecasting
c) Production control d) Investment decisions

11) The correct sequence of operations in production planning and control is ____.
a) Routing-Scheduling-Dispatching-Follow up
b) Scheduling-Routing-Dispatching-Follow up
c) Dispatching-Routing-Scheduling-Follow up
d) Routing-Scheduling-Follow up-Dispatching

12) TPM Means ____.
a) Total Production Management
b) Total Process Management
c) Total Productive Maintenance
d) None of these

13) JIT is targeted for ____.
a) Average inventory b) Zero inventory
c) High inventory d) None of the above

14) Who has developed Economic lot size (EOQ) model?
a) F. B. Gilbreth b) F. W. Harris
c) T. H. C. Tippett d) None of the above

Seat No.

Set Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Production and Operations Management (BTN02706)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Draw neat diagram whenever necessary.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** Explain different types of forecasting & also a brief on qualitative forecasting. **07**

b) Following data gives the sales of the company for the various years of the company. **07**
Using 3 yearly moving average method, forecast the sales for the next three years,

Year:	2001	2002	2003	2004	2005	2006	2007
Sale(000units):	80	90	92	83	94	99	92

Q.3 **a)** Explain procedure for capacity planning. **07**

b) Discuss different measures and measurements in capacity planning. **07**

Q.4 **Attempt the following: (Any Two)**

a) Aggregate Planning **07**

b) Co-ordination of PPC with another Department **07**

c) Discuss Follow up, Evolution in PPC **07**

Section – II

Q.5 **a)** With neat sketch explain in brief about inventory cost relationship also state various cost associated with inventory. **07**

b) ABC corporation has got a demand for particular part at 10,000 units per year. The cost unit is Rs. 2 and it costa Rs. 36 to place an order and to process the delivery. The inventory carrying cost is estimated at 9 percent of average inventory investment. Determine: **07**
i) EOQ,
ii) Optimum number of orders to be placed per annum.
iii) Minimum total cost of inventory per annum.

Q.6	**a)**	Explain with block diagram value analysis procedure.	**07**
	b)	Explain in details term JIT and KAIZEN.	**07**
Q.7	**Attempt the following: (Any Two)**		
	a)	ABC Analysis	**07**
	b)	Preventive and break down maintenance.	**07**
	c)	TPM	**07**

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Production and Operations Management (BTN02706)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Short term forecasting involves period of ____.
a) Less than one year b) One of three year
c) Above three years d) None of the above

2) Gantt chart is mostly used for ____.
a) Routing b) Scheduling
c) Forecasting d) Inspection and quality control

3) Just-In-Time was successfully implemented by ____.
a) Toyota b) Honda
c) Suzuki d) Volkswagen

4) "ABC" analysis is done by arranging items in decreasing order of ____.
a) Total Inventory costs b) Item value
c) Annual usage valued d) Item demand

5) Which kind of labor force is required in case of Job-shop Production?
a) Highly Skilled b) Semi-skilled
c) Unskilled d) Any of the above

6) Sales forecasts are based on estimates of ____.
a) Demand b) Supply
c) Demand and supply d) None of the above

7) Payback Period Criteria is used for ____.
a) Capacity planning b) Forecasting
c) Production control d) Investment decisions

8) The correct sequence of operations in production planning and control is ____.
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b) Scheduling-Routing-Dispatching-Follow up
c) Dispatching-Routing-Scheduling-Follow up
d) Routing-Scheduling-Follow up-Dispatching

9) TPM Means ____.
a) Total Production Management
b) Total Process Management
c) Total Productive Maintenance
d) None of these

10) JIT is targeted for ____.
a) Average inventory b) Zero inventory
c) High inventory d) None of the above

11) Who has developed Economic lot size (EOQ) model?
a) F. B. Gilbreth b) F. W. Harris
c) T. H. C. Tippett d) None of the above

12) Which of the following statement is correct?
a) A-B-C analysis is based on pareto's principle
b) Simulation can be used for inventory control
c) Economic order quality formula ignores variations in demand pattern
d) All of the above

13) Regression method of forecasting is applicable mainly for ____.
a) Casual models b) Qualitative forecasting
c) Delphi method d) Time-sense model

14) Systematic plant maintenance is called ____.
a) Corrective maintenance b) Break-down maintenance
c) Operational maintenance d) Preventive maintenance

Seat No.

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Production and Operations Management (BTN02706)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Draw neat diagram whenever necessary.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** Explain different types of forecasting & also a brief on qualitative forecasting. **07**

b) Following data gives the sales of the company for the various years of the company. **07**
Using 3 yearly moving average method, forecast the sales for the next three years,

Year:	2001	2002	2003	2004	2005	2006	2007
Sale(000units):	80	90	92	83	94	99	92

Q.3 **a)** Explain procedure for capacity planning. **07**

b) Discuss different measures and measurements in capacity planning. **07**

Q.4 **Attempt the following: (Any Two)**

a) Aggregate Planning **07**

b) Co-ordination of PPC with another Department **07**

c) Discuss Follow up, Evolution in PPC **07**

Section – II

Q.5 **a)** With neat sketch explain in brief about inventory cost relationship also state various cost associated with inventory. **07**

b) ABC corporation has got a demand for particular part at 10,000 units per year. The cost unit is Rs. 2 and it costa Rs. 36 to place an order and to process the delivery. The inventory carrying cost is estimated at 9 percent of average inventory investment. Determine: **07**
i) EOQ,
ii) Optimum number of orders to be placed per annum.
iii) Minimum total cost of inventory per annum.

Q.6	**a)**	Explain with block diagram value analysis procedure.	**07**
	b)	Explain in details term JIT and KAIZEN.	**07**
Q.7	**Attempt the following: (Any Two)**		
	a)	ABC Analysis	**07**
	b)	Preventive and break down maintenance.	**07**
	c)	TPM	**07**

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Production and Operations Management (BTN02706)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) JIT is targeted for ____.
a) Average inventory b) Zero inventory
c) High inventory d) None of the above

2) Who has developed Economic lot size (EOQ) model?
a) F. B. Gilbreth b) F. W. Harris
c) T. H. C. Tippett d) None of the above

3) Which of the following statement is correct?
a) A-B-C analysis is based on pareto's principle
b) Simulation can be used for inventory control
c) Economic order quality formula ignores variations in demand pattern
d) All of the above

4) Regression method of forecasting is applicable mainly for ____.
a) Casual models b) Qualitative forecasting
c) Delphi method d) Time-sense model

5) Systematic plant maintenance is called ____.
a) Corrective maintenance b) Break-down maintenance
c) Operational maintenance d) Preventive maintenance

6) Short term forecasting involves period of ____.
a) Less than one year b) One of three year
c) Above three years d) None of the above

7) Gantt chart is mostly used for ____.
a) Routing b) Scheduling
c) Forecasting d) Inspection and quality control

8) Just-In-Time was successfully implemented by ____.
a) Toyota b) Honda
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9) "ABC" analysis is done by arranging items in decreasing order of ____.
a) Total Inventory costs b) Item value
c) Annual usage valued d) Item demand

10) Which kind of labor force is required in case of Job-shop Production?
a) Highly Skilled b) Semi-skilled
c) Unskilled d) Any of the above

11) Sales forecasts are based on estimates of ____.
a) Demand b) Supply
c) Demand and supply d) None of the above

12) Payback Period Criteria is used for ____.
a) Capacity planning b) Forecasting
c) Production control d) Investment decisions

13) The correct sequence of operations in production planning and control is ____.
a) Routing-Scheduling-Dispatching-Follow up
b) Scheduling-Routing-Dispatching-Follow up
c) Dispatching-Routing-Scheduling-Follow up
d) Routing-Scheduling-Follow up-Dispatching

14) TPM Means ____.
a) Total Production Management
b) Total Process Management
c) Total Productive Maintenance
d) None of these

SLR-BD-388

Seat No.

Set S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Production and Operations Management (BTN02706)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Draw neat diagram whenever necessary.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** Explain different types of forecasting & also a brief on qualitative forecasting. **07**

b) Following data gives the sales of the company for the various years of the company. **07**
Using 3 yearly moving average method, forecast the sales for the next three years,

Year:	2001	2002	2003	2004	2005	2006	2007
Sale(000units):	80	90	92	83	94	99	92

Q.3 **a)** Explain procedure for capacity planning. **07**

b) Discuss different measures and measurements in capacity planning. **07**

Q.4 **Attempt the following: (Any Two)**

a) Aggregate Planning **07**

b) Co-ordination of PPC with another Department **07**

c) Discuss Follow up, Evolution in PPC **07**

Section – II

Q.5 **a)** With neat sketch explain in brief about inventory cost relationship also state various cost associated with inventory. **07**

b) ABC corporation has got a demand for particular part at 10,000 units per year. The cost unit is Rs. 2 and it costa Rs. 36 to place an order and to process the delivery. The inventory carrying cost is estimated at 9 percent of average inventory investment. Determine: **07**
i) EOQ,
ii) Optimum number of orders to be placed per annum.
iii) Minimum total cost of inventory per annum.

Q.6	**a)**	Explain with block diagram value analysis procedure.	**07**
	b)	Explain in details term JIT and KAIZEN.	**07**
Q.7	**Attempt the following: (Any Two)**		
	a)	ABC Analysis	**07**
	b)	Preventive and break down maintenance.	**07**
	c)	TPM	**07**

SLR-BD-389

Seat No.	

Set P

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Artificial Intelligence and Machine Learning (BTN02707)

Day & Date: Thursday 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Objective Type (Each question carries one mark) **14**

1) What is Artificial Intelligence?
a) A field that aims to make humans more intelligent
b) A field that aims to improve the security
c) A field that aims to develop intelligent machines
d) A field that aims to mine the data

2) Which of the following is the branch of Artificial Intelligence?
a) Machine Learning b) Cyber forensics
c) Full-Stack Developer d) Network Design

3) What is state space?

a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

4) What is the form of Fuzzy logic?
a) Two-valued logic b) Crisp set logi
c) Many-valued logic d) Binary set logic

5) The values of the set membership is represented by _____

a) Discrete Set
b) Degree of truth
c) Probabilities
d) Both Degree of truth & Probabilities

6) What is the field of Natural Language Processing (NLP)?
a) Computer Science b) Artificial Intelligence
c) Linguistics d) All of the mentioned

7) What is Machine Translation?
a) Converts one human language to another
b) Converts human language to machine language
c) Converts any human language to English
d) Converts Machine language to human language

8) Which of the factors affect the performance of learner system does not include?
a) Representation scheme used
b) Training scenario
c) Type of feedback
d) Good data structures

9) In language understanding, the levels of knowledge that does not include?
a) Phonological
b) Syntactic
c) Empirical
d) Logical

10) A model of language consists of the categories which does not include?
a) Language units
b) Role structure of units
c) System constraints
d) Structural units

11) What are the essential elements in a Markov Decision Process?
a) States, Model, Probabilities, Stations
b) States, Model, Actions, Rewards
c) Model, Lines, Decisions. Rewards
d) States, Actions

12) In reinforcement learning, the purpose or goal of the agent is formalized in terms of a special signal, called the _____
a) Return
b) State
c) Action
d) Reward

13) What's the main point of difference between human & machine intelligence?
a) human perceive everything as a pattern while machine perceive it merely as data
b) human have emotions
c) human have more IQ & intellect
d) human have sense organs

14) What is plasticity in neural networks?
a) input pattern keeps on changing
b) input pattern has become static
c) output pattern keeps on changing
d) Output is static

Seat No.		Set	P

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Artificial Intelligence and Machine Learning (BTN02707)

Day & Date: Thursday 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section I, attempt any two questions.
2) In Section II, attempt any two questions.
3) Figure to the right indicate full marks.
4) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Attempt the following questions.
a) Explain applications of Artificial Intelligence. **07**
b) Explain Depth First Search Technique. **07**

Q.3 Attempt the following questions.
a) Define fuzzy logic and explain basic elements of fuzzy logic. **07**
b) Explain advantages and disadvantages of fuzzy logic. **07**

Q.4 Attempt the following.
a) What is Morphology analysis? Discuss in detail. **07**
b) Explain image processing steps with neat sketch. **07**

Section – II

Q.5 Attempt the following.
a) Define machine learning and explain various types of machine learning. **07**
b) Explain applications of machine learning in Mechanical Engineering. **07**

Q.6 Attempt the following.
a) Compare between Supervised learning, Unsupervised learning and Reinforcement learning. **07**
b) Explain various types of Supervised machine learning algorithms. **07**

Q.7 Attempt the following.
a) Define neural network. Explain various types of neural networks. **07**
b) Explain applications of Artificial Neural Network (ANN) in Mechanical Engineering. **07**

SLR-BD-389

Seat No.		Set	Q

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Artificial Intelligence and Machine Learning (BTN02707)

Day & Date: Thursday 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Objective Type (Each question carries one mark) **14**

1) Which of the factors affect the performance of learner system does not include?
a) Representation scheme used
b) Training scenario
c) Type of feedback
d) Good data structures

2) In language understanding, the levels of knowledge that does not include?
a) Phonological b) Syntactic
c) Empirical d) Logical

3) A model of language consists of the categories which does not include?
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c) System constraints d) Structural units

4) What are the essential elements in a Markov Decision Process?
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b) States, Model, Actions, Rewards
c) Model, Lines, Decisions. Rewards
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5) In reinforcement learning, the purpose or goal of the agent is formalized in terms of a special signal, called the _____
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   b) human have emotions
   c) human have more IQ & intellect
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   c) output pattern keeps on changing
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   a) A field that aims to make humans more intelligent
   b) A field that aims to improve the security
   c) A field that aims to develop intelligent machines
   d) A field that aims to mine the data

9) Which of the following is the branch of Artificial Intelligence?
   a) Machine Learning
   b) Cyber forensics
   c) Full-Stack Developer
   d) Network Design

10) What is state space?

   a) The whole problem
   b) Your Definition to a problem
   c) Problem you design
   d) Representing your problem with variable and parameter

11) What is the form of Fuzzy logic?
   a) Two-valued logic
   b) Crisp set logi
   c) Many-valued logic
   d) Binary set logic

12) The values of the set membership is represented by _____

   a) Discrete Set
   b) Degree of truth
   c) Probabilities
   d) Both Degree of truth & Probabilities

13) What is the field of Natural Language Processing (NLP)?
   a) Computer Science
   b) Artificial Intelligence
   c) Linguistics
   d) All of the mentioned

14) What is Machine Translation?
   a) Converts one human language to another
   b) Converts human language to machine language
   c) Converts any human language to English
   d) Converts Machine language to human language

SLR-BD-389

Seat No.		Set	Q

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Artificial Intelligence and Machine Learning (BTN02707)

Day & Date: Thursday 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section I, attempt any two questions.
2) In Section II, attempt any two questions.
3) Figure to the right indicate full marks.
4) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Attempt the following questions.
a) Explain applications of Artificial Intelligence. **07**
b) Explain Depth First Search Technique. **07**

Q.3 Attempt the following questions.
a) Define fuzzy logic and explain basic elements of fuzzy logic. **07**
b) Explain advantages and disadvantages of fuzzy logic. **07**

Q.4 Attempt the following.
a) What is Morphology analysis? Discuss in detail. **07**
b) Explain image processing steps with neat sketch. **07**

Section – II

Q.5 Attempt the following.
a) Define machine learning and explain various types of machine learning. **07**
b) Explain applications of machine learning in Mechanical Engineering. **07**

Q.6 Attempt the following.
a) Compare between Supervised learning, Unsupervised learning and Reinforcement learning. **07**
b) Explain various types of Supervised machine learning algorithms. **07**

Q.7 Attempt the following.
a) Define neural network. Explain various types of neural networks. **07**
b) Explain applications of Artificial Neural Network (ANN) in Mechanical Engineering. **07**

Seat No.	

Set **R**

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Artificial Intelligence and Machine Learning (BTN02707)

Day & Date: Thursday 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Objective Type (Each question carries one mark) **14**

1) What are the essential elements in a Markov Decision Process?
a) States, Model, Probabilities, Stations
b) States, Model, Actions, Rewards
c) Model, Lines, Decisions. Rewards
d) States, Actions

2) In reinforcement learning, the purpose or goal of the agent is formalized in terms of a special signal, called the _____
a) Return b) State
c) Action d) Reward

3) What's the main point of difference between human & machine intelligence?
a) human perceive everything as a pattern while machine perceive it merely as data
b) human have emotions
c) human have more IQ & intellect
d) human have sense organs

4) What is plasticity in neural networks?
a) input pattern keeps on changing
b) input pattern has become static
c) output pattern keeps on changing
d) Output is static

5) What is Artificial Intelligence?
a) A field that aims to make humans more intelligent
b) A field that aims to improve the security
c) A field that aims to develop intelligent machines
d) A field that aims to mine the data

6) Which of the following is the branch of Artificial Intelligence?
a) Machine Learning b) Cyber forensics
c) Full-Stack Developer d) Network Design

7) What is state space?

a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

8) What is the form of Fuzzy logic?
a) Two-valued logic b) Crisp set logi
c) Many-valued logic d) Binary set logic

9) The values of the set membership is represented by _____

a) Discrete Set
b) Degree of truth
c) Probabilities
d) Both Degree of truth & Probabilities

10) What is the field of Natural Language Processing (NLP)?
a) Computer Science b) Artificial Intelligence
c) Linguistics d) All of the mentioned

11) What is Machine Translation?
a) Converts one human language to another
b) Converts human language to machine language
c) Converts any human language to English
d) Converts Machine language to human language

12) Which of the factors affect the performance of learner system does not include?
a) Representation scheme used
b) Training scenario
c) Type of feedback
d) Good data structures

13) In language understanding, the levels of knowledge that does not include?
a) Phonological b) Syntactic
c) Empirical d) Logical

14) A model of language consists of the categories which does not include?
a) Language units b) Role structure of units
c) System constraints d) Structural units

Seat No.		Set	R

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Artificial Intelligence and Machine Learning (BTN02707)

Day & Date: Thursday 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section I, attempt any two questions.
2) In Section II, attempt any two questions.
3) Figure to the right indicate full marks.
4) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Attempt the following questions.
a) Explain applications of Artificial Intelligence. **07**
b) Explain Depth First Search Technique. **07**

Q.3 Attempt the following questions.
a) Define fuzzy logic and explain basic elements of fuzzy logic. **07**
b) Explain advantages and disadvantages of fuzzy logic. **07**

Q.4 Attempt the following.
a) What is Morphology analysis? Discuss in detail. **07**
b) Explain image processing steps with neat sketch. **07**

Section – II

Q.5 Attempt the following.
a) Define machine learning and explain various types of machine learning. **07**
b) Explain applications of machine learning in Mechanical Engineering. **07**

Q.6 Attempt the following.
a) Compare between Supervised learning, Unsupervised learning and Reinforcement learning. **07**
b) Explain various types of Supervised machine learning algorithms. **07**

Q.7 Attempt the following.
a) Define neural network. Explain various types of neural networks. **07**
b) Explain applications of Artificial Neural Network (ANN) in Mechanical Engineering. **07**

Seat No.	

Set **S**

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Artificial Intelligence and Machine Learning (BTN02707)

Day & Date: Thursday 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Objective Type (Each question carries one mark) **14**

1) What is the field of Natural Language Processing (NLP)?
a) Computer Science b) Artificial Intelligence
c) Linguistics d) All of the mentioned

2) What is Machine Translation?
a) Converts one human language to another
b) Converts human language to machine language
c) Converts any human language to English
d) Converts Machine language to human language

3) Which of the factors affect the performance of learner system does not include?
a) Representation scheme used
b) Training scenario
c) Type of feedback
d) Good data structures

4) In language understanding, the levels of knowledge that does not include?
a) Phonological b) Syntactic
c) Empirical d) Logical

5) A model of language consists of the categories which does not include?
a) Language units b) Role structure of units
c) System constraints d) Structural units

6) What are the essential elements in a Markov Decision Process?
a) States, Model, Probabilities, Stations
b) States, Model, Actions, Rewards
c) Model, Lines, Decisions. Rewards
d) States, Actions

7) In reinforcement learning, the purpose or goal of the agent is formalized in terms of a special signal, called the _____

a) Return
b) State
c) Action
d) Reward

8) What's the main point of difference between human & machine intelligence?

a) human perceive everything as a pattern while machine perceive it merely as data
b) human have emotions
c) human have more IQ & intellect
d) human have sense organs

9) What is plasticity in neural networks?

a) input pattern keeps on changing
b) input pattern has become static
c) output pattern keeps on changing
d) Output is static

10) What is Artificial Intelligence?

a) A field that aims to make humans more intelligent
b) A field that aims to improve the security
c) A field that aims to develop intelligent machines
d) A field that aims to mine the data

11) Which of the following is the branch of Artificial Intelligence?

a) Machine Learning
b) Cyber forensics
c) Full-Stack Developer
d) Network Design

12) What is state space?

a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

13) What is the form of Fuzzy logic?

a) Two-valued logic
b) Crisp set logi
c) Many-valued logic
d) Binary set logic

14) The values of the set membership is represented by _____

a) Discrete Set
b) Degree of truth
c) Probabilities
d) Both Degree of truth & Probabilities

SLR-BD-389

Seat No.		Set	S

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Artificial Intelligence and Machine Learning (BTN02707)

Day & Date: Thursday 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section I, attempt any two questions.
2) In Section II, attempt any two questions.
3) Figure to the right indicate full marks.
4) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Attempt the following questions.
a) Explain applications of Artificial Intelligence. **07**
b) Explain Depth First Search Technique. **07**

Q.3 Attempt the following questions.
a) Define fuzzy logic and explain basic elements of fuzzy logic. **07**
b) Explain advantages and disadvantages of fuzzy logic. **07**

Q.4 Attempt the following.
a) What is Morphology analysis? Discuss in detail. **07**
b) Explain image processing steps with neat sketch. **07**

Section – II

Q.5 Attempt the following.
a) Define machine learning and explain various types of machine learning. **07**
b) Explain applications of machine learning in Mechanical Engineering. **07**

Q.6 Attempt the following.
a) Compare between Supervised learning, Unsupervised learning and Reinforcement learning. **07**
b) Explain various types of Supervised machine learning algorithms. **07**

Q.7 Attempt the following.
a) Define neural network. Explain various types of neural networks. **07**
b) Explain applications of Artificial Neural Network (ANN) in Mechanical Engineering. **07**

SLR-BD-390

Seat No.		Set	P

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Railway Systems Management (BTN02708)

Day & Date: Thursday 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Weight of the engine is categorized in _____
a) sprung mass b) un-sprung mass
c) non-sprung mass d) dummy mass

2) Tractive force can be increasing by _____
a) reducing the load b) increasing the load
c) reducing friction d) none of this

3) _____ is not a part of VCC used in A/C
a) Evaporator b) Condenser
c) compressor d) deflector

4) _____ Type Air Conditioning units are used in LHB A.C. Coaches now days.
a) RMPU b) RMCU
c) Conventional d) none of these

5) In railway, green light indicates _____
a) Stop b) Proceed
c) Proceed cautiously d) None

6) Electric locomotives in India are manufactured at ____
a) Jamalpur b) Bangalore
c) Chittranjan d) Gorakhpur

7) _____ Locomotive has the highest operational availability.
a) Electric b) Diesel
c) Steam d) None

8) Maintenance consist of the following action(s) _____
a) Replace of component
b) Repair of component
c) Service of component
d) All of the above

9) Belt of an electric motor is broken, it needs _____
a) Corrective maintenance b) Scheduled maintenance
c) Preventive maintenance d) Timely maintenance

10) POH period of maintenance for HHP-Loco is _____
a) 6 years b) 4 years
c) 18 years d) 10 years

11) By 2019 Indian Railways expected _____% bio-toilet coaches.
a) 50 b) 70
c) 40 d) 100

12) _____ is not a stage for fire.
a) propagation b) period of decline
c) flash over d) fully developed

13) _____ is not a Digital Technology used in Traffic Control.
a) RFID b) LiDAR
c) Li-Fi d) Wi-Fi

14) RFID means _____
a) Radio Frequency Identification Tags
b) Radio Frequency Indicative Tub
c) Resonance Frequency Identification Tags
d) None of these

SLR-BD-390

Seat No.		Set	P

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Railway Systems Management (BTN02708)

Day & Date: Thursday 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Attempt the following questions.

a) What are the components of air suspension in the Indian Railway? Elaborate in details. **04**

b) Draw typical passenger Vehicle showing the layout of air conditioning & heating equipment. **05**

c) What is Head on Generation (HOG) technology? Explain in details of HOG. **05**

Q.3 Attempt the following questions.

a) Classify in details the types of braking system in Indian Railway. **04**

b) Explain in details the components of C.B.C coupler. **05**

c) Define tractive force. Write its effects on Diesel locomotives. **05**

Q.4 Attempt the following.

a) Describe D.C electric supply unit for EMU with neat Sketches. **04**

b) Write a short note R.M.P.U in LHB coaches. **05**

c) Classify in details the types of Power supply units. **05**

Section – II

Q.5 Attempt the following questions.

a) Describe the duties & responsibilities of Senior Section Engineer (Diesel locomotives). **04**

b) Explain with neat sketch the Bio-Vacuum toilet system used in Indian railway. **05**

c) Write Short note on RMS in Indian railway. **05**

Q.6 Attempt the following questions.

a) What are different components of Bio-Vacuum toilet system explain in detail. **05**

b) Write short note on Traffic management system in Indian railway. **05**

c) Describe all parts of D.C traction Motor with neat Sketches. **04**

Q.7 Attempt the following.

a) Write in details the Scrap management system in Indian Railway. **04**

b) What is mean by rolling stock management? Which types of rolling stock management used in Indian railway? **05**

c) Which digital technologies in traffic control? Explain RFID in details. **05**

Seat No.	

Set **Q**

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Railway Systems Management (BTN02708)

Day & Date: Thursday 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Maintenance consist of the following action(s) _____
a) Replace of component
b) Repair of component
c) Service of component
d) All of the above

2) Belt of an electric motor is broken, it needs _____
a) Corrective maintenance b) Scheduled maintenance
c) Preventive maintenance d) Timely maintenance

3) POH period of maintenance for HHP-Loco is _____
a) 6 years b) 4 years
c) 18 years d) 10 years

4) By 2019 Indian Railways expected _____% bio-toilet coaches.
a) 50 b) 70
c) 40 d) 100

5) _____ is not a stage for fire.
a) propagation b) period of decline
c) flash over d) fully developed

6) _____ is not a Digital Technology used in Traffic Control.
a) RFID b) LiDAR
c) Li-Fi d) Wi-Fi

7) RFID means _____
a) Radio Frequency Identification Tags
b) Radio Frequency Indicative Tub
c) Resonance Frequency Identification Tags
d) None of these

8) Weight of the engine is categorized in _____

a) sprung mass b) un-sprung mass
c) non-sprung mass d) dummy mass

9) Tractive force can be increasing by _____

a) reducing the load b) increasing the load
c) reducing friction d) none of this

10) _____ is not a part of VCC used in A/C

a) Evaporator b) Condenser
c) compressor d) deflector

11) _____ Type Air Conditioning units are used in LHB A.C. Coaches now days.

a) RMPU b) RMCU
c) Conventional d) none of these

12) In railway, green light indicates _____

a) Stop b) Proceed
c) Proceed cautiously d) None

13) Electric locomotives in India are manufactured at ____

a) Jamalpur b) Bangalore
c) Chittranjan d) Gorakhpur

14) _____ Locomotive has the highest operational availability.

a) Electric b) Diesel
c) Steam d) None

SLR-BD-390

Seat No.		Set	Q

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Railway Systems Management (BTN02708)

Day & Date: Thursday 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Attempt the following questions.

a) What are the components of air suspension in the Indian Railway? Elaborate in details. **04**

b) Draw typical passenger Vehicle showing the layout of air conditioning & heating equipment. **05**

c) What is Head on Generation (HOG) technology? Explain in details of HOG. **05**

Q.3 Attempt the following questions.

a) Classify in details the types of braking system in Indian Railway. **04**

b) Explain in details the components of C.B.C coupler. **05**

c) Define tractive force. Write its effects on Diesel locomotives. **05**

Q.4 Attempt the following.

a) Describe D.C electric supply unit for EMU with neat Sketches. **04**

b) Write a short note R.M.P.U in LHB coaches. **05**

c) Classify in details the types of Power supply units. **05**

Section – II

Q.5 Attempt the following questions.

a) Describe the duties & responsibilities of Senior Section Engineer (Diesel locomotives). **04**

b) Explain with neat sketch the Bio-Vacuum toilet system used in Indian railway. **05**

c) Write Short note on RMS in Indian railway. **05**

Q.6 Attempt the following questions.

a) What are different components of Bio-Vacuum toilet system explain in detail. **05**

b) Write short note on Traffic management system in Indian railway. **05**

c) Describe all parts of D.C traction Motor with neat Sketches. **04**

Q.7 Attempt the following.

a) Write in details the Scrap management system in Indian Railway. **04**

b) What is mean by rolling stock management? Which types of rolling stock management used in Indian railway? **05**

c) Which digital technologies in traffic control? Explain RFID in details. **05**

Seat No.	

Set **R**

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Railway Systems Management (BTN02708)

Day & Date: Thursday 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) By 2019 Indian Railways expected _____% bio-toilet coaches.
a) 50 b) 70
c) 40 d) 100

2) _____ is not a stage for fire.
a) propagation b) period of decline
c) flash over d) fully developed

3) _____ is not a Digital Technology used in Traffic Control.
a) RFID b) LiDAR
c) Li-Fi d) Wi-Fi

4) RFID means _____
a) Radio Frequency Identification Tags
b) Radio Frequency Indicative Tub
c) Resonance Frequency Identification Tags
d) None of these

5) Weight of the engine is categorized in _____
a) sprung mass b) un-sprung mass
c) non-sprung mass d) dummy mass

6) Tractive force can be increasing by _____
a) reducing the load b) increasing the load
c) reducing friction d) none of this

7) _____ is not a part of VCC used in A/C
a) Evaporator b) Condenser
c) compressor d) deflector

8) _____ Type Air Conditioning units are used in LHB A.C. Coaches now days.

a) RMPU b) RMCU
c) Conventional d) none of these

9) In railway, green light indicates _____

a) Stop b) Proceed
c) Proceed cautiously d) None

10) Electric locomotives in India are manufactured at ____

a) Jamalpur b) Bangalore
c) Chittranjan d) Gorakhpur

11) _____ Locomotive has the highest operational availability.

a) Electric b) Diesel
c) Steam d) None

12) Maintenance consist of the following action(s) _____

a) Replace of component
b) Repair of component
c) Service of component
d) All of the above

13) Belt of an electric motor is broken, it needs _____

a) Corrective maintenance b) Scheduled maintenance
c) Preventive maintenance d) Timely maintenance

14) POH period of maintenance for HHP-Loco is _____

a) 6 years b) 4 years
c) 18 years d) 10 years

SLR-BD-390

Seat No.		Set	R

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Railway Systems Management (BTN02708)

Day & Date: Thursday 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
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3) Assume suitable data if required.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Attempt the following questions.

a) What are the components of air suspension in the Indian Railway? Elaborate in details. **04**

b) Draw typical passenger Vehicle showing the layout of air conditioning & heating equipment. **05**

c) What is Head on Generation (HOG) technology? Explain in details of HOG. **05**

Q.3 Attempt the following questions.

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Section – II

Q.5 Attempt the following questions.

a) Describe the duties & responsibilities of Senior Section Engineer (Diesel locomotives). **04**

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c) Write Short note on RMS in Indian railway. **05**

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c) Describe all parts of D.C traction Motor with neat Sketches. **04**

Q.7 Attempt the following.

a) Write in details the Scrap management system in Indian Railway. **04**

b) What is mean by rolling stock management? Which types of rolling stock management used in Indian railway? **05**

c) Which digital technologies in traffic control? Explain RFID in details. **05**

SLR-BD-390

Seat No.		Set	S

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Railway Systems Management (BTN02708)

Day & Date: Thursday 05-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Electric locomotives in India are manufactured at ____
a) Jamalpur b) Bangalore
c) Chittranjan d) Gorakhpur

2) _____ Locomotive has the highest operational availability.
a) Electric b) Diesel
c) Steam d) None

3) Maintenance consist of the following action(s) _____
a) Replace of component
b) Repair of component
c) Service of component
d) All of the above

4) Belt of an electric motor is broken, it needs _____
a) Corrective maintenance b) Scheduled maintenance
c) Preventive maintenance d) Timely maintenance

5) POH period of maintenance for HHP-Loco is _____
a) 6 years b) 4 years
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6) By 2019 Indian Railways expected _____% bio-toilet coaches.
a) 50 b) 70
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7) _____ is not a stage for fire.
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c) flash over d) fully developed

8) _____ is not a Digital Technology used in Traffic Control.

a) RFID b) LiDAR
c) Li-Fi d) Wi-Fi

9) RFID means _____

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c) Resonance Frequency Identification Tags
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c) non-sprung mass d) dummy mass

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c) compressor d) deflector

13) _____ Type Air Conditioning units are used in LHB A.C. Coaches now days.

a) RMPU b) RMCU
c) Conventional d) none of these

14) In railway, green light indicates _____

a) Stop b) Proceed
c) Proceed cautiously d) None

SLR-BD-390

Seat No.		Set	S

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Railway Systems Management (BTN02708)

Day & Date: Thursday 05-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Attempt the following questions.

a) What are the components of air suspension in the Indian Railway? Elaborate in details. **04**

b) Draw typical passenger Vehicle showing the layout of air conditioning & heating equipment. **05**

c) What is Head on Generation (HOG) technology? Explain in details of HOG. **05**

Q.3 Attempt the following questions.

a) Classify in details the types of braking system in Indian Railway. **04**

b) Explain in details the components of C.B.C coupler. **05**

c) Define tractive force. Write its effects on Diesel locomotives. **05**

Q.4 Attempt the following.

a) Describe D.C electric supply unit for EMU with neat Sketches. **04**

b) Write a short note R.M.P.U in LHB coaches. **05**

c) Classify in details the types of Power supply units. **05**

Section – II

Q.5 Attempt the following questions.

a) Describe the duties & responsibilities of Senior Section Engineer (Diesel locomotives). **04**

b) Explain with neat sketch the Bio-Vacuum toilet system used in Indian railway. **05**

c) Write Short note on RMS in Indian railway. **05**

Q.6 Attempt the following questions.

a) What are different components of Bio-Vacuum toilet system explain in detail. **05**

b) Write short note on Traffic management system in Indian railway. **05**

c) Describe all parts of D.C traction Motor with neat Sketches. **04**

Q.7 Attempt the following.

a) Write in details the Scrap management system in Indian Railway. **04**

b) What is mean by rolling stock management? Which types of rolling stock management used in Indian railway? **05**

c) Which digital technologies in traffic control? Explain RFID in details. **05**

SLR-BD-391

Seat No.	

Set P

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Analysis and Synthesis of Mechanisms (BTN02709)

Day & Date: Thursday 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) The analysis of mechanism deals with _____.
a) the determination of input and output angles of a mechanism
b) the determination of dimensions of the links in a mechanism
c) the determination of displacement, velocity and acceleration of the links in a mechanism
d) the determination of number of joints in a mechanism

2) The synthesis of mechanism deals with _____.
a) the determination of input and output angles of a mechanism
b) the determination of dimensions of the links in a mechanism
c) the determination of displacement, velocity and acceleration of the links in a mechanism
d) the determination of number of joints in a mechanism

3) The difference between the desired motion and the actual motion produced is known as _____
a) Structural error b) Mechanical error
c) Graphical error d) Mathematical error

4) The error resulting from tolerance in the length of links and bearing clearance is known as _____
a) Structural error b) Mechanical error
c) Graphical error d) Mathematical error

5) Which of the following is not a kind of synthesis problem?
a) Function generation b) Path generation
c) Body guidance d) Linkage guidance

6) Designing a four-bar mechanism to generate the function y = f(x) is an example of _____

a) Function generation
b) Path generation
c) Body guidance
d) Linkage guidance

7) When a mechanism is required to guide a point, it falls under category of _____ synthesis.

a) Function generation
b) Path generation
c) Body guidance
d) Linkage guidance

8) Synthesis of the mechanism starts with which of the following step?

a) Dimensional synthesis
b) Joints synthesis
c) Number synthesis
d) Type synthesis

9) What do you mean by cognate linkages?

a) The same curve can always be generated by three different linkages
b) The same curve can always be generated by two different linkages
c) The same curve can always be generated by four different linkages
d) The same curve can always be generated by relative position of coupler and driver linkage

10) If the crank rotation angle varies from 45 degrees to 135 degrees, Using three precision points with Chebyshev's spacing, synthesize a slider crank mechanism where displacement of slider is square of the crank rotation. From the above information calculate 'b' in mm.

a) 148.2
b) 158.2
c) 135.7
d) 120.2

11) What is the relation between displacement of slider and crank angle over an interval?

a) Quadratic
b) Directly proportional
c) Linear
d) Inversely proportional

12) Which of the following is true regarding synthesis of mechanisms?

a) It determines the dimensions of the link
b) It determines the input and output angles of the links
c) It determines velocity of link
d) It determines acceleration of link

13) What is the unit of constant of proportionality C used in the relation between displacement of slider and crank angle?

a) m/rad
b) m/s-rad
c) m-s/rad
d) m/s^2

14) From the given data calculate the constant of proportionality, s = 10mm, Ss = 5mm θ = 50 degrees and θs = 45 degrees.

a) 1
b) -1
c) 1/2
d) -1/2

Seat No.		Set	P

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Analysis and Synthesis of Mechanisms (BTN02709)

Day & Date: Thursday 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following questions.
a) Classify various types of spatial mechanisms and mention their applications. **07**
b) Explain Grubbler criterion for spatial mechanism and reduce the form to apply for planer mechanism. **07**

Q.3 Attempt the following questions.
a) Explain various static and dynamic forces exist in mechanisms. **07**
b) Explain kinetostatic analysis of mechanisms. **07**

Q.4 Attempt the following questions.
a) Derive Euler Savary equation. **07**
b) Explain cubic of stationary curvature. **07**

Section – II

Q.5 Attempt the following questions.
a) Explain the concept of Branch and order defects and types of error in kinematic synthesis. **07**
b) Explain two position and three position synthesis of slider crank mechanism. **07**

Q.6 Attempt the following questions.
a) Explain complex number method of synthesis. **07**
b) Derive an expression for coupler's point curve for a four bar linkage. **07**

Q.7 Attempt the following.
a) Explain the concept of Denvit - Hartenberg parameters and their use in the study of spatial mechanism. **07**
b) Explain compatibility condition of synthesis. **07**

Seat No.	

Set **Q**

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Analysis and Synthesis of Mechanisms (BTN02709)

Day & Date: Thursday 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Synthesis of the mechanism starts with which of the following step?
a) Dimensional synthesis b) Joints synthesis
c) Number synthesis d) Type synthesis

2) What do you mean by cognate linkages?
a) The same curve can always be generated by three different linkages
b) The same curve can always be generated by two different linkages
c) The same curve can always be generated by four different linkages
d) The same curve can always be generated by relative position of coupler and driver linkage

3) If the crank rotation angle varies from 45 degrees to 135 degrees, Using three precision points with Chebyshev's spacing, synthesize a slider crank mechanism where displacement of slider is square of the crank rotation. From the above information calculate 'b' in mm.
a) 148.2 b) 158.2
c) 135.7 d) 120.2

4) What is the relation between displacement of slider and crank angle over an interval?
a) Quadratic b) Directly proportional
c) Linear d) Inversely proportional

5) Which of the following is true regarding synthesis of mechanisms?
a) It determines the dimensions of the link
b) It determines the input and output angles of the links
c) It determines velocity of link
d) It determines acceleration of link

6) What is the unit of constant of proportionality C used in the relation between displacement of slider and crank angle?

a) m/rad
b) m/s-rad
c) m-s/rad
d) m/s^2

7) From the given data calculate the constant of proportionality, s = 10mm, Ss = 5mm θ = 50 degrees and θs = 45 degrees.

a) 1
b) -1
c) 1/2
d) -1/2

8) The analysis of mechanism deals with _____.

a) the determination of input and output angles of a mechanism
b) the determination of dimensions of the links in a mechanism
c) the determination of displacement, velocity and acceleration of the links in a mechanism
d) the determination of number of joints in a mechanism

9) The synthesis of mechanism deals with _____.

a) the determination of input and output angles of a mechanism
b) the determination of dimensions of the links in a mechanism
c) the determination of displacement, velocity and acceleration of the links in a mechanism
d) the determination of number of joints in a mechanism

10) The difference between the desired motion and the actual motion produced is known as _____

a) Structural error
b) Mechanical error
c) Graphical error
d) Mathematical error

11) The error resulting from tolerance in the length of links and bearing clearance is known as _____

a) Structural error
b) Mechanical error
c) Graphical error
d) Mathematical error

12) Which of the following is not a kind of synthesis problem?

a) Function generation
b) Path generation
c) Body guidance
d) Linkage guidance

13) Designing a four-bar mechanism to generate the function y = f(x) is an example of _____

a) Function generation
b) Path generation
c) Body guidance
d) Linkage guidance

14) When a mechanism is required to guide a point, it falls under category of _____ synthesis.

a) Function generation
b) Path generation
c) Body guidance
d) Linkage guidance

Seat No.	

Set **Q**

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Analysis and Synthesis of Mechanisms (BTN02709)

Day & Date: Thursday 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following questions.
a) Classify various types of spatial mechanisms and mention their applications. **07**
b) Explain Grubbler criterion for spatial mechanism and reduce the form to apply for planer mechanism. **07**

Q.3 Attempt the following questions.
a) Explain various static and dynamic forces exist in mechanisms. **07**
b) Explain kinetostatic analysis of mechanisms. **07**

Q.4 Attempt the following questions.
a) Derive Euler Savary equation. **07**
b) Explain cubic of stationary curvature. **07**

Section – II

Q.5 Attempt the following questions.
a) Explain the concept of Branch and order defects and types of error in kinematic synthesis. **07**
b) Explain two position and three position synthesis of slider crank mechanism. **07**

Q.6 Attempt the following questions.
a) Explain complex number method of synthesis. **07**
b) Derive an expression for coupler's point curve for a four bar linkage. **07**

Q.7 Attempt the following.
a) Explain the concept of Denvit - Hartenberg parameters and their use in the study of spatial mechanism. **07**
b) Explain compatibility condition of synthesis. **07**

Seat No.	

Set **R**

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Analysis and Synthesis of Mechanisms (BTN02709)

Day & Date: Thursday 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) What is the relation between displacement of slider and crank angle over an interval?
a) Quadratic
b) Directly proportional
c) Linear
d) Inversely proportional

2) Which of the following is true regarding synthesis of mechanisms?
a) It determines the dimensions of the link
b) It determines the input and output angles of the links
c) It determines velocity of link
d) It determines acceleration of link

3) What is the unit of constant of proportionality C used in the relation between displacement of slider and crank angle?
a) m/rad
b) m/s-rad
c) m-s/rad
d) m/s^2

4) From the given data calculate the constant of proportionality, s = 10mm, Ss = 5mm θ = 50 degrees and θs = 45 degrees.
a) 1
b) -1
c) 1/2
d) -1/2

5) The analysis of mechanism deals with _____.
a) the determination of input and output angles of a mechanism
b) the determination of dimensions of the links in a mechanism
c) the determination of displacement, velocity and acceleration of the links in a mechanism
d) the determination of number of joints in a mechanism

6) The synthesis of mechanism deals with _____.
   a) the determination of input and output angles of a mechanism
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   c) the determination of displacement, velocity and acceleration of the links in a mechanism
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   a) Structural error b) Mechanical error
   c) Graphical error d) Mathematical error

8) The error resulting from tolerance in the length of links and bearing clearance is known as _____
   a) Structural error b) Mechanical error
   c) Graphical error d) Mathematical error

9) Which of the following is not a kind of synthesis problem?
   a) Function generation b) Path generation
   c) Body guidance d) Linkage guidance

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13) What do you mean by cognate linkages?
   a) The same curve can always be generated by three different linkages
   b) The same curve can always be generated by two different linkages
   c) The same curve can always be generated by four different linkages
   d) The same curve can always be generated by relative position of coupler and driver linkage

14) If the crank rotation angle varies from 45 degrees to 135 degrees, Using three precision points with Chebyshev's spacing, synthesize a slider crank mechanism where displacement of slider is square of the crank rotation. From the above information calculate 'b' in mm.
   a) 148.2 b) 158.2
   c) 135.7 d) 120.2

Seat No.	

Set **R**

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Analysis and Synthesis of Mechanisms (BTN02709)

Day & Date: Thursday 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following questions.
- **a)** Classify various types of spatial mechanisms and mention their applications. **07**
- **b)** Explain Grubbler criterion for spatial mechanism and reduce the form to apply for planer mechanism. **07**

Q.3 Attempt the following questions.
- **a)** Explain various static and dynamic forces exist in mechanisms. **07**
- **b)** Explain kinetostatic analysis of mechanisms. **07**

Q.4 Attempt the following questions.
- **a)** Derive Euler Savary equation. **07**
- **b)** Explain cubic of stationary curvature. **07**

Section – II

Q.5 Attempt the following questions.
- **a)** Explain the concept of Branch and order defects and types of error in kinematic synthesis. **07**
- **b)** Explain two position and three position synthesis of slider crank mechanism. **07**

Q.6 Attempt the following questions.
- **a)** Explain complex number method of synthesis. **07**
- **b)** Derive an expression for coupler's point curve for a four bar linkage. **07**

Q.7 Attempt the following.
- **a)** Explain the concept of Denvit - Hartenberg parameters and their use in the study of spatial mechanism. **07**
- **b)** Explain compatibility condition of synthesis. **07**

Seat No.		Set	S

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Analysis and Synthesis of Mechanisms (BTN02709)

Day & Date: Thursday 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Designing a four-bar mechanism to generate the function y = f(x) is an example of _____
a) Function generation b) Path generation
c) Body guidance d) Linkage guidance

2) When a mechanism is required to guide a point, it falls under category of _____ synthesis.
a) Function generation b) Path generation
c) Body guidance d) Linkage guidance

3) Synthesis of the mechanism starts with which of the following step?
a) Dimensional synthesis b) Joints synthesis
c) Number synthesis d) Type synthesis

4) What do you mean by cognate linkages?
a) The same curve can always be generated by three different linkages
b) The same curve can always be generated by two different linkages
c) The same curve can always be generated by four different linkages
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5) If the crank rotation angle varies from 45 degrees to 135 degrees, Using three precision points with Chebyshev's spacing, synthesize a slider crank mechanism where displacement of slider is square of the crank rotation. From the above information calculate 'b' in mm.
a) 148.2 b) 158.2
c) 135.7 d) 120.2

6) What is the relation between displacement of slider and crank angle over an interval?
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   a) It determines the dimensions of the link
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   c) It determines velocity of link
   d) It determines acceleration of link

8) What is the unit of constant of proportionality C used in the relation between displacement of slider and crank angle?
   a) m/rad
   b) m/s-rad
   c) m-s/rad
   d) m/s^2

9) From the given data calculate the constant of proportionality, s = 10mm, Ss = 5mm θ = 50 degrees and θs = 45 degrees.
   a) 1
   b) -1
   c) 1/2
   d) -1/2

10) The analysis of mechanism deals with _____.
   a) the determination of input and output angles of a mechanism
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   c) the determination of displacement, velocity and acceleration of the links in a mechanism
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   a) the determination of input and output angles of a mechanism
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   a) Structural error
   b) Mechanical error
   c) Graphical error
   d) Mathematical error

13) The error resulting from tolerance in the length of links and bearing clearance is known as _____
   a) Structural error
   b) Mechanical error
   c) Graphical error
   d) Mathematical error

14) Which of the following is not a kind of synthesis problem?
   a) Function generation
   b) Path generation
   c) Body guidance
   d) Linkage guidance

SLR-BD-391

Seat No.		Set	S

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Analysis and Synthesis of Mechanisms (BTN02709)

Day & Date: Thursday 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following questions.
a) Classify various types of spatial mechanisms and mention their applications. **07**
b) Explain Grubbler criterion for spatial mechanism and reduce the form to apply for planer mechanism. **07**

Q.3 Attempt the following questions.
a) Explain various static and dynamic forces exist in mechanisms. **07**
b) Explain kinetostatic analysis of mechanisms. **07**

Q.4 Attempt the following questions.
a) Derive Euler Savary equation. **07**
b) Explain cubic of stationary curvature. **07**

Section – II

Q.5 Attempt the following questions.
a) Explain the concept of Branch and order defects and types of error in kinematic synthesis. **07**
b) Explain two position and three position synthesis of slider crank mechanism. **07**

Q.6 Attempt the following questions.
a) Explain complex number method of synthesis. **07**
b) Derive an expression for coupler's point curve for a four bar linkage. **07**

Q.7 Attempt the following.
a) Explain the concept of Denvit - Hartenberg parameters and their use in the study of spatial mechanism. **07**
b) Explain compatibility condition of synthesis. **07**

SLR-BD-392

Seat No.		Set	P

Fourth.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Business Economics (BTN02710)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) If supply & demand both shift outward, but demand shifts outward more than supply, the equilibrium price _____.
a) will increase & quantity will increase
b) will increase & quantity will decrease
c) will decrease & quantity will decrease
d) will decrease & quantity will increase

2) Bread and butter have _____.
a) negative CPED b) positive CPED
c) positive IED d) negative IED

3) Maximum ceiling price must be _____.
a) below the equilibrium price
b) same as the equilibrium price
c) above the equilibrium price
d) same as production cost

4) Higher angle of incidence indicates _____.
a) higher loss b) higher profit
c) higher fixed cost d) lower variable cost

5) Cost that cannot be shown in a statement is known as _____.
a) opportunity cost b) incremental cost
c) direct cost d) current cost

6) Cost of welding rods is an example of _____.
a) direct material cost b) sunk cost
c) economist's cost d) indirect material cost

7) Which of the following reduces time value of money?
a) Hike in prices b) Inflation
c) Devaluation of currency d) All of above

8) Replacing casting by forging is an example of _____.
a) raw material substitution b) product modification
c) process modification d) design modification

9) _____ favours 'make' decision.
a) Higher fixed cost b) Protection of own patent
c) Availability of vendors d) Less production volume

10) Anticipating the possible failure is an essential feature of _____ maintenance.
a) Breakdown b) Opportunistic
c) Routine d) Predictive

11) For an asset, _____.
a) economic life < useful life b) useful life < economic life
c) physical life < useful life d) physical life < economic life

12) Pollution is considered in _____ appraisal.
a) Social b) Technical
c) Ecological d) Economic

13) Feasibility study is done in _____ stage of project management life cycle.
a) Execution b) Initial
c) Planning d) Closeout

14) Which of the following is the correct sequence of steps in value engineering?
a) creating, blasting, refining b) refining, creating, blasting
c) blasting, creating, refining d) creating, refining, blasting

Seat No.	

Set **P**

Fourth.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Business Economics (BTN02710)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Use of scientific calculator is allowed.
3) Figures to right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.

SECTION – I

Q.2 **a)** Explain law of supply and relation between demand & supply. **08**

b) Sudhir is currently investing money in a bank account having a nominal 7 % interest compounded annually. If he invests Rs. 50000 today, how many years will it take for his account to grow to Rs. 600000? **06**

Q.3 **a)** Explain graphically 'Break Even Analysis' stating important expressions. **08**

b) Sneha wants her savings to yield Rs. 800000 at the end of six years. How much should she deposit today if interest rate is fixed at 8% compounded annually. **06**

Q.4 **a)** Explain in brief the following terms. **08**
i) factory cost
ii) prime cost
iii) incremental cost
iv) implicit cost

b) Describe 'indifference curves' graphically. **06**

SECTION – II

Q.5 **a)** Explain various aspects of make or buy decision. **08**

b) Explain with a block diagram 'project management life cycle'. **06**

Q.6 **a)** Explain the importance of 'value analysis' with a suitable example. **08**

b) Explain in details C.B.M. **06**

Q.7 **a)** Explain various lives of an asset. **08**

b) What do you mean by process modification and why is it needed? **06**

Seat No.	

Set **Q**

Fourth.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Business Economics (BTN02710)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Replacing casting by forging is an example of _____.
a) raw material substitution b) product modification
c) process modification d) design modification

2) _____ favours 'make' decision.
a) Higher fixed cost b) Protection of own patent
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3) Anticipating the possible failure is an essential feature of _____ maintenance.
a) Breakdown b) Opportunistic
c) Routine d) Predictive

4) For an asset, _____.
a) economic life < useful life b) useful life < economic life
c) physical life < useful life d) physical life < economic life

5) Pollution is considered in _____ appraisal.
a) Social b) Technical
c) Ecological d) Economic

6) Feasibility study is done in _____ stage of project management life cycle.
a) Execution b) Initial
c) Planning d) Closeout

7) Which of the following is the correct sequence of steps in value engineering?
a) creating, blasting, refining b) refining, creating, blasting
c) blasting, creating, refining d) creating, refining, blasting

8) If supply & demand both shift outward, but demand shifts outward more than supply, the equilibrium price _____.

a) will increase & quantity will increase
b) will increase & quantity will decrease
c) will decrease & quantity will decrease
d) will decrease & quantity will increase

9) Bread and butter have _____.

a) negative CPED
b) positive CPED
c) positive IED
d) negative IED

10) Maximum ceiling price must be _____.

a) below the equilibrium price
b) same as the equilibrium price
c) above the equilibrium price
d) same as production cost

11) Higher angle of incidence indicates _____.

a) higher loss
b) higher profit
c) higher fixed cost
d) lower variable cost

12) Cost that cannot be shown in a statement is known as _____.

a) opportunity cost
b) incremental cost
c) direct cost
d) current cost

13) Cost of welding rods is an example of _____.

a) direct material cost
b) sunk cost
c) economist's cost
d) indirect material cost

14) Which of the following reduces time value of money?

a) Hike in prices
b) Inflation
c) Devaluation of currency
d) All of above

SLR-BD-392

Seat No.	

Set Q

Fourth.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Business Economics (BTN02710)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Use of scientific calculator is allowed.
3) Figures to right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.

SECTION – I

Q.2 a) Explain law of supply and relation between demand & supply. **08**
b) Sudhir is currently investing money in a bank account having a nominal 7 % interest compounded annually. If he invests Rs. 50000 today, how many years will it take for his account to grow to Rs. 600000? **06**

Q.3 a) Explain graphically 'Break Even Analysis' stating important expressions. **08**
b) Sneha wants her savings to yield Rs. 800000 at the end of six years. How much should she deposit today if interest rate is fixed at 8% compounded annually. **06**

Q.4 a) Explain in brief the following terms. **08**
i) factory cost
ii) prime cost
iii) incremental cost
iv) implicit cost
b) Describe 'indifference curves' graphically. **06**

SECTION – II

Q.5 a) Explain various aspects of make or buy decision. **08**
b) Explain with a block diagram 'project management life cycle'. **06**

Q.6 a) Explain the importance of 'value analysis' with a suitable example. **08**
b) Explain in details C.B.M. **06**

Q.7 a) Explain various lives of an asset. **08**
b) What do you mean by process modification and why is it needed? **06**

Seat No.	

Set **R**

Fourth.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Business Economics (BTN02710)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) For an asset, _____.
a) economic life < useful life b) useful life < economic life
c) physical life < useful life d) physical life < economic life

2) Pollution is considered in _____ appraisal.
a) Social b) Technical
c) Ecological d) Economic

3) Feasibility study is done in _____ stage of project management life cycle.
a) Execution b) Initial
c) Planning d) Closeout

4) Which of the following is the correct sequence of steps in value engineering?
a) creating, blasting, refining b) refining, creating, blasting
c) blasting, creating, refining d) creating, refining, blasting

5) If supply & demand both shift outward, but demand shifts outward more than supply, the equilibrium price _____.
a) will increase & quantity will increase
b) will increase & quantity will decrease
c) will decrease & quantity will decrease
d) will decrease & quantity will increase

6) Bread and butter have _____.
a) negative CPED b) positive CPED
c) positive IED d) negative IED

7) Maximum ceiling price must be _____.
a) below the equilibrium price
b) same as the equilibrium price
c) above the equilibrium price
d) same as production cost

8) Higher angle of incidence indicates _____.
a) higher loss
b) higher profit
c) higher fixed cost
d) lower variable cost

9) Cost that cannot be shown in a statement is known as _____.
a) opportunity cost
b) incremental cost
c) direct cost
d) current cost

10) Cost of welding rods is an example of _____.
a) direct material cost
b) sunk cost
c) economist's cost
d) indirect material cost

11) Which of the following reduces time value of money?
a) Hike in prices
b) Inflation
c) Devaluation of currency
d) All of above

12) Replacing casting by forging is an example of _____.
a) raw material substitution
b) product modification
c) process modification
d) design modification

13) _____ favours 'make' decision.
a) Higher fixed cost
b) Protection of own patent
c) Availability of vendors
d) Less production volume

14) Anticipating the possible failure is an essential feature of _____ maintenance.
a) Breakdown
b) Opportunistic
c) Routine
d) Predictive

SLR-BD-392

Seat No.	

Set R

Fourth.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Business Economics (BTN02710)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Use of scientific calculator is allowed.
3) Figures to right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.

SECTION – I

Q.2 a) Explain law of supply and relation between demand & supply. **08**
b) Sudhir is currently investing money in a bank account having a nominal 7 % interest compounded annually. If he invests Rs. 50000 today, how many years will it take for his account to grow to Rs. 600000? **06**

Q.3 a) Explain graphically 'Break Even Analysis' stating important expressions. **08**
b) Sneha wants her savings to yield Rs. 800000 at the end of six years. How much should she deposit today if interest rate is fixed at 8% compounded annually. **06**

Q.4 a) Explain in brief the following terms. **08**
i) factory cost
ii) prime cost
iii) incremental cost
iv) implicit cost
b) Describe 'indifference curves' graphically. **06**

SECTION – II

Q.5 a) Explain various aspects of make or buy decision. **08**
b) Explain with a block diagram 'project management life cycle'. **06**

Q.6 a) Explain the importance of 'value analysis' with a suitable example. **08**
b) Explain in details C.B.M. **06**

Q.7 a) Explain various lives of an asset. **08**
b) What do you mean by process modification and why is it needed? **06**

Seat No.	

Set **S**

Fourth.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Business Economics (BTN02710)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Cost of welding rods is an example of _____.
a) direct material cost b) sunk cost
c) economist's cost d) indirect material cost

2) Which of the following reduces time value of money?
a) Hike in prices b) Inflation
c) Devaluation of currency d) All of above

3) Replacing casting by forging is an example of _____.
a) raw material substitution b) product modification
c) process modification d) design modification

4) _____ favours 'make' decision.
a) Higher fixed cost b) Protection of own patent
c) Availability of vendors d) Less production volume

5) Anticipating the possible failure is an essential feature of _____ maintenance.
a) Breakdown b) Opportunistic
c) Routine d) Predictive

6) For an asset, _____.
a) economic life < useful life b) useful life < economic life
c) physical life < useful life d) physical life < economic life

7) Pollution is considered in _____ appraisal.
a) Social b) Technical
c) Ecological d) Economic

8) Feasibility study is done in _____ stage of project management life cycle.

a) Execution
b) Initial
c) Planning
d) Closeout

9) Which of the following is the correct sequence of steps in value engineering?

a) creating, blasting, refining
b) refining, creating, blasting
c) blasting, creating, refining
d) creating, refining, blasting

10) If supply & demand both shift outward, but demand shifts outward more than supply, the equilibrium price _____.

a) will increase & quantity will increase
b) will increase & quantity will decrease
c) will decrease & quantity will decrease
d) will decrease & quantity will increase

11) Bread and butter have _____.

a) negative CPED
b) positive CPED
c) positive IED
d) negative IED

12) Maximum ceiling price must be _____.

a) below the equilibrium price
b) same as the equilibrium price
c) above the equilibrium price
d) same as production cost

13) Higher angle of incidence indicates _____.

a) higher loss
b) higher profit
c) higher fixed cost
d) lower variable cost

14) Cost that cannot be shown in a statement is known as _____.

a) opportunity cost
b) incremental cost
c) direct cost
d) current cost

SLR-BD-392

Seat No.		Set	S

Fourth.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Business Economics (BTN02710)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Use of scientific calculator is allowed.
3) Figures to right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.

SECTION – I

Q.2 **a)** Explain law of supply and relation between demand & supply. **08**
b) Sudhir is currently investing money in a bank account having a nominal 7 % interest compounded annually. If he invests Rs. 50000 today, how many years will it take for his account to grow to Rs. 600000? **06**

Q.3 **a)** Explain graphically 'Break Even Analysis' stating important expressions. **08**
b) Sneha wants her savings to yield Rs. 800000 at the end of six years. How much should she deposit today if interest rate is fixed at 8% compounded annually. **06**

Q.4 **a)** Explain in brief the following terms. **08**
i) factory cost
ii) prime cost
iii) incremental cost
iv) implicit cost
b) Describe 'indifference curves' graphically. **06**

SECTION – II

Q.5 **a)** Explain various aspects of make or buy decision. **08**
b) Explain with a block diagram 'project management life cycle'. **06**

Q.6 **a)** Explain the importance of 'value analysis' with a suitable example. **08**
b) Explain in details C.B.M. **06**

Q.7 **a)** Explain various lives of an asset. **08**
b) What do you mean by process modification and why is it needed? **06**

SLR-BD-393

Seat No.	

Set P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced topics in robotics (BTN02718)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).
5) Use of non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) From the following which is the types of Automated Guided Vehicle (AGV)?
a) Driver less train b) Pallet trucks
c) Unit load carriers d) All of the above

2) _____ is a general purpose, programmable machine possessing certain human like characteristics.
a) Robot b) Manipulator
c) Gripper d) None of the above

3) _____ is a collection of mechanical linkage connected by joints.
a) End effector b) Gripper
c) Sensor d) Manipulator

4) From which of the following is robot programming language?
a) VAL b) AML
c) ABD d) Both a & b

5) Up and down motion along an axis known as _____ in robotics.
a) Pitch b) Roll
c) Yaw d) None of the above

6) In which of the following areas are Robots currently being used?
a) Industry b) Medicine
c) Consumer electronics d) All of these

7) From which of the following is benefit of robot?
a) Variety of task b) Computer control
c) Repetitive task d) All of the above

8) _____ is the name for space inside which a robot unit operates.
a) environment b) spatial base
c) exclusion zone d) work envelope

9) Technology that is concerned with the use of mechanical, electronic and computer-based systems in the operation and control of production?
a) Mechanization b) Automation
c) Industrialization d) All the above

10) Unmanned Ground Vehicles (UGV) are primarily designed for: _____
a) Aerial surveillance
b) Underwater exploration
c) Ground-based tasks without human intervention
d) Space exploration

11) _____ maintenance of robot is the case when the maintenance is done at periodic intervals.
a) Preventive b) Predictive
c) Remedial d) All of the above

12) MARR stands for _____ in economic analysis.
a) Mean Annual Rate of Return
b) Minimum Annual Rate of Return
c) Minimum Attractive Rate of Return
d) Maximum Annual Rate of Return

13) Slip in the context of WMR refers to: _____
a) Smooth motion on flat surfaces
b) The loss of traction and wheel slippage
c) Precise positioning on uneven terrain
d) Reducing the wheel diameter

14) The estimated value of robot at the end of its useful life is called _____.
a) Depreciation cost b) MARR
c) ROI d) Salvage value

SLR-BD-393

Seat No.		Set	P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced topics in robotics (BTN02718)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.
4) Use of non-programmable scientific calculator is allowed.

Section – I

Q.2 **a)** Explain the robotics market, current market scenario and future prospects. **07**
b) Discuss concept of Robot Intelligence and robot applications with suitable examples. **07**

Q.3 **a)** Discuss any two robot work cell layouts. State clearly and justify typical application area for each layout. **07**
b) Explain human - machine interface and safety considerations in work cell design. **07**

Q.4 **a)** Explain various types of mobile robot with neat sketch with suitable examples. **07**
b) Explain Slip and its modeling with design of slip-free motion on uneven terrain. **07**

Section – II

Q.5 **a)** Discuss requirements of robots to be used for Electronics Assembly with applications. **07**
b) Discuss requirements of robots to be used for Continuous Welding with applications. **07**

Q.6 **a)** Explain detailed economics analysis and capital authorization. **07**
b) Explain the concept of Planning and Engineering for the installation. **07**

Q.7 **a)** What are the general safety consideration for industrial robotics. Explain plant survey to identify potential application. **07**
b) Explain the concept of education, training and maintenance of robotics. **07**

Seat No.		Set	Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced topics in robotics (BTN02718)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).
5) Use of non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ is the name for space inside which a robot unit operates.
a) environment b) spatial base
c) exclusion zone d) work envelope

2) Technology that is concerned with the use of mechanical, electronic and computer-based systems in the operation and control of production?
a) Mechanization b) Automation
c) Industrialization d) All the above

3) Unmanned Ground Vehicles (UGV) are primarily designed for: _____
a) Aerial surveillance
b) Underwater exploration
c) Ground-based tasks without human intervention
d) Space exploration

4) _____ maintenance of robot is the case when the maintenance is done at periodic intervals.
a) Preventive b) Predictive
c) Remedial d) All of the above

5) MARR stands for _____ in economic analysis.
a) Mean Annual Rate of Return
b) Minimum Annual Rate of Return
c) Minimum Attractive Rate of Return
d) Maximum Annual Rate of Return

6) Slip in the context of WMR refers to: _____
   a) Smooth motion on flat surfaces
   b) The loss of traction and wheel slippage
   c) Precise positioning on uneven terrain
   d) Reducing the wheel diameter

7) The estimated value of robot at the end of its useful life is called _____.
   a) Depreciation cost b) MARR
   c) ROI d) Salvage value

8) From the following which is the types of Automated Guided Vehicle (AGV)?
   a) Driver less train b) Pallet trucks
   c) Unit load carriers d) All of the above

9) _____ is a general purpose, programmable machine possessing certain human like characteristics.
   a) Robot b) Manipulator
   c) Gripper d) None of the above

10) _____ is a collection of mechanical linkage connected by joints.
   a) End effector b) Gripper
   c) Sensor d) Manipulator

11) From which of the following is robot programming language?
   a) VAL b) AML
   c) ABD d) Both a & b

12) Up and down motion along an axis known as _____ in robotics.
   a) Pitch b) Roll
   c) Yaw d) None of the above

13) In which of the following areas are Robots currently being used?
   a) Industry b) Medicine
   c) Consumer electronics d) All of these

14) From which of the following is benefit of robot?
   a) Variety of task b) Computer control
   c) Repetitive task d) All of the above

SLR-BD-393

Seat No.		Set	Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced topics in robotics (BTN02718)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.
4) Use of non-programmable scientific calculator is allowed.

Section – I

Q.2	**a)**	Explain the robotics market, current market scenario and future prospects.	**07**
	b)	Discuss concept of Robot Intelligence and robot applications with suitable examples.	**07**
Q.3	**a)**	Discuss any two robot work cell layouts. State clearly and justify typical application area for each layout.	**07**
	b)	Explain human - machine interface and safety considerations in work cell design.	**07**
Q.4	**a)**	Explain various types of mobile robot with neat sketch with suitable examples.	**07**
	b)	Explain Slip and its modeling with design of slip-free motion on uneven terrain.	**07**

Section – II

Q.5	**a)**	Discuss requirements of robots to be used for Electronics Assembly with applications.	**07**
	b)	Discuss requirements of robots to be used for Continuous Welding with applications.	**07**
Q.6	**a)**	Explain detailed economics analysis and capital authorization.	**07**
	b)	Explain the concept of Planning and Engineering for the installation.	**07**
Q.7	**a)**	What are the general safety consideration for industrial robotics. Explain plant survey to identify potential application.	**07**
	b)	Explain the concept of education, training and maintenance of robotics.	**07**

SLR-BD-393

Seat No.	

Set R

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced topics in robotics (BTN02718)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).
5) Use of non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) _____ maintenance of robot is the case when the maintenance is done at periodic intervals.
a) Preventive b) Predictive
c) Remedial d) All of the above

2) MARR stands for _____ in economic analysis.
a) Mean Annual Rate of Return
b) Minimum Annual Rate of Return
c) Minimum Attractive Rate of Return
d) Maximum Annual Rate of Return

3) Slip in the context of WMR refers to: _____
a) Smooth motion on flat surfaces
b) The loss of traction and wheel slippage
c) Precise positioning on uneven terrain
d) Reducing the wheel diameter

4) The estimated value of robot at the end of its useful life is called _____.
a) Depreciation cost b) MARR
c) ROI d) Salvage value

5) From the following which is the types of Automated Guided Vehicle (AGV)?
a) Driver less train b) Pallet trucks
c) Unit load carriers d) All of the above

6) _____ is a general purpose, programmable machine possessing certain human like characteristics.
a) Robot b) Manipulator
c) Gripper d) None of the above

7) _____ is a collection of mechanical linkage connected by joints.
a) End effector b) Gripper
c) Sensor d) Manipulator

8) From which of the following is robot programming language?
a) VAL b) AML
c) ABD d) Both a & b

9) Up and down motion along an axis known as _____ in robotics.
a) Pitch b) Roll
c) Yaw d) None of the above

10) In which of the following areas are Robots currently being used?
a) Industry b) Medicine
c) Consumer electronics d) All of these

11) From which of the following is benefit of robot?
a) Variety of task b) Computer control
c) Repetitive task d) All of the above

12) _____ is the name for space inside which a robot unit operates.
a) environment b) spatial base
c) exclusion zone d) work envelope

13) Technology that is concerned with the use of mechanical, electronic and computer-based systems in the operation and control of production?
a) Mechanization b) Automation
c) Industrialization d) All the above

14) Unmanned Ground Vehicles (UGV) are primarily designed for: _____
a) Aerial surveillance
b) Underwater exploration
c) Ground-based tasks without human intervention
d) Space exploration

SLR-BD-393

Seat No.		Set	R

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced topics in robotics (BTN02718)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.
4) Use of non-programmable scientific calculator is allowed.

Section – I

Q.2 **a)** Explain the robotics market, current market scenario and future prospects. **07**
b) Discuss concept of Robot Intelligence and robot applications with suitable examples. **07**

Q.3 **a)** Discuss any two robot work cell layouts. State clearly and justify typical application area for each layout. **07**
b) Explain human - machine interface and safety considerations in work cell design. **07**

Q.4 **a)** Explain various types of mobile robot with neat sketch with suitable examples. **07**
b) Explain Slip and its modeling with design of slip-free motion on uneven terrain. **07**

Section – II

Q.5 **a)** Discuss requirements of robots to be used for Electronics Assembly with applications. **07**
b) Discuss requirements of robots to be used for Continuous Welding with applications. **07**

Q.6 **a)** Explain detailed economics analysis and capital authorization. **07**
b) Explain the concept of Planning and Engineering for the installation. **07**

Q.7 **a)** What are the general safety consideration for industrial robotics. Explain plant survey to identify potential application. **07**
b) Explain the concept of education, training and maintenance of robotics. **07**

Seat No.		Set	S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced topics in robotics (BTN02718)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).
5) Use of non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) In which of the following areas are Robots currently being used?
a) Industry b) Medicine
c) Consumer electronics d) All of these

2) From which of the following is benefit of robot?
a) Variety of task b) Computer control
c) Repetitive task d) All of the above

3) _____ is the name for space inside which a robot unit operates.
a) environment b) spatial base
c) exclusion zone d) work envelope

4) Technology that is concerned with the use of mechanical, electronic and computer-based systems in the operation and control of production?
a) Mechanization b) Automation
c) Industrialization d) All the above

5) Unmanned Ground Vehicles (UGV) are primarily designed for: _____
a) Aerial surveillance
b) Underwater exploration
c) Ground-based tasks without human intervention
d) Space exploration

6) _____ maintenance of robot is the case when the maintenance is done at periodic intervals.
a) Preventive b) Predictive
c) Remedial d) All of the above

7) MARR stands for _____ in economic analysis.
a) Mean Annual Rate of Return
b) Minimum Annual Rate of Return
c) Minimum Attractive Rate of Return
d) Maximum Annual Rate of Return

8) Slip in the context of WMR refers to: _____
a) Smooth motion on flat surfaces
b) The loss of traction and wheel slippage
c) Precise positioning on uneven terrain
d) Reducing the wheel diameter

9) The estimated value of robot at the end of its useful life is called _____.
a) Depreciation cost b) MARR
c) ROI d) Salvage value

10) From the following which is the types of Automated Guided Vehicle (AGV)?
a) Driver less train b) Pallet trucks
c) Unit load carriers d) All of the above

11) _____ is a general purpose, programmable machine possessing certain human like characteristics.
a) Robot b) Manipulator
c) Gripper d) None of the above

12) _____ is a collection of mechanical linkage connected by joints.
a) End effector b) Gripper
c) Sensor d) Manipulator

13) From which of the following is robot programming language?
a) VAL b) AML
c) ABD d) Both a & b

14) Up and down motion along an axis known as _____ in robotics.
a) Pitch b) Roll
c) Yaw d) None of the above

SLR-BD-393

Seat No.		Set	S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced topics in robotics (BTN02718)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.
4) Use of non-programmable scientific calculator is allowed.

Section – I

Q.2 **a)** Explain the robotics market, current market scenario and future prospects. **07**
b) Discuss concept of Robot Intelligence and robot applications with suitable examples. **07**

Q.3 **a)** Discuss any two robot work cell layouts. State clearly and justify typical application area for each layout. **07**
b) Explain human - machine interface and safety considerations in work cell design. **07**

Q.4 **a)** Explain various types of mobile robot with neat sketch with suitable examples. **07**
b) Explain Slip and its modeling with design of slip-free motion on uneven terrain. **07**

Section – II

Q.5 **a)** Discuss requirements of robots to be used for Electronics Assembly with applications. **07**
b) Discuss requirements of robots to be used for Continuous Welding with applications. **07**

Q.6 **a)** Explain detailed economics analysis and capital authorization. **07**
b) Explain the concept of Planning and Engineering for the installation. **07**

Q.7 **a)** What are the general safety consideration for industrial robotics. Explain plant survey to identify potential application. **07**
b) Explain the concept of education, training and maintenance of robotics. **07**

SLR-BD-394

Seat No.		Set	P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced topics on 3D Printing (BTN02719)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the primary goal of automation in manufacturing?
a) Reduce workforce
b) Increase production speed and efficiency
c) Decrease product quality
d) Increase manual labour

2) Which of the following is an example of a basic automated process?
a) Handcrafting b) 3D printing
c) Wood carving d) Sewing by hand

3) What is the purpose of 3D CAD modeling in the manufacturing process?
a) Creating physical prototypes b) Designing user interfaces
c) Modeling 2D graphics d) Drafting blueprints

4) Which 3D printing technology is associated with the acronym "SLA"?
a) Solid Ground Curing (SGC) System
b) Solid Creation System
c) 3D Systems SLA
d) EOS' Stereos System

5) What does "SGC" stand for in 3D printing technology?
a) Solid Ground Curing b) Solid Creation System
c) Stereolithography d) Selective Laser Sintering

6) What does CAD stand for?
a) Computer-Aided Design b) Computer-Aided Development
c) Computer-Activated Drawing d) Computer-Appointed Diagram

7) In feature-based 3D CAD modeling, what are "features"?
   a) Specific design elements with no parametric relations
   b) Geometric shapes that cannot be edited
   c) Parametric design elements like holes, fillets, and extrusions
   d) 3D scans of physical objects

8) What is the primary goal of Rapid Tooling?
   a) To produce high-quality, long-lasting molds
   b) To create functional prototypes quickly
   c) To handcraft tools for manufacturing
   d) To minimize the use of technology in tooling

9) Rapid Tooling is often used in which phase of product development?
   a) Conceptual design
   b) Mass production
   c) Market research
   d) Distribution

10) Which of the following is NOT a key advantage of Rapid Tooling?
   a) Cost-effectiveness
   b) High tool durability
   c) Short lead times
   d) Increased design flexibility

11) What does "STL" stand for in the context of 3D printing?
   a) Stereolithography
   b) Standard Triangle Language
   c) Structured Text Language
   d) Solid Transition Layer

12) What is the primary purpose of an STL file in 3D printing?
   a) Storing color information for 3D models
   b) Defining the dimensions of a 3D printer
   c) Describing the geometry of a 3D object
   d) Managing printer firmware

13) What is post-processing in the context of 3D printing?
   a) The initial setup of a 3D printer
   b) The process of designing 3D models
   c) Additional treatments or finishing steps after 3D printing
   d) The method of slicing 3D models for printing

14) Which phase of 3D printing involves post-processing?
   a) Modeling
   b) Printing
   c) Design
   d) Finishing

Seat No.	

Set **P**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced topics on 3D Printing (BTN02719)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory in section I, and solve any two questions from the remaining. Q. No. 6 is compulsory in section II, and solve any two questions from the remaining
2) Use if scientific calculator is allowed.
3) Figures to the right indicate full marks.
4) Assume suitable data if required.

Section – I

Q.2	Enlist the types of 3D printing technologies and illustrate any 01 with neat sketch.	**10**
Q.3	Compare Automated processes in w.r.t 3D printing.	**09**
Q.4	Elaborate the Stratasys's Fused Deposition Modeling process with applications.	**09**
Q.5	Discuss feature-based 3D CAD modeling.	**09**

Section – II

Q.6	Enlist different types of Indirect tooling. Explain any 01 with neat sketch.	**10**
Q.7	What is meant by Rapid Tooling? Discuss Architecture of Rapid Tooling Integrated Manufacturing system.	**09**
Q.8	Discuss common errors in CAD to STL conversion.	**09**
Q.9	Describe techniques for improvement in surface finish and geometry in 3D Printing.	**09**

Seat No.		Set	Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced topics on 3D Printing (BTN02719)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the primary goal of Rapid Tooling?
a) To produce high-quality, long-lasting molds
b) To create functional prototypes quickly
c) To handcraft tools for manufacturing
d) To minimize the use of technology in tooling

2) Rapid Tooling is often used in which phase of product development?
a) Conceptual design b) Mass production
c) Market research d) Distribution

3) Which of the following is NOT a key advantage of Rapid Tooling?
a) Cost-effectiveness b) High tool durability
c) Short lead times d) Increased design flexibility

4) What does "STL" stand for in the context of 3D printing?
a) Stereolithography b) Standard Triangle Language
c) Structured Text Language d) Solid Transition Layer

5) What is the primary purpose of an STL file in 3D printing?
a) Storing color information for 3D models
b) Defining the dimensions of a 3D printer
c) Describing the geometry of a 3D object
d) Managing printer firmware

6) What is post-processing in the context of 3D printing?
a) The initial setup of a 3D printer
b) The process of designing 3D models
c) Additional treatments or finishing steps after 3D printing
d) The method of slicing 3D models for printing

7) Which phase of 3D printing involves post-processing?
a) Modeling b) Printing
c) Design d) Finishing

8) What is the primary goal of automation in manufacturing?
a) Reduce workforce
b) Increase production speed and efficiency
c) Decrease product quality
d) Increase manual labour

9) Which of the following is an example of a basic automated process?
a) Handcrafting b) 3D printing
c) Wood carving d) Sewing by hand

10) What is the purpose of 3D CAD modeling in the manufacturing process?
a) Creating physical prototypes b) Designing user interfaces
c) Modeling 2D graphics d) Drafting blueprints

11) Which 3D printing technology is associated with the acronym "SLA"?
a) Solid Ground Curing (SGC) System
b) Solid Creation System
c) 3D Systems SLA
d) EOS' Stereos System

12) What does "SGC" stand for in 3D printing technology?
a) Solid Ground Curing b) Solid Creation System
c) Stereolithography d) Selective Laser Sintering

13) What does CAD stand for?
a) Computer-Aided Design b) Computer-Aided Development
c) Computer-Activated Drawing d) Computer-Appointed Diagram

14) In feature-based 3D CAD modeling, what are "features"?
a) Specific design elements with no parametric relations
b) Geometric shapes that cannot be edited
c) Parametric design elements like holes, fillets, and extrusions
d) 3D scans of physical objects

Seat No.	

Set **Q**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced topics on 3D Printing (BTN02719)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory in section I, and solve any two questions from the remaining. Q. No. 6 is compulsory in section II, and solve any two questions from the remaining
2) Use if scientific calculator is allowed.
3) Figures to the right indicate full marks.
4) Assume suitable data if required.

Section – I

Q.2	Enlist the types of 3D printing technologies and illustrate any 01 with neat sketch.	**10**
Q.3	Compare Automated processes in w.r.t 3D printing.	**09**
Q.4	Elaborate the Stratasys's Fused Deposition Modeling process with applications.	**09**
Q.5	Discuss feature-based 3D CAD modeling.	**09**

Section – II

Q.6	Enlist different types of Indirect tooling. Explain any 01 with neat sketch.	**10**
Q.7	What is meant by Rapid Tooling? Discuss Architecture of Rapid Tooling Integrated Manufacturing system.	**09**
Q.8	Discuss common errors in CAD to STL conversion.	**09**
Q.9	Describe techniques for improvement in surface finish and geometry in 3D Printing.	**09**

SLR-BD-394

Seat No.		Set	R

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced topics on 3D Printing (BTN02719)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if required.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What does "STL" stand for in the context of 3D printing?
a) Stereolithography b) Standard Triangle Language
c) Structured Text Language d) Solid Transition Layer

2) What is the primary purpose of an STL file in 3D printing?
a) Storing color information for 3D models
b) Defining the dimensions of a 3D printer
c) Describing the geometry of a 3D object
d) Managing printer firmware

3) What is post-processing in the context of 3D printing?
a) The initial setup of a 3D printer
b) The process of designing 3D models
c) Additional treatments or finishing steps after 3D printing
d) The method of slicing 3D models for printing

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a) Modeling b) Printing
c) Design d) Finishing

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c) Decrease product quality
d) Increase manual labour

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a) Creating physical prototypes b) Designing user interfaces
c) Modeling 2D graphics d) Drafting blueprints

8) Which 3D printing technology is associated with the acronym "SLA"?
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b) Solid Creation System
c) 3D Systems SLA
d) EOS' Stereos System

9) What does "SGC" stand for in 3D printing technology?
a) Solid Ground Curing b) Solid Creation System
c) Stereolithography d) Selective Laser Sintering

10) What does CAD stand for?
a) Computer-Aided Design b) Computer-Aided Development
c) Computer-Activated Drawing d) Computer-Appointed Diagram

11) In feature-based 3D CAD modeling, what are "features"?
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d) 3D scans of physical objects

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b) To create functional prototypes quickly
c) To handcraft tools for manufacturing
d) To minimize the use of technology in tooling

13) Rapid Tooling is often used in which phase of product development?
a) Conceptual design b) Mass production
c) Market research d) Distribution

14) Which of the following is NOT a key advantage of Rapid Tooling?
a) Cost-effectiveness b) High tool durability
c) Short lead times d) Increased design flexibility

Seat No.	

Set **R**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced topics on 3D Printing (BTN02719)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory in section I, and solve any two questions from the remaining. Q. No. 6 is compulsory in section II, and solve any two questions from the remaining
2) Use if scientific calculator is allowed.
3) Figures to the right indicate full marks.
4) Assume suitable data if required.

Section – I

Q.2	Enlist the types of 3D printing technologies and illustrate any 01 with neat sketch.	**10**
Q.3	Compare Automated processes in w.r.t 3D printing.	**09**
Q.4	Elaborate the Stratasys's Fused Deposition Modeling process with applications.	**09**
Q.5	Discuss feature-based 3D CAD modeling.	**09**

Section – II

Q.6	Enlist different types of Indirect tooling. Explain any 01 with neat sketch.	**10**
Q.7	What is meant by Rapid Tooling? Discuss Architecture of Rapid Tooling Integrated Manufacturing system.	**09**
Q.8	Discuss common errors in CAD to STL conversion.	**09**
Q.9	Describe techniques for improvement in surface finish and geometry in 3D Printing.	**09**

Seat No.		Set	S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced topics on 3D Printing (BTN02719)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) What does CAD stand for?
a) Computer-Aided Design b) Computer-Aided Development
c) Computer-Activated Drawing d) Computer-Appointed Diagram

2) In feature-based 3D CAD modeling, what are "features"?
a) Specific design elements with no parametric relations
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c) Market research d) Distribution

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c) Short lead times d) Increased design flexibility

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a) Stereolithography b) Standard Triangle Language
c) Structured Text Language d) Solid Transition Layer

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a) The initial setup of a 3D printer
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9) Which phase of 3D printing involves post-processing?
a) Modeling b) Printing
c) Design d) Finishing

10) What is the primary goal of automation in manufacturing?
a) Reduce workforce
b) Increase production speed and efficiency
c) Decrease product quality
d) Increase manual labour

11) Which of the following is an example of a basic automated process?
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c) Wood carving d) Sewing by hand

12) What is the purpose of 3D CAD modeling in the manufacturing process?
a) Creating physical prototypes b) Designing user interfaces
c) Modeling 2D graphics d) Drafting blueprints

13) Which 3D printing technology is associated with the acronym "SLA"?
a) Solid Ground Curing (SGC) System
b) Solid Creation System
c) 3D Systems SLA
d) EOS' Stereos System

14) What does "SGC" stand for in 3D printing technology?
a) Solid Ground Curing b) Solid Creation System
c) Stereolithography d) Selective Laser Sintering

SLR-BD-394

Seat No.		Set	S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced topics on 3D Printing (BTN02719)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory in section I, and solve any two questions from the remaining. Q. No. 6 is compulsory in section II, and solve any two questions from the remaining
2) Use if scientific calculator is allowed.
3) Figures to the right indicate full marks.
4) Assume suitable data if required.

Section – I

Q.2	Enlist the types of 3D printing technologies and illustrate any 01 with neat sketch.	**10**
Q.3	Compare Automated processes in w.r.t 3D printing.	**09**
Q.4	Elaborate the Stratasys's Fused Deposition Modeling process with applications.	**09**
Q.5	Discuss feature-based 3D CAD modeling.	**09**

Section – II

Q.6	Enlist different types of Indirect tooling. Explain any 01 with neat sketch.	**10**
Q.7	What is meant by Rapid Tooling? Discuss Architecture of Rapid Tooling Integrated Manufacturing system.	**09**
Q.8	Discuss common errors in CAD to STL conversion.	**09**
Q.9	Describe techniques for improvement in surface finish and geometry in 3D Printing.	**09**

SLR-BD-395

Seat No.	

Set P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Resources, Economics and Environment (BTN02716)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Kyto Protocol launched in _____.
a) India b) Japan
c) China d) U.S.A.

2) The time taken by the project to pay for itself is called as _____.
a) Pay hold period b) Payback period
c) a & b d) None of the Above

3) Source of energy in the biosphere is _____.
a) Producer b) Decomposer
c) Sunlight d) Heat of earth

4) "Bet on Climate change was won by _____."
a) Eherlich b) Watson
c) Jorge d) Simon

5) Which is the following is Environmental impact?
a) Soil damage b) Gas leakage
c) Air pollution d) Temperature

6) NPV stands for _____
a) Net Protect Value b) Net Present value
c) a & b d) None of the Above

7) Simon-Erich bet on planet was formalized on Sep 29, 1980.
a) True b) False

8) Major Challenge in solar power plant _____
a) Water b) Solar Panels
c) Land Acquisition d) Money

9) EIA Stands for Environmental Impact Assessment.
a) True b) False

10) Carbon credits also called as _____
a) Carbon b) Pollution
c) Emission d) Carbon Offset

11) National Solar Mission launched in _____
a) Jan 2011 b) Jan 2023
c) Jan 2022 d) Jan 2010

12) Which of the following Energy Resources is renewable?
a) Coal b) Hydropower plan
c) Natural gas d) Petroleum

13) Preferences are nothing but Choice given by person.
a) True b) False

14) The main Constitute of biogas is _____.
a) Methane b) Carbon dioxide
c) Hydrogen d) HCL

Seat No.		Set	P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Resources, Economics and Environment (BTN02716)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions form Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data, diagrams if required.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Solve:

a) What are the Energy Resources? Explain the primary Energy Analysis. **04**

b) Explain in detail the "National Solar Mission". **05**

c) What is the meaning of "Quality of Life"? How it is increases by Energy? **05**

Q.3 Solve:

a) Explain Following terms. **04**
i) Kaya identity ii) Emission Factor

b) Explain the Linkage between "Energy & Development." **05**

c) Write a short note on "Global Energy use in India". **05**

Q.4 Solve:

a) Write a short note on "Country Energy Balance". **04**

b) What is the Net present value? Explain positive & Negative NPV of energy Economics. **05**

c) Explain following terms **05**
i) Energy Inequality ii) Energy Security

Section – II

Q.5 Solve:

a) Explain the term "Carbon Credits". **04**

b) Explain the term "Climate Change from Green House Gases CO_2 Emission". **05**

c) What is Hoteling rule? Explain the terms "Utility & Preferences of energy". **05**

Q.6 Solve:

a) Define Pollution and Explain types of Pollution in detailed. **04**

b) Write a short note on “Kayto Protocol” of Energy & Environment. **05**

c) Write a short note on “Global Warming”. **05**

Q.7 Solve:

a) What is Energy Analysis? Explain in detailed “Future energy demand & Supply of energy Analysis.” **04**

b) Explain “Preferences & Utility” of energy. **05**

c) Write a short note on “Betting on Planet Simons change.” **05**

Seat No.	

Set **Q**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Resources, Economics and Environment (BTN02716)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Major Challenge in solar power plant _____
a) Water b) Solar Panels
c) Land Acquisition d) Money

2) EIA Stands for Environmental Impact Assessment.
a) True b) False

3) Carbon credits also called as _____
a) Carbon b) Pollution
c) Emission d) Carbon Offset

4) National Solar Mission launched in _____
a) Jan 2011 b) Jan 2023
c) Jan 2022 d) Jan 2010

5) Which of the following Energy Resources is renewable?
a) Coal b) Hydropower plan
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6) Preferences are nothing but Choice given by person.
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a) Methane b) Carbon dioxide
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8) Kyto Protocol launched in _____.
a) India b) Japan
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9) The time taken by the project to pay for itself is called as _____.
a) Pay hold period b) Payback period
c) a & b d) None of the Above

10) Source of energy in the biosphere is _____.
a) Producer b) Decomposer
c) Sunlight d) Heat of earth

11) "Bet on Climate change was won by _____."
a) Eherlich b) Watson
c) Jorge d) Simon

12) Which is the following is Environmental impact?
a) Soil damage b) Gas leakage
c) Air pollution d) Temperature

13) NPV stands for _____
a) Net Protect Value b) Net Present value
c) a & b d) None of the Above

14) Simon-Erich bet on planet was formalized on Sep 29, 1980.
a) True b) False

Seat No.		Set	Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Resources, Economics and Environment (BTN02716)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions form Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data, diagrams if required.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Solve:

a) What are the Energy Resources? Explain the primary Energy Analysis. **04**

b) Explain in detail the "National Solar Mission". **05**

c) What is the meaning of "Quality of Life"? How it is increases by Energy? **05**

Q.3 Solve:

a) Explain Following terms. **04**
i) Kaya identity ii) Emission Factor

b) Explain the Linkage between "Energy & Development." **05**

c) Write a short note on "Global Energy use in India". **05**

Q.4 Solve:

a) Write a short note on "Country Energy Balance". **04**

b) What is the Net present value? Explain positive & Negative NPV of energy Economics. **05**

c) Explain following terms **05**
i) Energy Inequality ii) Energy Security

Section – II

Q.5 Solve:

a) Explain the term "Carbon Credits". **04**

b) Explain the term "Climate Change from Green House Gases CO_2 Emission". **05**

c) What is Hoteling rule? Explain the terms "Utility & Preferences of energy". **05**

Q.6 Solve:

a)	Define Pollution and Explain types of Pollution in detailed.	**04**
b)	Write a short note on “Kayto Protocol” of Energy & Environment.	**05**
c)	Write a short note on “Global Warming”.	**05**

Q.7 Solve:

a)	What is Energy Analysis? Explain in detailed “Future energy demand & Supply of energy Analysis.”	**04**
b)	Explain “Preferences & Utility” of energy.	**05**
c)	Write a short note on “Betting on Planet Simons change.”	**05**

Seat No.	

Set **R**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Resources, Economics and Environment (BTN02716)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) National Solar Mission launched in _____
a) Jan 2011 b) Jan 2023
c) Jan 2022 d) Jan 2010

2) Which of the following Energy Resources is renewable?
a) Coal b) Hydropower plan
c) Natural gas d) Petroleum

3) Preferences are nothing but Choice given by person.
a) True b) False

4) The main Constitute of biogas is _____.
a) Methane b) Carbon dioxide
c) Hydrogen d) HCL

5) Kyto Protocol launched in _____.
a) India b) Japan
c) China d) U.S.A.

6) The time taken by the project to pay for itself is called as _____.
a) Pay hold period b) Payback period
c) a & b d) None of the Above

7) Source of energy in the biosphere is _____.
a) Producer b) Decomposer
c) Sunlight d) Heat of earth

8) "Bet on Climate change was won by _____."
a) Eherlich b) Watson
c) Jorge d) Simon

9) Which is the following is Environmental impact?
a) Soil damage b) Gas leakage
c) Air pollution d) Temperature

10) NPV stands for _____
a) Net Protect Value b) Net Present value
c) a & b d) None of the Above

11) Simon-Erich bet on planet was formalized on Sep 29, 1980.
a) True b) False

12) Major Challenge in solar power plant _____
a) Water b) Solar Panels
c) Land Acquisition d) Money

13) EIA Stands for Environmental Impact Assessment.
a) True b) False

14) Carbon credits also called as _____
a) Carbon b) Pollution
c) Emission d) Carbon Offset

Seat No.	

Set **R**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Resources, Economics and Environment (BTN02716)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions form Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data, diagrams if required.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Solve:

a) What are the Energy Resources? Explain the primary Energy Analysis. **04**

b) Explain in detail the "National Solar Mission". **05**

c) What is the meaning of "Quality of Life"? How it is increases by Energy? **05**

Q.3 Solve:

a) Explain Following terms. **04**
i) Kaya identity ii) Emission Factor

b) Explain the Linkage between "Energy & Development." **05**

c) Write a short note on "Global Energy use in India". **05**

Q.4 Solve:

a) Write a short note on "Country Energy Balance". **04**

b) What is the Net present value? Explain positive & Negative NPV of energy Economics. **05**

c) Explain following terms **05**
i) Energy Inequality ii) Energy Security

Section – II

Q.5 Solve:

a) Explain the term "Carbon Credits". **04**

b) Explain the term "Climate Change from Green House Gases CO_2 Emission". **05**

c) What is Hoteling rule? Explain the terms "Utility & Preferences of energy". **05**

Q.6 Solve:

a)	Define Pollution and Explain types of Pollution in detailed.	**04**
b)	Write a short note on “Kayto Protocol” of Energy & Environment.	**05**
c)	Write a short note on “Global Warming”.	**05**

Q.7 Solve:

a)	What is Energy Analysis? Explain in detailed “Future energy demand & Supply of energy Analysis.”	**04**
b)	Explain “Preferences & Utility” of energy.	**05**
c)	Write a short note on “Betting on Planet Simons change.”	**05**

Seat No.	

Set **S**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Resources, Economics and Environment (BTN02716)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if required.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) NPV stands for _____
a) Net Protect Value b) Net Present value
c) a & b d) None of the Above

2) Simon-Erich bet on planet was formalized on Sep 29, 1980.
a) True b) False

3) Major Challenge in solar power plant _____
a) Water b) Solar Panels
c) Land Acquisition d) Money

4) EIA Stands for Environmental Impact Assessment.
a) True b) False

5) Carbon credits also called as _____
a) Carbon b) Pollution
c) Emission d) Carbon Offset

6) National Solar Mission launched in _____
a) Jan 2011 b) Jan 2023
c) Jan 2022 d) Jan 2010

7) Which of the following Energy Resources is renewable?
a) Coal b) Hydropower plan
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8) Preferences are nothing but Choice given by person.
a) True b) False

9) The main Constitute of biogas is _____.
a) Methane b) Carbon dioxide
c) Hydrogen d) HCL

10) Kyto Protocol launched in _____.
a) India b) Japan
c) China d) U.S.A.

11) The time taken by the project to pay for itself is called as _____.
a) Pay hold period b) Payback period
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12) Source of energy in the biosphere is _____.
a) Producer b) Decomposer
c) Sunlight d) Heat of earth

13) "Bet on Climate change was won by _____."
a) Eherlich b) Watson
c) Jorge d) Simon

14) Which is the following is Environmental impact?
a) Soil damage b) Gas leakage
c) Air pollution d) Temperature

Seat No.		Set	S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Energy Resources, Economics and Environment (BTN02716)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions form Section I and Section II.
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3) Assume suitable data, diagrams if required.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Solve:

a) What are the Energy Resources? Explain the primary Energy Analysis. **04**

b) Explain in detail the "National Solar Mission". **05**

c) What is the meaning of "Quality of Life"? How it is increases by Energy? **05**

Q.3 Solve:

a) Explain Following terms. **04**
i) Kaya identity ii) Emission Factor

b) Explain the Linkage between "Energy & Development." **05**

c) Write a short note on "Global Energy use in India". **05**

Q.4 Solve:

a) Write a short note on "Country Energy Balance". **04**

b) What is the Net present value? Explain positive & Negative NPV of energy Economics. **05**

c) Explain following terms **05**
i) Energy Inequality ii) Energy Security

Section – II

Q.5 Solve:

a) Explain the term "Carbon Credits". **04**

b) Explain the term "Climate Change from Green House Gases CO_2 Emission". **05**

c) What is Hoteling rule? Explain the terms "Utility & Preferences of energy". **05**

Q.6 Solve:

a) Define Pollution and Explain types of Pollution in detailed. **04**

b) Write a short note on “Kayto Protocol” of Energy & Environment. **05**

c) Write a short note on “Global Warming”. **05**

Q.7 Solve:

a) What is Energy Analysis? Explain in detailed “Future energy demand & Supply of energy Analysis.” **04**

b) Explain “Preferences & Utility” of energy. **05**

c) Write a short note on “Betting on Planet Simons change.” **05**

SLR-BD-396

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced Topics in Electric Vehicles (BTN02717)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the role of the catalyst in a fuel cell?
a) It conducts electrons from the cathode to the anode.
b) It facilitates the reaction between hydrogen and oxygen.
c) It blocks the flow of protons through the membrane.
d) It stores energy for later use.

2) What is the primary function of a fuel cell?
a) To store energy
b) To convert fuel into heat
c) To convert chemical potential energy into electrical energy
d) To generate mechanical power

3) Which component in an electric vehicle's traction control system is responsible for processing data from various sensors and making real-time control decisions?
a) Battery pack b) Electric motor
c) Traction control module d) Headlights

4) Traction control systems in electric vehicles often work in conjunction with: _____
a) Windshield wipers b) Air conditioning systems
c) Stability control systems d) AM/FM radios

5) Which type of diode is designed to emit light when forward-biased?
a) Zener diode b) Schottky diode 1
c) Light-emitting diode (LED) d) Varactor diode

6) IGBTs combine the advantages of which two types of transistors?
a) Diode and BJT b) BJT and MOSFET
c) Diode and MOSFET d) Thyristor and BJT

7) Which layer of autonomy involves full human control with no automation?
a) Layer 0 b) Layer 1
c) Layer 2 d) Layer 3

8) What is the primary goal of Advanced Driver Assistance Systems (ADAS)?
a) Enhancing driver distraction
b) Reducing driver involvement
c) Increasing the likelihood of accidents
d) Enhancing road safety and driver convenience

9) In robotics, what is the main goal of path planning?
a) Maximizing fuel efficiency
b) Finding the shortest path between two points
c) Avoiding obstacles while reaching a target destination
d) Minimizing manufacturing costs

10) Which of the following is an advantage of regenerative braking in electric vehicles?
a) Increased brake pad wear
b) Improved energy efficiency and extended range
c) Reduced battery capacity
d) Higher energy consumption

11) When it comes to electric vehicle safety, what should first responders be trained to do?
a) Approach the vehicle without protective gear
b) Assume that EV accidents are identical to accidents involving 1traditional vehicles
c) Identify and follow proper shutdown procedures for the high-voltage system
d) Open the vehicle's battery compartment to check for damage

12) Which of the following is a potential security concern associated with IoT in EVs?
a) Enhanced vehicle tracking for theft prevention
b) Unauthorized access and control of vehicle functions
c) Improved vehicle-to-vehicle communication
d) Reduced risk of accidents

13) What is the primary benefit of charging EVs from renewable energy sources such as solar or wind power?
a) Lowering the vehicle's weight
b) Reducing greenhouse gas emissions
c) Increasing the need for battery replacement
d) Making EV charging more expensive

14) What is the primary concept behind battery swap stations for EVs?
a) Charging EVs using solar power
b) Replacing the entire battery with a fully charged one
c) Enhancing vehicle aesthetics
d) Installing additional batteries in EVs

SLR-BD-396

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced Topics in Electric Vehicles (BTN02717)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions form Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2	**a)**	Define fuel cell and explain any two fuel cells with neat sketch.	**07**
	b)	Explain various obstacles for fuel cell vehicles.	**07**
Q.3	**a)**	Explain various trends in traction control system.	**07**
	b)	Explain concept of Anti-lock Braking system.	**07**
Q.4	**a)**	Explain various types of Convertors.	**07**
	b)	Explain different sensors used in autonomous cars.	**07**

Section – II

Q.5	**a)**	Explain various layers of autonomy in autonomous vehicles.	**07**
	b)	Explain in detail Advanced Driver Assistance System.	**07**
Q.6	**a)**	Explain advantages and disadvantages of Electrical Vehicle.	**07**
	b)	Explain in detail for which parts of Electrical Vehicle maintenance is required.	**07**
Q.7	**a)**	Explain Nuna Solar Car.	**07**
	b)	Explain future trends in electric cars.	**07**

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced Topics in Electric Vehicles (BTN02717)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the primary goal of Advanced Driver Assistance Systems (ADAS)?
a) Enhancing driver distraction
b) Reducing driver involvement
c) Increasing the likelihood of accidents
d) Enhancing road safety and driver convenience

2) In robotics, what is the main goal of path planning?
a) Maximizing fuel efficiency
b) Finding the shortest path between two points
c) Avoiding obstacles while reaching a target destination
d) Minimizing manufacturing costs

3) Which of the following is an advantage of regenerative braking in electric vehicles?
a) Increased brake pad wear
b) Improved energy efficiency and extended range
c) Reduced battery capacity
d) Higher energy consumption

4) When it comes to electric vehicle safety, what should first responders be trained to do?
a) Approach the vehicle without protective gear
b) Assume that EV accidents are identical to accidents involving 1traditional vehicles
c) Identify and follow proper shutdown procedures for the high-voltage system
d) Open the vehicle's battery compartment to check for damage

5) Which of the following is a potential security concern associated with IoT in EVs?
a) Enhanced vehicle tracking for theft prevention
b) Unauthorized access and control of vehicle functions
c) Improved vehicle-to-vehicle communication
d) Reduced risk of accidents

6) What is the primary benefit of charging EVs from renewable energy sources such as solar or wind power?
a) Lowering the vehicle's weight
b) Reducing greenhouse gas emissions
c) Increasing the need for battery replacement
d) Making EV charging more expensive

7) What is the primary concept behind battery swap stations for EVs?
a) Charging EVs using solar power
b) Replacing the entire battery with a fully charged one
c) Enhancing vehicle aesthetics
d) Installing additional batteries in EVs

8) What is the role of the catalyst in a fuel cell?
a) It conducts electrons from the cathode to the anode.
b) It facilitates the reaction between hydrogen and oxygen.
c) It blocks the flow of protons through the membrane.
d) It stores energy for later use.

9) What is the primary function of a fuel cell?
a) To store energy
b) To convert fuel into heat
c) To convert chemical potential energy into electrical energy
d) To generate mechanical power

10) Which component in an electric vehicle's traction control system is responsible for processing data from various sensors and making real-time control decisions?
a) Battery pack
b) Electric motor
c) Traction control module
d) Headlights

11) Traction control systems in electric vehicles often work in conjunction with: ____
a) Windshield wipers
b) Air conditioning systems
c) Stability control systems
d) AM/FM radios

12) Which type of diode is designed to emit light when forward-biased?
a) Zener diode
b) Schottky diode 1
c) Light-emitting diode (LED)
d) Varactor diode

13) IGBTs combine the advantages of which two types of transistors?
a) Diode and BJT
b) BJT and MOSFET
c) Diode and MOSFET
d) Thyristor and BJT

14) Which layer of autonomy involves full human control with no automation?

a) Layer 0
b) Layer 1
c) Layer 2
d) Layer 3

SLR-BD-396

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced Topics in Electric Vehicles (BTN02717)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions form Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 **a)** Define fuel cell and explain any two fuel cells with neat sketch. **07**
b) Explain various obstacles for fuel cell vehicles. **07**

Q.3 **a)** Explain various trends in traction control system. **07**
b) Explain concept of Anti-lock Braking system. **07**

Q.4 **a)** Explain various types of Convertors. **07**
b) Explain different sensors used in autonomous cars. **07**

Section – II

Q.5 **a)** Explain various layers of autonomy in autonomous vehicles. **07**
b) Explain in detail Advanced Driver Assistance System. **07**

Q.6 **a)** Explain advantages and disadvantages of Electrical Vehicle. **07**
b) Explain in detail for which parts of Electrical Vehicle maintenance is required. **07**

Q.7 **a)** Explain Nuna Solar Car. **07**
b) Explain future trends in electric cars. **07**

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced Topics in Electric Vehicles (BTN02717)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) When it comes to electric vehicle safety, what should first responders be trained to do?
a) Approach the vehicle without protective gear
b) Assume that EV accidents are identical to accidents involving 1traditional vehicles
c) Identify and follow proper shutdown procedures for the high-voltage system
d) Open the vehicle's battery compartment to check for damage

2) Which of the following is a potential security concern associated with IoT in EVs?
a) Enhanced vehicle tracking for theft prevention
b) Unauthorized access and control of vehicle functions
c) Improved vehicle-to-vehicle communication
d) Reduced risk of accidents

3) What is the primary benefit of charging EVs from renewable energy sources such as solar or wind power?
a) Lowering the vehicle's weight
b) Reducing greenhouse gas emissions
c) Increasing the need for battery replacement
d) Making EV charging more expensive

4) What is the primary concept behind battery swap stations for EVs?
a) Charging EVs using solar power
b) Replacing the entire battery with a fully charged one
c) Enhancing vehicle aesthetics
d) Installing additional batteries in EVs

5) What is the role of the catalyst in a fuel cell?
a) It conducts electrons from the cathode to the anode.
b) It facilitates the reaction between hydrogen and oxygen.
c) It blocks the flow of protons through the membrane.
d) It stores energy for later use.

6) What is the primary function of a fuel cell?
a) To store energy
b) To convert fuel into heat
c) To convert chemical potential energy into electrical energy
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7) Which component in an electric vehicle's traction control system is responsible for processing data from various sensors and making real-time control decisions?
a) Battery pack
b) Electric motor
c) Traction control module
d) Headlights

8) Traction control systems in electric vehicles often work in conjunction with: _____
a) Windshield wipers
b) Air conditioning systems
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9) Which type of diode is designed to emit light when forward-biased?
a) Zener diode
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10) IGBTs combine the advantages of which two types of transistors?
a) Diode and BJT
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11) Which layer of autonomy involves full human control with no automation?
a) Layer 0
b) Layer 1
c) Layer 2
d) Layer 3

12) What is the primary goal of Advanced Driver Assistance Systems (ADAS)?
a) Enhancing driver distraction
b) Reducing driver involvement
c) Increasing the likelihood of accidents
d) Enhancing road safety and driver convenience

13) In robotics, what is the main goal of path planning?
a) Maximizing fuel efficiency
b) Finding the shortest path between two points
c) Avoiding obstacles while reaching a target destination
d) Minimizing manufacturing costs

14) Which of the following is an advantage of regenerative braking in electric vehicles?

a) Increased brake pad wear
b) Improved energy efficiency and extended range
c) Reduced battery capacity
d) Higher energy consumption

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced Topics in Electric Vehicles (BTN02717)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions form Section I and Section II.
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3) Assume suitable data if necessary.

Section – I

Q.2 **a)** Define fuel cell and explain any two fuel cells with neat sketch. **07**
b) Explain various obstacles for fuel cell vehicles. **07**

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b) Explain different sensors used in autonomous cars. **07**

Section – II

Q.5 **a)** Explain various layers of autonomy in autonomous vehicles. **07**
b) Explain in detail Advanced Driver Assistance System. **07**

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b) Explain in detail for which parts of Electrical Vehicle maintenance is required. **07**

Q.7 **a)** Explain Nuna Solar Car. **07**
b) Explain future trends in electric cars. **07**

Seat No.	

Set **S**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced Topics in Electric Vehicles (BTN02717)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) IGBTs combine the advantages of which two types of transistors?
a) Diode and BJT b) BJT and MOSFET
c) Diode and MOSFET d) Thyristor and BJT

2) Which layer of autonomy involves full human control with no automation?
a) Layer 0 b) Layer 1
c) Layer 2 d) Layer 3

3) What is the primary goal of Advanced Driver Assistance Systems (ADAS)?
a) Enhancing driver distraction
b) Reducing driver involvement
c) Increasing the likelihood of accidents
d) Enhancing road safety and driver convenience

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   a) Approach the vehicle without protective gear
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   d) Open the vehicle's battery compartment to check for damage

7) Which of the following is a potential security concern associated with IoT in EVs?
   a) Enhanced vehicle tracking for theft prevention
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   c) Improved vehicle-to-vehicle communication
   d) Reduced risk of accidents

8) What is the primary benefit of charging EVs from renewable energy sources such as solar or wind power?
   a) Lowering the vehicle's weight
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   a) It conducts electrons from the cathode to the anode.
   b) It facilitates the reaction between hydrogen and oxygen.
   c) It blocks the flow of protons through the membrane.
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   c) Traction control module
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a) Windshield wipers
b) Air conditioning systems
c) Stability control systems
d) AM/FM radios

14) Which type of diode is designed to emit light when forward-biased?

a) Zener diode
b) Schottky diode 1
c) Light-emitting diode (LED)
d) Varactor diode

SLR-BD-396

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Advanced Topics in Electric Vehicles (BTN02717)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions form Section I and Section II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2	**a)**	Define fuel cell and explain any two fuel cells with neat sketch.	**07**
	b)	Explain various obstacles for fuel cell vehicles.	**07**
Q.3	**a)**	Explain various trends in traction control system.	**07**
	b)	Explain concept of Anti-lock Braking system.	**07**
Q.4	**a)**	Explain various types of Convertors.	**07**
	b)	Explain different sensors used in autonomous cars.	**07**

Section – II

Q.5	**a)**	Explain various layers of autonomy in autonomous vehicles.	**07**
	b)	Explain in detail Advanced Driver Assistance System.	**07**
Q.6	**a)**	Explain advantages and disadvantages of Electrical Vehicle.	**07**
	b)	Explain in detail for which parts of Electrical Vehicle maintenance is required.	**07**
Q.7	**a)**	Explain Nuna Solar Car.	**07**
	b)	Explain future trends in electric cars.	**07**

SLR-BD-397

Seat No.		Set	P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Entrepreneurship Development (BTN02711)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following best defines entrepreneurship?
a) The art of managing resources effectively
b) The process of identifying and exploiting opportunities for innovation
c) The ability to manage employees efficiently
d) The ownership of a business

2) Which of the following is NOT a direct benefit of entrepreneurial activity?
a) Job creation b) Economic growth
c) Environmental degradation d) Innovation

3) Why is entrepreneurship important for economic development?
a) It ensures government control over the economy
b) It drives industrial growth and innovation
c) It reduces competition in the market
d) It discourages private investments

4) Which is NOT a characteristic of a successful entrepreneur?
a) Risk-taking
b) Dependence on others for decision-making
c) Creativity
d) Resilience

5) Which of the following is NOT a focus area of EDPs?
a) Enhancing entrepreneurial motivation
b) Providing technical skills
c) Addressing workforce grievances
d) Developing business planning skills

6) The curriculum of an EDP typically includes: ____.
   a) Leadership training, market research, and financial planning
   b) Personal grooming sessions
   c) Political campaign management
   d) Meditation and yoga classes

7) Which phase involves mentoring and providing ongoing support?
   a) Pre-training phase
   b) Classroom training phase
   c) Post-training phase
   d) Feedback collection phase

8) A brainstorming session is an example of: ____.
   b) Individual idea generation
   b) Group-based idea generation
   c) SWOT analysis
   d) Market segmentation

9) The most critical factor in identifying business ideas is: ____.
   a) Capital investment
   b) Feasibility and market demand
   c) Presence of competition
   d) Company size

10) The lean canvas model is primarily used for: ____.
   a) Creating a detailed market report
   b) Designing product prototypes
   c) Tracking financial performance
   d) Quickly summarizing a business idea

11) The break-even point indicates: ____.
   a) The maximum profit achievable
   b) The level of sales where total revenue equals total cost
   c) The minimum investment required
   d) The net income after taxes

12) MSMEs contribute significantly to: ____.
   a) Importing raw materials
   b) National employment and GDP growth
   c) Stock market stability
   d) Increasing government expenditure

13) What is the first step in setting up a small business unit?
   a) Preparing a project report
   b) Registering the business
   c) Identifying the business opportunity
   d) Securing funding

14) Which government policy specifically focuses on the promotion of MSMEs?
   a) MSME Development Act, 2006
   b) Start-up India Policy
   c) Make in India Initiative
   d) Digital India Programme

SLR-BD-397

Seat No.	

Set P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Entrepreneurship Development (BTN02711)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two full questions from each Section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions, if required and state them clearly.

Section – I

Q.2	**a)**	Discuss various definitions of entrepreneurship given by notable scholars and their significance.	**07**
	b)	What is corporate entrepreneurship? How does it differ from traditional entrepreneurship?	**07**
Q.3	**a)**	What are the essential qualities and skills required to be a successful entrepreneur?	**07**
	b)	What is Entrepreneurial Development Program (EDPs), and why are they important for fostering entrepreneurship?	**07**
Q.4	**a)**	What funding options can EDPs introduce to entrepreneurs to address financial constraints?	**07**
	b)	Explain the concept of franchising and its benefits for entrepreneurs with limited resources.	**07**

Section – II

Q.5	**a)**	How does brainstorming differ from other idea-generation techniques.	**07**
	b)	What is the lean canvas model, and how is it used by entrepreneurs?	**07**
Q.6	**a)**	What are the essential components of a project report or business plan?	**07**
	b)	What is break-even analysis, and how is it used in decision-making?	**07**
Q.7	**a)**	What are the major differences between micro, small, and medium enterprises?	**07**
	b)	Explain the role of angel investors and venture capitalists in funding startups and SMEs.	**07**

Seat No.		Set	Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Entrepreneurship Development (BTN02711)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A brainstorming session is an example of: ____.
b) Individual idea generation b) Group-based idea generation
c) SWOT analysis d) Market segmentation

2) The most critical factor in identifying business ideas is: ____.
a) Capital investment b) Feasibility and market demand
c) Presence of competition d) Company size

3) The lean canvas model is primarily used for: ____.
a) Creating a detailed market report
b) Designing product prototypes
c) Tracking financial performance
d) Quickly summarizing a business idea

4) The break-even point indicates: ____.
a) The maximum profit achievable
b) The level of sales where total revenue equals total cost
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   a) MSME Development Act, 2006
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   c) Environmental degradation
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   a) It ensures government control over the economy
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   c) Creativity
   d) Resilience

12) Which of the following is NOT a focus area of EDPs?
   a) Enhancing entrepreneurial motivation
   b) Providing technical skills
   c) Addressing workforce grievances
   d) Developing business planning skills

13) The curriculum of an EDP typically includes: ____.
   a) Leadership training, market research, and financial planning
   b) Personal grooming sessions
   c) Political campaign management
   d) Meditation and yoga classes

14) Which phase involves mentoring and providing ongoing support?

a) Pre-training phase
b) Classroom training phase
c) Post-training phase
d) Feedback collection phase

Seat No.	

Set | Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Entrepreneurship Development (BTN02711)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two full questions from each Section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions, if required and state them clearly.

Section – I

Q.2	**a)**	Discuss various definitions of entrepreneurship given by notable scholars and their significance.	**07**
	b)	What is corporate entrepreneurship? How does it differ from traditional entrepreneurship?	**07**
Q.3	**a)**	What are the essential qualities and skills required to be a successful entrepreneur?	**07**
	b)	What is Entrepreneurial Development Program (EDPs), and why are they important for fostering entrepreneurship?	**07**
Q.4	**a)**	What funding options can EDPs introduce to entrepreneurs to address financial constraints?	**07**
	b)	Explain the concept of franchising and its benefits for entrepreneurs with limited resources.	**07**

Section – II

Q.5	**a)**	How does brainstorming differ from other idea-generation techniques.	**07**
	b)	What is the lean canvas model, and how is it used by entrepreneurs?	**07**
Q.6	**a)**	What are the essential components of a project report or business plan?	**07**
	b)	What is break-even analysis, and how is it used in decision-making?	**07**
Q.7	**a)**	What are the major differences between micro, small, and medium enterprises?	**07**
	b)	Explain the role of angel investors and venture capitalists in funding startups and SMEs.	**07**

SLR-BD-397

Seat No.		Set	R

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Entrepreneurship Development (BTN02711)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The break-even point indicates: ____.
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b) The level of sales where total revenue equals total cost
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d) The net income after taxes

2) MSMEs contribute significantly to: ____.
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c) Stock market stability
d) Increasing government expenditure

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d) Feedback collection phase

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b) Group-based idea generation
c) SWOT analysis
d) Market segmentation

13) The most critical factor in identifying business ideas is: ____.
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b) Feasibility and market demand
c) Presence of competition
d) Company size

14) The lean canvas model is primarily used for: ____.

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b) Designing product prototypes
c) Tracking financial performance
d) Quickly summarizing a business idea

Seat No.	

Set **R**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Entrepreneurship Development (BTN02711)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two full questions from each Section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions, if required and state them clearly.

Section – I

Q.2	**a)**	Discuss various definitions of entrepreneurship given by notable scholars and their significance.	**07**
	b)	What is corporate entrepreneurship? How does it differ from traditional entrepreneurship?	**07**
Q.3	**a)**	What are the essential qualities and skills required to be a successful entrepreneur?	**07**
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Q.4	**a)**	What funding options can EDPs introduce to entrepreneurs to address financial constraints?	**07**
	b)	Explain the concept of franchising and its benefits for entrepreneurs with limited resources.	**07**

Section – II

Q.5	**a)**	How does brainstorming differ from other idea-generation techniques.	**07**
	b)	What is the lean canvas model, and how is it used by entrepreneurs?	**07**
Q.6	**a)**	What are the essential components of a project report or business plan?	**07**
	b)	What is break-even analysis, and how is it used in decision-making?	**07**
Q.7	**a)**	What are the major differences between micro, small, and medium enterprises?	**07**
	b)	Explain the role of angel investors and venture capitalists in funding startups and SMEs.	**07**

Seat No.		Set	S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Entrepreneurship Development (BTN02711)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The curriculum of an EDP typically includes: ____.
a) Leadership training, market research, and financial planning
b) Personal grooming sessions
c) Political campaign management
d) Meditation and yoga classes

2) Which phase involves mentoring and providing ongoing support?
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c) Tracking financial performance
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d) The net income after taxes

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   c) Creativity
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14) Which of the following is NOT a focus area of EDPs?
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   b) Providing technical skills
   c) Addressing workforce grievances
   d) Developing business planning skills

Seat No.	

Set **S**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Entrepreneurship Development (BTN02711)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two full questions from each Section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions, if required and state them clearly.

Section – I

Q.2	**a)**	Discuss various definitions of entrepreneurship given by notable scholars and their significance.	**07**
	b)	What is corporate entrepreneurship? How does it differ from traditional entrepreneurship?	**07**
Q.3	**a)**	What are the essential qualities and skills required to be a successful entrepreneur?	**07**
	b)	What is Entrepreneurial Development Program (EDPs), and why are they important for fostering entrepreneurship?	**07**
Q.4	**a)**	What funding options can EDPs introduce to entrepreneurs to address financial constraints?	**07**
	b)	Explain the concept of franchising and its benefits for entrepreneurs with limited resources.	**07**

Section – II

Q.5	**a)**	How does brainstorming differ from other idea-generation techniques.	**07**
	b)	What is the lean canvas model, and how is it used by entrepreneurs?	**07**
Q.6	**a)**	What are the essential components of a project report or business plan?	**07**
	b)	What is break-even analysis, and how is it used in decision-making?	**07**
Q.7	**a)**	What are the major differences between micro, small, and medium enterprises?	**07**
	b)	Explain the role of angel investors and venture capitalists in funding startups and SMEs.	**07**

SLR-BD-398

Seat No.		Set	P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Operations Research (BTN02712)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the full form of PERT?
a) Project Evaluation and Review Technique
b) Program Evaluation and Resource Technique
c) Program Estimation and Review Technique
d) Project Estimation and Resource Technique

2) In a balanced assignment problem, the total supply is: _____
a) Less than total demand b) Equal to total demand
c) More than total demand d) Not related to total demand

3) Johnson's Rule is used for: _____
a) Queuing problems
b) Project scheduling
c) Sequencing jobs on machines
d) Linear programming

4) Which method is used to calculate the earliest and latest times in CPM?
a) Backward pass and forward pass
b) Simplex method
c) Johnson's Rule
d) Probability analysis

5) The critical path in a network represents: _____
a) The longest path and minimum time for completion
b) The shortest path and maximum time for completion
c) The longest path and cost minimization
d) None of the above

6) The graphical method of LPP is applicable for how many variables?
a) Two or more b) Two only
c) One only d) Three only

7) For a queuing system, if arrival rate λ\lambda = 5 customers/hour and service rate μ\mu$\mu$ = 10 customers/hour, the traffic intensity (ρ\rho$\rho$) is: _____
a) 0.2 b) 0.5
c) 0.8 d) 2.0

8) In the North-West Corner Rule, allocations start from: _____
b) The cell with the least cost b) The top-left corner
c) The bottom-right corner d) Any random cell

9) What does duality in LPP provide?
a) An alternative optimal solution
b) An infeasible solution
c) A solution to the primal problem
d) Insight into the shadow prices

10) A cash flow diagram is used in: _____
a) PERT analysis b) Linear programming problems
c) Engineering economics d) Transportation problems

11) Which cost is an example of an intangible cost?
a) Labour cost b) Material cost
c) Lost customer goodwill d) Equipment cost

12) What is the purpose of calculating floats in CPM?
a) To reduce the project duration
b) To determine slack in non-critical activities
c) To identify the critical path
d) To calculate the expected completion time

13) What is the objective of linear programming?
a) Maximization or minimization of a linear function
b) Solving non-linear equations
c) Estimating probabilities
d) Scheduling projects

14) The term "waiting line" is associated with: _____
a) Assignment problems b) Queuing theory
c) Sequencing rales d) Transportation models

Seat No.	

Set P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Operations Research (BTN02712)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two full questions from each Section.
2) Figures to the right indicate full marks.
3) Assume additional suitable data, if necessary and mention it clearly.
4) Use of calculator is allowed.

Section – I

Q.2 **a)** Solve following LPP by Graphical method. **07**
Subjected to, $x_1 + x_2 \leq 30$
$x_2 \geq 3$
$x_2 \leq 12$
$x_1 - x_2 \geq 0$
$0 \leq x_1 \leq 20$

b) Solve the minimal assignment problem whose effectiveness matrix is **07**

	1	2	3	4
I	2	3	4	5
II	4	5	6	7
III	7	8	9	8
IV	3	5	8	4

Q.3 **a)** Consider the following unbalanced transportation problem. **07**

	1	2	3	Supply
A	5	1	7	10
B	6	4	6	80
C	3	2	5	15
Demand	75	20	50	

Since there is not enough supply, some of the demands at these destinations may not be satisfied. Suppose there are penalty costs for every unsatisfied demand unit which are given by 5, 3 and 2 for destination 1, 2, and 3 respectively. Find the optimal solution.

b) Solve Transportation Problem where sell enters are unit costs. **07**

	D1	D2	D3	D4	D5	Available
1	68	35	4	74	15	18
2	57	88	91	3	8	17
3	91	60	75	45	60	19
4	52	53	24	7	82	13
5	51	18	82	13	7	15
Required	16	18	20	14	14	82/82

Q.4 **a)** Solve the following LLP by Graphical Method. $Z = 5x_1 + 7x_2$ **07**

$$x_1 + x_2 \leq 4$$
$$3x_1 + 8x_2 \leq 24$$
$$10x_1 + 7x_2 \leq 35$$
$$x_1, x_2 \geq 0$$

b) What are the different types of models used in Operations Research? Discuss their applications. **07**

Section – II

Q.5 **a)** Explain the differences between CPM and PERT, highlighting their specific uses in project management. **05**

b) Estimated times for the jobs of a project are given below: **09**

Job	A	B	C	D	E	F	G	H	I	J	K	L
Time (Weeks)	13	5	8	10	9	7	7	12	8	9	4	17

The constraints governing the jobs are as follows:
A and B are start jobs; A controls C, D and E; B controls F and J; G depends upon C; H depends on D; E and F control I and L; K follows J; L is also controlled by K; G, H, I and L are the last jobs. Draw the network; determine project duration and the critical path.

Q.6 **a)** A company plans to invest ₹1,00,000 in a project for 5 years at an annual interest rate of 10%. Calculate interest earned at the end of 5 years. **07**

b) There are seven jobs, each of which has to go through the machines A and B in the order AB. Processing times in hours are given as **07**

Job	1	2	3	4	5	6	7
Machine A	3	12	15	6	10	11	9
Machine B	8	10	10	6	12	1	3

Determine a sequence of these jobs that will minimize the total elapsed time T. Also find T and idle time for machines A and B.

Q.7 **a)** Eight jobs 1, 2, …, 8 are to be processed on a single machine. The processing times, due dates and importance weights of the jobs are represented in below table. **09**

Job	Processing Time t_i (Minutes)	Due Date d_i (Minutes)	Importance Weight w_i	T_i / w_i
1	5	15	1	5.0
2	8	10	2	4.0
3	6	15	3	2.0
4	3	25	1	3.0
5	10	20	2	5.0
6	14	40	3	4.7
7	7	45	2	3.5
8	3	50	1	3.0

Assuming that no new jobs arrive thereafter, determine using SPT rule and W'SPT rule

i) Optimal sequence,
ii) Completion time of the jobs,
iii) Mean flow time,
iv) Average in-process inventory,
v) Maximum lateness,
vi) Number of jobs actually late.

b) Discuss the importance of Engineering Economics in decision-making. Explain its applications in engineering projects. **05**

SLR-BD-398

Seat No.		Set	Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Operations Research (BTN02712)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In the North-West Corner Rule, allocations start from: _____
b) The cell with the least cost b) The top-left corner
c) The bottom-right corner d) Any random cell

2) What does duality in LPP provide?
a) An alternative optimal solution
b) An infeasible solution
c) A solution to the primal problem
d) Insight into the shadow prices

3) A cash flow diagram is used in: _____
a) PERT analysis b) Linear programming problems
c) Engineering economics d) Transportation problems

4) Which cost is an example of an intangible cost?
a) Labour cost b) Material cost
c) Lost customer goodwill d) Equipment cost

5) What is the purpose of calculating floats in CPM?
a) To reduce the project duration
b) To determine slack in non-critical activities
c) To identify the critical path
d) To calculate the expected completion time

6) What is the objective of linear programming?
a) Maximization or minimization of a linear function
b) Solving non-linear equations
c) Estimating probabilities
d) Scheduling projects

7) The term "waiting line" is associated with: _____

a) Assignment problems
b) Queuing theory
c) Sequencing rales
d) Transportation models

8) What is the full form of PERT?

a) Project Evaluation and Review Technique
b) Program Evaluation and Resource Technique
c) Program Estimation and Review Technique
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9) In a balanced assignment problem, the total supply is: _____

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b) Equal to total demand
c) More than total demand
d) Not related to total demand

10) Johnson's Rule is used for: _____

a) Queuing problems
b) Project scheduling
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d) Linear programming

11) Which method is used to calculate the earliest and latest times in CPM?

a) Backward pass and forward pass
b) Simplex method
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d) Probability analysis

12) The critical path in a network represents: _____

a) The longest path and minimum time for completion
b) The shortest path and maximum time for completion
c) The longest path and cost minimization
d) None of the above

13) The graphical method of LPP is applicable for how many variables?

a) Two or more
b) Two only
c) One only
d) Three only

14) For a queuing system, if arrival rate λ\lambda = 5 customers/hour and service rate μ\mu$\mu$ = 10 customers/hour, the traffic intensity (ρ\rho$\rho$) is: _____

a) 0.2
b) 0.5
c) 0.8
d) 2.0

Seat No.	

Set Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Operations Research (BTN02712)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two full questions from each Section.
2) Figures to the right indicate full marks.
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4) Use of calculator is allowed.

Section – I

Q.2 **a)** Solve following LPP by Graphical method. **07**
Subjected to, $x_1 + x_2 \leq 30$
$x_2 \geq 3$
$x_2 \leq 12$
$x_1 - x_2 \geq 0$
$0 \leq x_1 \leq 20$

b) Solve the minimal assignment problem whose effectiveness matrix is **07**

	1	2	3	4
I	2	3	4	5
II	4	5	6	7
III	7	8	9	8
IV	3	5	8	4

Q.3 **a)** Consider the following unbalanced transportation problem. **07**

	1	2	3	Supply
A	5	1	7	10
B	6	4	6	80
C	3	2	5	15
Demand	75	20	50	

Since there is not enough supply, some of the demands at these destinations may not be satisfied. Suppose there are penalty costs for every unsatisfied demand unit which are given by 5, 3 and 2 for destination 1, 2, and 3 respectively. Find the optimal solution.

b) Solve Transportation Problem where sell enters are unit costs. **07**

	D1	D2	D3	D4	D5	Available
1	68	35	4	74	15	18
2	57	88	91	3	8	17
3	91	60	75	45	60	19
4	52	53	24	7	82	13
5	51	18	82	13	7	15
Required	16	18	20	14	14	82/82

Q.4 **a)** Solve the following LLP by Graphical Method. $Z = 5x_1 + 7x_2$ **07**

$$x_1 + x_2 \leq 4$$
$$3x_1 + 8x_2 \leq 24$$
$$10x_1 + 7x_2 \leq 35$$
$$x_1, x_2 \geq 0$$

b) What are the different types of models used in Operations Research? Discuss their applications. **07**

Section – II

Q.5 **a)** Explain the differences between CPM and PERT, highlighting their specific uses in project management. **05**

b) Estimated times for the jobs of a project are given below: **09**

Job	A	B	C	D	E	F	G	H	I	J	K	L
Time (Weeks)	13	5	8	10	9	7	7	12	8	9	4	17

The constraints governing the jobs are as follows:
A and B are start jobs; A controls C, D and E; B controls F and J; G depends upon C; H depends on D; E and F control I and L; K follows J; L is also controlled by K; G, H, I and L are the last jobs. Draw the network; determine project duration and the critical path.

Q.6 **a)** A company plans to invest ₹1,00,000 in a project for 5 years at an annual interest rate of 10%. Calculate interest earned at the end of 5 years. **07**

b) There are seven jobs, each of which has to go through the machines A and B in the order AB. Processing times in hours are given as **07**

Job	1	2	3	4	5	6	7
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Determine a sequence of these jobs that will minimize the total elapsed time T. Also find T and idle time for machines A and B.

Q.7 **a)** Eight jobs 1, 2, …, 8 are to be processed on a single machine. The processing times, due dates and importance weights of the jobs are represented in below table. **09**

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7	7	45	2	3.5
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Assuming that no new jobs arrive thereafter, determine using SPT rule and W'SPT rule

i) Optimal sequence,
ii) Completion time of the jobs,
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b) Discuss the importance of Engineering Economics in decision-making. Explain its applications in engineering projects. **05**

SLR-BD-398

Seat No.		Set	R

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Operations Research (BTN02712)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which cost is an example of an intangible cost?
a) Labour cost b) Material cost
c) Lost customer goodwill d) Equipment cost

2) What is the purpose of calculating floats in CPM?
a) To reduce the project duration
b) To determine slack in non-critical activities
c) To identify the critical path
d) To calculate the expected completion time

3) What is the objective of linear programming?
a) Maximization or minimization of a linear function
b) Solving non-linear equations
c) Estimating probabilities
d) Scheduling projects

4) The term "waiting line" is associated with: _____
a) Assignment problems b) Queuing theory
c) Sequencing rales d) Transportation models

5) What is the full form of PERT?
a) Project Evaluation and Review Technique
b) Program Evaluation and Resource Technique
c) Program Estimation and Review Technique
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6) In a balanced assignment problem, the total supply is: _____
a) Less than total demand b) Equal to total demand
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10) The graphical method of LPP is applicable for how many variables?
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11) For a queuing system, if arrival rate λ\lambda = 5 customers/hour and service rate μ\mu$\mu$ = 10 customers/hour, the traffic intensity (ρ\rho$\rho$) is: _____
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13) What does duality in LPP provide?
a) An alternative optimal solution
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Seat No.	

Set **R**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Operations Research (BTN02712)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two full questions from each Section.
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Section – I

Q.2 **a)** Solve following LPP by Graphical method. **07**
Subjected to, $x_1 + x_2 \leq 30$
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b) Solve the minimal assignment problem whose effectiveness matrix is **07**

	1	**2**	**3**	**4**
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Q.3 **a)** Consider the following unbalanced transportation problem. **07**

	1	**2**	**3**	**Supply**
A	5	1	7	10
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C	3	2	5	15
Demand	75	20	50	

Since there is not enough supply, some of the demands at these destinations may not be satisfied. Suppose there are penalty costs for every unsatisfied demand unit which are given by 5, 3 and 2 for destination 1, 2, and 3 respectively. Find the optimal solution.

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	D1	D2	D3	D4	D5	Available
1	68	35	4	74	15	18
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4	52	53	24	7	82	13
5	51	18	82	13	7	15
Required	16	18	20	14	14	82/82

Q.4 **a)** Solve the following LLP by Graphical Method. $Z = 5x_1 + 7x_2$ **07**

$$x_1 + x_2 \leq 4$$
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b) What are the different types of models used in Operations Research? Discuss their applications. **07**

Section – II

Q.5 **a)** Explain the differences between CPM and PERT, highlighting their specific uses in project management. **05**

b) Estimated times for the jobs of a project are given below: **09**

Job	A	B	C	D	E	F	G	H	I	J	K	L
Time (Weeks)	13	5	8	10	9	7	7	12	8	9	4	17

The constraints governing the jobs are as follows:
A and B are start jobs; A controls C, D and E; B controls F and J; G depends upon C; H depends on D; E and F control I and L; K follows J; L is also controlled by K; G, H, I and L are the last jobs. Draw the network; determine project duration and the critical path.

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Assuming that no new jobs arrive thereafter, determine using SPT rule and W'SPT rule

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SLR-BD-398

Seat No.		Set	S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Operations Research (BTN02712)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The graphical method of LPP is applicable for how many variables?
a) Two or more b) Two only
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2) For a queuing system, if arrival rate λ\lambda = 5 customers/hour and service rate μ\mu$\mu$ = 10 customers/hour, the traffic intensity (ρ\rho$\rho$) is: _____
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Seat No.	

Set **S**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Operations Research (BTN02712)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two full questions from each Section.
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Section – I

Q.2 **a)** Solve following LPP by Graphical method. **07**
Subjected to, $x_1 + x_2 \leq 30$
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b) Solve the minimal assignment problem whose effectiveness matrix is **07**

	1	**2**	**3**	**4**
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Q.3 **a)** Consider the following unbalanced transportation problem. **07**

	1	**2**	**3**	**Supply**
A	5	1	7	10
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Since there is not enough supply, some of the demands at these destinations may not be satisfied. Suppose there are penalty costs for every unsatisfied demand unit which are given by 5, 3 and 2 for destination 1, 2, and 3 respectively. Find the optimal solution.

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	D1	D2	D3	D4	D5	Available
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4	52	53	24	7	82	13
5	51	18	82	13	7	15
Required	16	18	20	14	14	82/82

Q.4 **a)** Solve the following LLP by Graphical Method. $Z = 5x_1 + 7x_2$ **07**

$$x_1 + x_2 \leq 4$$
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$$x_1, x_2 \geq 0$$

b) What are the different types of models used in Operations Research? Discuss their applications. **07**

Section – II

Q.5 **a)** Explain the differences between CPM and PERT, highlighting their specific uses in project management. **05**

b) Estimated times for the jobs of a project are given below: **09**

Job	A	B	C	D	E	F	G	H	I	J	K	L
Time (Weeks)	13	5	8	10	9	7	7	12	8	9	4	17

The constraints governing the jobs are as follows:
A and B are start jobs; A controls C, D and E; B controls F and J; G depends upon C; H depends on D; E and F control I and L; K follows J; L is also controlled by K; G, H, I and L are the last jobs. Draw the network; determine project duration and the critical path.

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Assuming that no new jobs arrive thereafter, determine using SPT rule and W'SPT rule

i) Optimal sequence,
ii) Completion time of the jobs,
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iv) Average in-process inventory,
v) Maximum lateness,
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b) Discuss the importance of Engineering Economics in decision-making. Explain its applications in engineering projects. **05**

Seat No.	

Set **P**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Supply Chain Management (BTN02714)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required & state it clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In the cycle view of Supply Chain, which cycle involves the manufacturer and supplier?
a) Customer Order Cycle b) Procurement Cycle
c) Replenishment Cycle d) Manufacturing Cycle

2) What is the "typology of supply chains" primarily concerned with?
a) Classification of supply chain based on customer needs and product flow
b) Designing warehouse locations
c) Determining the exact number of suppliers
d) Evaluating employee performance

3) Which of the following is NOT a common problem in Supply Chain Management?
a) Bullwhip Effect
b) Poor Inventory Management
c) Low Collaboration among Partners
d) Excessive Focus on Automation

4) What is the main effect of a lack of coordination on supply chain performance?
a) Increased transparency across the supply chain
b) Lower levels of inventory buildup
c) Higher costs and reduced customer satisfaction
d) Improved forecasting accuracy

5) Which of the following strategies can help to achieve coordination in a supply chain?
   a) Siloed decision-making across supply chain members
   b) Establishing a culture of secrecy among partners
   c) Information sharing and collaborative forecasting
   d) Eliminating all intermediaries in the supply chain

6) Structuring supply chain capabilities involves: ____.
   a) Creating separate strategies for marketing and supply chain processes
   b) Building specific skills and infrastructure to support business objectives
   c) Designing independent functions without integration
   d) Avoiding investments in logistics and distribution

7) Matching supply chain design with business strategy focuses on: ___.
   a) Prioritizing low costs irrespective of customer needs
   b) Ensuring the supply chain aligns with the company's competitive priorities
   c) Avoiding flexibility in supply chain operations
   d) Eliminating redundancies regardless of operational risks

8) Which inventory model is best suited for managing demand that is both constant and known?
   a) Economic Order Quantity (EOQ) model
   b) Periodic Review model
   c) Just-in-Time (JIT) inventory system
   d) ABC classification model

9) Which of the following is NOT an impediment to improving supply chain performance?
   a) Lack of information sharing
   b) Advanced technological integration
   c) Resistance to change
   d) Fragmented decision-making

10) Measuring logistics cost in performance evaluation includes which of the following components?
   a) Transportation costs b) Warehousing costs
   c) Inventory holding costs d) All of the above

11) Which of the trends is transforming international supply chain management?
   a) Increased reliance on manual processes
   b) Adoption of digital technologies like AI and blockchain
   c) Reduced focus on sustainability
   d) Avoidance of data-driven decision-making

12) Which of the following best describes "Co-Makership" in supply chain management?

a) A strategy for cost reduction by eliminating partnerships
b) A collaboration where suppliers and manufacturers jointly work to improve product development
c) A conflict management technique between supply chain partners
d) Outsourcing all operations to third-party service providers

13) What role does Distribution Resource Planning (DRP) play in supply chain management?

a) Forecasting customer demand
b) Managing inventory levels across distribution centres
c) Optimizing replenishment schedules
d) All of the above

14) What differentiates World-Class Supply Chain Management from traditional practices?

a) Emphasis on localized operations only
b) Adoption of advanced technology, agility, and customer-centric approaches
c) Complete reliance on manual processes
d) Avoidance of sustainability and innovation

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Supply Chain Management (BTN02714)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any 2 questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if required & state it clearly.
4) Use of non-programmable calculator is allowed.

Section - I

Q.2	**a)**	What are the key problems in Supply Chain Management, and what solutions are suggested?	**05**
	b)	What are the key drivers of Supply Chain Management, and how do they impact its performance?	**05**
	c)	Compare the different types of Supply Chain Management (SCM).	**04**
Q.3	**a)**	Explain the obstacles for achieving coordination in a supply chain.	**05**
	b)	Explain the strategies to achieve better coordination in a supply chain.	**05**
	c)	Explain the methods and strategies for building strategic partnerships and fostering trust within a supply chain.	**04**
Q.4	**a)**	Explain in detail How does a company align its supply chain design with its overall business strategy?	**05**
	b)	Explain the key factors that companies need to consider when developing a global supply chain strategy.	**05**
	c)	Explain companies supply chain structure to support their strategic goals.	**04**

Section - II

Q.5	**a)**	Describe the role of safety stock and the factors affecting its determination.	**05**
	b)	Discuss common inventory models used in supply chain management.	**05**
	c)	Explain forecasting models and their significance in inventory flow management.	**04**
Q.6	**a)**	Discuss the common impediments for improving supply chain performance.	**05**
	b)	Explain the methods to measure logistics costs and performance in a supply chain.	**05**
	c)	Explain How do trends in international supply chain management impact performance measurement.	**04**

Q.7	**a)**	What are the recent developments in supply chain management, and how do they address current challenges?	**05**
	b)	Explain the main characteristics of World-Class Supply Chain Management.	**05**
	c)	Discuss the significance of Distribution Resource Planning (DRP) in supply chain management.	**04**

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Supply Chain Management (BTN02714)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which inventory model is best suited for managing demand that is both constant and known?
a) Economic Order Quantity (EOQ) model
b) Periodic Review model
c) Just-in-Time (JIT) inventory system
d) ABC classification model

2) Which of the following is NOT an impediment to improving supply chain performance?
a) Lack of information sharing
b) Advanced technological integration
c) Resistance to change
d) Fragmented decision-making

3) Measuring logistics cost in performance evaluation includes which of the following components?
a) Transportation costs b) Warehousing costs
c) Inventory holding costs d) All of the above

4) Which of the trends is transforming international supply chain management?
a) Increased reliance on manual processes
b) Adoption of digital technologies like AI and blockchain
c) Reduced focus on sustainability
d) Avoidance of data-driven decision-making

5) Which of the following best describes "Co-Makership" in supply chain management?
   a) A strategy for cost reduction by eliminating partnerships
   b) A collaboration where suppliers and manufacturers jointly work to improve product development
   c) A conflict management technique between supply chain partners
   d) Outsourcing all operations to third-party service providers

6) What role does Distribution Resource Planning (DRP) play in supply chain management?
   a) Forecasting customer demand
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7) What differentiates World-Class Supply Chain Management from traditional practices?
   a) Emphasis on localized operations only
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   c) Complete reliance on manual processes
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8) In the cycle view of Supply Chain, which cycle involves the manufacturer and supplier?
   a) Customer Order Cycle b) Procurement Cycle
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9) What is the “typology of supply chains” primarily concerned with?
   a) Classification of supply chain based on customer needs and product flow
   b) Designing warehouse locations
   c) Determining the exact number of suppliers
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10) Which of the following is NOT a common problem in Supply Chain Management?
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11) What is the main effect of a lack of coordination on supply chain performance?
   a) Increased transparency across the supply chain
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12) Which of the following strategies can help to achieve coordination in a supply chain?
   a) Siloed decision-making across supply chain members
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13) Structuring supply chain capabilities involves: ____.
   a) Creating separate strategies for marketing and supply chain processes
   b) Building specific skills and infrastructure to support business objectives
   c) Designing independent functions without integration
   d) Avoiding investments in logistics and distribution

14) Matching supply chain design with business strategy focuses on: ___.
   a) Prioritizing low costs irrespective of customer needs
   b) Ensuring the supply chain aligns with the company's competitive priorities
   c) Avoiding flexibility in supply chain operations
   d) Eliminating redundancies regardless of operational risks

Seat No.	

Set **Q**

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Set **R**

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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MECHANICAL ENGINEERING
Supply Chain Management (BTN02714)

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MCQ/Objective Type Questions

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Seat No.		Set	S

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SLR-BD-401

Seat No.	

Set P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Finite Element Method (BTN02715)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Shape function is usually ____.
a) The coefficient that appears in the interpolation polynomial
b) Written for each individual node of finite element
c) Interchanged with the terminology interpolation polynomial
d) All of the above

2) If element size is reduced, number of elements ____.
a) increases b) decreases
c) remains constant d) gets deleted

3) The loading, constraints and other external effects applied to a model is ____.
a) Boundary conditions b) Meshing
c) Constraining d) Modeling

4) Preprocessing means ____.
a) Solving b) Meshing
c) Result analysis d) None of the above

5) Sum of all the natural coordinates of the node is ____.
a) One b) Zero
c) Can not be predicted d) None of the above

6) The interpolation function for a CST element is given by ____.
a) $U = a_1 + a_2x + a_3y$ b) $U = a_1 + a_2x + a_3x^2$
c) $U = a_1 + a_2x + a_3x^2 + a_4y$ d) $U = a_1 + a_2x + a_3y + a_4z$

7) Complex elements are defined as those elements which ____.
a) have higher order interpolation polynomials
b) have sides parallel to coordinate system
c) have sides parallel to coordinate system and use higher order interpolation polynomials
d) have polynomials with only linear and constant terms

8) Each node of beam element is having following degree of freedom ____.
a) 3 b) 4
c) 2 d) 1

9) In ____ element the value of field variable remains unchanged in the circumferential direction.
a) 1D and 2D b) Beam
c) Truss d) Axisymmetric

10) Size of shape function matrix of 2D element having 3 nodes is ____.
a) 2 x 6 b) 3 x 3
c) 4 x 6 d) 2 x 5

11) Formula for Galerkin method is _____.
a) $f(x)R(x)dx = 0$ b) $\int R(x)dx = 0$
c) $R(x) = 0$ d) $\int R2(x)dx = 0$

12) A measure of distortion of an element is ____.
a) Bandwidth b) Damping ratio
c) Aspect ratio d) Shape function

13) A problem which is not a function of a time ____.
a) Eigenvalue problem b) Steady state problem
c) Transient problem d) Propagation problem

14) The three most common cases on non-linearity are ____.
a) Fluttering, Geometric, Material
b) Material, Geometric, Contact
c) Material, Fluttering, plasticity
d) Creep, Fluttering, Contact

Seat No.	

Set **P**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Finite Element Method (BTN02715)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
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Section - I

Q.2 **a)** Obtain solution of differential equation by using Galerkin's method. **07**

$$\frac{\partial^2 u}{\partial x^2} + u - x^2 = 0, \qquad 0 \le x \le 1$$

Take boundary conditions as $u(0) = 0$, $\frac{du}{dx}(1) = 1$

b) Explain Simplex, Complex and Multiplex elements. **07**

Q.3 **a)** Find nodal displacement in stepped bar as shown in figure 1. **07**
Take $A_1 = 20\ mm^2, A_2 = 10\ mm^2$
$L_1 = L_2 = 100\ mm$, $E_1 = E_2 = 200 \times 10^3$ MPa

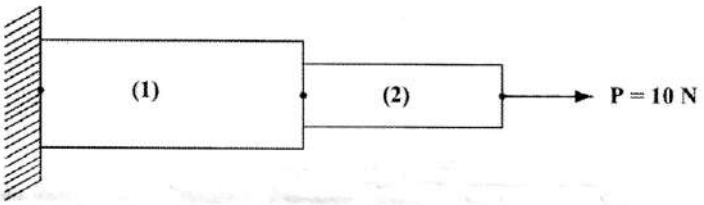

Figure 1

b) Explain discretization in FEM with suitable example and also brief p-refinement and h- refinement. **07**

Q.4 **Attempt the following.**
a) What are the properties of Stiffness matrix? Explain. **04**
b) Write a note on FEM steps. **04**
c) Shape functions for 1D element in global and natural coordinates. **06**

Section - II

Q.5 **a)** Calculate the value of field variable at the point A (2.5, 2.5), which is located inside the triangles shown in figure 2. The nodal values for field variable are U_i = 3.5, U_j = 2.2 and U_k = 4.4 **07**

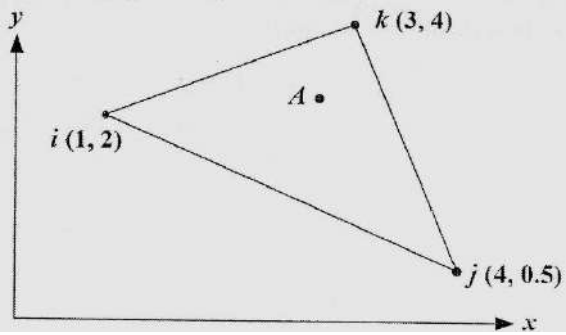

Figure 2

b) Explain static analysis and modal analysis. **07**

Q.6 **a)** Solve the following problem for all unknowns. Impose the boundary conditions using the penalty method. Refer figure 3. **12**

A_1 = 900 mm^2, A_2 = 400 mm^2, A_3 = 200 mm^2

L_1 = 80 mm, L_2 = 80 mm, L_3 = 70 mm

E_1 = 70 GPa, E_2 = 105 GPa, E_3 = 200G Pa

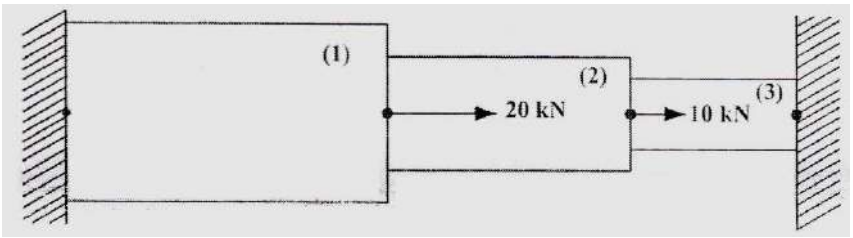

Figure 3

b) What are the 3D elements? **02**

Q.7 **Write short Notes on: (Any Three)** **14**

- **a)** Size and number of elements
- **b)** Interpolation functions
- **c)** Axisymmetric problems and axisymmetric elements
- **d)** Transient thermal analysis

Seat No.	

Set **Q**

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c) Truss d) Axisymmetric

3) Size of shape function matrix of 2D element having 3 nodes is ____.
a) 2 x 6 b) 3 x 3
c) 4 x 6 d) 2 x 5

4) Formula for Galerkin method is ____.
a) $f(x)R(x)dx = 0$ b) $\int R(x)dx = 0$
c) $R(x) = 0$ d) $\int R2(x)dx = 0$

5) A measure of distortion of an element is ____.
a) Bandwidth b) Damping ratio
c) Aspect ratio d) Shape function

6) A problem which is not a function of a time ____.
a) Eigenvalue problem b) Steady state problem
c) Transient problem d) Propagation problem

7) The three most common cases on non-linearity are ____.
a) Fluttering, Geometric, Material
b) Material, Geometric, Contact
c) Material, Fluttering, plasticity
d) Creep, Fluttering, Contact

8) Shape function is usually ____.
a) The coefficient that appears in the interpolation polynomial
b) Written for each individual node of finite element
c) Interchanged with the terminology interpolation polynomial
d) All of the above

9) If element size is reduced, number of elements ____.
a) increases b) decreases
c) remains constant d) gets deleted

10) The loading, constraints and other external effects applied to a model is ____.
a) Boundary conditions b) Meshing
c) Constraining d) Modeling

11) Preprocessing means ____.
a) Solving b) Meshing
c) Result analysis d) None of the above

12) Sum of all the natural coordinates of the node is ____.
a) One b) Zero
c) Can not be predicted d) None of the above

13) The interpolation function for a CST element is given by ____.
a) $U = a_1 + a_2x + a_3y$ b) $U = a_1 + a_2x + a_3x^2$
c) $U = a_1 + a_2x + a_3x^2 + a_4y$ d) $U = a_1 + a_2x + a_3y + a_4z$

14) Complex elements are defined as those elements which ____.
a) have higher order interpolation polynomials
b) have sides parallel to coordinate system
c) have sides parallel to coordinate system and use higher order interpolation polynomials
d) have polynomials with only linear and constant terms

Seat No.	

Set **Q**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Finite Element Method (BTN02715)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Use of non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and mention it clearly.

Section - I

Q.2 **a)** Obtain solution of differential equation by using Galerkin's method. **07**

$$\frac{\partial^2 u}{\partial x^2} + u - x^2 = 0, \qquad 0 \le x \le 1$$

Take boundary conditions as $u(0) = 0$, $\frac{du}{dx}(1) = 1$

b) Explain Simplex, Complex and Multiplex elements. **07**

Q.3 **a)** Find nodal displacement in stepped bar as shown in figure 1. **07**
Take $A_1 = 20\ mm^2, A_2 = 10\ mm^2$
$L_1 = L_2 = 100\ mm$, $E_1 = E_2 = 200 \times 10^3$ MPa

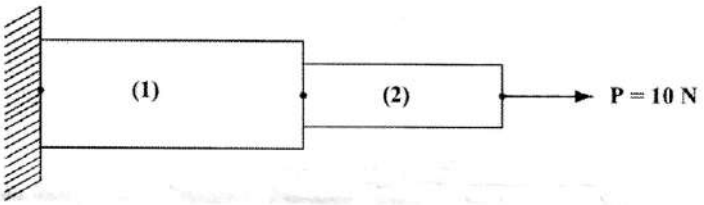

Figure 1

b) Explain discretization in FEM with suitable example and also brief p-refinement and h- refinement. **07**

Q.4 **Attempt the following.**
a) What are the properties of Stiffness matrix? Explain. **04**
b) Write a note on FEM steps. **04**
c) Shape functions for 1D element in global and natural coordinates. **06**

Section - II

Q.5 **a)** Calculate the value of field variable at the point A (2.5, 2.5), which is located inside the triangles shown in figure 2. The nodal values for field variable are U_i = 3.5, U_j = 2.2 and U_k = 4.4 **07**

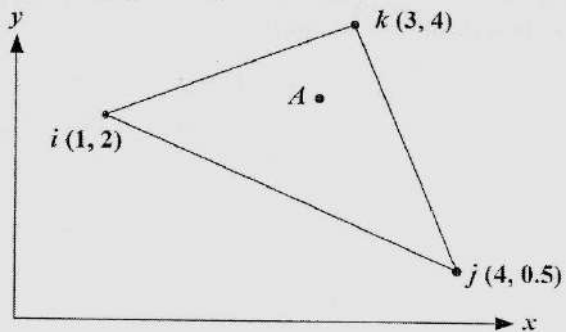

Figure 2

b) Explain static analysis and modal analysis. **07**

Q.6 **a)** Solve the following problem for all unknowns. Impose the boundary conditions using the penalty method. Refer figure 3. **12**

A_1 = 900 mm^2, A_2 = 400 mm^2, A_3 = 200 mm^2

L_1 = 80 mm, L_2 = 80 mm, L_3 = 70 mm

E_1 = 70 GPa, E_2 = 105 GPa, E_3 = 200G Pa

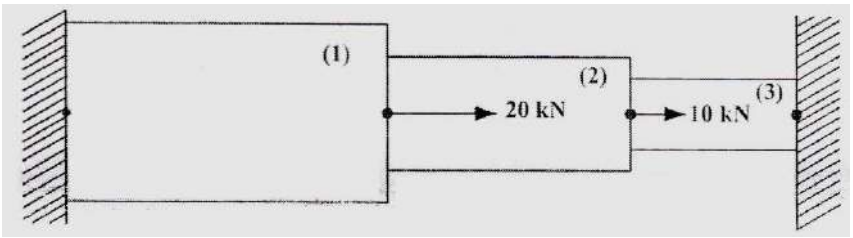

Figure 3

b) What are the 3D elements? **02**

Q.7 **Write short Notes on: (Any Three)** **14**

- **a)** Size and number of elements
- **b)** Interpolation functions
- **c)** Axisymmetric problems and axisymmetric elements
- **d)** Transient thermal analysis

Seat No.	

Set **R**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Finite Element Method (BTN02715)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Formula for Galerkin method is _____.
a) $f(x)R(x)dx = 0$ b) $\int R(x)dx = 0$
c) $R(x) = 0$ d) $\int R2(x)dx = 0$

2) A measure of distortion of an element is _____.
a) Bandwidth b) Damping ratio
c) Aspect ratio d) Shape function

3) A problem which is not a function of a time _____.
a) Eigenvalue problem b) Steady state problem
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4) The three most common cases on non-linearity are _____.
a) Fluttering, Geometric, Material
b) Material, Geometric, Contact
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5) Shape function is usually _____.
a) The coefficient that appears in the interpolation polynomial
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6) If element size is reduced, number of elements _____.
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c) remains constant d) gets deleted

7) The loading, constraints and other external effects applied to a model is _____.

a) Boundary conditions b) Meshing
c) Constraining d) Modeling

8) Preprocessing means _____.

a) Solving b) Meshing
c) Result analysis d) None of the above

9) Sum of all the natural coordinates of the node is _____.

a) One b) Zero
c) Can not be predicted d) None of the above

10) The interpolation function for a CST element is given by _____.

a) $U = a_1 + a_2x + a_3y$ b) $U = a_1 + a_2x + a_3x^2$
c) $U = a_1 + a_2x + a_3x^2 + a_4y$ d) $U = a_1 + a_2x + a_3y + a_4z$

11) Complex elements are defined as those elements which _____.

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b) have sides parallel to coordinate system
c) have sides parallel to coordinate system and use higher order interpolation polynomials
d) have polynomials with only linear and constant terms

12) Each node of beam element is having following degree of freedom _____.

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

13) In _____ element the value of field variable remains unchanged in the circumferential direction.

a) 1D and 2D b) Beam
c) Truss d) Axisymmetric

14) Size of shape function matrix of 2D element having 3 nodes is _____.

a) 2 x 6 b) 3 x 3
c) 4 x 6 d) 2 x 5

Seat No.	

Set **R**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Finite Element Method (BTN02715)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Use of non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and mention it clearly.

Section - I

Q.2 **a)** Obtain solution of differential equation by using Galerkin's method. **07**

$$\frac{\partial^2 u}{\partial x^2} + u - x^2 = 0, \qquad 0 \le x \le 1$$

Take boundary conditions as $u(0) = 0$, $\frac{du}{dx}(1) = 1$

b) Explain Simplex, Complex and Multiplex elements. **07**

Q.3 **a)** Find nodal displacement in stepped bar as shown in figure 1. **07**
Take $A_1 = 20\ mm^2, A_2 = 10\ mm^2$
$L_1 = L_2 = 100\ mm$, $E_1 = E_2 = 200 \times 10^3$ MPa

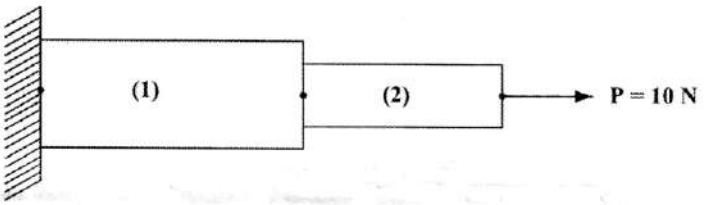

Figure 1

b) Explain discretization in FEM with suitable example and also brief p-refinement and h- refinement. **07**

Q.4 **Attempt the following.**
a) What are the properties of Stiffness matrix? Explain. **04**
b) Write a note on FEM steps. **04**
c) Shape functions for 1D element in global and natural coordinates. **06**

Section - II

Q.5 **a)** Calculate the value of field variable at the point A (2.5, 2.5), which is located inside the triangles shown in figure 2. The nodal values for field variable are U_i = 3.5, U_j = 2.2 and U_k = 4.4 **07**

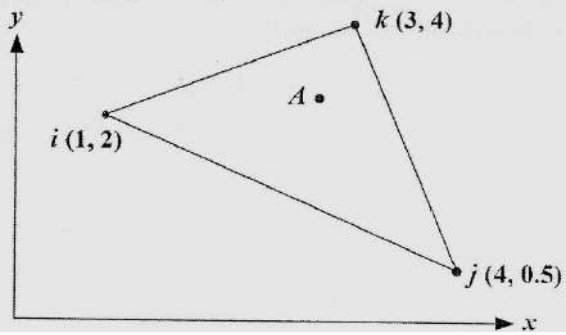

Figure 2

b) Explain static analysis and modal analysis. **07**

Q.6 **a)** Solve the following problem for all unknowns. Impose the boundary conditions using the penalty method. Refer figure 3. **12**

A_1 = 900 mm^2, A_2 = 400 mm^2, A_3 = 200 mm^2

L_1 = 80 mm, L_2 = 80 mm, L_3 = 70 mm

E_1 = 70 GPa, E_2 = 105 GPa, E_3 = 200G Pa

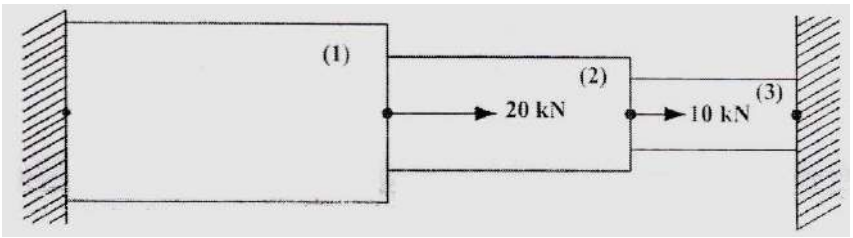

Figure 3

b) What are the 3D elements? **02**

Q.7 **Write short Notes on: (Any Three)** **14**

- **a)** Size and number of elements
- **b)** Interpolation functions
- **c)** Axisymmetric problems and axisymmetric elements
- **d)** Transient thermal analysis

Seat No.	

Set **S**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Finite Element Method (BTN02715)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Use of non-programable scientific calculator is allowed.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The interpolation function for a CST element is given by _____.
a) $U = a_1 + a_2x + a_3y$ b) $U = a_1 + a_2x + a_3x^2$
c) $U = a_1 + a_2x + a_3x^2 + a_4y$ d) $U = a_1 + a_2x + a_3y + a_4z$

2) Complex elements are defined as those elements which _____.
a) have higher order interpolation polynomials
b) have sides parallel to coordinate system
c) have sides parallel to coordinate system and use higher order interpolation polynomials
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3) Each node of beam element is having following degree of freedom ____.
a) 3 b) 4
c) 2 d) 1

4) In _____ element the value of field variable remains unchanged in the circumferential direction.
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c) Truss d) Axisymmetric

5) Size of shape function matrix of 2D element having 3 nodes is _____.
a) 2 x 6 b) 3 x 3
c) 4 x 6 d) 2 x 5

6) Formula for Galerkin method is _____.
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8) A problem which is not a function of a time ____.
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b) Material, Geometric, Contact
c) Material, Fluttering, plasticity
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c) remains constant d) gets deleted

12) The loading, constraints and other external effects applied to a model is ____.
a) Boundary conditions b) Meshing
c) Constraining d) Modeling

13) Preprocessing means ____.
a) Solving b) Meshing
c) Result analysis d) None of the above

14) Sum of all the natural coordinates of the node is ____.
a) One b) Zero
c) Can not be predicted d) None of the above

Seat No.		Set	S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Finite Element Method (BTN02715)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to the right indicate full marks.
3) Use of non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and mention it clearly.

Section - I

Q.2 **a)** Obtain solution of differential equation by using Galerkin's method. **07**

$$\frac{\partial^2 u}{\partial x^2} + u - x^2 = 0, \qquad 0 \le x \le 1$$

Take boundary conditions as $u(0) = 0$, $\frac{du}{dx}(1) = 1$

b) Explain Simplex, Complex and Multiplex elements. **07**

Q.3 **a)** Find nodal displacement in stepped bar as shown in figure 1. **07**
Take $A_1 = 20\ mm^2, A_2 = 10\ mm^2$
$L_1 = L_2 = 100\ mm$, $E_1 = E_2 = 200 \times 10^3$ MPa

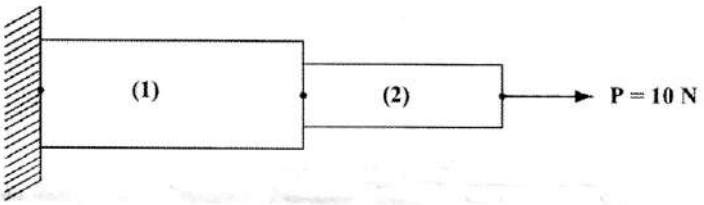


Figure 1

b) Explain discretization in FEM with suitable example and also brief p-refinement and h- refinement. **07**

Q.4 **Attempt the following.**
a) What are the properties of Stiffness matrix? Explain. **04**
b) Write a note on FEM steps. **04**
c) Shape functions for 1D element in global and natural coordinates. **06**

Section - II

Q.5 **a)** Calculate the value of field variable at the point A (2.5, 2.5), which is located inside the triangles shown in figure 2. The nodal values for field variable are U_i = 3.5, U_j = 2.2 and U_k = 4.4 **07**

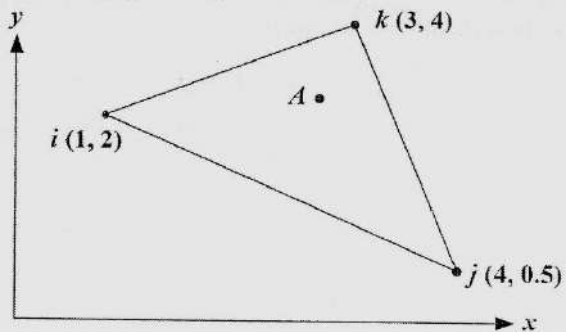


Figure 2

b) Explain static analysis and modal analysis. **07**

Q.6 **a)** Solve the following problem for all unknowns. Impose the boundary conditions using the penalty method. Refer figure 3. **12**

A_1 = 900 mm^2, A_2 = 400 mm^2, A_3 = 200 mm^2

L_1 = 80 mm, L_2 = 80 mm, L_3 = 70 mm

E_1 = 70 GPa, E_2 = 105 GPa, E_3 = 200G Pa

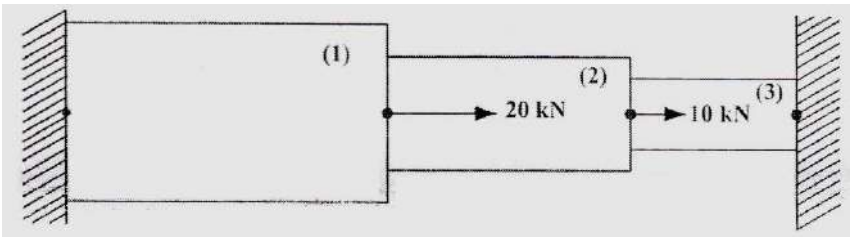


Figure 3

b) What are the 3D elements? **02**

Q.7 **Write short Notes on: (Any Three)** **14**

- **a)** Size and number of elements
- **b)** Interpolation functions
- **c)** Axisymmetric problems and axisymmetric elements
- **d)** Transient thermal analysis

SLR-BD-402

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (CBCS) Examination: March/April - 2025
MECHANICAL ENGINEERING
Robotics and Artificial Intelligence (197041703)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which of the following is a component of Artificial Intelligence?
a) Learning b) Training
c) Designing d) Puzzling

2) When the joint angles and the different configurations of manipulator are derived from the position orientation, the scheme is known as
a) Forward kinematics b) inverse kinematics
c) transformation d) none of these

3) Segmentation is the process of…….
a) Noise reduction b) object recognition
c) divide the image d) none of these

4) The term UGV stands for_____.
a) Unnamed Ground Vehicle b) Unknown Ground Vehicle
c) Universal Ground Vehicle d) Unmanned Ground Vehicle

5) Which type of joints used in robots.
a) Knuckle joint b) Prismatic joint
c) Universal joint d) None of these

6) Work envelope generated by Cartesian coordinate robot is
a) Sphere b) cylinder
c) rectangular box d) triangle

7) What is Artificial Intelligence?
a) A field that aims to make humans more intelligent
b) A field that aims to improve the security
c) A field that aims to develop intelligent machines
d) A field that aims to mine the data

8) Binary sensors having _____ is the contact device
a) fingers b) micro switch
c) wrist d) none of these

9) The envelope or space within which robot can manipulate the wrist is known as
a) Repeatability b) Accuracy
c) Work volume d) Stability

10) Robot grippers for industrial robots typically employ ___ actuators.
a) Pneumatic b) Hydraulic
c) Magnetic d) Electric

11) The non-manufacturing areas of robotics are
a) Mining b) agriculture
c) assembly d) nuclear

12) Which of the following drives used for control the robots?
a) Hydraulic b) pneumatic
c) electrical d) solenoid

13) Which of the following are tactile sensors?
a) Magnetic sensor b) piezoelectric
c) encoder d) range sensor

14) Which is the higher level vision?
a) Smoothing b) Segmentation
c) Thresholding d) Region growing

Seat No.	

Set **P**

Fourth Y. (B.Tech.) (Sem - I) (CBCS) Examination: March/April - 2025
MECHANICAL ENGINEERING
Robotics and Artificial Intelligence (197041703)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory; answer any two from remaining questions from Sec – I.
2) Q. 6 is compulsory; answer any two from remaining questions from Sec – II.
3) Figures to the right indicate full marks.
4) Make suitable assumptions if necessary and state them clearly.

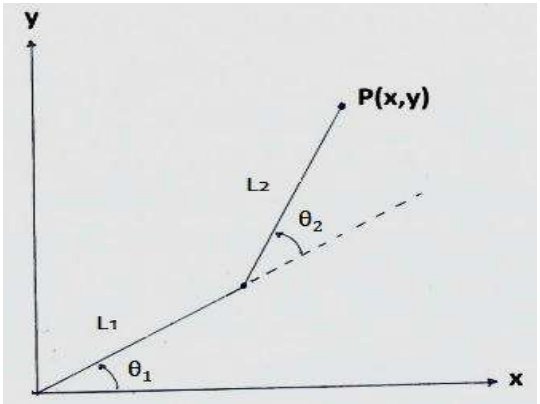
Section – I

Q.2 **a)** Explain selection criteria for sensors. **04**
b) Explain the five basic robot types according to the work envelope geometries. **06**

Q.3 **a)** Discuss the construction and working of stepper motors. List its applications. **05**
b) Explain briefly following sensors **04**
i) Force sensors
ii) Eddy current sensors

Q.4 **a)** Explain following industrial automation **05**
i) Fixed automation
ii) Programmable automation
iii) Flexible automation **04**
b) Define robot vision system & explain with block diagram.

Q.5 **a)** What are the different specifications used in Robots. **05**
b) It is a desired to determine the value to which the angles $\theta 1$ and $\theta 2$ must be set in order to achieve a certain point in space for manipulator as shown in fig. the length of joint - 1 LI =12", and the length of joint - 2 L2=10". The point 'p' which the robot must achieve is defined by co-ordinates x = 15.7 and y = 12.6 using reverse transformation method determine the angles θ_1 and θ_2. **04**



Section - II

Q.5	**a)**	Explain Artificial Neural Network (ANN) With suitable example.	**04**
	b)	Explain segmentation process.	**06**
Q.6	**a)**	Explain the applications of robot in following i) Medical ii) Assembly	**05**
	b)	Explain the applications of robot in following i) Material handling ii) Spray painting/coating	**04**
Q.7	**a)**	Explain Genetic Algorithm (GA). With neat sketch.	**05**
	b)	Explain template matching technique for image processing.	**04**
Q.8	**a)**	Compare online and offline programming.	**05**
	b)	Discuss the application of the wheeled robot.	**04**

SLR-BD-402

Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - I) (CBCS) Examination: March/April - 2025
MECHANICAL ENGINEERING
Robotics and Artificial Intelligence (197041703)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Binary sensors having _____ is the contact device
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c) A field that aims to develop intelligent machines
d) A field that aims to mine the data

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (CBCS) Examination: March/April - 2025
MECHANICAL ENGINEERING
Robotics and Artificial Intelligence (197041703)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory; answer any two from remaining questions from Sec – I.
2) Q. 6 is compulsory; answer any two from remaining questions from Sec – II.
3) Figures to the right indicate full marks.
4) Make suitable assumptions if necessary and state them clearly.

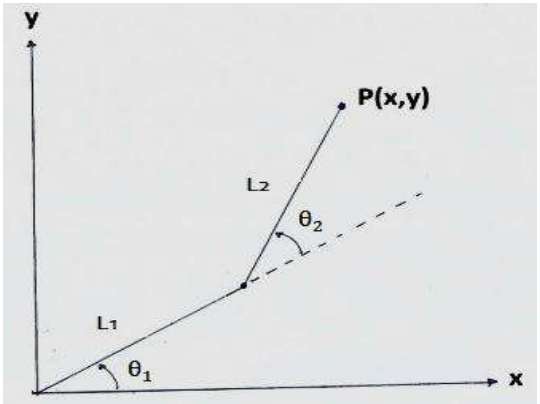
Section – I

Q.2 **a)** Explain selection criteria for sensors. **04**
b) Explain the five basic robot types according to the work envelope geometries. **06**

Q.3 **a)** Discuss the construction and working of stepper motors. List its applications. **05**
b) Explain briefly following sensors **04**
i) Force sensors
ii) Eddy current sensors

Q.4 **a)** Explain following industrial automation **05**
i) Fixed automation
ii) Programmable automation
iii) Flexible automation **04**
b) Define robot vision system & explain with block diagram.

Q.5 **a)** What are the different specifications used in Robots. **05**
b) It is a desired to determine the value to which the angles $\theta 1$ and $\theta 2$ must be set in order to achieve a certain point in space for manipulator as shown in fig. the length of joint - 1 LI =12", and the length of joint - 2 L2=10". The point 'p' which the robot must achieve is defined by co-ordinates x = 15.7 and y = 12.6 using reverse transformation method determine the angles θ_1 and θ_2. **04**



Section - II

Q.5	**a)**	Explain Artificial Neural Network (ANN) With suitable example.	**04**
	b)	Explain segmentation process.	**06**
Q.6	**a)**	Explain the applications of robot in following i) Medical ii) Assembly	**05**
	b)	Explain the applications of robot in following i) Material handling ii) Spray painting/coating	**04**
Q.7	**a)**	Explain Genetic Algorithm (GA). With neat sketch.	**05**
	b)	Explain template matching technique for image processing.	**04**
Q.8	**a)**	Compare online and offline programming.	**05**
	b)	Discuss the application of the wheeled robot.	**04**

Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem - I) (CBCS) Examination: March/April - 2025
MECHANICAL ENGINEERING
Robotics and Artificial Intelligence (197041703)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) The non-manufacturing areas of robotics are
a) Mining b) agriculture
c) assembly d) nuclear

2) Which of the following drives used for control the robots?
a) Hydraulic b) pneumatic
c) electrical d) solenoid

3) Which of the following are tactile sensors?
a) Magnetic sensor b) piezoelectric
c) encoder d) range sensor

4) Which is the higher level vision?
a) Smoothing b) Segmentation
c) Thresholding d) Region growing

5) Which of the following is a component of Artificial Intelligence?
a) Learning b) Training
c) Designing d) Puzzling

6) When the joint angles and the different configurations of manipulator are derived from the position orientation, the scheme is known as
a) Forward kinematics b) inverse kinematics
c) transformation d) none of these

7) Segmentation is the process of…….
a) Noise reduction b) object recognition
c) divide the image d) none of these

8) The term UGV stands for_____.
a) Unnamed Ground Vehicle b) Unknown Ground Vehicle
c) Universal Ground Vehicle d) Unmanned Ground Vehicle

9) Which type of joints used in robots.
a) Knuckle joint b) Prismatic joint
c) Universal joint d) None of these

10) Work envelope generated by Cartesian coordinate robot is
a) Sphere b) cylinder
c) rectangular box d) triangle

11) What is Artificial Intelligence?
a) A field that aims to make humans more intelligent
b) A field that aims to improve the security
c) A field that aims to develop intelligent machines
d) A field that aims to mine the data

12) Binary sensors having _____ is the contact device
a) fingers b) micro switch
c) wrist d) none of these

13) The envelope or space within which robot can manipulate the wrist is known as
a) Repeatability b) Accuracy
c) Work volume d) Stability

14) Robot grippers for industrial robots typically employ ___ actuators.
a) Pneumatic b) Hydraulic
c) Magnetic d) Electric

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (CBCS) Examination: March/April - 2025
MECHANICAL ENGINEERING
Robotics and Artificial Intelligence (197041703)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory; answer any two from remaining questions from Sec – I.
2) Q. 6 is compulsory; answer any two from remaining questions from Sec – II.
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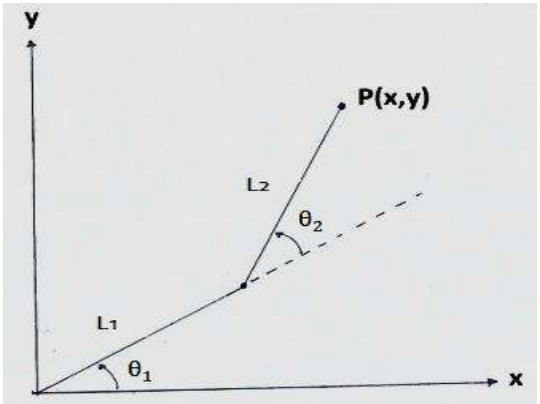
Section – I

Q.2 **a)** Explain selection criteria for sensors. **04**
b) Explain the five basic robot types according to the work envelope geometries. **06**

Q.3 **a)** Discuss the construction and working of stepper motors. List its applications. **05**
b) Explain briefly following sensors **04**
i) Force sensors
ii) Eddy current sensors

Q.4 **a)** Explain following industrial automation **05**
i) Fixed automation
ii) Programmable automation
iii) Flexible automation **04**
b) Define robot vision system & explain with block diagram.

Q.5 **a)** What are the different specifications used in Robots. **05**
b) It is a desired to determine the value to which the angles $\theta 1$ and $\theta 2$ must be set in order to achieve a certain point in space for manipulator as shown in fig. the length of joint - 1 LI =12", and the length of joint - 2 L2=10". The point 'p' which the robot must achieve is defined by co-ordinates x = 15.7 and y = 12.6 using reverse transformation method determine the angles θ_1 and θ_2. **04**



Section - II

Q.5	**a)**	Explain Artificial Neural Network (ANN) With suitable example.	**04**
	b)	Explain segmentation process.	**06**
Q.6	**a)**	Explain the applications of robot in following i) Medical ii) Assembly	**05**
	b)	Explain the applications of robot in following i) Material handling ii) Spray painting/coating	**04**
Q.7	**a)**	Explain Genetic Algorithm (GA). With neat sketch.	**05**
	b)	Explain template matching technique for image processing.	**04**
Q.8	**a)**	Compare online and offline programming.	**05**
	b)	Discuss the application of the wheeled robot.	**04**

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (CBCS) Examination: March/April - 2025
MECHANICAL ENGINEERING
Robotics and Artificial Intelligence (197041703)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page No. 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Work envelope generated by Cartesian coordinate robot is
a) Sphere b) cylinder
c) rectangular box d) triangle

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a) A field that aims to make humans more intelligent
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3) Binary sensors having _____ is the contact device
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a) Noise reduction b) object recognition
c) divide the image d) none of these

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c) Universal Ground Vehicle d) Unmanned Ground Vehicle

14) Which type of joints used in robots.
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c) Universal joint d) None of these

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (CBCS) Examination: March/April - 2025
MECHANICAL ENGINEERING
Robotics and Artificial Intelligence (197041703)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory; answer any two from remaining questions from Sec – I.
2) Q. 6 is compulsory; answer any two from remaining questions from Sec – II.
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4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 **a)** Explain selection criteria for sensors. **04**
b) Explain the five basic robot types according to the work envelope geometries. **06**

Q.3 **a)** Discuss the construction and working of stepper motors. List its applications. **05**
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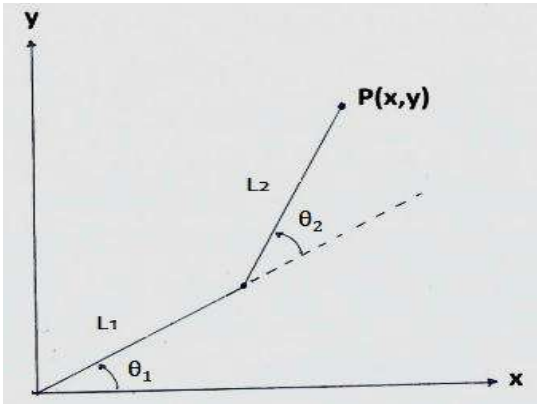

Section - II

Q.5	**a)**	Explain Artificial Neural Network (ANN) With suitable example.	**04**
	b)	Explain segmentation process.	**06**
Q.6	**a)**	Explain the applications of robot in following i) Medical ii) Assembly	**05**
	b)	Explain the applications of robot in following i) Material handling ii) Spray painting/coating	**04**
Q.7	**a)**	Explain Genetic Algorithm (GA). With neat sketch.	**05**
	b)	Explain template matching technique for image processing.	**04**
Q.8	**a)**	Compare online and offline programming.	**05**
	b)	Discuss the application of the wheeled robot.	**04**

Seat No.	

Set P

T.Y. (B.Tech.) (Electronics Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Digital Communication (BTN04501)

Day & Date: Saturday 17-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

1) Matched filter may be optimally used only for _____.
a) Gaussian noise b) Transit time noise
c) Flicker d) All of the above

2) In uniform quantization process _____.
a) The step size remains same
b) Step size varies according to the values of the input signal
c) The quantizer has linear characteristics
d) Both a and c are correct

3) The modulation techniques used to convert analog signal into digital signal are _____.
a) Pulse code modulation b) Delta modulation
c) Adaptive delta modulation d) All of the above

4) One of the disadvantages of PCM is _____.
a) It requires large bandwidth b) very high noise
c) cannot be decoded easily d) All of the above

5) The channel capacity according to Shannon's equation is _____.
a) Maximum error free communication
b) Defined for optimum system
c) Information transmitted
d) All of the above

6) The information rate R for given average information H = 2.0 for analog signal band limited to B Hz is _____.

a) 8 B bits/sec
b) 4 B bits/sec
c) 2 B bits/sec
d) 16 B bits/sec

7) For decoding in convolution coding, in a code tree, _____.

a) Diverge upward when a bit is 0 and diverge downward when the bit is 1
b) Diverge downward when a bit is 0 and diverge upward when the bit is 1
c) Diverge left when a bit is 0 and diverge right when the bit is 1
d) Diverge right when a bit is 0 and diverge left when the bit is 1

8) Parity check bit coding is used for _____.

a) Error correction
b) Error detection
c) Error correction and detection
d) None of the above

9) The probability of error of DPSK is _____ than that of BPSK.

a) Higher
b) Lower
c) Same
d) Not predictable

10) QPSK is a modulation scheme where each symbol consists of _____.

a) 4 bits
b) 2 bits
c) 1 bits
d) M number of bits, depending upon the requirement

11) The data rate of QPSK is _____ of BPSK.

a) Thrice
b) Four times
c) Twice
d) Same

12) One of the disadvantages of PCM is _____.

a) It requires large bandwidth
b) Very high noise
c) cannot be decoded easily
d) All of the above

13) The sequence of operations in which PCM is done is _____.

a) Sampling, quantizing, encoding
b) Quantizing, encoding, sampling
c) Quantizing, sampling, encoding
d) None of the above

14) Minimum shift keying is similar to _____.

a) Continuous phase frequency shift keying
b) Binary phase shift keying
c) Binary frequency shift keying
d) QPSK

Seat No.		Set	P

T.Y. (B.Tech.) (Electronics Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Digital Communication (BTN04501)

Day & Date: Saturday 17-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Compare Analog Communication and digital Communication.
b) Explain PPM using IC555.
c) Define the Information Theory and Mutual information.
d) Why companding is necessary?
e) Determine the Nyquist sampling rate & sampling interval for the following signal
$x(t) = 6\cos(50\pi\, t) + 20\sin(300\pi t) - 10\cos(100\pi t)$

Q.3 Attempt Any Two. **12**

a) Compare PCM, DPCM, DM and ADM.
b) Derive the expression for condition of maximum entropy.
c) A DMS X has five symbols x1, x2, x3, x4 and x5 with 0.4, 0.19, 0.16, 0.15 and 0.1 respectively
i) Construct a Shannon Fano code for X and calculate the efficiency of the code.
ii) Repeat for Huffman code and compare the result.

Section – II

Q.4 Attempt Any Four. **16**

a) What is coherent and non coherent detection?
b) Explain Matched Filter BPSK Detector.
c) Explain convolution code with Example.
d) In an (n, k) linear block code, how many code words will be there? Justify your answer.
e) With suitable example explain baseband modulation and band pass modulation.

Q.5 Attempt any two. **12**

a) With suitable waveforms explain QPSK & OQPSK.

b) For a (7,4) code the generator matrix G is given by

$$G = \begin{matrix} 1 & 0 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 1 & 1 \end{matrix}$$

i) Find the code Vector for Message $1 \quad 1 \quad 0 \quad 1$

ii) Find the parity Check Matrix

c) Explain frame synchronization.

Seat No.	

Set Q

T.Y. (B.Tech.) (Electronics Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Digital Communication (BTN04501)

Day & Date: Saturday 17-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

1) Parity check bit coding is used for _____.
a) Error correction
b) Error detection
c) Error correction and detection
d) None of the above

2) The probability of error of DPSK is _____ than that of BPSK.
a) Higher b) Lower
c) Same d) Not predictable

3) QPSK is a modulation scheme where each symbol consists of _____.
a) 4 bits
b) 2 bits
c) 1 bits
d) M number of bits, depending upon the requirement

4) The data rate of QPSK is _____ of BPSK.
a) Thrice b) Four times
c) Twice d) Same

5) One of the disadvantages of PCM is _____.
a) It requires large bandwidth b) Very high noise
c) cannot be decoded easily d) All of the above

6) The sequence of operations in which PCM is done is _____.
a) Sampling, quantizing, encoding
b) Quantizing, encoding, sampling
c) Quantizing, sampling, encoding
d) None of the above

7) Minimum shift keying is similar to _____.
a) Continuous phase frequency shift keying
b) Binary phase shift keying
c) Binary frequency shift keying
d) QPSK

8) Matched filter may be optimally used only for _____.
a) Gaussian noise b) Transit time noise
c) Flicker d) All of the above

9) In uniform quantization process _____.
a) The step size remains same
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d) Both a and c are correct

10) The modulation techniques used to convert analog signal into digital signal are _____.
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11) One of the disadvantages of PCM is _____.
a) It requires large bandwidth b) very high noise
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12) The channel capacity according to Shannon's equation is _____.
a) Maximum error free communication
b) Defined for optimum system
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d) All of the above

13) The information rate R for given average information H = 2.0 for analog signal band limited to B Hz is _____.
a) 8 B bits/sec b) 4 B bits/sec
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14) For decoding in convolution coding, in a code tree, _____.
a) Diverge upward when a bit is 0 and diverge downward when the bit is 1
b) Diverge downward when a bit is 0 and diverge upward when the bit is 1
c) Diverge left when a bit is 0 and diverge right when the bit is 1
d) Diverge right when a bit is 0 and diverge left when the bit is 1

SLR-BD-403

Seat No.	

Set Q

T.Y. (B.Tech.) (Electronics Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Digital Communication (BTN04501)

Day & Date: Saturday 17-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Compare Analog Communication and digital Communication.
b) Explain PPM using IC555.
c) Define the Information Theory and Mutual information.
d) Why companding is necessary?
e) Determine the Nyquist sampling rate & sampling interval for the following signal
$x(t) = 6\cos(50\pi\, t) + 20\sin(300\pi t) - 10\cos(100\pi t)$

Q.3 Attempt Any Two. **12**

a) Compare PCM, DPCM, DM and ADM.
b) Derive the expression for condition of maximum entropy.
c) A DMS X has five symbols x1, x2, x3, x4 and x5 with 0.4, 0.19, 0.16, 0.15 and 0.1 respectively
i) Construct a Shannon Fano code for X and calculate the efficiency of the code.
ii) Repeat for Huffman code and compare the result.

Section – II

Q.4 Attempt Any Four. **16**

a) What is coherent and non coherent detection?
b) Explain Matched Filter BPSK Detector.
c) Explain convolution code with Example.
d) In an (n, k) linear block code, how many code words will be there? Justify your answer.
e) With suitable example explain baseband modulation and band pass modulation.

Q.5 Attempt any two. **12**

a) With suitable waveforms explain QPSK & OQPSK.

b) For a (7,4) code the generator matrix G is given by

$$G = \begin{matrix} 1 & 0 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 1 & 1 \end{matrix}$$

i) Find the code Vector for Message $1 \quad 1 \quad 0 \quad 1$

ii) Find the parity Check Matrix

c) Explain frame synchronization.

Seat No.	

Set R

T.Y. (B.Tech.) (Electronics Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Digital Communication (BTN04501)

Day & Date: Saturday 17-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

1) The data rate of QPSK is _____ of BPSK.
a) Thrice b) Four times
c) Twice d) Same

2) One of the disadvantages of PCM is _____.
a) It requires large bandwidth b) Very high noise
c) cannot be decoded easily d) All of the above

3) The sequence of operations in which PCM is done is _____.
a) Sampling, quantizing, encoding
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4) Minimum shift keying is similar to _____.
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b) 2 bits
c) 1 bits
d) M number of bits, depending upon the requirement

Seat No.	

Set **R**

T.Y. (B.Tech.) (Electronics Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Digital Communication (BTN04501)

Day & Date: Saturday 17-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Compare Analog Communication and digital Communication.
b) Explain PPM using IC555.
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Q.3 Attempt Any Two. **12**

a) Compare PCM, DPCM, DM and ADM.
b) Derive the expression for condition of maximum entropy.
c) A DMS X has five symbols x1, x2, x3, x4 and x5 with 0.4, 0.19, 0.16, 0.15 and 0.1 respectively
i) Construct a Shannon Fano code for X and calculate the efficiency of the code.
ii) Repeat for Huffman code and compare the result.

Section – II

Q.4 Attempt Any Four. **16**

a) What is coherent and non coherent detection?
b) Explain Matched Filter BPSK Detector.
c) Explain convolution code with Example.
d) In an (n, k) linear block code, how many code words will be there? Justify your answer.
e) With suitable example explain baseband modulation and band pass modulation.

Q.5 Attempt any two. **12**

a) With suitable waveforms explain QPSK & OQPSK.

b) For a (7,4) code the generator matrix G is given by

$$G = \begin{matrix} 1 & 0 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 1 & 1 \end{matrix}$$

i) Find the code Vector for Message $1 \quad 1 \quad 0 \quad 1$

ii) Find the parity Check Matrix

c) Explain frame synchronization.

Seat No.	

Set S

T.Y. (B.Tech.) (Electronics Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Digital Communication (BTN04501)

Day & Date: Saturday 17-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

1) The information rate R for given average information H = 2.0 for analog signal band limited to B Hz is _____.
a) 8 B bits/sec b) 4 B bits/sec
c) 2 B bits/sec d) 16 B bits/sec

2) For decoding in convolution coding, in a code tree, _____.
a) Diverge upward when a bit is 0 and diverge downward when the bit is 1
b) Diverge downward when a bit is 0 and diverge upward when the bit is 1
c) Diverge left when a bit is 0 and diverge right when the bit is 1
d) Diverge right when a bit is 0 and diverge left when the bit is 1

3) Parity check bit coding is used for _____.
a) Error correction
b) Error detection
c) Error correction and detection
d) None of the above

4) The probability of error of DPSK is _____ than that of BPSK.
a) Higher b) Lower
c) Same d) Not predictable

5) QPSK is a modulation scheme where each symbol consists of _____.
a) 4 bits
b) 2 bits
c) 1 bits
d) M number of bits, depending upon the requirement

6) The data rate of QPSK is _____ of BPSK.
a) Thrice b) Four times
c) Twice d) Same

7) One of the disadvantages of PCM is _____.
a) It requires large bandwidth b) Very high noise
c) cannot be decoded easily d) All of the above

8) The sequence of operations in which PCM is done is _____.
a) Sampling, quantizing, encoding
b) Quantizing, encoding, sampling
c) Quantizing, sampling, encoding
d) None of the above

9) Minimum shift keying is similar to _____.
a) Continuous phase frequency shift keying
b) Binary phase shift keying
c) Binary frequency shift keying
d) QPSK

10) Matched filter may be optimally used only for _____.
a) Gaussian noise b) Transit time noise
c) Flicker d) All of the above

11) In uniform quantization process _____.
a) The step size remains same
b) Step size varies according to the values of the input signal
c) The quantizer has linear characteristics
d) Both a and c are correct

12) The modulation techniques used to convert analog signal into digital signal are _____.
a) Pulse code modulation b) Delta modulation
c) Adaptive delta modulation d) All of the above

13) One of the disadvantages of PCM is _____.
a) It requires large bandwidth b) very high noise
c) cannot be decoded easily d) All of the above

14) The channel capacity according to Shannon's equation is _____.
a) Maximum error free communication
b) Defined for optimum system
c) Information transmitted
d) All of the above

Seat No.	

Set **S**

T.Y. (B.Tech.) (Electronics Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Digital Communication (BTN04501)

Day & Date: Saturday 17-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Compare Analog Communication and digital Communication.
b) Explain PPM using IC555.
c) Define the Information Theory and Mutual information.
d) Why companding is necessary?
e) Determine the Nyquist sampling rate & sampling interval for the following signal
$x(t) = 6\cos(50\pi\, t) + 20\sin(300\pi t) - 10\cos(100\pi t)$

Q.3 Attempt Any Two. **12**

a) Compare PCM, DPCM, DM and ADM.
b) Derive the expression for condition of maximum entropy.
c) A DMS X has five symbols x1, x2, x3, x4 and x5 with 0.4, 0.19, 0.16, 0.15 and 0.1 respectively
i) Construct a Shannon Fano code for X and calculate the efficiency of the code.
ii) Repeat for Huffman code and compare the result.

Section – II

Q.4 Attempt Any Four. **16**

a) What is coherent and non coherent detection?
b) Explain Matched Filter BPSK Detector.
c) Explain convolution code with Example.
d) In an (n, k) linear block code, how many code words will be there? Justify your answer.
e) With suitable example explain baseband modulation and band pass modulation.

Q.5 Attempt any two. **12**

a) With suitable waveforms explain QPSK & OQPSK.

b) For a (7,4) code the generator matrix G is given by

$$G = \begin{matrix} 1 & 0 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 1 & 1 \end{matrix}$$

i) Find the code Vector for Message $1 \quad 1 \quad 0 \quad 1$

ii) Find the parity Check Matrix

c) Explain frame synchronization.

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Digital Signal Processing (BTN04502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) The value of the twiddle factor W_4^5 is _____.
a) j b) 1
c) -0.707 + j0.707 d) -j

2) The following realization minimizes the delay elements.
a) Direct form-I realization b) Direct form-II realization
c) Cascade form realization d) Parallel realization

3) The ROC of Z-Transform of $x[n] = \delta[n]$ is_____
a) Entire Z-plane b) Entire Z-plane expect $Z = 0$
c) Entire Z-plane expect $Z = \infty$ d) none of above

4) Number of delay elements are required for direct form I realization of $y(n) = 1.5y(n-1) - 0.45y(n-2) + x(n) + 0.25x(n-2)$ are ____
a) 1 b) 2
c) 3 d) 4

5) DFT of a impulse function is _____.
a) $\delta[n]$ b) 1
c) $\delta[n-1]$ d) None

6) With signal $x(n) = \{1, 4, 6, 7, 8\}$, if $x1(n) = x\big((n-1)\big)_5$ then $x1(n)$ will be
a) {1, 7, 8, 6, 4} b) {7, 8, 1, 4, 6}
c) {4, 6, 7, 8, 1} d) {1, 4, 6, 7, 8}

7) The number of complex additions required DIT FFT algorithm to compute N point DFT is _____.
a) N^2 b) $N\log_2 N$
c) $(N/2)\log_2 2$ d) None of the above

8) The addressing mode that is convenient for FFT computation is ____.
a) Indirect addressing b) Circular mode addressing
c) Bit reversed addressing d) Memory mapped addressing

9) The frequency mapping from s domain to z domain using impulse invariant technique is _____.
a) Many to many b) Many to one
c) One to many d) None of above

10) Butterworth filters have _____.
a) Wide transition region
b) Sharp transition region
c) Oscillation in transition region
d) Maximally flat passband

11) Which of the following is not true for IIR filters?
a) Impulse response duration is infinite
b) They have poles
c) They give linear phase response
d) All of these

12) The FIR filter of order M gives linear phase response if _____.
a) $h(n) < \infty$ b) $h(n) = h(-n)$
c) $h(n) = h(M-1-n)$ d) none of these

13) The hardware used in digital signal processor to scale down or scale up operands is _____.
a) Barrel shifter b) MAC
c) Multiplier d) ALU

14) In Bilinear transformation the relation between Ω and ω is _____.
a) $\Omega = \omega \mathrm{T}$ b) $\Omega = \omega/\mathrm{T}$
c) $\omega = \tan(\Omega \mathrm{T})$ d) $\Omega = (2/\mathrm{T})\tan(\omega/2)$

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Digital Signal Processing (BTN04502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any four of the following. **16**

a) State and prove circular time shift property of DFT of a DT signal.

b) If $x(n) = \{\ 6,5,3,2\ \}$ Determine
1) $x1(n) = x\big((-n)\big)_4$
2) $x2(n) = x\big((n+1)\big)_4$

c) Compute circular convolution of the signal
$x1[n] = \{3,1,4,2\}$ & $x2[n] = \{2,3,5,4\}$.

d) Compute IDFT of $X(k) = \{\ 6,0,2,0\ \}$

e) Obtain the direct form realization of the system characterized by transfer function
$H(z) = 1 + 1/3Z^{-1} + 1/2Z^{-2} + 2Z^{-3} + 3z^{-4}$

Q.3 Solve any two of the followings. **12**

a) Realize the FIR system given below in
1) Direct Form I
2) Direct form II
$y(n) = -3y(n-1) + 2y(n-2) + x(n) + 3x(n-1) + 2x(n-2) - x(n-3)$

b) Prove that the multiplication of the DFT's of two sequences is equivalent to the DFT of time domain circular convolution of two sequences.

c) Obtain the output of a filter using overlap & add method whose input & impulse response are as below.
$x(n) = \{3,2,1,3,1,4,1,2,1,4\}$ & $h(n) = \{1\ 2\ \ 5\}$

Section – II

Q.4 Solve any four of the following. **16**

a) Consider the analog transfer function.

$$H(s) = \frac{1}{(s-3)} + \frac{3}{(s \mp 2)}$$

Obtain the digital transfer function H(z) using impulse invariant method. Use T = 1 s

b) Draw and explain the barrel shifter block of DSP chip.

c) Draw and explain the architecture of TMS 320C54 DSP.

d) Design the first order high pass filter with fc = 1 kHz and sampling frequency fs = 10000 sps. Use bilinear transformation method.

e) Given the desired specifications $\Omega p, \Omega s, \delta 1, \delta 2$ of Butterworth filter derive the relation for obtaining order N & cutoff frequency Ωc.

f) Explain finite word length effect in designing FIR filters.

Q.5 Solve any two of the followings. **12**

a) Explain Impulse Invariant Technique along with mapping between s domain & z domain in this method.

b) The desired frequency response of a low pass filter is

$$Hd(e^{jw}) = \begin{cases} e^{-2jw} & -\frac{\pi}{4} \le \omega \le \pi/4 \\ 0 & \frac{\pi}{4} \le |\omega| \le \pi \end{cases}$$

Determine hd(n). Also determine h(n) using symmetric Rectangular window of length 5.

c) Design a digital Butterworth filter to meet the following constraints.

$0.9 \le \left|H(e^{jw})\right| \le 1 \quad 0 \le \omega \le 0.5\pi$

$a. |H(e^{jw})| \le 0.2 \quad 0.75\pi \le \omega \le \pi$

Use bilinear transformation. Use T = 1 sec.

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Digital Signal Processing (BTN04502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The addressing mode that is convenient for FFT computation is ____.
a) Indirect addressing b) Circular mode addressing
c) Bit reversed addressing d) Memory mapped addressing

2) The frequency mapping from s domain to z domain using impulse invariant technique is _____.
a) Many to many b) Many to one
c) One to many d) None of above

3) Butterworth filters have _____.
a) Wide transition region
b) Sharp transition region
c) Oscillation in transition region
d) Maximally flat passband

4) Which of the following is not true for IIR filters?
a) Impulse response duration is infinite
b) They have poles
c) They give linear phase response
d) All of these

5) The FIR filter of order M gives linear phase response if _____.
a) $h(n) < \infty$ b) $h(n) = h(-n)$
c) $h(n) = h(M - 1 - n)$ d) none of these

6) The hardware used in digital signal processor to scale down or scale up operands is _____.
a) Barrel shifter b) MAC
c) Multiplier d) ALU

7) In Bilinear transformation the relation between Ω and ω is _____.

a) $\Omega = \omega T$ b) $\Omega = \omega/T$

c) $\omega = \tan(\Omega T)$ d) $\Omega = (2/T)\tan(\omega/2)$

8) The value of the twiddle factor W_4^5 is _____.

a) j b) 1

c) -0.707 + j0.707 d) -j

9) The following realization minimizes the delay elements.

a) Direct form-I realization b) Direct form-II realization

c) Cascade form realization d) Parallel realization

10) The ROC of Z-Transform of $x[n] = \delta[n]$ is_____

a) Entire Z-plane b) Entire Z-plane expect $Z = 0$

c) Entire Z-plane expect $Z = \infty$ d) none of above

11) Number of delay elements are required for direct form I realization of $y(n) = 1.5y(n-1) - 0.45y(n-2) + x(n) + 0.25x(n-2)$ are ____

a) 1 b) 2

c) 3 d) 4

12) DFT of a impulse function is _____.

a) $\delta[n]$ b) 1

c) $\delta[n-1]$ d) None

13) With signal $x(n) = \{1, 4, 6, 7, 8\}$, if $x1(n) = x\big((n-1)\big)_5$ then $x1(n)$ will be

a) {1, 7, 8, 6, 4} b) {7, 8, 1, 4, 6}

c) {4, 6, 7, 8, 1} d) {1, 4, 6, 7, 8}

14) The number of complex additions required DIT FFT algorithm to compute N point DFT is _____.

a) N^2 b) $N\log_2 N$

c) $(N/2)\log_2 2$ d) None of the above

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Digital Signal Processing (BTN04502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any four of the following. **16**

a) State and prove circular time shift property of DFT of a DT signal.

b) If $x(n) = \{\ 6,5,3,2\ \}$ Determine
1) $x1(n) = x\big((-n)\big)_4$
2) $x2(n) = x\big((n+1)\big)_4$

c) Compute circular convolution of the signal
$x1[n] = \{3,1,4,2\}$ & $x2[n] = \{2,3,5,4\}$.

d) Compute IDFT of $X(k) = \{\ 6,0,2,0\ \}$

e) Obtain the direct form realization of the system characterized by transfer function
$H(z) = 1 + 1/3Z^{-1} + 1/2Z^{-2} + 2Z^{-3} + 3z^{-4}$

Q.3 Solve any two of the followings. **12**

a) Realize the FIR system given below in
1) Direct Form I
2) Direct form II
$y(n) = -3y(n-1) + 2y(n-2) + x(n) + 3x(n-1) + 2x(n-2) - x(n-3)$

b) Prove that the multiplication of the DFT's of two sequences is equivalent to the DFT of time domain circular convolution of two sequences.

c) Obtain the output of a filter using overlap & add method whose input & impulse response are as below.
$x(n) = \{3,2,1,3,1,4,1,2,1,4\}$ & $h(n) = \{1\ 2\ \ 5\}$

Section – II

Q.4 Solve any four of the following. **16**

a) Consider the analog transfer function.

$$H(s) = \frac{1}{(s-3)} + \frac{3}{(s \mp 2)}$$

Obtain the digital transfer function H(z) using impulse invariant method. Use T = 1 s

b) Draw and explain the barrel shifter block of DSP chip.

c) Draw and explain the architecture of TMS 320C54 DSP.

d) Design the first order high pass filter with fc = 1 kHz and sampling frequency fs = 10000 sps. Use bilinear transformation method.

e) Given the desired specifications $\Omega p, \Omega s, \delta 1, \delta 2$ of Butterworth filter derive the relation for obtaining order N & cutoff frequency Ωc.

f) Explain finite word length effect in designing FIR filters.

Q.5 Solve any two of the followings. **12**

a) Explain Impulse Invariant Technique along with mapping between s domain & z domain in this method.

b) The desired frequency response of a low pass filter is

$$Hd(e^{jw}) = \begin{cases} e^{-2jw} & -\frac{\pi}{4} \le \omega \le \pi/4 \\ 0 & \frac{\pi}{4} \le |\omega| \le \pi \end{cases}$$

Determine hd(n). Also determine h(n) using symmetric Rectangular window of length 5.

c) Design a digital Butterworth filter to meet the following constraints.

$$0.9 \le \left|H(e^{jw})\right| \le 1 \qquad 0 \le \omega \le 0.5\pi$$

$$a.\ |H(e^{jw})| \le 0.2 \qquad 0.75\pi \le \omega \le \pi$$

Use bilinear transformation. Use T = 1 sec.

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Digital Signal Processing (BTN04502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) Which of the following is not true for IIR filters?
a) Impulse response duration is infinite
b) They have poles
c) They give linear phase response
d) All of these

2) The FIR filter of order M gives linear phase response if _____.
a) $h(n) < \infty$ b) $h(n) = h(-n)$
c) $h(n) = h(M-1-n)$ d) none of these

3) The hardware used in digital signal processor to scale down or scale up operands is _____.
a) Barrel shifter b) MAC
c) Multiplier d) ALU

4) In Bilinear transformation the relation between Ω and ω is _____.
a) $\Omega = \omega T$ b) $\Omega = \omega/T$
c) $\omega = \tan(\Omega T)$ d) $\Omega = (2/T)\tan(\omega/2)$

5) The value of the twiddle factor W_4^5 is _____.
a) j b) 1
c) -0.707 + j0.707 d) -j

6) The following realization minimizes the delay elements.
a) Direct form-I realization b) Direct form-II realization
c) Cascade form realization d) Parallel realization

7) The ROC of Z-Transform of $x[n] = \delta[n]$ is_____

a) Entire Z-plane
b) Entire Z-plane expect $Z = 0$
c) Entire Z-plane expect $Z = \infty$
d) none of above

8) Number of delay elements are required for direct form I realization of $y(n) = 1.5y(n-1) - 0.45y(n-2) + x(n) + 0.25x(n-2)$ are ____

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

9) DFT of a impulse function is _____.

a) $\delta[n]$
b) 1
c) $\delta[n-1]$
d) None

10) With signal $x(n) = \{1, 4, 6, 7, 8\}$, if $x1(n) = x\big((n-1)\big)_5$ then $x1(n)$ will be

a) {1, 7, 8, 6, 4}
b) {7, 8, 1, 4, 6}
c) {4, 6, 7, 8, 1}
d) {1, 4, 6, 7, 8}

11) The number of complex additions required DIT FFT algorithm to compute N point DFT is _____.

a) N^2
b) $N\log_2 N$
c) $(N/2)\log_2 2$
d) None of the above

12) The addressing mode that is convenient for FFT computation is ____.

a) Indirect addressing
b) Circular mode addressing
c) Bit reversed addressing
d) Memory mapped addressing

13) The frequency mapping from s domain to z domain using impulse invariant technique is _____.

a) Many to many
b) Many to one
c) One to many
d) None of above

14) Butterworth filters have _____.

a) Wide transition region
b) Sharp transition region
c) Oscillation in transition region
d) Maximally flat passband

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Digital Signal Processing (BTN04502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any four of the following. **16**

a) State and prove circular time shift property of DFT of a DT signal.

b) If $x(n) = \{\ 6,5,3,2\ \}$ Determine
1) $x1(n) = x\big((-n)\big)_4$
2) $x2(n) = x\big((n+1)\big)_4$

c) Compute circular convolution of the signal
$x1[n] = \{3,1,4,2\}$ & $x2[n] = \{2,3,5,4\}$.

d) Compute IDFT of $X(k) = \{\ 6,0,2,0\ \}$

e) Obtain the direct form realization of the system characterized by transfer function
$H(z) = 1 + 1/3Z^{-1} + 1/2Z^{-2} + 2Z^{-3} + 3z^{-4}$

Q.3 Solve any two of the followings. **12**

a) Realize the FIR system given below in
1) Direct Form I
2) Direct form II
$y(n) = -3y(n-1) + 2y(n-2) + x(n) + 3x(n-1) + 2x(n-2) - x(n-3)$

b) Prove that the multiplication of the DFT's of two sequences is equivalent to the DFT of time domain circular convolution of two sequences.

c) Obtain the output of a filter using overlap & add method whose input & impulse response are as below.
$x(n) = \{3,2,1,3,1,4,1,2,1,4\}$ & $h(n) = \{1\ 2\ \ 5\}$

Section – II

Q.4 Solve any four of the following. **16**

a) Consider the analog transfer function.

$$H(s) = \frac{1}{(s-3)} + \frac{3}{(s \mp 2)}$$

Obtain the digital transfer function H(z) using impulse invariant method. Use T = 1 s

b) Draw and explain the barrel shifter block of DSP chip.

c) Draw and explain the architecture of TMS 320C54 DSP.

d) Design the first order high pass filter with fc = 1 kHz and sampling frequency fs = 10000 sps. Use bilinear transformation method.

e) Given the desired specifications $\Omega p, \Omega s, \delta 1, \delta 2$ of Butterworth filter derive the relation for obtaining order N & cutoff frequency Ωc.

f) Explain finite word length effect in designing FIR filters.

Q.5 Solve any two of the followings. **12**

a) Explain Impulse Invariant Technique along with mapping between s domain & z domain in this method.

b) The desired frequency response of a low pass filter is

$$Hd(e^{jw}) = \begin{cases} e^{-2jw} & -\frac{\pi}{4} \le \omega \le \pi/4 \\ 0 & \frac{\pi}{4} \le |\omega| \le \pi \end{cases}$$

Determine hd(n). Also determine h(n) using symmetric Rectangular window of length 5.

c) Design a digital Butterworth filter to meet the following constraints.

$$0.9 \le \left|H(e^{jw})\right| \le 1 \qquad 0 \le \omega \le 0.5\pi$$

$$a. |H(e^{jw})| \le 0.2 \qquad 0.75\pi \le \omega \le \pi$$

Use bilinear transformation. Use T = 1 sec.

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Digital Signal Processing (BTN04502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) With signal $x(n) = \{1, 4, 6, 7, 8\}$, if $x1(n) = x\big((n-1)\big)_5$ then $x1(n)$ will be
a) {1, 7, 8, 6, 4} b) {7, 8, 1, 4, 6}
c) {4, 6, 7, 8, 1} d) {1, 4, 6, 7, 8}

2) The number of complex additions required DIT FFT algorithm to compute N point DFT is _____.
a) N^2 b) $N\log_2 N$
c) $(N/2)\log_2 2$ d) None of the above

3) The addressing mode that is convenient for FFT computation is ____.
a) Indirect addressing b) Circular mode addressing
c) Bit reversed addressing d) Memory mapped addressing

4) The frequency mapping from s domain to z domain using impulse invariant technique is _____.
a) Many to many b) Many to one
c) One to many d) None of above

5) Butterworth filters have _____.
a) Wide transition region
b) Sharp transition region
c) Oscillation in transition region
d) Maximally flat passband

6) Which of the following is not true for IIR filters?
a) Impulse response duration is infinite
b) They have poles
c) They give linear phase response
d) All of these

7) The FIR filter of order M gives linear phase response if _____.

a) $h(n) < \infty$ b) $h(n) = h(-n)$

c) $h(n) = h(M-1-n)$ d) none of these

8) The hardware used in digital signal processor to scale down or scale up operands is _____.

a) Barrel shifter b) MAC

c) Multiplier d) ALU

9) In Bilinear transformation the relation between Ω and ω is _____.

a) $\Omega = \omega \mathrm{T}$ b) $\Omega = \omega/\mathrm{T}$

c) $\omega = \tan(\Omega \mathrm{T})$ d) $\Omega = (2/\mathrm{T})\tan(\omega/2)$

10) The value of the twiddle factor W_4^5 is _____.

a) j b) 1

c) -0.707 + j0.707 d) -j

11) The following realization minimizes the delay elements.

a) Direct form-I realization b) Direct form-II realization

c) Cascade form realization d) Parallel realization

12) The ROC of Z-Transform of $x[n] = \delta[n]$ is_____

a) Entire Z-plane b) Entire Z-plane expect $Z = 0$

c) Entire Z-plane expect $Z = \infty$ d) none of above

13) Number of delay elements are required for direct form I realization of $y(n) = 1.5y(n-1) - 0.45y(n-2) + x(n) + 0.25x(n-2)$ are ____

a) 1 b) 2

c) 3 d) 4

14) DFT of a impulse function is _____.

a) $\delta[n]$ b) 1

c) $\delta[n-1]$ d) None

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Digital Signal Processing (BTN04502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any four of the following. **16**

a) State and prove circular time shift property of DFT of a DT signal.

b) If $x(n) = \{\ 6,5,3,2\ \}$ Determine
1) $x1(n) = x\big((-n)\big)_4$
2) $x2(n) = x\big((n+1)\big)_4$

c) Compute circular convolution of the signal
$x1[n] = \{3,1,4,2\}$ & $x2[n] = \{2,3,5,4\}$.

d) Compute IDFT of $X(k) = \{\ 6,0,2,0\ \}$

e) Obtain the direct form realization of the system characterized by transfer function
$H(z) = 1 + 1/3Z^{-1} + 1/2Z^{-2} + 2Z^{-3} + 3z^{-4}$

Q.3 Solve any two of the followings. **12**

a) Realize the FIR system given below in
1) Direct Form I
2) Direct form II
$y(n) = -3y(n-1) + 2y(n-2) + x(n) + 3x(n-1) + 2x(n-2) - x(n-3)$

b) Prove that the multiplication of the DFT's of two sequences is equivalent to the DFT of time domain circular convolution of two sequences.

c) Obtain the output of a filter using overlap & add method whose input & impulse response are as below.
$x(n) = \{3,2,1,3,1,4,1,2,1,4\}$ & $h(n) = \{1\ 2\ \ 5\}$

Section – II

Q.4 Solve any four of the following. **16**

a) Consider the analog transfer function.

$$H(s) = \frac{1}{(s-3)} + \frac{3}{(s \mp 2)}$$

Obtain the digital transfer function H(z) using impulse invariant method. Use T = 1 s

b) Draw and explain the barrel shifter block of DSP chip.

c) Draw and explain the architecture of TMS 320C54 DSP.

d) Design the first order high pass filter with fc = 1 kHz and sampling frequency fs = 10000 sps. Use bilinear transformation method.

e) Given the desired specifications $\Omega p, \Omega s, \delta 1, \delta 2$ of Butterworth filter derive the relation for obtaining order N & cutoff frequency Ωc.

f) Explain finite word length effect in designing FIR filters.

Q.5 Solve any two of the followings. **12**

a) Explain Impulse Invariant Technique along with mapping between s domain & z domain in this method.

b) The desired frequency response of a low pass filter is

$$Hd(e^{jw}) = \begin{cases} e^{-2jw} & -\frac{\pi}{4} \le \omega \le \pi/4 \\ 0 & \frac{\pi}{4} \le |\omega| \le \pi \end{cases}$$

Determine hd(n). Also determine h(n) using symmetric Rectangular window of length 5.

c) Design a digital Butterworth filter to meet the following constraints.

$0.9 \le \left|H(e^{jw})\right| \le 1$ $\quad 0 \le \omega \le 0.5\pi$

$a. |H(e^{jw})| \le 0.2$ $\quad 0.75\pi \le \omega \le \pi$

Use bilinear transformation. Use T = 1 sec.

SLR-BD-405

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Microcontrollers (BTN04503)

Day & Date: Tuesday, 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Objective questions. **14**

1) What is the address range of SFR in internal RAM of 8051?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

2) In 8051 Serial port interrupt vector address is _____.
a) 0003H b) 0023H
c) 0013H d) 001BH

3) In PIC to make Port B an output port, we must place _____ in register _____.
a) 00 h, PORTB b) FF h, PORTB
c) 00 h, TRISB d) FF h, TRISB

4) In PIC 16F877 has interrupt capability up to _____ sources.
a) 11 b) 13
c) 14 d) 20

5) Timer 1 of the PIC 16F877 is _____ bit, accessed as _____.
a) 8, timer/counter b) 16, timer/counter
c) 8, timer d) 8, counter

6) The ____ pins can become the I/O control inputs for the parallel slave port.
a) PORT A b) PORT B
c) PORT D d) PORT E

7) The PIC 16F877 MSSP module in I^2C mode, implements ____ bit and ____ bit addressing.
a) 7, 10 b) 10, 8
c) 7, 8 d) 11, 7

8) Which of the following instructions will load the value 35H into the high byte of timer 0?

a) MOV TH0, #35H
b) MOV TH0, 35H
c) MOV T0, #35H
d) MOV T0, 35H ___

9) Bit-addressable memory locations are _____.

a) 10H through 1FH
b) 20H through 2FH
c) 30H through 3FH
d) 40H through 4FH

10) The 8-bit address bus allows access to an address range of _____.

a) 0000 to FFFFH
b) 000 to FFFH
c) 00 to FFH
d) 0 to FH

11) The contents of the accumulator after this operation _____.

MOV A,#0BH
ANL A,#2CH
will be

a) 11010111
b) 11011010
c) 00001000
d) 00101000

12) Which of the following statements will add the accumulator and register 3?

a) ADD @R3, @A
b) ADD @A; R3
c) ADD R3, A
d) ADD A, R3

13) In 8051, serial communication mode 0, the baud rate will be _____.

a) variable
b) fosc/164
c) fosc/32
d) fosc/12

14) Which of the following signal(s) of 8051 must be used in accessing external data RAM?

a) RD
b) WR
c) PSEN
d) both (a) and (b)

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Microcontrollers (BTN04503)

Day & Date: Tuesday, 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any four. **16**

a) Write a 8051 assembly program to find largest number from given array of ten elements.
b) Compare microprocessor and microcontroller.
c) Define addressing mode. Explain the different addressing modes in 8051 with suitable example.
d) Draw and Explain memory organization in 8051.
e) Write 8051 assembly program to turn on and off eight LEDs connected to PORT B by a delay of 25 msec. Use Timer1 interrupt.
Assume crystal (XTAL) = 11.0592 MHZ

Q.3 Solve any two. **12**

a) Write an 8051 assembly or C program to generate a square wave of 50 Hz frequency on pin P2.3. Assume XTAL= 11.0592MHz. Use Timer interrupt.
b) Write a 8051 assembly program to add respective elements of two arrays of ten elements.
c) What happens in the following instructions?
1) Here: SJMP Here
2) MOV SP, #74
3) JZ FEh
4) JC 02
5) INC @R3
6) DEC 51h
7) CPL 91h

Section – II

Q.4 Solve any four. **16**

a) Draw and explain addressing modes in PIC 16F877.

b) With block diagram Explain Timer-0 module used in PIC microcontroller.

c) Write PIC program to clear memory location 20 h to 2F h with indirect addressing mode. Also explain meaning of each used instructions.

d) Explain PWM mode used in PIC microcontroller.

e) Explain PSW (Status) register bit format in PIC 16F877.

Q.5 Solve any two. **12**

a) Interface ADC 0808/09 to 8051. Write a program to covert analog voltage on channel 1 to digital.

b) Draw and explain interfacing of 16K x 8 Data ROM to 8051. Write a assembly program to read 10 bytes starting at 2000h in external ROM.

c) Interface one seven segment display to 8051 and write a program to display decimal values “0” to “9”.

SLR-BD-405

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Microcontrollers (BTN04503)

Day & Date: Tuesday, 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Objective questions. **14**

1) Which of the following instructions will load the value 35H into the high byte of timer 0?
a) MOV TH0, #35H b) MOV TH0, 35H
c) MOV T0, #35H d) MOV T0, 35H ___

2) Bit-addressable memory locations are _____.
a) 10H through 1FH b) 20H through 2FH
c) 30H through 3FH d) 40H through 4FH

3) The 8-bit address bus allows access to an address range of _____.
a) 0000 to FFFFH b) 000 to FFFH
c) 00 to FFH d) 0 to FH

4) The contents of the accumulator after this operation _____.
MOV A,#0BH
ANL A,#2CH
will be
a) 11010111 b) 11011010
c) 00001000 d) 00101000

5) Which of the following statements will add the accumulator and register 3?
a) ADD @R3, @A b) ADD @A; R3
c) ADD R3, A d) ADD A, R3

6) In 8051, serial communication mode 0, the baud rate will be _____.
a) variable b) fosc/164
c) fosc/32 d) fosc/12

7) Which of the following signal(s) of 8051 must be used in accessing external data RAM?

a) RD b) WR
c) PSEN d) both (a) and (b)

8) What is the address range of SFR in internal RAM of 8051?

a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

9) In 8051 Serial port interrupt vector address is _____.

a) 0003H b) 0023H
c) 0013H d) 001BH

10) In PIC to make Port B an output port, we must place _____ in register _____.

a) 00 h, PORTB b) FF h, PORTB
c) 00 h, TRISB d) FF h, TRISB

11) In PIC 16F877 has interrupt capability up to _____ sources.

a) 11 b) 13
c) 14 d) 20

12) Timer 1 of the PIC 16F877 is _____ bit, accessed as _____.

a) 8, timer/counter b) 16, timer/counter
c) 8, timer d) 8, counter

13) The ____ pins can become the I/O control inputs for the parallel slave port.

a) PORT A b) PORT B
c) PORT D d) PORT E

14) The PIC 16F877 MSSP module in I^2C mode, implements ____ bit and ____ bit addressing.

a) 7, 10 b) 10, 8
c) 7, 8 d) 11, 7

SLR-BD-405

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Microcontrollers (BTN04503)

Day & Date: Tuesday, 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data if necessary.

Section – I

Q.2 Solve any four. **16**

a) Write a 8051 assembly program to find largest number from given array of ten elements.

b) Compare microprocessor and microcontroller.

c) Define addressing mode. Explain the different addressing modes in 8051 with suitable example.

d) Draw and Explain memory organization in 8051.

e) Write 8051 assembly program to turn on and off eight LEDs connected to PORT B by a delay of 25 msec. Use Timer1 interrupt.
Assume crystal (XTAL) = 11.0592 MHZ

Q.3 Solve any two. **12**

a) Write an 8051 assembly or C program to generate a square wave of 50 Hz frequency on pin P2.3. Assume XTAL= 11.0592MHz. Use Timer interrupt.

b) Write a 8051 assembly program to add respective elements of two arrays of ten elements.

c) What happens in the following instructions?
1) Here: SJMP Here
2) MOV SP, #74
3) JZ FEh
4) JC 02
5) INC @R3
6) DEC 51h
7) CPL 91h

Section – II

Q.4 Solve any four. **16**

a) Draw and explain addressing modes in PIC 16F877.

b) With block diagram Explain Timer-0 module used in PIC microcontroller.

c) Write PIC program to clear memory location 20 h to 2F h with indirect addressing mode. Also explain meaning of each used instructions.

d) Explain PWM mode used in PIC microcontroller.

e) Explain PSW (Status) register bit format in PIC 16F877.

Q.5 Solve any two. **12**

a) Interface ADC 0808/09 to 8051. Write a program to covert analog voltage on channel 1 to digital.

b) Draw and explain interfacing of 16K x 8 Data ROM to 8051. Write a assembly program to read 10 bytes starting at 2000h in external ROM.

c) Interface one seven segment display to 8051 and write a program to display decimal values “0” to “9”.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Microcontrollers (BTN04503)

Day & Date: Tuesday, 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Objective questions. **14**

1) The contents of the accumulator after this operation _____.
MOV A,#0BH
ANL A,#2CH
will be
a) 11010111 b) 11011010
c) 00001000 d) 00101000

2) Which of the following statements will add the accumulator and register 3?
a) ADD @R3, @A b) ADD @A; R3
c) ADD R3, A d) ADD A, R3

3) In 8051, serial communication mode 0, the baud rate will be _____.
a) variable b) fosc/164
c) fosc/32 d) fosc/12

4) Which of the following signal(s) of 8051 must be used in accessing external data RAM?
a) RD b) WR
c) PSEN d) both (a) and (b)

5) What is the address range of SFR in internal RAM of 8051?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

6) In 8051 Serial port interrupt vector address is _____.
a) 0003H b) 0023H
c) 0013H d) 001BH

7) In PIC to make Port B an output port, we must place _____ in register _____.

a) 00 h, PORTB b) FF h, PORTB
c) 00 h, TRISB d) FF h, TRISB

8) In PIC 16F877 has interrupt capability up to _____ sources.

a) 11 b) 13
c) 14 d) 20

9) Timer 1 of the PIC 16F877 is _____ bit, accessed as _____.

a) 8, timer/counter b) 16, timer/counter
c) 8, timer d) 8, counter

10) The ____ pins can become the I/O control inputs for the parallel slave port.

a) PORT A b) PORT B
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11) The PIC 16F877 MSSP module in I^2C mode, implements ____ bit and ____ bit addressing.

a) 7, 10 b) 10, 8
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12) Which of the following instructions will load the value 35H into the high byte of timer 0?

a) MOV TH0, #35H b) MOV TH0, 35H
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13) Bit-addressable memory locations are _____.

a) 10H through 1FH b) 20H through 2FH
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14) The 8-bit address bus allows access to an address range of _____.

a) 0000 to FFFFH b) 000 to FFFH
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Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Microcontrollers (BTN04503)

Day & Date: Tuesday, 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

Q.2 Solve any four. **16**

a) Write a 8051 assembly program to find largest number from given array of ten elements.
b) Compare microprocessor and microcontroller.
c) Define addressing mode. Explain the different addressing modes in 8051 with suitable example.
d) Draw and Explain memory organization in 8051.
e) Write 8051 assembly program to turn on and off eight LEDs connected to PORT B by a delay of 25 msec. Use Timer1 interrupt.
Assume crystal (XTAL) = 11.0592 MHZ

Q.3 Solve any two. **12**

a) Write an 8051 assembly or C program to generate a square wave of 50 Hz frequency on pin P2.3. Assume XTAL= 11.0592MHz. Use Timer interrupt.
b) Write a 8051 assembly program to add respective elements of two arrays of ten elements.
c) What happens in the following instructions?
1) Here: SJMP Here
2) MOV SP, #74
3) JZ FEh
4) JC 02
5) INC @R3
6) DEC 51h
7) CPL 91h

Section – II

Q.4 Solve any four. **16**

a) Draw and explain addressing modes in PIC 16F877.

b) With block diagram Explain Timer-0 module used in PIC microcontroller.

c) Write PIC program to clear memory location 20 h to 2F h with indirect addressing mode. Also explain meaning of each used instructions.

d) Explain PWM mode used in PIC microcontroller.

e) Explain PSW (Status) register bit format in PIC 16F877.

Q.5 Solve any two. **12**

a) Interface ADC 0808/09 to 8051. Write a program to covert analog voltage on channel 1 to digital.

b) Draw and explain interfacing of 16K x 8 Data ROM to 8051. Write a assembly program to read 10 bytes starting at 2000h in external ROM.

c) Interface one seven segment display to 8051 and write a program to display decimal values “0” to “9”.

SLR-BD-405

Seat No.	

Set S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Microcontrollers (BTN04503)

Day & Date: Tuesday, 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Objective questions. **14**

1) The ____ pins can become the I/O control inputs for the parallel slave port.
a) PORT A b) PORT B
c) PORT D d) PORT E

2) The PIC 16F877 MSSP module in I^2C mode, implements ____ bit and ____ bit addressing.
a) 7, 10 b) 10, 8
c) 7, 8 d) 11, 7

3) Which of the following instructions will load the value 35H into the high byte of timer 0?
a) MOV TH0, #35H b) MOV TH0, 35H
c) MOV T0, #35H d) MOV T0, 35H ___

4) Bit-addressable memory locations are _____.
a) 10H through 1FH b) 20H through 2FH
c) 30H through 3FH d) 40H through 4FH

5) The 8-bit address bus allows access to an address range of _____.
a) 0000 to FFFFH b) 000 to FFFH
c) 00 to FFH d) 0 to FH

6) The contents of the accumulator after this operation _____.
MOV A,#0BH
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7) Which of the following statements will add the accumulator and register 3?

a) ADD @R3, @A
b) ADD @A; R3
c) ADD R3, A
d) ADD A, R3

8) In 8051, serial communication mode 0, the baud rate will be _____.

a) variable
b) fosc/164
c) fosc/32
d) fosc/12

9) Which of the following signal(s) of 8051 must be used in accessing external data RAM?

a) RD
b) WR
c) PSEN
d) both (a) and (b)

10) What is the address range of SFR in internal RAM of 8051?

a) 00H-77H
b) 40H-80H
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d) 80H-FFH

11) In 8051 Serial port interrupt vector address is _____.

a) 0003H
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12) In PIC to make Port B an output port, we must place _____ in register _____.

a) 00 h, PORTB
b) FF h, PORTB
c) 00 h, TRISB
d) FF h, TRISB

13) In PIC 16F877 has interrupt capability up to _____ sources.

a) 11
b) 13
c) 14
d) 20

14) Timer 1 of the PIC 16F877 is _____ bit, accessed as _____.

a) 8, timer/counter
b) 16, timer/counter
c) 8, timer
d) 8, counter

SLR-BD-405

Seat No.	

Set S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Microcontrollers (BTN04503)

Day & Date: Tuesday, 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any four. **16**

a) Write a 8051 assembly program to find largest number from given array of ten elements.

b) Compare microprocessor and microcontroller.

c) Define addressing mode. Explain the different addressing modes in 8051 with suitable example.

d) Draw and Explain memory organization in 8051.

e) Write 8051 assembly program to turn on and off eight LEDs connected to PORT B by a delay of 25 msec. Use Timer1 interrupt.
Assume crystal (XTAL) = 11.0592 MHZ

Q.3 Solve any two. **12**

a) Write an 8051 assembly or C program to generate a square wave of 50 Hz frequency on pin P2.3. Assume XTAL= 11.0592MHz. Use Timer interrupt.

b) Write a 8051 assembly program to add respective elements of two arrays of ten elements.

c) What happens in the following instructions?
1) Here: SJMP Here
2) MOV SP, #74
3) JZ FEh
4) JC 02
5) INC @R3
6) DEC 51h
7) CPL 91h

Section – II

Q.4 Solve any four. **16**

a) Draw and explain addressing modes in PIC 16F877.

b) With block diagram Explain Timer-0 module used in PIC microcontroller.

c) Write PIC program to clear memory location 20 h to 2F h with indirect addressing mode. Also explain meaning of each used instructions.

d) Explain PWM mode used in PIC microcontroller.

e) Explain PSW (Status) register bit format in PIC 16F877.

Q.5 Solve any two. **12**

a) Interface ADC 0808/09 to 8051. Write a program to covert analog voltage on channel 1 to digital.

b) Draw and explain interfacing of 16K x 8 Data ROM to 8051. Write a assembly program to read 10 bytes starting at 2000h in external ROM.

c) Interface one seven segment display to 8051 and write a program to display decimal values “0” to “9”.

SLR-BD-406

Seat No.	

Set P

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Information Technology and Management (BTN04513)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ is the automated control of imaged and electronic documents through their life cycle within an organization.
a) ERP b) SCM
c) ECM d) ADW

2) _____ is a central repository of integrated data from one or more disparate sources.
a) Data warehouse b) Data content
c) Database d) All of these

3) Which of below is not an advantage of e-auctions?
a) shortening the cycle time b) broadening customer
c) no transparency d) paperless transactions

4) _____ represent a business model in which a company offers basic features to users at no cost and charges a premium for supplemental or advanced features.
a) SCM b) Freemium
c) Community d) COCO

5) Software project management consists of _____.
a) planning b) implementing
c) monitoring d) all of these

6) In a software project, dependencies on technology platform is an example of _____.
a) internal risk b) external risk
c) assumption d) mitigation

7) Which of below is not true about software project?
a) it consists of only tasks which are independent of each other
b) it has purpose
c) progressive elaboration
d) it requires people with different roles

8) A rule based IS that helps a manager to take a decision about loan to be given to a customer is an example of _____.
a) data driven DSS
b) model driven DSS
c) customer relationship management
d) OLTP

9) The major cost incurred in implementing ERP is due to _____.
a) hardware b) software
c) training d) reengineering

10) What for IS & IT are used in digital enterprises?
a) research b) to boost employee productivity
c) customer support d) all of these

11) _____ a is logical group of related files.
a) Data b) Information
c) Database d) Datamart

12) Which of below is not true about organizations?
a) closed system b) social unit
c) interact with environment d) have a structure

13) Take odd man out – NEFT, ERP, RTGS, UPI
a) NEFT b) ERP
c) RTGS d) UPI

14) Take odd man out- MS Project, MS Access, DB2, Oracle.
a) MS Word b) MS Access
c) DB2 d) Oracle

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Information Technology and Management (BTN04513)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Solve Any Two **12**

a) Explain partitioned database with - diagram, advantages and disadvantages
b) What are components of information system? Discuss with suitable diagram.
c) Discuss need of and how enterprise content management system is being implemented.

Q.3 Solve Any Four. **16**

a) Discuss cloud computing - SAAS model
b) How IT infrastructure for a typical organization is decided?
c) With suitable example explain B2C and C2B transactions.
d) Differentiate - data mart Vs data warehouse.
e) What is business analytics? What are its types?

Section – II

Q.4 Solve any Two. **12**

a) Justify: IT projects are as complex as other engineering projects.
b) Explain economical impact of IS on organization.
c) Discuss need of and how supply chain management system is being implemented.

Q.5 Solve Any Four. **16**

a) Discuss social issues related to information systems.
b) Discuss types of intellectual property rights.
c) With a typical example explain -decision support system.
d) With suitable example explain how ERP is beneficial for organizations.
e) Discuss pros and cons of waterfall SDLC model.

Seat No.		Set	Q

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Information Technology and Management (BTN04513)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) A rule based IS that helps a manager to take a decision about loan to be given to a customer is an example of _____.
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10) Which of below is not an advantage of e-auctions?

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11) _____ represent a business model in which a company offers basic features to users at no cost and charges a premium for supplemental or advanced features.

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12) Software project management consists of _____.

a) planning b) implementing
c) monitoring d) all of these

13) In a software project, dependencies on technology platform is an example of _____.

a) internal risk b) external risk
c) assumption d) mitigation

14) Which of below is not true about software project?

a) it consists of only tasks which are independent of each other
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c) progressive elaboration
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Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Information Technology and Management (BTN04513)

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Section – I

Q.2 Solve Any Two **12**

a) Explain partitioned database with - diagram, advantages and disadvantages
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b) How IT infrastructure for a typical organization is decided?
c) With suitable example explain B2C and C2B transactions.
d) Differentiate - data mart Vs data warehouse.
e) What is business analytics? What are its types?

Section – II

Q.4 Solve any Two. **12**

a) Justify: IT projects are as complex as other engineering projects.
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c) Discuss need of and how supply chain management system is being implemented.

Q.5 Solve Any Four. **16**

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b) Discuss types of intellectual property rights.
c) With a typical example explain -decision support system.
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Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Information Technology and Management (BTN04513)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ a is logical group of related files.
a) Data b) Information
c) Database d) Datamart

2) Which of below is not true about organizations?
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c) training
d) reengineering

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c) customer support
d) all of these

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Information Technology and Management (BTN04513)

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Section – I

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d) Differentiate - data mart Vs data warehouse.
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Section – II

Q.4 Solve any Two. **12**

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c) Discuss need of and how supply chain management system is being implemented.

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c) With a typical example explain -decision support system.
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Seat No.		Set	S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Information Technology and Management (BTN04513)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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13) _____ represent a business model in which a company offers basic features to users at no cost and charges a premium for supplemental or advanced features.
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c) Community d) COCO

14) Software project management consists of _____.
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SLR-BD-406

Seat No.		Set	S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Information Technology and Management (BTN04513)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Solve Any Two **12**

a) Explain partitioned database with - diagram, advantages and disadvantages
b) What are components of information system? Discuss with suitable diagram.
c) Discuss need of and how enterprise content management system is being implemented.

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a) Discuss cloud computing - SAAS model
b) How IT infrastructure for a typical organization is decided?
c) With suitable example explain B2C and C2B transactions.
d) Differentiate - data mart Vs data warehouse.
e) What is business analytics? What are its types?

Section – II

Q.4 Solve any Two. **12**

a) Justify: IT projects are as complex as other engineering projects.
b) Explain economical impact of IS on organization.
c) Discuss need of and how supply chain management system is being implemented.

Q.5 Solve Any Four. **16**

a) Discuss social issues related to information systems.
b) Discuss types of intellectual property rights.
c) With a typical example explain -decision support system.
d) With suitable example explain how ERP is beneficial for organizations.
e) Discuss pros and cons of waterfall SDLC model.

SLR-BD-407

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Managerial Economics (BTN04514)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the primary focus of Managerial Economics?
a) Studying individual consumer behaviour
b) Analyzing market equilibrium
c) Applying economic principles to managerial decision-making
d) Investigating government policies

2) Which branch of economics primarily deals with the aggregate behavior of the economy?
a) Managerial Economics b) Microeconomics
c) Macroeconomics d) Behavioral Economics

3) What does the demand curve illustrate in economics?
a) The relationship between price and quantity supplied
b) The relationship between price and quantity demanded
c) The equilibrium points in the market
d) The effect of government interventions on market prices

4) In consumer demand analysis, which approach focuses on assigning numerical values to the satisfaction derived from consuming goods?
a) Cardinal approach b) Ordinal approach
c) Indifference curve analysis d) Utility maximization theory

5) What does price elasticity of demand measure?
a) The responsiveness of quantity demanded to changes in price
b) The change in total revenue due to changes in price
c) The sensitivity of quantity demanded to changes in income
d) The relationship between quantity supplied and price changes

6) Which factor does NOT typically influence the price elasticity of demand?
a) Availability of substitutes b) Time horizon
c) Consumer preferences d) Total revenue

7) What is the relationship between total revenue and price elasticity of demand when demand is elastic?
a) Total revenue increases as price increases
b) Total revenue remains constant as price changes
c) Total revenue decreases as price increases
d) Total revenue is maximized at the midpoint of the demand curve

8) What does the production function represent in economics?
a) The relationship between inputs and outputs in the production process
b) The total revenue generated from production
c) The cost structure of the firm
d) The market demand for the produced goods

9) Which of the following is NOT a determinant of costs in production?
a) Input prices b) Technological advancements
c) Government regulations d) Market demand

10) What is one of the primary objectives of studying market structure in economics?
a) Analyzing consumer preferences
b) Understanding the behavior of individual firms
c) Identifying opportunities for market entry
d) Evaluating the level of competition within a market

11) What aspect of the market does the demand side primarily focus on?
a) Determining production costs
b) Analyzing consumer behavior and preferences
c) Evaluating government regulations
d) Assessing technological advancements

12) Which factor is NOT typically considered as part of the supply side of the market?
a) Input prices b) Technology
c) Consumer income levels d) Government policies

13) In a market with perfect competition, how are prices determined?
a) By government regulations
b) By the dominant firm in the market
c) Through negotiation between buyers and sellers
d) Through the interaction of supply and demand forces

14) Pen and Ink are the example of the _____.
a) Complementary Goods b) Supplementary Goods
c) Consumer Goods d) Normal Goods

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Managerial Economics (BTN04514)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) "How does Managerial Economics contribute to effective managerial decision-making? Provide examples to illustrate its impact."
b) Write short note on Microeconomics.
c) Explain the demand curve.
Explain the factors affecting the elasticity of supply.
d) Define Monopoly with example.
e) Define the term Total Revenue and Marginal Revenue.

Q.3 Solve any two of the followings. **12**

a) What is Goods? Explain any two types with example.
b) Explain the importance of elasticity of Demand.
c) Explain the concept Price of celling and Price Floors.

Section – II

Q.4 Solve any four of the following. **16**

a) Explain any two applications of linear Programming Techniques.
b) What are the determinants of costs explain any two.
c) Explain the various costs of production in details.
d) Explain the concept of demand side of market.
e) Explain the concept profit margin of safety.

Q.5 Solve any two of the followings. **12**

a) Describe Survey methods for demand Forecasting.
b) State and explain the characteristics of market structure.
c) Explain the trend of Projection Method for demand Forecasting.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Managerial Economics (BTN04514)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

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4) What aspect of the market does the demand side primarily focus on?
a) Determining production costs
b) Analyzing consumer behavior and preferences
c) Evaluating government regulations
d) Assessing technological advancements

5) Which factor is NOT typically considered as part of the supply side of the market?
a) Input prices b) Technology
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6) In a market with perfect competition, how are prices determined?
a) By government regulations
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7) Pen and Ink are the example of the _____.
a) Complementary Goods b) Supplementary Goods
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8) What is the primary focus of Managerial Economics?
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c) Applying economic principles to managerial decision-making
d) Investigating government policies

9) Which branch of economics primarily deals with the aggregate behavior of the economy?
a) Managerial Economics b) Microeconomics
c) Macroeconomics d) Behavioral Economics

10) What does the demand curve illustrate in economics?
a) The relationship between price and quantity supplied
b) The relationship between price and quantity demanded
c) The equilibrium points in the market
d) The effect of government interventions on market prices

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Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Managerial Economics (BTN04514)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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a) "How does Managerial Economics contribute to effective managerial decision-making? Provide examples to illustrate its impact."
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Explain the factors affecting the elasticity of supply.
d) Define Monopoly with example.
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a) What is Goods? Explain any two types with example.
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Section – II

Q.4 Solve any four of the following. **16**

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b) What are the determinants of costs explain any two.
c) Explain the various costs of production in details.
d) Explain the concept of demand side of market.
e) Explain the concept profit margin of safety.

Q.5 Solve any two of the followings. **12**

a) Describe Survey methods for demand Forecasting.
b) State and explain the characteristics of market structure.
c) Explain the trend of Projection Method for demand Forecasting.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Managerial Economics (BTN04514)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What aspect of the market does the demand side primarily focus on?
a) Determining production costs
b) Analyzing consumer behavior and preferences
c) Evaluating government regulations
d) Assessing technological advancements

2) Which factor is NOT typically considered as part of the supply side of the market?
a) Input prices b) Technology
c) Consumer income levels d) Government policies

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d) Investigating government policies

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c) Macroeconomics d) Behavioral Economics

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c) Indifference curve analysis d) Utility maximization theory

9) What does price elasticity of demand measure?
a) The responsiveness of quantity demanded to changes in price
b) The change in total revenue due to changes in price
c) The sensitivity of quantity demanded to changes in income
d) The relationship between quantity supplied and price changes

10) Which factor does NOT typically influence the price elasticity of demand?
a) Availability of substitutes b) Time horizon
c) Consumer preferences d) Total revenue

11) What is the relationship between total revenue and price elasticity of demand when demand is elastic?
a) Total revenue increases as price increases
b) Total revenue remains constant as price changes
c) Total revenue decreases as price increases
d) Total revenue is maximized at the midpoint of the demand curve

12) What does the production function represent in economics?
a) The relationship between inputs and outputs in the production process
b) The total revenue generated from production
c) The cost structure of the firm
d) The market demand for the produced goods

13) Which of the following is NOT a determinant of costs in production?
a) Input prices b) Technological advancements
c) Government regulations d) Market demand

14) What is one of the primary objectives of studying market structure in economics?
a) Analyzing consumer preferences
b) Understanding the behavior of individual firms
c) Identifying opportunities for market entry
d) Evaluating the level of competition within a market

Seat No.	

Set R

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Managerial Economics (BTN04514)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) "How does Managerial Economics contribute to effective managerial decision-making? Provide examples to illustrate its impact."
b) Write short note on Microeconomics.
c) Explain the demand curve.
Explain the factors affecting the elasticity of supply.
d) Define Monopoly with example.
e) Define the term Total Revenue and Marginal Revenue.

Q.3 Solve any two of the followings. **12**

a) What is Goods? Explain any two types with example.
b) Explain the importance of elasticity of Demand.
c) Explain the concept Price of celling and Price Floors.

Section – II

Q.4 Solve any four of the following. **16**

a) Explain any two applications of linear Programming Techniques.
b) What are the determinants of costs explain any two.
c) Explain the various costs of production in details.
d) Explain the concept of demand side of market.
e) Explain the concept profit margin of safety.

Q.5 Solve any two of the followings. **12**

a) Describe Survey methods for demand Forecasting.
b) State and explain the characteristics of market structure.
c) Explain the trend of Projection Method for demand Forecasting.

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Managerial Economics (BTN04514)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which factor does NOT typically influence the price elasticity of demand?
a) Availability of substitutes b) Time horizon
c) Consumer preferences d) Total revenue

2) What is the relationship between total revenue and price elasticity of demand when demand is elastic?
a) Total revenue increases as price increases
b) Total revenue remains constant as price changes
c) Total revenue decreases as price increases
d) Total revenue is maximized at the midpoint of the demand curve

3) What does the production function represent in economics?
a) The relationship between inputs and outputs in the production process
b) The total revenue generated from production
c) The cost structure of the firm
d) The market demand for the produced goods

4) Which of the following is NOT a determinant of costs in production?
a) Input prices b) Technological advancements
c) Government regulations d) Market demand

5) What is one of the primary objectives of studying market structure in economics?
a) Analyzing consumer preferences
b) Understanding the behavior of individual firms
c) Identifying opportunities for market entry
d) Evaluating the level of competition within a market

6) What aspect of the market does the demand side primarily focus on?
a) Determining production costs
b) Analyzing consumer behavior and preferences
c) Evaluating government regulations
d) Assessing technological advancements

7) Which factor is NOT typically considered as part of the supply side of the market?
a) Input prices
b) Technology
c) Consumer income levels
d) Government policies

8) In a market with perfect competition, how are prices determined?
a) By government regulations
b) By the dominant firm in the market
c) Through negotiation between buyers and sellers
d) Through the interaction of supply and demand forces

9) Pen and Ink are the example of the _____.
a) Complementary Goods
b) Supplementary Goods
c) Consumer Goods
d) Normal Goods

10) What is the primary focus of Managerial Economics?
a) Studying individual consumer behaviour
b) Analyzing market equilibrium
c) Applying economic principles to managerial decision-making
d) Investigating government policies

11) Which branch of economics primarily deals with the aggregate behavior of the economy?
a) Managerial Economics
b) Microeconomics
c) Macroeconomics
d) Behavioral Economics

12) What does the demand curve illustrate in economics?
a) The relationship between price and quantity supplied
b) The relationship between price and quantity demanded
c) The equilibrium points in the market
d) The effect of government interventions on market prices

13) In consumer demand analysis, which approach focuses on assigning numerical values to the satisfaction derived from consuming goods?
a) Cardinal approach
b) Ordinal approach
c) Indifference curve analysis
d) Utility maximization theory

14) What does price elasticity of demand measure?
a) The responsiveness of quantity demanded to changes in price
b) The change in total revenue due to changes in price
c) The sensitivity of quantity demanded to changes in income
d) The relationship between quantity supplied and price changes

SLR-BD-407

Seat No.	

Set S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Managerial Economics (BTN04514)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) "How does Managerial Economics contribute to effective managerial decision-making? Provide examples to illustrate its impact."
b) Write short note on Microeconomics.
c) Explain the demand curve.
Explain the factors affecting the elasticity of supply.
d) Define Monopoly with example.
e) Define the term Total Revenue and Marginal Revenue.

Q.3 Solve any two of the followings. **12**

a) What is Goods? Explain any two types with example.
b) Explain the importance of elasticity of Demand.
c) Explain the concept Price of celling and Price Floors.

Section – II

Q.4 Solve any four of the following. **16**

a) Explain any two applications of linear Programming Techniques.
b) What are the determinants of costs explain any two.
c) Explain the various costs of production in details.
d) Explain the concept of demand side of market.
e) Explain the concept profit margin of safety.

Q.5 Solve any two of the followings. **12**

a) Describe Survey methods for demand Forecasting.
b) State and explain the characteristics of market structure.
c) Explain the trend of Projection Method for demand Forecasting.

SLR-BD-409

Seat No.		Set	P

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Business Ethics (BTN04516)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which one of the following is not principle business ethics?
a) Principle of universality b) Principle of humanity
c) Principle of autonomy d) Principle of dissatisfaction

2) Code of conduct does not include _____.
a) Dishonesty b) Rules
c) Morality d) integrity

3) Which of the following is not one the underlying principles of the corporate governance Combined Code of Practice?
a) Integrity b) Accountability
c) Openness d) Acceptability

4) Ethics should guide the technology towards _____.
a) Political justice b) Cultural justice
c) Social justice d) None of the above

5) Most companies begin the process of establishing organizational ethics programs by developing: _____.
a) ethics training programs
b) codes of conduct
c) ethics enforcement mechanisms
d) hidden agendas

6) Which is not one of the natures of ethics?
a) Focus on human values b) Social work
c) Branch of philosophy d) Applies moral principles

7) Which of the following relating to CSR theories is correct?
a) Institutional theory is based on the shareholder concept
b) Social contract is the key concept of legitimacy theory.
c) The key concept of enlightened self-interest is stakeholder relations.
d) Stakeholder theory requires organizations to manage community perceptions to survive

8) The moral principles, standards of behavior, or set of values that guide a person's actions in the workplace is called _____
a) Office place ethics b) Factory place ethics
c) Behavioral ethics d) Workplace ethics

9) Which legislation relates to the concept of business ethics?
a) Freedom of Information Act b) Food Act
c) Building regulations d) All of these

10) Who are organisational stakeholders?
a) Government b) Employees
c) Customers d) All of the above

11) The _____ dimension of social responsibility refers to a business's societal contribution of time, money, and other resources.
a) Ethical b) Philanthropic
c) Volunteerism d) Strategic

12) A _____sets out the purpose and general direction for the organization?
a) Mission statement b) Purpose statement
c) Vision d) Profit statement

13) The hand-of-government refers to the _____.
a) ability of the government to interfere in business negotiations
b) role of corporations to be profitable within the law
c) effect of national politics on business decisions
d) impact of changing government regulations

14) Why business ethics are important?
a) It formulates the firm's image and builds the brand
b) It influences the buying decision of the customers
c) Build confidence within employees
d) All of the above

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Business Ethics (BTN04516)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) What is Business Ethics? Explain the benefits and importance of Business Ethics.
b) Explain nature and need of business ethics.
c) Explain how to manage stakeholder relations for better business environment.
d) Explain the stages in modern decision making process.
e) State and explain the essential elements of corporate governance.
f) Explain purpose and importance of corporate governance in Stakeholder's point of view.

Q.3 Solve any two of the followings. **12**

a) List out the basic ethical theories. Identify the limitations of each theory.
b) How are the ethical decisions made? Which factors involved in decision making? Give an example.
c) Explain the objectives and importance of CSR.

Section – II

Q.4 Solve any four of the following. **16**

a) Describe corporate citizen and employee relations towards sustainable employment.
b) Explain ethical challenges of globalization.
c) Explain the relation between business ethics and environmental values.
d) Explain the business ethics for pollution control.
e) Explain moral significance of information technology to business.
f) Describe ethical issues in the relation between business and government.

Q.5 Solve any two of the followings. **12**

a) State and explain ethical issues in the firm-employee relationship.
b) Discuss various approaches to environmental ethics.
c) Explain the role of government in business ethics.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Business Ethics (BTN04516)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The moral principles, standards of behavior, or set of values that guide a person's actions in the workplace is called _____
a) Office place ethics b) Factory place ethics
c) Behavioral ethics d) Workplace ethics

2) Which legislation relates to the concept of business ethics?
a) Freedom of Information Act b) Food Act
c) Building regulations d) All of these

3) Who are organisational stakeholders?
a) Government b) Employees
c) Customers d) All of the above

4) The _____ dimension of social responsibility refers to a business's societal contribution of time, money, and other resources.
a) Ethical b) Philanthropic
c) Volunteerism d) Strategic

5) A _____sets out the purpose and general direction for the organization?
a) Mission statement b) Purpose statement
c) Vision d) Profit statement

6) The hand-of-government refers to the _____.
a) ability of the government to interfere in business negotiations
b) role of corporations to be profitable within the law
c) effect of national politics on business decisions
d) impact of changing government regulations

7) Why business ethics are important?
a) It formulates the firm's image and builds the brand
b) It influences the buying decision of the customers
c) Build confidence within employees
d) All of the above

8) Which one of the following is not principle business ethics?
a) Principle of universality b) Principle of humanity
c) Principle of autonomy d) Principle of dissatisfaction

9) Code of conduct does not include _____.
a) Dishonesty b) Rules
c) Morality d) integrity

10) Which of the following is not one the underlying principles of the corporate governance Combined Code of Practice?
a) Integrity b) Accountability
c) Openness d) Acceptability

11) Ethics should guide the technology towards _____.
a) Political justice b) Cultural justice
c) Social justice d) None of the above

12) Most companies begin the process of establishing organizational ethics programs by developing: _____.
a) ethics training programs
b) codes of conduct
c) ethics enforcement mechanisms
d) hidden agendas

13) Which is not one of the natures of ethics?
a) Focus on human values b) Social work
c) Branch of philosophy d) Applies moral principles

14) Which of the following relating to CSR theories is correct?
a) Institutional theory is based on the shareholder concept
b) Social contract is the key concept of legitimacy theory.
c) The key concept of enlightened self-interest is stakeholder relations.
d) Stakeholder theory requires organizations to manage community perceptions to survive

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Business Ethics (BTN04516)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) What is Business Ethics? Explain the benefits and importance of Business Ethics.
b) Explain nature and need of business ethics.
c) Explain how to manage stakeholder relations for better business environment.
d) Explain the stages in modern decision making process.
e) State and explain the essential elements of corporate governance.
f) Explain purpose and importance of corporate governance in Stakeholder's point of view.

Q.3 Solve any two of the followings. **12**

a) List out the basic ethical theories. Identify the limitations of each theory.
b) How are the ethical decisions made? Which factors involved in decision making? Give an example.
c) Explain the objectives and importance of CSR.

Section – II

Q.4 Solve any four of the following. **16**

a) Describe corporate citizen and employee relations towards sustainable employment.
b) Explain ethical challenges of globalization.
c) Explain the relation between business ethics and environmental values.
d) Explain the business ethics for pollution control.
e) Explain moral significance of information technology to business.
f) Describe ethical issues in the relation between business and government.

Q.5 Solve any two of the followings. **12**

a) State and explain ethical issues in the firm-employee relationship.
b) Discuss various approaches to environmental ethics.
c) Explain the role of government in business ethics.

Seat No.	

Set R

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Business Ethics (BTN04516)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) The _____ dimension of social responsibility refers to a business's societal contribution of time, money, and other resources.
a) Ethical b) Philanthropic
c) Volunteerism d) Strategic

2) A _____sets out the purpose and general direction for the organization?
a) Mission statement b) Purpose statement
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3) The hand-of-government refers to the _____.
a) ability of the government to interfere in business negotiations
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9) Most companies begin the process of establishing organizational ethics programs by developing: _____.

a) ethics training programs
b) codes of conduct
c) ethics enforcement mechanisms
d) hidden agendas

10) Which is not one of the natures of ethics?

a) Focus on human values b) Social work
c) Branch of philosophy d) Applies moral principles

11) Which of the following relating to CSR theories is correct?

a) Institutional theory is based on the shareholder concept
b) Social contract is the key concept of legitimacy theory.
c) The key concept of enlightened self-interest is stakeholder relations.
d) Stakeholder theory requires organizations to manage community perceptions to survive

12) The moral principles, standards of behavior, or set of values that guide a person's actions in the workplace is called _____

a) Office place ethics b) Factory place ethics
c) Behavioral ethics d) Workplace ethics

13) Which legislation relates to the concept of business ethics?

a) Freedom of Information Act b) Food Act
c) Building regulations d) All of these

14) Who are organisational stakeholders?

a) Government b) Employees
c) Customers d) All of the above

Seat No.	

Set R

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Business Ethics (BTN04516)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) What is Business Ethics? Explain the benefits and importance of Business Ethics.
b) Explain nature and need of business ethics.
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d) Explain the stages in modern decision making process.
e) State and explain the essential elements of corporate governance.
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Q.3 Solve any two of the followings. **12**

a) List out the basic ethical theories. Identify the limitations of each theory.
b) How are the ethical decisions made? Which factors involved in decision making? Give an example.
c) Explain the objectives and importance of CSR.

Section – II

Q.4 Solve any four of the following. **16**

a) Describe corporate citizen and employee relations towards sustainable employment.
b) Explain ethical challenges of globalization.
c) Explain the relation between business ethics and environmental values.
d) Explain the business ethics for pollution control.
e) Explain moral significance of information technology to business.
f) Describe ethical issues in the relation between business and government.

Q.5 Solve any two of the followings. **12**

a) State and explain ethical issues in the firm-employee relationship.
b) Discuss various approaches to environmental ethics.
c) Explain the role of government in business ethics.

Seat No.		Set	S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Business Ethics (BTN04516)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which is not one of the natures of ethics?
a) Focus on human values b) Social work
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2) Which of the following relating to CSR theories is correct?
a) Institutional theory is based on the shareholder concept
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a) Office place ethics b) Factory place ethics
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4) Which legislation relates to the concept of business ethics?
a) Freedom of Information Act b) Food Act
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a) Dishonesty b) Rules
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12) Which of the following is not one the underlying principles of the corporate governance Combined Code of Practice?
a) Integrity b) Accountability
c) Openness d) Acceptability

13) Ethics should guide the technology towards _____.
a) Political justice b) Cultural justice
c) Social justice d) None of the above

14) Most companies begin the process of establishing organizational ethics programs by developing: _____.
a) ethics training programs
b) codes of conduct
c) ethics enforcement mechanisms
d) hidden agendas

SLR-BD-409

Seat No.		Set	S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Business Ethics (BTN04516)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) What is Business Ethics? Explain the benefits and importance of Business Ethics.
b) Explain nature and need of business ethics.
c) Explain how to manage stakeholder relations for better business environment.
d) Explain the stages in modern decision making process.
e) State and explain the essential elements of corporate governance.
f) Explain purpose and importance of corporate governance in Stakeholder's point of view.

Q.3 Solve any two of the followings. **12**

a) List out the basic ethical theories. Identify the limitations of each theory.
b) How are the ethical decisions made? Which factors involved in decision making? Give an example.
c) Explain the objectives and importance of CSR.

Section – II

Q.4 Solve any four of the following. **16**

a) Describe corporate citizen and employee relations towards sustainable employment.
b) Explain ethical challenges of globalization.
c) Explain the relation between business ethics and environmental values.
d) Explain the business ethics for pollution control.
e) Explain moral significance of information technology to business.
f) Describe ethical issues in the relation between business and government.

Q.5 Solve any two of the followings. **12**

a) State and explain ethical issues in the firm-employee relationship.
b) Discuss various approaches to environmental ethics.
c) Explain the role of government in business ethics.

SLR-BD-410

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Artificial Intelligence (BTN04517)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).
5) Draw neat sketches wherever necessary.
6) Use of nonprogrammable calculator is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is Artificial intelligence?
a) Putting your intelligence into Computer
b) Programming with your own intelligence
c) Making a Machine intelligent
d) Playing a Game

2) Which is not the commonly used programming language for Al?
a) PROLOG b) Java
c) LISP d) Perl

3) What is state space?
a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

4) A production rule consists of _____.
a) A set of Rule
b) A sequence of steps
c) Both (a) and (b)
d) Arbitrary representation to problem

5) Which search method takes less memory?
a) Depth-First Search b) Breadth-First search
c) Both (a) and (b) d) Linear Search

6) A heuristic is a way of trying _____.
a) To discover something or an idea embedded in a program
b) To search and measure how far a node in a search tree seems to be from a goal
c) To compare two nodes in a search tree to see if one is better than the other
d) Only (a), (b) and (c)

7) A* algorithm is based on _____.
a) Breadth-First-Search b) Depth-First-Search
c) Best-First-Search d) Hill climbing

8) Which is the best way to go for Game playing problem?
a) Linear approach b) Heuristic approach
c) Random approach d) Optimal approach

9) Which is not a property of representation of knowledge?
a) Representational Verification b) Representational Adequacy
c) Inferential Adequacy d) Inferential Efficiency

10) The core idea of develop Al is building machines and algorithms to ____.
a) functions like anything
b) perform computation tasks and functions like human brain
c) perform only arithmetic tasks
d) perform logical comparisons only

11) Which if the following most advanced form of Al?
a) Neural Network b) Machine Learning
c) Data Science d) Deep Learning

12) Procedural Domain Knowledge in a rule-based system, is in the form of?
a) Meta Rule b) Control Rule
c) Production Rule d) None of the above

13) The available ways to solve a problem of state-space-search.
a) 1 b) 2
c) 3 d) 4

14) An Al agent perceives and acts upon the environment using _____.
a) Sensors b) Perceiver
c) Actuators d) Both a and c

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Artificial Intelligence (BTN04517)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Draw neat sketches wherever necessary.
5) Use of nonprogrammable calculator is permitted.

Section – I

Q.2 Solve any three. **12**

a) What is an Agent in Al? Explain any two types of Agents in Artificial Intelligence.
b) Explain MIN-MAX Algorithm.
c) Explain any Stochastic Search with example.
d) Explain various approaches to knowledge Representation.

Q.3 Solve any two. **16**

a) Differentiate between informed and uninformed search in detail.
b) Explain reasoning with defaults in Al.
c) Explain FOL in detail with examples.

Section – II

Q.4 Solve any three. **12**

a) Explain Bayes Rule with suitable example.
b) Explain reasoning with examples.
c) Explain elementary game theory.
d) Explain sequential decision problems.

Q.5 Solve any two. **16**

a) State the difference between supervised and unsupervised and semi supervised learning.
b) Justify any two application of machine learning with block diagram in Artificial Intelligence.
c) Explain the problems related to learning to knowledge and data acquisition.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Artificial Intelligence (BTN04517)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).
5) Draw neat sketches wherever necessary.
6) Use of nonprogrammable calculator is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which is the best way to go for Game playing problem?
a) Linear approach b) Heuristic approach
c) Random approach d) Optimal approach

2) Which is not a property of representation of knowledge?
a) Representational Verification b) Representational Adequacy
c) Inferential Adequacy d) Inferential Efficiency

3) The core idea of develop Al is building machines and algorithms to ____.
a) functions like anything
b) perform computation tasks and functions like human brain
c) perform only arithmetic tasks
d) perform logical comparisons only

4) Which if the following most advanced form of Al?
a) Neural Network b) Machine Learning
c) Data Science d) Deep Learning

5) Procedural Domain Knowledge in a rule-based system, is in the form of?
a) Meta Rule b) Control Rule
c) Production Rule d) None of the above

6) The available ways to solve a problem of state-space-search.
a) 1 b) 2
c) 3 d) 4

7) An Al agent perceives and acts upon the environment using _____.
a) Sensors b) Perceiver
c) Actuators d) Both a and c

8) What is Artificial intelligence?
a) Putting your intelligence into Computer
b) Programming with your own intelligence
c) Making a Machine intelligent
d) Playing a Game

9) Which is not the commonly used programming language for Al?
a) PROLOG b) Java
c) LISP d) Perl

10) What is state space?
a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

11) A production rule consists of _____.
a) A set of Rule
b) A sequence of steps
c) Both (a) and (b)
d) Arbitrary representation to problem

12) Which search method takes less memory?
a) Depth-First Search b) Breadth-First search
c) Both (a) and (b) d) Linear Search

13) A heuristic is a way of trying _____.
a) To discover something or an idea embedded in a program
b) To search and measure how far a node in a search tree seems to be from a goal
c) To compare two nodes in a search tree to see if one is better than the other
d) Only (a), (b) and (c)

14) A* algorithm is based on _____.
a) Breadth-First-Search b) Depth-First-Search
c) Best-First-Search d) Hill climbing

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Artificial Intelligence (BTN04517)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Draw neat sketches wherever necessary.
5) Use of nonprogrammable calculator is permitted.

Section – I

Q.2 Solve any three. **12**

a) What is an Agent in Al? Explain any two types of Agents in Artificial Intelligence.
b) Explain MIN-MAX Algorithm.
c) Explain any Stochastic Search with example.
d) Explain various approaches to knowledge Representation.

Q.3 Solve any two. **16**

a) Differentiate between informed and uninformed search in detail.
b) Explain reasoning with defaults in Al.
c) Explain FOL in detail with examples.

Section – II

Q.4 Solve any three. **12**

a) Explain Bayes Rule with suitable example.
b) Explain reasoning with examples.
c) Explain elementary game theory.
d) Explain sequential decision problems.

Q.5 Solve any two. **16**

a) State the difference between supervised and unsupervised and semi supervised learning.
b) Justify any two application of machine learning with block diagram in Artificial Intelligence.
c) Explain the problems related to learning to knowledge and data acquisition.

SLR-BD-410

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Artificial Intelligence (BTN04517)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).
5) Draw neat sketches wherever necessary.
6) Use of nonprogrammable calculator is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which if the following most advanced form of Al?
a) Neural Network b) Machine Learning
c) Data Science d) Deep Learning

2) Procedural Domain Knowledge in a rule-based system, is in the form of?
a) Meta Rule b) Control Rule
c) Production Rule d) None of the above

3) The available ways to solve a problem of state-space-search.
a) 1 b) 2
c) 3 d) 4

4) An Al agent perceives and acts upon the environment using _____.
a) Sensors b) Perceiver
c) Actuators d) Both a and c

5) What is Artificial intelligence?
a) Putting your intelligence into Computer
b) Programming with your own intelligence
c) Making a Machine intelligent
d) Playing a Game

6) Which is not the commonly used programming language for Al?
a) PROLOG b) Java
c) LISP d) Perl

7) What is state space?
- a) The whole problem
- b) Your Definition to a problem
- c) Problem you design
- d) Representing your problem with variable and parameter

8) A production rule consists of _____.
- a) A set of Rule
- b) A sequence of steps
- c) Both (a) and (b)
- d) Arbitrary representation to problem

9) Which search method takes less memory?
- a) Depth-First Search
- b) Breadth-First search
- c) Both (a) and (b)
- d) Linear Search

10) A heuristic is a way of trying _____.
- a) To discover something or an idea embedded in a program
- b) To search and measure how far a node in a search tree seems to be from a goal
- c) To compare two nodes in a search tree to see if one is better than the other
- d) Only (a), (b) and (c)

11) A* algorithm is based on _____.
- a) Breadth-First-Search
- b) Depth-First-Search
- c) Best-First-Search
- d) Hill climbing

12) Which is the best way to go for Game playing problem?
- a) Linear approach
- b) Heuristic approach
- c) Random approach
- d) Optimal approach

13) Which is not a property of representation of knowledge?
- a) Representational Verification
- b) Representational Adequacy
- c) Inferential Adequacy
- d) Inferential Efficiency

14) The core idea of develop Al is building machines and algorithms to ____.
- a) functions like anything
- b) perform computation tasks and functions like human brain
- c) perform only arithmetic tasks
- d) perform logical comparisons only

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Artificial Intelligence (BTN04517)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Make suitable assumptions if necessary and state them clearly.
4) Draw neat sketches wherever necessary.
5) Use of nonprogrammable calculator is permitted.

Section – I

Q.2 Solve any three. **12**

a) What is an Agent in Al? Explain any two types of Agents in Artificial Intelligence.
b) Explain MIN-MAX Algorithm.
c) Explain any Stochastic Search with example.
d) Explain various approaches to knowledge Representation.

Q.3 Solve any two. **16**

a) Differentiate between informed and uninformed search in detail.
b) Explain reasoning with defaults in Al.
c) Explain FOL in detail with examples.

Section – II

Q.4 Solve any three. **12**

a) Explain Bayes Rule with suitable example.
b) Explain reasoning with examples.
c) Explain elementary game theory.
d) Explain sequential decision problems.

Q.5 Solve any two. **16**

a) State the difference between supervised and unsupervised and semi supervised learning.
b) Justify any two application of machine learning with block diagram in Artificial Intelligence.
c) Explain the problems related to learning to knowledge and data acquisition.

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Artificial Intelligence (BTN04517)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).
5) Draw neat sketches wherever necessary.
6) Use of nonprogrammable calculator is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A heuristic is a way of trying _____.
a) To discover something or an idea embedded in a program
b) To search and measure how far a node in a search tree seems to be from a goal
c) To compare two nodes in a search tree to see if one is better than the other
d) Only (a), (b) and (c)

2) A* algorithm is based on _____.
a) Breadth-First-Search b) Depth-First-Search
c) Best-First-Search d) Hill climbing

3) Which is the best way to go for Game playing problem?
a) Linear approach b) Heuristic approach
c) Random approach d) Optimal approach

4) Which is not a property of representation of knowledge?
a) Representational Verification b) Representational Adequacy
c) Inferential Adequacy d) Inferential Efficiency

5) The core idea of develop Al is building machines and algorithms to ____.
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b) perform computation tasks and functions like human brain
c) perform only arithmetic tasks
d) perform logical comparisons only

6) Which if the following most advanced form of Al?
a) Neural Network b) Machine Learning
c) Data Science d) Deep Learning

7) Procedural Domain Knowledge in a rule-based system, is in the form of?
a) Meta Rule b) Control Rule
c) Production Rule d) None of the above

8) The available ways to solve a problem of state-space-search.
a) 1 b) 2
c) 3 d) 4

9) An Al agent perceives and acts upon the environment using _____.
a) Sensors b) Perceiver
c) Actuators d) Both a and c

10) What is Artificial intelligence?
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b) Programming with your own intelligence
c) Making a Machine intelligent
d) Playing a Game

11) Which is not the commonly used programming language for Al?
a) PROLOG b) Java
c) LISP d) Perl

12) What is state space?
a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

13) A production rule consists of _____.
a) A set of Rule
b) A sequence of steps
c) Both (a) and (b)
d) Arbitrary representation to problem

14) Which search method takes less memory?
a) Depth-First Search b) Breadth-First search
c) Both (a) and (b) d) Linear Search

SLR-BD-410

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Artificial Intelligence (BTN04517)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Draw neat sketches wherever necessary.
5) Use of nonprogrammable calculator is permitted.

Section – I

Q.2 Solve any three. **12**

a) What is an Agent in Al? Explain any two types of Agents in Artificial Intelligence.
b) Explain MIN-MAX Algorithm.
c) Explain any Stochastic Search with example.
d) Explain various approaches to knowledge Representation.

Q.3 Solve any two. **16**

a) Differentiate between informed and uninformed search in detail.
b) Explain reasoning with defaults in Al.
c) Explain FOL in detail with examples.

Section – II

Q.4 Solve any three. **12**

a) Explain Bayes Rule with suitable example.
b) Explain reasoning with examples.
c) Explain elementary game theory.
d) Explain sequential decision problems.

Q.5 Solve any two. **16**

a) State the difference between supervised and unsupervised and semi supervised learning.
b) Justify any two application of machine learning with block diagram in Artificial Intelligence.
c) Explain the problems related to learning to knowledge and data acquisition.

SLR-BD-412

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Industrial IoT (BTN04519)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which tool is used for connecting devices and orchestrating data workflows on the edge?
a) TensorFlow b) Stream Manager
c) IoT Greengrass d) Apache Kafka

2) What distinguishes a modern, smart home solution from traditional home automation systems?
a) Increased reliance on cloud computing
b) Integration of machine learning at the edge
c) Use of proprietary protocols for communication
d) Focus on centralized control and management

3) Why is reducing latency crucial in smart home and industrial IoT environments?
a) To minimize energy consumption
b) To enhance security measures
c) To enable real-time decision-making
d) To optimize data storage

4) What is the primary purpose of IoT Greengrass in the context of edge ML solutions?
a) Cloud-based data storage
b) Edge device management and orchestration
c) Machine learning model deployment
d) Real-time data analysis

5) What role does IoT Greengrass play in the anatomy of an edge ML solution?
a) Data processing at the cloud
b) Data ingestion from edge devices
c) Edge device management and communication
d) Machine learning model training

6) How does exploring the topology of the edge contribute to system efficiency?
a) By reducing latency in data transmission
b) By optimizing cloud storage utilization
c) By enhancing machine learning model accuracy
d) By improving network security measures

7) What is the role of security protocols in edge computing?
a) Minimizing device compatibility issues
b) Preventing unauthorized access and data breaches
c) Optimizing machine learning model training
d) Enhancing cloud synchronization efficiency

8) Which device characteristic is essential for effective sensing at the edge?
a) High computational power
b) Low power consumption
c) Large storage capacity
d) High-speed network connectivity

9) How does remote deployment contribute to the scalability of edge computing solutions?
a) By reducing edge device compatibility issues
b) By optimizing cloud storage utilization
c) By enabling rapid deployment across distributed environments
d) By minimizing machine learning model complexity

10) What is a primary challenge of storing logs in the cloud?
a) Data inconsistency
b) Security vulnerabilities
c) Network latency
d) Limited storage capacity

11) How does streaming from the edge to a data lake on the cloud enhance analytics capabilities?
a) By minimizing data transmission
b) By centralizing data processing
c) By optimizing machine learning model training
d) By enabling real-time data analysis

12) Which tool is used for defining data models for IoT workloads?
a) TensorFlow
b) AWS IoT Core
c) Stream Manager
d) EdgeML Toolkit

13) How does Domain-Driven Design (DDD) contribute to processing data on the cloud?

a) By optimizing machine learning model training
b) By ensuring data consistency and integrity
c) By facilitating efficient data flow patterns
d) By automating device management tasks

14) What is the purpose of designing data flow patterns on the cloud?

a) Centralizing data processing
b) Enhancing machine learning model accuracy
c) Optimizing network bandwidth utilization
d) Ensuring efficient data processing workflows

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Industrial IoT (BTN04519)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three. **12**

a) Analyze the role of compatibility with edge devices in ensuring the scalability of edge computing solutions.
b) Explain the importance of network connectivity in the context of IoT Greengrass installation.
c) Evaluate the significance of actuating at the edge in enabling real-time responses to sensor data.
d) Explain the process of creating and deploying remotely in the context of edge computing.

Q.3 Solve any two. **16**

a) Explain the process of deploying the first edge component in IoT Greengrass and its implications.
b) Discuss the implications of data flow patterns for optimizing efficiency in edge computing environments.
c) Discuss the challenges and advantages of extending the cloud to the edge in IoT environments.

Section – II

Q.4 Solve any three. **12**

a) Evaluate the role of cloud storage in enhancing the accessibility and availability of data in edge computing.
b) Explain the process of deploying the first ML model in an edge computing environment and its implications.
c) Analyze the role of data patterns in facilitating efficient data processing workflows and scalability in edge computing deployments.
d) Evaluate the challenges and opportunities of processing and consuming data on the cloud in the context of edge computing, including scalability, security, and cost-effectiveness.

Q.5 Solve any two. **16**

a) Discuss the importance of Stream Manager in orchestrating data ingestion and streaming from the edge and its implications for real-time data processing.

b) Discuss the process of installing IoT Greengrass on edge devices, highlighting the key steps involved.

c) Evaluate the significance of Domain-Driven Design (DDD) in optimizing data interpretation, analysis, and visualization in cloud-based IoT environments.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Industrial IoT (BTN04519)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which device characteristic is essential for effective sensing at the edge?
a) High computational power
b) Low power consumption
c) Large storage capacity
d) High-speed network connectivity

2) How does remote deployment contribute to the scalability of edge computing solutions?
a) By reducing edge device compatibility issues
b) By optimizing cloud storage utilization
c) By enabling rapid deployment across distributed environments
d) By minimizing machine learning model complexity

3) What is a primary challenge of storing logs in the cloud?
a) Data inconsistency b) Security vulnerabilities
c) Network latency d) Limited storage capacity

4) How does streaming from the edge to a data lake on the cloud enhance analytics capabilities?
a) By minimizing data transmission
b) By centralizing data processing
c) By optimizing machine learning model training
d) By enabling real-time data analysis

5) Which tool is used for defining data models for IoT workloads?
a) TensorFlow b) AWS IoT Core
c) Stream Manager d) EdgeML Toolkit

6) How does Domain-Driven Design (DDD) contribute to processing data on the cloud?
a) By optimizing machine learning model training
b) By ensuring data consistency and integrity
c) By facilitating efficient data flow patterns
d) By automating device management tasks

7) What is the purpose of designing data flow patterns on the cloud?
a) Centralizing data processing
b) Enhancing machine learning model accuracy
c) Optimizing network bandwidth utilization
d) Ensuring efficient data processing workflows

8) Which tool is used for connecting devices and orchestrating data workflows on the edge?
a) TensorFlow
b) Stream Manager
c) IoT Greengrass
d) Apache Kafka

9) What distinguishes a modern, smart home solution from traditional home automation systems?
a) Increased reliance on cloud computing
b) Integration of machine learning at the edge
c) Use of proprietary protocols for communication
d) Focus on centralized control and management

10) Why is reducing latency crucial in smart home and industrial IoT environments?
a) To minimize energy consumption
b) To enhance security measures
c) To enable real-time decision-making
d) To optimize data storage

11) What is the primary purpose of IoT Greengrass in the context of edge ML solutions?
a) Cloud-based data storage
b) Edge device management and orchestration
c) Machine learning model deployment
d) Real-time data analysis

12) What role does IoT Greengrass play in the anatomy of an edge ML solution?
a) Data processing at the cloud
b) Data ingestion from edge devices
c) Edge device management and communication
d) Machine learning model training

13) How does exploring the topology of the edge contribute to system efficiency?

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b) By optimizing cloud storage utilization
c) By enhancing machine learning model accuracy
d) By improving network security measures

14) What is the role of security protocols in edge computing?

a) Minimizing device compatibility issues
b) Preventing unauthorized access and data breaches
c) Optimizing machine learning model training
d) Enhancing cloud synchronization efficiency

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Industrial IoT (BTN04519)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three. **12**

a) Analyze the role of compatibility with edge devices in ensuring the scalability of edge computing solutions.
b) Explain the importance of network connectivity in the context of IoT Greengrass installation.
c) Evaluate the significance of actuating at the edge in enabling real-time responses to sensor data.
d) Explain the process of creating and deploying remotely in the context of edge computing.

Q.3 Solve any two. **16**

a) Explain the process of deploying the first edge component in IoT Greengrass and its implications.
b) Discuss the implications of data flow patterns for optimizing efficiency in edge computing environments.
c) Discuss the challenges and advantages of extending the cloud to the edge in IoT environments.

Section – II

Q.4 Solve any three. **12**

a) Evaluate the role of cloud storage in enhancing the accessibility and availability of data in edge computing.
b) Explain the process of deploying the first ML model in an edge computing environment and its implications.
c) Analyze the role of data patterns in facilitating efficient data processing workflows and scalability in edge computing deployments.
d) Evaluate the challenges and opportunities of processing and consuming data on the cloud in the context of edge computing, including scalability, security, and cost-effectiveness.

Q.5 Solve any two. **16**

a) Discuss the importance of Stream Manager in orchestrating data ingestion and streaming from the edge and its implications for real-time data processing.

b) Discuss the process of installing IoT Greengrass on edge devices, highlighting the key steps involved.

c) Evaluate the significance of Domain-Driven Design (DDD) in optimizing data interpretation, analysis, and visualization in cloud-based IoT environments.

SLR-BD-412

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Industrial IoT (BTN04519)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) How does streaming from the edge to a data lake on the cloud enhance analytics capabilities?
a) By minimizing data transmission
b) By centralizing data processing
c) By optimizing machine learning model training
d) By enabling real-time data analysis

2) Which tool is used for defining data models for IoT workloads?
a) TensorFlow b) AWS IoT Core
c) Stream Manager d) EdgeML Toolkit

3) How does Domain-Driven Design (DDD) contribute to processing data on the cloud?
a) By optimizing machine learning model training
b) By ensuring data consistency and integrity
c) By facilitating efficient data flow patterns
d) By automating device management tasks

4) What is the purpose of designing data flow patterns on the cloud?
a) Centralizing data processing
b) Enhancing machine learning model accuracy
c) Optimizing network bandwidth utilization
d) Ensuring efficient data processing workflows

5) Which tool is used for connecting devices and orchestrating data workflows on the edge?
a) TensorFlow b) Stream Manager
c) IoT Greengrass d) Apache Kafka

6) What distinguishes a modern, smart home solution from traditional home automation systems?
a) Increased reliance on cloud computing
b) Integration of machine learning at the edge
c) Use of proprietary protocols for communication
d) Focus on centralized control and management

7) Why is reducing latency crucial in smart home and industrial IoT environments?
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b) To enhance security measures
c) To enable real-time decision-making
d) To optimize data storage

8) What is the primary purpose of IoT Greengrass in the context of edge ML solutions?
a) Cloud-based data storage
b) Edge device management and orchestration
c) Machine learning model deployment
d) Real-time data analysis

9) What role does IoT Greengrass play in the anatomy of an edge ML solution?
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c) Edge device management and communication
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10) How does exploring the topology of the edge contribute to system efficiency?
a) By reducing latency in data transmission
b) By optimizing cloud storage utilization
c) By enhancing machine learning model accuracy
d) By improving network security measures

11) What is the role of security protocols in edge computing?
a) Minimizing device compatibility issues
b) Preventing unauthorized access and data breaches
c) Optimizing machine learning model training
d) Enhancing cloud synchronization efficiency

12) Which device characteristic is essential for effective sensing at the edge?
a) High computational power
b) Low power consumption
c) Large storage capacity
d) High-speed network connectivity

13) How does remote deployment contribute to the scalability of edge computing solutions?

a) By reducing edge device compatibility issues
b) By optimizing cloud storage utilization
c) By enabling rapid deployment across distributed environments
d) By minimizing machine learning model complexity

14) What is a primary challenge of storing logs in the cloud?

a) Data inconsistency
b) Security vulnerabilities
c) Network latency
d) Limited storage capacity

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Industrial IoT (BTN04519)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three. **12**

a) Analyze the role of compatibility with edge devices in ensuring the scalability of edge computing solutions.
b) Explain the importance of network connectivity in the context of IoT Greengrass installation.
c) Evaluate the significance of actuating at the edge in enabling real-time responses to sensor data.
d) Explain the process of creating and deploying remotely in the context of edge computing.

Q.3 Solve any two. **16**

a) Explain the process of deploying the first edge component in IoT Greengrass and its implications.
b) Discuss the implications of data flow patterns for optimizing efficiency in edge computing environments.
c) Discuss the challenges and advantages of extending the cloud to the edge in IoT environments.

Section – II

Q.4 Solve any three. **12**

a) Evaluate the role of cloud storage in enhancing the accessibility and availability of data in edge computing.
b) Explain the process of deploying the first ML model in an edge computing environment and its implications.
c) Analyze the role of data patterns in facilitating efficient data processing workflows and scalability in edge computing deployments.
d) Evaluate the challenges and opportunities of processing and consuming data on the cloud in the context of edge computing, including scalability, security, and cost-effectiveness.

Q.5 Solve any two. **16**

a) Discuss the importance of Stream Manager in orchestrating data ingestion and streaming from the edge and its implications for real-time data processing.

b) Discuss the process of installing IoT Greengrass on edge devices, highlighting the key steps involved.

c) Evaluate the significance of Domain-Driven Design (DDD) in optimizing data interpretation, analysis, and visualization in cloud-based IoT environments.

SLR-BD-412

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Industrial IoT (BTN04519)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) How does exploring the topology of the edge contribute to system efficiency?
a) By reducing latency in data transmission
b) By optimizing cloud storage utilization
c) By enhancing machine learning model accuracy
d) By improving network security measures

2) What is the role of security protocols in edge computing?
a) Minimizing device compatibility issues
b) Preventing unauthorized access and data breaches
c) Optimizing machine learning model training
d) Enhancing cloud synchronization efficiency

3) Which device characteristic is essential for effective sensing at the edge?
a) High computational power
b) Low power consumption
c) Large storage capacity
d) High-speed network connectivity

4) How does remote deployment contribute to the scalability of edge computing solutions?
a) By reducing edge device compatibility issues
b) By optimizing cloud storage utilization
c) By enabling rapid deployment across distributed environments
d) By minimizing machine learning model complexity

5) What is a primary challenge of storing logs in the cloud?
a) Data inconsistency b) Security vulnerabilities
c) Network latency d) Limited storage capacity

6) How does streaming from the edge to a data lake on the cloud enhance analytics capabilities?
a) By minimizing data transmission
b) By centralizing data processing
c) By optimizing machine learning model training
d) By enabling real-time data analysis

7) Which tool is used for defining data models for IoT workloads?
a) TensorFlow
b) AWS IoT Core
c) Stream Manager
d) EdgeML Toolkit

8) How does Domain-Driven Design (DDD) contribute to processing data on the cloud?
a) By optimizing machine learning model training
b) By ensuring data consistency and integrity
c) By facilitating efficient data flow patterns
d) By automating device management tasks

9) What is the purpose of designing data flow patterns on the cloud?
a) Centralizing data processing
b) Enhancing machine learning model accuracy
c) Optimizing network bandwidth utilization
d) Ensuring efficient data processing workflows

10) Which tool is used for connecting devices and orchestrating data workflows on the edge?
a) TensorFlow
b) Stream Manager
c) IoT Greengrass
d) Apache Kafka

11) What distinguishes a modern, smart home solution from traditional home automation systems?
a) Increased reliance on cloud computing
b) Integration of machine learning at the edge
c) Use of proprietary protocols for communication
d) Focus on centralized control and management

12) Why is reducing latency crucial in smart home and industrial IoT environments?
a) To minimize energy consumption
b) To enhance security measures
c) To enable real-time decision-making
d) To optimize data storage

13) What is the primary purpose of IoT Greengrass in the context of edge ML solutions?
a) Cloud-based data storage
b) Edge device management and orchestration
c) Machine learning model deployment
d) Real-time data analysis

14) What role does IoT Greengrass play in the anatomy of an edge ML solution?

a) Data processing at the cloud
b) Data ingestion from edge devices
c) Edge device management and communication
d) Machine learning model training

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Industrial IoT (BTN04519)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three. **12**

a) Analyze the role of compatibility with edge devices in ensuring the scalability of edge computing solutions.
b) Explain the importance of network connectivity in the context of IoT Greengrass installation.
c) Evaluate the significance of actuating at the edge in enabling real-time responses to sensor data.
d) Explain the process of creating and deploying remotely in the context of edge computing.

Q.3 Solve any two. **16**

a) Explain the process of deploying the first edge component in IoT Greengrass and its implications.
b) Discuss the implications of data flow patterns for optimizing efficiency in edge computing environments.
c) Discuss the challenges and advantages of extending the cloud to the edge in IoT environments.

Section – II

Q.4 Solve any three. **12**

a) Evaluate the role of cloud storage in enhancing the accessibility and availability of data in edge computing.
b) Explain the process of deploying the first ML model in an edge computing environment and its implications.
c) Analyze the role of data patterns in facilitating efficient data processing workflows and scalability in edge computing deployments.
d) Evaluate the challenges and opportunities of processing and consuming data on the cloud in the context of edge computing, including scalability, security, and cost-effectiveness.

Q.5 Solve any two. **16**

a) Discuss the importance of Stream Manager in orchestrating data ingestion and streaming from the edge and its implications for real-time data processing.

b) Discuss the process of installing IoT Greengrass on edge devices, highlighting the key steps involved.

c) Evaluate the significance of Domain-Driven Design (DDD) in optimizing data interpretation, analysis, and visualization in cloud-based IoT environments.

SLR-BD-413

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Economics (BTN04506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive b) Monopoly
c) Oligopoly d) Monopolistic

2) Average revenue is _____
a) Total revenue divided by the number of units sold
b) Revenue earned by all the units of the output
c) Revenue earned by the average sized firm in the industry
d) Net addition made to the total revenue by selling one more unit of a commodity

3) Which of these is an economic activity?
a) Father teaching his son at home instead of spending on coaching
b) A housewife making food for the family on her own
c) A hair dresser doing hair cut designing on payment
d) A singer giving a show on his son's wedding anniversary

4) Which of the following is NOT an account in the Balance of Payments?
a) Current Account b) Capital Account
c) Financial Account d) Future Account

5) Which of the following is not a regulatory institution in Indian financial system?
a) RBI b) CIBIL
c) SEBI d) IRDA

6) In a mixed economy which sector (s) is 1 are found _____

a) Private only
b) Public only
c) None
d) Both (a) Private and (b)Public

7) Who is known as father of economics?

a) Adam Smith
b) Prof. A. Samulson
c) Alfred Marshall
d) J. R. Hicks

8) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False
b) True
c) Partly true
d) Partly False

9) Which one of the following is not the function of money?

a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

10) Which one of the following cost can never become zero?

a) Average cost
b) Fixed cost
c) Marginal cost
d) Variable cost

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Economics (BTN04506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Economics (BTN04506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) In a mixed economy which sector (s) is 1 are found _____
a) Private only b) Public only
c) None d) Both (a) Private and (b)Public

1) Who is known as father of economics?
a) Adam Smith b) Prof. A. Samulson
c) Alfred Marshall d) J. R. Hicks

3) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

4) Which one of the following is not the function of money?
a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

5) Which one of the following cost can never become zero?
a) Average cost b) Fixed cost
c) Marginal cost d) Variable cost

6) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive b) Monopoly
c) Oligopoly d) Monopolistic

7) Average revenue is _____
   a) Total revenue divided by the number of units sold
   b) Revenue earned by all the units of the output
   c) Revenue earned by the average sized firm in the industry
   d) Net addition made to the total revenue by selling one more unit of a commodity

8) Which of these is an economic activity?
   a) Father teaching his son at home instead of spending on coaching
   b) A housewife making food for the family on her own
   c) A hair dresser doing hair cut designing on payment
   d) A singer giving a show on his son's wedding anniversary

9) Which of the following is NOT an account in the Balance of Payments?
   a) Current Account
   b) Capital Account
   c) Financial Account
   d) Future Account

10) Which of the following is not a regulatory institution in Indian financial system?
   a) RBI
   b) CIBIL
   c) SEBI
   d) IRDA

SLR-BD-413

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Economics (BTN04506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Economics (BTN04506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which one of the following is not the function of money?
a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

2) Which one of the following cost can never become zero?
a) Average cost b) Fixed cost
c) Marginal cost d) Variable cost

3) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive b) Monopoly
c) Oligopoly d) Monopolistic

4) Average revenue is _____
a) Total revenue divided by the number of units sold
b) Revenue earned by all the units of the output
c) Revenue earned by the average sized firm in the industry
d) Net addition made to the total revenue by selling one more unit of a commodity

5) Which of these is an economic activity?
a) Father teaching his son at home instead of spending on coaching
b) A housewife making food for the family on her own
c) A hair dresser doing hair cut designing on payment
d) A singer giving a show on his son's wedding anniversary

6) Which of the following is NOT an account in the Balance of Payments?

a) Current Account b) Capital Account
c) Financial Account d) Future Account

7) Which of the following is not a regulatory institution in Indian financial system?

a) RBI b) CIBIL
c) SEBI d) IRDA

8) In a mixed economy which sector (s) is 1 are found _____

a) Private only b) Public only
c) None d) Both (a) Private and (b)Public

9) Who is known as father of economics?

a) Adam Smith b) Prof. A. Samulson
c) Alfred Marshall d) J. R. Hicks

10) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False b) True
c) Partly true d) Partly False

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Economics (BTN04506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Economics (BTN04506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which of these is an economic activity?
a) Father teaching his son at home instead of spending on coaching
b) A housewife making food for the family on her own
c) A hair dresser doing hair cut designing on payment
d) A singer giving a show on his son's wedding anniversary

2) Which of the following is NOT an account in the Balance of Payments?
a) Current Account b) Capital Account
c) Financial Account d) Future Account

3) Which of the following is not a regulatory institution in Indian financial system?
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c) SEBI d) IRDA

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a) Private only b) Public only
c) None d) Both (a) Private and (b)Public

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a) Adam Smith b) Prof. A. Samulson
c) Alfred Marshall d) J. R. Hicks

6) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

7) Which one of the following is not the function of money?
a) Medium of exchange
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8) Which one of the following cost can never become zero?
a) Average cost
b) Fixed cost
c) Marginal cost
d) Variable cost

9) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive
b) Monopoly
c) Oligopoly
d) Monopolistic

10) Average revenue is _____
a) Total revenue divided by the number of units sold
b) Revenue earned by all the units of the output
c) Revenue earned by the average sized firm in the industry
d) Net addition made to the total revenue by selling one more unit of a commodity

SLR-BD-413

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Economics (BTN04506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

SLR-BD-414

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN04507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) What protects the intellectual property created by artists?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

2) If a company develops a new technology that improves its main product, what type of intellectual property can they use to stop others from copying their invention?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

3) All of the following are examples of intellectual property protections except _____.
a) Copyrights b) Patents
c) Contracts d) Trademarks

4) The first Patent Law was enacted in India in the year _____
a) 1856 b) 1880
c) 1905 d) 1850

5) How long does intellectual property last? (after the death of the author)
a) 10 yrs b) 30 yrs
c) 60 yrs d) 70 yrs

6) Which of the following can you copyright?
a) Literary work b) Ideas
c) Choreographic work d) Fashion

7) Which of the following identifies as a trademark?

a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

8) What is the subject matter of a patent?

a) Art b) Invention
c) Goods d) Ideas

9) What is copyright meant for?

a) Film work b) Books
c) Essay d) All of these

10) In which article is intellectual property rights outlined?

a) Article 15 b) Article 27
c) Article 13 d) Article 20

SLR-BD-414

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN04507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?
b) Explain Outlines concepts of confidentiality and information security.
c) Explain the Comparison of the Indian IPR system with international IPR frameworks.

Q.3 Solve any Four: **20**

a) Explain the role of Engineers and Managers in technology development in project commercialization.
b) Write a short note on the shifting paradigms of R&D and their linkage to IPR.
c) Explain Copyright issues in creative works.
d) Discuss the importance of Law on Industrial designs.
e) Explain commercial exploitation and infringement.
f) Write a short note on IPR and Electronic Commerce.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN04507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Which of the following can you copyright?
a) Literary work b) Ideas
c) Choreographic work d) Fashion

2) Which of the following identifies as a trademark?
a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

3) What is the subject matter of a patent?
a) Art b) Invention
c) Goods d) Ideas

4) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

5) In which article is intellectual property rights outlined?
a) Article 15 b) Article 27
c) Article 13 d) Article 20

6) What protects the intellectual property created by artists?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

7) If a company develops a new technology that improves its main product, what type of intellectual property can they use to stop others from copying their invention?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

8) All of the following are examples of intellectual property protections except _____.

a) Copyrights b) Patents
c) Contracts d) Trademarks

9) The first Patent Law was enacted in India in the year _____

a) 1856 b) 1880
c) 1905 d) 1850

10) How long does intellectual property last? (after the death of the author)

a) 10 yrs b) 30 yrs
c) 60 yrs d) 70 yrs

SLR-BD-414

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN04507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?
b) Explain Outlines concepts of confidentiality and information security.
c) Explain the Comparison of the Indian IPR system with international IPR frameworks.

Q.3 Solve any Four: **20**

a) Explain the role of Engineers and Managers in technology development in project commercialization.
b) Write a short note on the shifting paradigms of R&D and their linkage to IPR.
c) Explain Copyright issues in creative works.
d) Discuss the importance of Law on Industrial designs.
e) Explain commercial exploitation and infringement.
f) Write a short note on IPR and Electronic Commerce.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN04507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

2) In which article is intellectual property rights outlined?
a) Article 15 b) Article 27
c) Article 13 d) Article 20

3) What protects the intellectual property created by artists?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

4) If a company develops a new technology that improves its main product, what type of intellectual property can they use to stop others from copying their invention?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

5) All of the following are examples of intellectual property protections except _____.
a) Copyrights b) Patents
c) Contracts d) Trademarks

6) The first Patent Law was enacted in India in the year _____
a) 1856 b) 1880
c) 1905 d) 1850

7) How long does intellectual property last? (after the death of the author)

a) 10 yrs b) 30 yrs
c) 60 yrs d) 70 yrs

8) Which of the following can you copyright?

a) Literary work b) Ideas
c) Choreographic work d) Fashion

9) Which of the following identifies as a trademark?

a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

10) What is the subject matter of a patent?

a) Art b) Invention
c) Goods d) Ideas

SLR-BD-414

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN04507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?
b) Explain Outlines concepts of confidentiality and information security.
c) Explain the Comparison of the Indian IPR system with international IPR frameworks.

Q.3 Solve any Four: **20**

a) Explain the role of Engineers and Managers in technology development in project commercialization.
b) Write a short note on the shifting paradigms of R&D and their linkage to IPR.
c) Explain Copyright issues in creative works.
d) Discuss the importance of Law on Industrial designs.
e) Explain commercial exploitation and infringement.
f) Write a short note on IPR and Electronic Commerce.

SLR-BD-414

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN04507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) All of the following are examples of intellectual property protections except _____.
a) Copyrights b) Patents
c) Contracts d) Trademarks

2) The first Patent Law was enacted in India in the year _____
a) 1856 b) 1880
c) 1905 d) 1850

3) How long does intellectual property last? (after the death of the author)
a) 10 yrs b) 30 yrs
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a) Name, symbol b) Symbol, logo
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SLR-BD-414

Seat No.	

Set S

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SLR-BD-415

Seat No.		Set	P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Introduction to Sociology (BTN04508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) Name of state having highest percentage of literacy level.
a) West Bengal b) Punjab
c) Kerala d) Maharashtra

2) Functions of Social Institutes is ____.
a) To meet fundamental needs of society
b) To improve the Society
c) To meet the needs of Family
d) None of above

3) Social change is change in ____.
a) Society b) Community
c) Individual d) Education

4) Which is recognized as one of the first environmental movements in country?
a) Chipko Movement
b) Kisan Movement
c) Lok satta Movement
d) Naramada Bachao Andolan

5) Science that deals with the relationship between living organism with their physical environment and each other is called ____.
a) Ecosystem b) Biodiversity
c) Environment d) Ecology

6) In which year the term sociology was coined?

a) 1798 b) 1815
c) 1839 d) 1857

7) The word sociology is made up of two words. These are ____.

a) Societies and logy b) Societia and logistia
c) Socious and logos d) Socia and logos

8) Who is the father of Sociology?

a) Karl Max b) Herbert Spencer
c) Auguste Comte d) Charles Darwin

9) The major component of demography are:

a) Mortality b) Fertility
c) Migration d) All of these

10) India occupies _____ rank among the population of the different countries of world.

a) Third b) First
c) Forth d) Second

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Introduction to Sociology (BTN04508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a) What is Sociology? And explain with concept like social structure, role, norms, values etc. **10**

b) Explain with detail trends of Urbanization in developing countries and world. **10**

c) Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development. **10**

d) Explain with detail social movements like protest, reformist, radical in India. **10**

e) Explain in detail demographic change in India & world along with Human Ecology. **10**

f) Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Introduction to Sociology (BTN04508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) In which year the term sociology was coined?
a) 1798 b) 1815
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a) Societies and logy b) Societia and logistia
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4) The major component of demography are:
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c) Forth d) Second

6) Name of state having highest percentage of literacy level.
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c) To meet the needs of Family
d) None of above

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c) Individual d) Education

9) Which is recognized as one of the first environmental movements in country?

a) Chipko Movement
b) Kisan Movement
c) Lok satta Movement
d) Naramada Bachao Andolan

10) Science that deals with the relationship between living organism with their physical environment and each other is called ____.

a) Ecosystem b) Biodiversity
c) Environment d) Ecology

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Introduction to Sociology (BTN04508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a)	What is Sociology? And explain with concept like social structure, role, norms, values etc.	**10**
b)	Explain with detail trends of Urbanization in developing countries and world.	**10**
c)	Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development.	**10**
d)	Explain with detail social movements like protest, reformist, radical in India.	**10**
e)	Explain in detail demographic change in India & world along with Human Ecology.	**10**
f)	Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization.	**10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Introduction to Sociology (BTN04508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

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SLR-BD-415

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Introduction to Sociology (BTN04508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a)	What is Sociology? And explain with concept like social structure, role, norms, values etc.	**10**
b)	Explain with detail trends of Urbanization in developing countries and world.	**10**
c)	Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development.	**10**
d)	Explain with detail social movements like protest, reformist, radical in India.	**10**
e)	Explain in detail demographic change in India & world along with Human Ecology.	**10**
f)	Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization.	**10**

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Introduction to Sociology (BTN04508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Social change is change in ____.
a) Society b) Community
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9) Name of state having highest percentage of literacy level.

a) West Bengal
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b) To improve the Society
c) To meet the needs of Family
d) None of above

SLR-BD-415

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Introduction to Sociology (BTN04508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a) What is Sociology? And explain with concept like social structure, role, norms, values etc. **10**

b) Explain with detail trends of Urbanization in developing countries and world. **10**

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SLR-BD-416

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Stress and Coping (BTN04509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) What is stress?
a) A state of physical tiredness
b) The body's response to a demand or challenge
c) A type of exercise
d) A form of relaxation

2) Which of the following is a healthy way to cope with stress?
a) Concentrating the stressor
b) Engaging in regular physical activity
c) Investing time on social media
d) Consuming excessive amounts of caffeine

3) Which of the following is a relaxation technique often used for stress management?
a) Procrastination b) Meditation
c) Caffeine consumption d) Multitasking

4) What is the purpose of time management in stress reduction?
a) To increase stress by overloading schedules
b) To create a sense of urgency
c) To prioritize tasks and reduce overwhelm
d) To eliminate breaks and relaxation time

5) Which of the following is a potential source of social support?
a) Isolation from friends and family
b) Engaging in negative self-talk
c) Seeking help from friends, family, or support groups
d) Avoiding all forms of communication

6) When a task appears overwhelming, it is best to _____
a) Put it aside till later
b) Drink alcohol to relax
c) Break it down into smaller task
d) Avoid the task

7) Anxiety can cause the following moods _____
a) Irritable
b) Nervous
c) Anxious
d) All of the above

8) The following are the characteristics of Positive Stress.
a) It improves performance
b) It feels exciting
c) It motivates
d) All of the above

9) A good way to prevent stress is _____
a) Drinking beverages high in caffeine
b) Sitting ideal doing nothing
c) Overeating
d) Taking time out for relaxation

10) Absenteeism, turnover and less productivity are _____ symptoms of stress.
a) Medical
b) Psychological
c) Behavioral
d) None of these

SLR-BD-416

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Stress and Coping (BTN04509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Stress and Coping (BTN04509)

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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

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10) Which of the following is a potential source of social support?
a) Isolation from friends and family
b) Engaging in negative self-talk
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SLR-BD-416

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Stress and Coping (BTN04509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

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Q.5 Discuss the nature of stress response. **10**

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Seat No.	

Set | R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Stress and Coping (BTN04509)

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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

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b) It feels exciting
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SLR-BD-416

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Stress and Coping (BTN04509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
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Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Stress and Coping (BTN04509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) Which of the following is a relaxation technique often used for stress management?
a) Procrastination b) Meditation
c) Caffeine consumption d) Multitasking

2) What is the purpose of time management in stress reduction?
a) To increase stress by overloading schedules
b) To create a sense of urgency
c) To prioritize tasks and reduce overwhelm
d) To eliminate breaks and relaxation time

3) Which of the following is a potential source of social support?
a) Isolation from friends and family
b) Engaging in negative self-talk
c) Seeking help from friends, family, or support groups
d) Avoiding all forms of communication

4) When a task appears overwhelming, it is best to _____
a) Put it aside till later
b) Drink alcohol to relax
c) Break it down into smaller task
d) Avoid the task

5) Anxiety can cause the following moods _____
a) Irritable b) Nervous
c) Anxious d) All of the above

6) The following are the characteristics of Positive Stress.
a) It improves performance
b) It feels exciting
c) It motivates
d) All of the above

7) A good way to prevent stress is _____
a) Drinking beverages high in caffeine
b) Sitting ideal doing nothing
c) Overeating
d) Taking time out for relaxation

8) Absenteeism, turnover and less productivity are _____ symptoms of stress.
a) Medical
b) Psychological
c) Behavioral
d) None of these

9) What is stress?
a) A state of physical tiredness
b) The body's response to a demand or challenge
c) A type of exercise
d) A form of relaxation

10) Which of the following is a healthy way to cope with stress?
a) Concentrating the stressor
b) Engaging in regular physical activity
c) Investing time on social media
d) Consuming excessive amounts of caffeine

SLR-BD-416

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Stress and Coping (BTN04509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

SLR-BD-417

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Professional Ethics and Human Value (BTN04510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values, and beliefs
c) Only Values d) Psychology

2) Word ethichs is definded as a _____
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

3) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) Authority

4) The study on ethics helps to know the people's _____.
a) Learn good or bad things
b) Copyright
c) Morality
d) Beliefs, values, and morals

5) The objectives of professional ethics in engineering are _____.
a) To understand the moral values that ought to guide the Engineering profession
b) To resolve the moral issues in the profession, and
c) To justify the moral judgment concerning the profession
d) All the above

6) The main core human values are _____.

a) Right conduct b) Peace
c) Both a & b d) None of these

7) Preconditioning is ____.

a) Assuming without knowing b) Knowing without assuming
c) Only assuming d) Only knowing

8) Value education deals with ____.

a) What is universally valuable to all of us
b) What is conductive to our individual and collective of us
c) Enables to be in harmony with ourselves, other and rest of nature
d) All of the above

9) Courage is the tendency to accept and face ____.

a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

10) Human life is lived at four levels individuals, family, society and ____.

a) Nature b) Nurture
c) World d) Universe

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Professional Ethics and Human Value (BTN04510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

SLR-BD-417

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Professional Ethics and Human Value (BTN04510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) The main core human values are _____.
a) Right conduct b) Peace
c) Both a & b d) None of these

2) Preconditioning is ____.
a) Assuming without knowing b) Knowing without assuming
c) Only assuming d) Only knowing

3) Value education deals with ____.
a) What is universally valuable to all of us
b) What is conductive to our individual and collective of us
c) Enables to be in harmony with ourselves, other and rest of nature
d) All of the above

4) Courage is the tendency to accept and face ____.
a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

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c) World d) Universe

6) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values, and beliefs
c) Only Values d) Psychology

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   a) Motivation
   b) Set of attitudes concerned with the value of work
   c) Attitude
   d) Values

8) _____ is defined as the duty, obligation or even authority.
   a) Work
   b) Responsibility
   c) Democracy
   d) Authority

9) The study on ethics helps to know the people's _____.
   a) Learn good or bad things
   b) Copyright
   c) Morality
   d) Beliefs, values, and morals

10) The objectives of professional ethics in engineering are _____.
   a) To understand the moral values that ought to guide the Engineering profession
   b) To resolve the moral issues in the profession, and
   c) To justify the moral judgment concerning the profession
   d) All the above

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Professional Ethics and Human Value (BTN04510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Professional Ethics and Human Value (BTN04510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Courage is the tendency to accept and face ____.
a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

2) Human life is lived at four levels individuals, family, society and ____.
a) Nature b) Nurture
c) World d) Universe

3) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values, and beliefs
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5) _____ is defined as the duty, obligation or even authority.
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c) Democracy d) Authority

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b) Copyright
c) Morality
d) Beliefs, values, and morals

7) The objectives of professional ethics in engineering are _____.
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   a) Right conduct b) Peace
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9) Preconditioning is ____.
   a) Assuming without knowing b) Knowing without assuming
   c) Only assuming d) Only knowing

10) Value education deals with ____.
   a) What is universally valuable to all of us
   b) What is conductive to our individual and collective of us
   c) Enables to be in harmony with ourselves, other and rest of nature
   d) All of the above

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Professional Ethics and Human Value (BTN04510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Professional Ethics and Human Value (BTN04510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) Authority

2) The study on ethics helps to know the people's _____.
a) Learn good or bad things
b) Copyright
c) Morality
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   c) Enables to be in harmony with ourselves, other and rest of nature
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   c) Physical courage
   d) Social courage

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9) Ethics is the word that refers to _____.
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   c) Only Values d) Psychology

10) Word ethichs is definded as a _____
   a) Motivation
   b) Set of attitudes concerned with the value of work
   c) Attitude
   d) Values

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS ENGINEERING
Professional Ethics and Human Value (BTN04510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

SLR-BD-418

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Computer Networks (BTN04601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Network device Switch is ____ layer device.
a) Physical b) Data Link
c) Network d) Application

2) The MAC id 06:12:EA:4F:30:98 is ____ type.
a) Unicast b) Multicast
c) Broadcast d) None of these

3) The ARQ stands for ____.
a) All Repeat Queue b) Automatic Repeat Request
c) Automatic Resolve Question d) None of these

4) Physical or logical arrangement of network is ____.
a) Topology b) Routing
c) Group d) None of these

5) Error detection at the data link level is achieved by ____.
a) Bit stuffing b) CRC
c) Frame formation d) Equalization

6) The maximum throughput for pure ALOHA is ____ percent.
a) 12.2 b) 18.4
c) 36.8 d) None of these

7) The network address (MAC) or Physical address present for each node in the network is of ____ bits.
a) 12 b) 32
c) 48 d) 64

8) The IP address 229.155.66.63 belongs to ____.
a) Class A b) Class B
c) Class C d) Class D

9) The data unit in transport layer in TCP/IP is called ____.
a) A datagram b) A segment
c) Frame d) Bit-string

10) Which of the following is false with respect to UDP?
a) Connection oriented b) Unreliable
c) Transport layer protocol d) All of the mentioned

11) UDP packets have a fixed-size header of ____ bytes.
a) 8 b) 16
c) 40 d) 64

12) Router can recognize and work with ____ addresses.
a) Data Link Layer b) Physical Layer
c) Network Layer d) Session Layer

13) Count to infinity problem is present ____ Routing Protocol.
a) Shortest Path b) Distance Vector
c) Link State d) None of these

14) A ____ is one endpoint of a two-way communication link between two programs running on the network.
a) Gateway b) Semaphore
c) Socket d) None of these

Seat No.	

Set | P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Computer Networks (BTN04601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Answer the following: (Any Four) **16**

a) With the help of diagram and example explain EIA232 Serial Communication Protocol.
b) How CRC is used to detect the error in message transmission? For given message bits "1110111101" and divisor polynomial "1011" calculate CRC.
c) Calculate Hamming code-word for an ASCII character - 1011110. Assume even parity during transmission.
d) With neat diagram discuss the stop and wait protocol in detail.
e) Draw frame format of IEEE 802.3 LAN and explain each field in detail.

Q.3 Solve the following: (Any Two) **12**

a) Explain in detail IEEE 802.15 Bluetooth Protocol.
b) Draw and explain ISO-OSI reference model and discuss various issues handled by the layers.
c) What are different types of network devices? Discuss any two in detail.

Section – II

Q.4 Answer the following: (Any Four) **16**

a) Draw UDP packet format and explain its header in detail.
b) What are different IP address classes? Write ranges of different IP addresses. What is network mask for IP address 192.168.110.125?
c) Explain IP packet Header in detail with help of diagram.
d) Give the difference between circuit switching and packet switching techniques.
e) Explain Shortest path routing Protocol in computer networks.

Q.5 Answer the following: (Any Two) **12**

a) What encapsulation and decapsulation in TCP/IP? Discuss three ways handshake in TCP.
b) With neat diagram explain Link State Routing in detail.
c) With the help of Diagram Explain Client - Server Architecture.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Computer Networks (BTN04601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The IP address 229.155.66.63 belongs to ____.
a) Class A b) Class B
c) Class C d) Class D

2) The data unit in transport layer in TCP/IP is called ____.
a) A datagram b) A segment
c) Frame d) Bit-string

3) Which of the following is false with respect to UDP?
a) Connection oriented b) Unreliable
c) Transport layer protocol d) All of the mentioned

4) UDP packets have a fixed-size header of ____ bytes.
a) 8 b) 16
c) 40 d) 64

5) Router can recognize and work with ____ addresses.
a) Data Link Layer b) Physical Layer
c) Network Layer d) Session Layer

6) Count to infinity problem is present ____ Routing Protocol.
a) Shortest Path b) Distance Vector
c) Link State d) None of these

7) A ____ is one endpoint of a two-way communication link between two programs running on the network.
a) Gateway b) Semaphore
c) Socket d) None of these

8) Network device Switch is ____ layer device.
a) Physical b) Data Link
c) Network d) Application

9) The MAC id 06:12:EA:4F:30:98 is ____ type.
a) Unicast b) Multicast
c) Broadcast d) None of these

10) The ARQ stands for ____.
a) All Repeat Queue b) Automatic Repeat Request
c) Automatic Resolve Question d) None of these

11) Physical or logical arrangement of network is ____.
a) Topology b) Routing
c) Group d) None of these

12) Error detection at the data link level is achieved by ____.
a) Bit stuffing b) CRC
c) Frame formation d) Equalization

13) The maximum throughput for pure ALOHA is ____ percent.
a) 12.2 b) 18.4
c) 36.8 d) None of these

14) The network address (MAC) or Physical address present for each node in the network is of ____ bits.
a) 12 b) 32
c) 48 d) 64

SLR-BD-418

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Computer Networks (BTN04601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Answer the following: (Any Four) **16**

a) With the help of diagram and example explain EIA232 Serial Communication Protocol.
b) How CRC is used to detect the error in message transmission? For given message bits "1110111101" and divisor polynomial "1011" calculate CRC.
c) Calculate Hamming code-word for an ASCII character - 1011110. Assume even parity during transmission.
d) With neat diagram discuss the stop and wait protocol in detail.
e) Draw frame format of IEEE 802.3 LAN and explain each field in detail.

Q.3 Solve the following: (Any Two) **12**

a) Explain in detail IEEE 802.15 Bluetooth Protocol.
b) Draw and explain ISO-OSI reference model and discuss various issues handled by the layers.
c) What are different types of network devices? Discuss any two in detail.

Section – II

Q.4 Answer the following: (Any Four) **16**

a) Draw UDP packet format and explain its header in detail.
b) What are different IP address classes? Write ranges of different IP addresses. What is network mask for IP address 192.168.110.125?
c) Explain IP packet Header in detail with help of diagram.
d) Give the difference between circuit switching and packet switching techniques.
e) Explain Shortest path routing Protocol in computer networks.

Q.5 Answer the following: (Any Two) **12**

a) What encapsulation and decapsulation in TCP/IP? Discuss three ways handshake in TCP.
b) With neat diagram explain Link State Routing in detail.
c) With the help of Diagram Explain Client - Server Architecture.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Computer Networks (BTN04601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) UDP packets have a fixed-size header of ____ bytes.
a) 8 b) 16
c) 40 d) 64

2) Router can recognize and work with ____ addresses.
a) Data Link Layer b) Physical Layer
c) Network Layer d) Session Layer

3) Count to infinity problem is present ____ Routing Protocol.
a) Shortest Path b) Distance Vector
c) Link State d) None of these

4) A ____ is one endpoint of a two-way communication link between two programs running on the network.
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c) Socket d) None of these

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6) The MAC id 06:12:EA:4F:30:98 is ____ type.
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7) The ARQ stands for ____.
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c) Automatic Resolve Question d) None of these

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13) The data unit in transport layer in TCP/IP is called ____.
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c) Frame d) Bit-string

14) Which of the following is false with respect to UDP?
a) Connection oriented b) Unreliable
c) Transport layer protocol d) All of the mentioned

SLR-BD-418

Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Computer Networks (BTN04601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Answer the following: (Any Four) **16**

a) With the help of diagram and example explain EIA232 Serial Communication Protocol.
b) How CRC is used to detect the error in message transmission? For given message bits "1110111101" and divisor polynomial "1011" calculate CRC.
c) Calculate Hamming code-word for an ASCII character - 1011110. Assume even parity during transmission.
d) With neat diagram discuss the stop and wait protocol in detail.
e) Draw frame format of IEEE 802.3 LAN and explain each field in detail.

Q.3 Solve the following: (Any Two) **12**

a) Explain in detail IEEE 802.15 Bluetooth Protocol.
b) Draw and explain ISO-OSI reference model and discuss various issues handled by the layers.
c) What are different types of network devices? Discuss any two in detail.

Section – II

Q.4 Answer the following: (Any Four) **16**

a) Draw UDP packet format and explain its header in detail.
b) What are different IP address classes? Write ranges of different IP addresses. What is network mask for IP address 192.168.110.125?
c) Explain IP packet Header in detail with help of diagram.
d) Give the difference between circuit switching and packet switching techniques.
e) Explain Shortest path routing Protocol in computer networks.

Q.5 Answer the following: (Any Two) **12**

a) What encapsulation and decapsulation in TCP/IP? Discuss three ways handshake in TCP.
b) With neat diagram explain Link State Routing in detail.
c) With the help of Diagram Explain Client - Server Architecture.

SLR-BD-418

Seat No.	

Set S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Computer Networks (BTN04601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The maximum throughput for pure ALOHA is ____ percent.
a) 12.2 b) 18.4
c) 36.8 d) None of these

2) The network address (MAC) or Physical address present for each node in the network is of ____ bits.
a) 12 b) 32
c) 48 d) 64 ____

3) The IP address 229.155.66.63 belongs to ____.
a) Class A b) Class B
c) Class C d) Class D

4) The data unit in transport layer in TCP/IP is called ____.
a) A datagram b) A segment
c) Frame d) Bit-string

5) Which of the following is false with respect to UDP?
a) Connection oriented b) Unreliable
c) Transport layer protocol d) All of the mentioned

6) UDP packets have a fixed-size header of ____ bytes.
a) 8 b) 16
c) 40 d) 64

7) Router can recognize and work with ____ addresses.
a) Data Link Layer b) Physical Layer
c) Network Layer d) Session Layer

8) Count to infinity problem is present ____ Routing Protocol.
a) Shortest Path b) Distance Vector
c) Link State d) None of these

9) A ____ is one endpoint of a two-way communication link between two programs running on the network.
a) Gateway b) Semaphore
c) Socket d) None of these

10) Network device Switch is ____ layer device.
a) Physical b) Data Link
c) Network d) Application

11) The MAC id 06:12:EA:4F:30:98 is ____ type.
a) Unicast b) Multicast
c) Broadcast d) None of these

12) The ARQ stands for ____.
a) All Repeat Queue b) Automatic Repeat Request
c) Automatic Resolve Question d) None of these

13) Physical or logical arrangement of network is ____.
a) Topology b) Routing
c) Group d) None of these

14) Error detection at the data link level is achieved by ____.
a) Bit stuffing b) CRC
c) Frame formation d) Equalization

SLR-BD-418

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Computer Networks (BTN04601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

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b) With neat diagram explain Link State Routing in detail.
c) With the help of Diagram Explain Client - Server Architecture.

SLR-BD-419

Seat No.	

Set P

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Embedded Systems (BTN04602)

Day & Date: Thursday 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The on-chip ADC's of LPC2148 has _____ bit resolution and _____ conversion time.
a) 8, 2.44 μsec b) 10, 2.44 μsec
c) 12, 1.44 μsec d) 10, 1.44 μsec

2) In LPC2148 the _____ register is used to select the direction of port pins P1.0 to P1.31.
a) IOCLR1 b) IODIR0
c) PINSEL d) IODIR1

3) The SPI bus can operate with a _____ master device/s and with _____ slave device/s.
a) single, one b) single, one or more
c) two, single d) two, two

4) Information about a task is maintained in a _____.
a) Stack
b) Translation Look aside Buffer
c) Task Control Block
d) Task Condition Block

5) A _____ is software for controlling, receiving, and sending a byte or stream of bytes from or to device.
a) Kernel b) Shell
c) Processor d) Device Driver

6) Binary, Mutual exclusion, Counting are the types of _____.
a) Queues b) Pipes
c) Semaphores d) Mailboxes

7) Inter task communication can be done through _____.
a) Mailboxes b) Queues
c) Pipes d) all of above

8) A _____ processor has large number of general purpose registers.
a) CICS b) RISC
c) Both a & b d) None of the above

9) _____ mode is used when the processor encounters an instruction that is not supported by the implementation.
a) Supervisor b) System
c) Undefined d) Abort

10) Let r0=0x02020202 and r1 =0x00009000. What will be the content of r1 after execution of instruction "LDR r0, [r1], #4”?
a) 0x00009000 b) 0x02020202
c) 0x00009004 d) 0x00008ffb

11) In ARM _____ exception is having the highest priority.
a) Reset b) Supervisor
c) System d) Interrupt request

12) ARM uses the thumb _____ bit instruction set to improve code density.
a) 32 b) 8
c) 64 d) 16

13) Let r0=0x00000000 and r1=0x00000005. What will be the content of r0 after execution of instruction "ADD r0, r1, r1, LSL #1”?
a) 0x00000000 b) 0x00000005
c) 0x0000000a d) 0x0000000f

14) The ARM register _____ is the program counter.
a) R12 b) R13
c) R14 d) R15

Seat No.	

Set **P**

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Embedded Systems (BTN04602)

Day & Date: Thursday 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four. **16**

a) Write an ARM assembly program to add two 64 bit numbers.
b) Explain the use of R13, R14, R15 registers in ARM7.
c) Explain ARM7TDMI nomenclature used for ARM processors.
d) Explain different addressing modes of ARM7 with examples.
e) Define embedded system. Explain major characteristics which differs embedded system from desktop computer.

Q.3 Solve any two. **12**

a) Explain concept of instruction pipeline with suitable example.
b) Draw and explain ARM programmer's data flow model.
c) Explain hardware and software architecture of embedded system.

Section – II

Q.4 Solve any four. **16**

a) What is a task? Draw and explain task status diagram.
b) List out the features of LPC2148.
c) Explain different inter-process communication techniques.
d) Define RTOS. Explain its function.
e) Explain the use of IOSET and IOCLR registers in LPC2148 with example.

Q.5 Solve any two. **12**

a) Interface 4 LED's to LPC2148 port pins P0.2 to P0.5. Write an embedded C program to blink them continuously.
b) Sketch and discuss interfacing of 16*2 LCD with LPC2148.
c) What is context switch or task switch? Explain with neat diagram.

Seat No.	

Set **Q**

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Embedded Systems (BTN04602)

Day & Date: Thursday 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

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

1) A _____ processor has large number of general purpose registers.
a) CICS b) RISC
c) Both a & b d) None of the above

2) _____ mode is used when the processor encounters an instruction that is not supported by the implementation.
a) Supervisor b) System
c) Undefined d) Abort

3) Let r0=0x02020202 and r1 =0x00009000. What will be the content of r1 after execution of instruction "LDR r0, [r1], #4"?
a) 0x00009000 b) 0x02020202
c) 0x00009004 d) 0x00008ffb

4) In ARM _____ exception is having the highest priority.
a) Reset b) Supervisor
c) System d) Interrupt request

5) ARM uses the thumb _____ bit instruction set to improve code density.
a) 32 b) 8
c) 64 d) 16

6) Let r0=0x00000000 and r1=0x00000005. What will be the content of r0 after execution of instruction "ADD r0, r1, r1, LSL #1"?
a) 0x00000000 b) 0x00000005
c) 0x0000000a d) 0x0000000f

7) The ARM register _____ is the program counter.
a) R12 b) R13
c) R14 d) R15

8) The on-chip ADC's of LPC2148 has _____ bit resolution and _____ conversion time.
a) 8, 2.44 μsec b) 10, 2.44 μsec
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9) In LPC2148 the _____ register is used to select the direction of port pins P1.0 to P1.31.
a) IOCLR1 b) IODIR0
c) PINSEL d) IODIR1

10) The SPI bus can operate with a _____ master device/s and with _____ slave device/s.
a) single, one b) single, one or more
c) two, single d) two, two

11) Information about a task is maintained in a _____.
a) Stack
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12) A _____ is software for controlling, receiving, and sending a byte or stream of bytes from or to device.
a) Kernel b) Shell
c) Processor d) Device Driver

13) Binary, Mutual exclusion, Counting are the types of _____.
a) Queues b) Pipes
c) Semaphores d) Mailboxes

14) Inter task communication can be done through _____.
a) Mailboxes b) Queues
c) Pipes d) all of above

Seat No.	

Set **Q**

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Embedded Systems (BTN04602)

Day & Date: Thursday 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

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a) Explain concept of instruction pipeline with suitable example.
b) Draw and explain ARM programmer's data flow model.
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Section – II

Q.4 Solve any four. **16**

a) What is a task? Draw and explain task status diagram.
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c) What is context switch or task switch? Explain with neat diagram.

Seat No.	

Set **R**

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Embedded Systems (BTN04602)

Day & Date: Thursday 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

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Seat No.	

Set **R**

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ELECTRONICS ENGINEERING
Embedded Systems (BTN04602)

Day & Date: Thursday 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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SLR-BD-419

Seat No.	

Set S

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Embedded Systems (BTN04602)

Day & Date: Thursday 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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c) Processor d) Device Driver

SLR-BD-419

Seat No.	

Set S

T.Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Embedded Systems (BTN04602)

Day & Date: Thursday 29-05-2025 Max. Marks: 56
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Q.4 Solve any four. **16**

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b) Sketch and discuss interfacing of 16*2 LCD with LPC2148.
c) What is context switch or task switch? Explain with neat diagram.

SLR-BD-420

Seat No.	

Set P

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
VLSI Design (BTN04603)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) In a VHDL code, * * operator represents _____.
a) Mod operator b) Remainder operator
c) Exponentiation operator d) Concatenation operator

2) Which is default delay in VHDL?
a) Delta delay b) Inertial delay
c) Transport delay d) None of the above

3) Which of the following feature can be used to specify the parameters for a component at the time of instantiation?
a) Generate b) Attribute
c) Generics d) Signals

4) Process in VHDL becomes active, when _____.
a) there is change in the value of signal in sensitivity list
b) change in clock statement
c) change in reset signal
d) none of the signal

5) Which of the following is sequential statement?
a) Signal assignment b) Variable assignment
c) wait statement d) All of these

6) In the signal assignment statement y <= a and b after 5 ns which delay model is used?
a) Transport delay b) Inertial delay
c) Delta delay d) Wire delay

7) VHDL statement
Op <= input when e = '1' else 'z'; infers _____.
a) 2 : 1 multiplexer b) Tristate buffer
c) Buffer d) None of these

8) The functional blocks that perform combinatorial or sequential logic, and also have the added flexibility for true or complement, along with varied feedback paths in a CPLD are known as _____.
a) Product term allocator b) Macrocell
c) Programmable switch matrix d) None of these

9) Input Resistance of CMOS Inverter is _____.
a) Extremely LOW b) Extremely High
c) Infinity d) Zero

10) Synthesis means _____.
a) Checking correctness of the Design
b) Conversion of the Design to actual component
c) Implement design into target technology
d) None of Above

11) A single pattern that may be interpreted as a result of all the applied tests in testing is _____.
a) MIC b) PRBSG
c) SIC d) Signature

12) RTL simulation does _____.
a) Preparation of Net lists b) Verifying correctness
c) Preparing Timing analysis d) None of above

13) Under steady state condition power dissipated in CMOS circuit is _____.
a) 0 w b) 10 μw
c) 0.1 μw d) None of above

14) CMOS logic consists of _____.
a) pull up network b) pull down network
c) Both a) and b) d) None of above

Seat No.	

Set **P**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
VLSI Design (BTN04603)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any FOUR of the following. **16**

a) Explain following attributes of VHDL with suitable example of using these attributes.
i) T'LOW
ii) S'Delayed(T)
iii) S'Active
iv) S'Event

b) Write VHDL code for half adder.

c) Write VHDL code for D Flip flop.

d) Explain with suitable example different forms of wait statement. What is the significance of wait for 0 ns?

e) Explain the transport and inertial delays in VHDL with suitable examples.

Q.3 Attempt any TWO of the following. **12**

a) Write VHDL code for 3 bit counter with synchronous reset.

b) Explain following statement of VHDL with suitable example.
i) if - else,
ii) case
iii) Loop statement
iv) When else

c) Compare following:
i) Functions and Procedures in VHDL
ii) Process with sensitivity list & Process without sensitivity list

Section – II

Q.4 Attempt any FOUR of the following. **16**

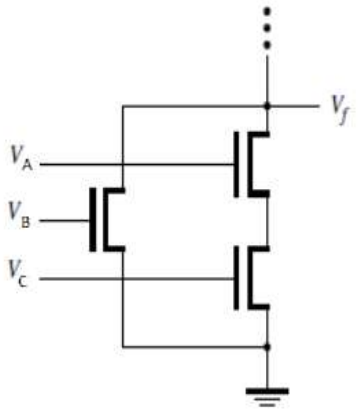
a) Explain in brief how to derive test set using path sensitizing method with suitable example.

b) Explain in brief RTL simulation.

c) Draw and Explain 2 input CMOS NOR gate.

d) Explain built in self-test method to test the circuits.

e) Following figure shows half of a CMOS circuit. Derive the other half that contains the PMOS transistors. Also derive the Boolean expression for Vf.



Q.5 Attempt any TWO of the following. **12**

a) Explain the CMOS noise margin in detail.

b) Draw and Explain Xilinx 9500 series CPLD architecture.

c) Elaborate the synthesis process, outlining the key steps involved.

Seat No.	

Set **Q**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
VLSI Design (BTN04603)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) The functional blocks that perform combinatorial or sequential logic, and also have the added flexibility for true or complement, along with varied feedback paths in a CPLD are known as _____.
a) Product term allocator b) Macrocell
c) Programmable switch matrix d) None of these

2) Input Resistance of CMOS Inverter is _____.
a) Extremely LOW b) Extremely High
c) Infinity d) Zero

3) Synthesis means _____.
a) Checking correctness of the Design
b) Conversion of the Design to actual component
c) Implement design into target technology
d) None of Above

4) A single pattern that may be interpreted as a result of all the applied tests in testing is _____.
a) MIC b) PRBSG
c) SIC d) Signature

5) RTL simulation does _____.
a) Preparation of Net lists b) Verifying correctness
c) Preparing Timing analysis d) None of above

6) Under steady state condition power dissipated in CMOS circuit is _____.
a) 0 w b) 10 μw
c) 0.1 μw d) None of above

7) CMOS logic consists of _____.
a) pull up network b) pull down network
c) Both a) and b) d) None of above

8) In a VHDL code, * * operator represents _____.
a) Mod operator b) Remainder operator
c) Exponentiation operator d) Concatenation operator

9) Which is default delay in VHDL?
a) Delta delay b) Inertial delay
c) Transport delay d) None of the above

10) Which of the following feature can be used to specify the parameters for a component at the time of instantiation?
a) Generate b) Attribute
c) Generics d) Signals

11) Process in VHDL becomes active, when _____.
a) there is change in the value of signal in sensitivity list
b) change in clock statement
c) change in reset signal
d) none of the signal

12) Which of the following is sequential statement?
a) Signal assignment b) Variable assignment
c) wait statement d) All of these

13) In the signal assignment statement y <= a and b after 5 ns which delay model is used?
a) Transport delay b) Inertial delay
c) Delta delay d) Wire delay

14) VHDL statement
Op <= input when e = '1' else 'z'; infers _____.
a) 2 : 1 multiplexer b) Tristate buffer
c) Buffer d) None of these

SLR-BD-420

Seat No.	

Set Q

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
VLSI Design (BTN04603)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Attempt any FOUR of the following. **16**

a) Explain following attributes of VHDL with suitable example of using these attributes.
i) T'LOW
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b) Write VHDL code for half adder.

c) Write VHDL code for D Flip flop.

d) Explain with suitable example different forms of wait statement. What is the significance of wait for 0 ns?

e) Explain the transport and inertial delays in VHDL with suitable examples.

Q.3 Attempt any TWO of the following. **12**

a) Write VHDL code for 3 bit counter with synchronous reset.

b) Explain following statement of VHDL with suitable example.
i) if - else,
ii) case
iii) Loop statement
iv) When else

c) Compare following:
i) Functions and Procedures in VHDL
ii) Process with sensitivity list & Process without sensitivity list

Section – II

Q.4 Attempt any FOUR of the following. **16**

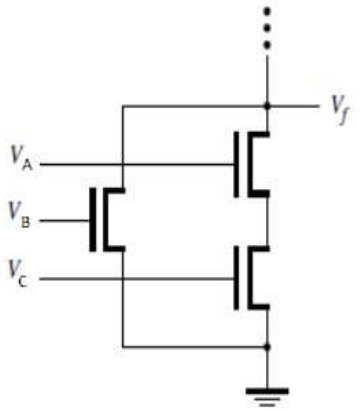
a) Explain in brief how to derive test set using path sensitizing method with suitable example.

b) Explain in brief RTL simulation.

c) Draw and Explain 2 input CMOS NOR gate.

d) Explain built in self-test method to test the circuits.

e) Following figure shows half of a CMOS circuit. Derive the other half that contains the PMOS transistors. Also derive the Boolean expression for Vf.



Q.5 Attempt any TWO of the following. **12**

a) Explain the CMOS noise margin in detail.

b) Draw and Explain Xilinx 9500 series CPLD architecture.

c) Elaborate the synthesis process, outlining the key steps involved.

Seat No.	

Set **R**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
VLSI Design (BTN04603)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) A single pattern that may be interpreted as a result of all the applied tests in testing is _____.
a) MIC b) PRBSG
c) SIC d) Signature

2) RTL simulation does _____.
a) Preparation of Net lists b) Verifying correctness
c) Preparing Timing analysis d) None of above

3) Under steady state condition power dissipated in CMOS circuit is _____.
a) 0 w b) 10 μw
c) 0.1 μw d) None of above

4) CMOS logic consists of _____.
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5) In a VHDL code, * * operator represents _____.
a) Mod operator b) Remainder operator
c) Exponentiation operator d) Concatenation operator

6) Which is default delay in VHDL?
a) Delta delay b) Inertial delay
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7) Which of the following feature can be used to specify the parameters for a component at the time of instantiation?
a) Generate b) Attribute
c) Generics d) Signals

8) Process in VHDL becomes active, when _____.
a) there is change in the value of signal in sensitivity list
b) change in clock statement
c) change in reset signal
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9) Which of the following is sequential statement?
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c) wait statement d) All of these

10) In the signal assignment statement y <= a and b after 5 ns which delay model is used?
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11) VHDL statement
Op <= input when e = '1' else 'z'; infers _____.
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12) The functional blocks that perform combinatorial or sequential logic, and also have the added flexibility for true or complement, along with varied feedback paths in a CPLD are known as _____.
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14) Synthesis means _____.
a) Checking correctness of the Design
b) Conversion of the Design to actual component
c) Implement design into target technology
d) None of Above

Seat No.	

Set **R**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
VLSI Design (BTN04603)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Attempt any FOUR of the following. **16**

a) Explain following attributes of VHDL with suitable example of using these attributes.
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c) Write VHDL code for D Flip flop.

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e) Explain the transport and inertial delays in VHDL with suitable examples.

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b) Explain following statement of VHDL with suitable example.
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ii) case
iii) Loop statement
iv) When else

c) Compare following:
i) Functions and Procedures in VHDL
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Section – II

Q.4 Attempt any FOUR of the following. **16**

a) Explain in brief how to derive test set using path sensitizing method with suitable example.

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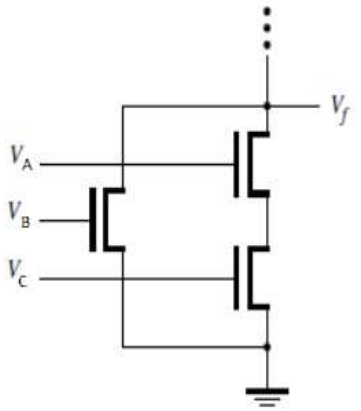

Q.5 Attempt any TWO of the following. **12**

a) Explain the CMOS noise margin in detail.

b) Draw and Explain Xilinx 9500 series CPLD architecture.

c) Elaborate the synthesis process, outlining the key steps involved.

Seat No.	

Set **S**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
VLSI Design (BTN04603)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) In the signal assignment statement y <= a and b after 5 ns which delay model is used?
a) Transport delay b) Inertial delay
c) Delta delay d) Wire delay

2) VHDL statement
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13) Process in VHDL becomes active, when _____.
a) there is change in the value of signal in sensitivity list
b) change in clock statement
c) change in reset signal
d) none of the signal

14) Which of the following is sequential statement?
a) Signal assignment b) Variable assignment
c) wait statement d) All of these

SLR-BD-420

Seat No.	

Set S

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
VLSI Design (BTN04603)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any FOUR of the following. **16**

a) Explain following attributes of VHDL with suitable example of using these attributes.
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b) Write VHDL code for half adder.

c) Write VHDL code for D Flip flop.

d) Explain with suitable example different forms of wait statement. What is the significance of wait for 0 ns?

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Q.3 Attempt any TWO of the following. **12**

a) Write VHDL code for 3 bit counter with synchronous reset.

b) Explain following statement of VHDL with suitable example.
i) if - else,
ii) case
iii) Loop statement
iv) When else

c) Compare following:
i) Functions and Procedures in VHDL
ii) Process with sensitivity list & Process without sensitivity list

Section – II

Q.4 Attempt any FOUR of the following. **16**

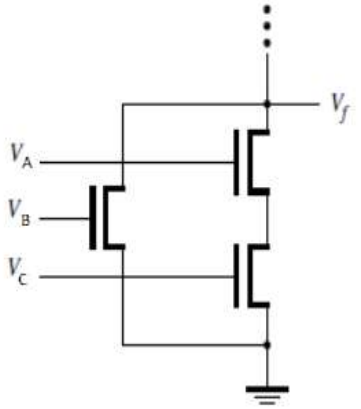
a) Explain in brief how to derive test set using path sensitizing method with suitable example.

b) Explain in brief RTL simulation.

c) Draw and Explain 2 input CMOS NOR gate.

d) Explain built in self-test method to test the circuits.

e) Following figure shows half of a CMOS circuit. Derive the other half that contains the PMOS transistors. Also derive the Boolean expression for Vf.



Q.5 Attempt any TWO of the following. **12**

a) Explain the CMOS noise margin in detail.

b) Draw and Explain Xilinx 9500 series CPLD architecture.

c) Elaborate the synthesis process, outlining the key steps involved.

SLR-BD-421

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Image Processing (BTN04609)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) A continuous image is digitized at ____ points.
a) random b) vertex
c) contour d) sampling

2) Images quantized with insufficient brightness levels will lead to the occurrence of _____
a) Pixilation b) blurring
c) False Contours d) none of the mentioned

3) What is the tool used in tasks such as zooming, shrinking, rotating, etc.?
a) Sampling b) Interpolation
c) Filters d) None of the mentioned

4) The type of Interpolation where the intensity of the FOUR neighbouring pixels is used to obtain intensity a new location is called _____
a) cubic interpolation
b) nearest neighbor interpolation
c) bilinear interpolation
d) bicubic interpolation

5) For line detection we use mask that is _____
a) Gaussian b) Laplacian
c) Ideal d) Butterworth

6) The process of extracting information from the image is called as _____
a) Image enhancement b) Image restoration
c) Image Analysis d) Image compression

7) Basic steps for filtering in the frequency domain: _____
a) Fourier transform b) filter function
c) Inverse Fourier transform d) all of these

8) Image negatives a gray level transformation is defined as: _____
a) $s = L - 1 - r$ b) $s = L - r$
c) $s = r - 1 - L$ d) None

9) _____ should stop when the objects of interest in an application have been isolated.
a) Segmentation b) Fragment
c) Addition d) none of above

10) What kind of information we can use for Image Representation and Description?
a) Boundary, shape b) Region
c) Texture d) All of these

11) A chain code: 10103322 –
a) The first difference = 3133030 b) The first difference = 3130030
c) The first difference = 3100030 d) none of above

12) region-based segmentation (seeded region growing)
a) advantage: With edge connectivity
b) advantage: With loose connectivity
c) advantage: With good connectivity
d) none of above

13) Giving one period of the periodic convolution is called _____
a) periodic convolution b) aperiodic convolution
c) correlation d) circular convolution

14) Fourier transform of two continuous functions, that are inverse of each other is called _____
a) Fourier series pair b) Fourier transform pair
c) Fourier series d) Fourier transform

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Image Processing (BTN04609)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four **16**

a) Write a note on intensity level slicing.
b) What is geometric transformation?
c) Explain singular value decomposition and specify its properties.
d) What is adjacency & different types of adjacency?
e) What is contrast stretching?

Q.3 Attempt Any Two **12**

a) Explain Fourier Transform: Discrete and Continuous and Give Properties of Fourier Transform.
b) Explain different techniques to sharpen the image in frequency domain.
c) Specify the objective of image enhancement technique. What is meant by histogram equalization?

Section – II

Q.4 Attempt Any Four **16**

a) What is Image Segmentation? Explain line detection technique.
b) What is edge linking? How to achieve this using local processing method?
c) What is Data Compression and state its types?
d) What is the need of Image Compression?
e) Explain texture and statistical texture description.

Q.5 Attempt Any Two **12**

a) Explain Hough transform based edge linking.
b) With suitable example, explain Fourier descriptor. What are its advantages over other descriptor?
c) Explain region splitting and merging technique for image segmentation.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Image Processing (BTN04609)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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c) Fourier series
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14) Basic steps for filtering in the frequency domain: _____

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SLR-BD-421

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Image Processing (BTN04609)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
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Instructions: 1) All questions are compulsory.
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Section – I

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a) Explain Fourier Transform: Discrete and Continuous and Give Properties of Fourier Transform.
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c) Specify the objective of image enhancement technique. What is meant by histogram equalization?

Section – II

Q.4 Attempt Any Four **16**

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a) Explain Hough transform based edge linking.
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Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Image Processing (BTN04609)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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7) What is the tool used in tasks such as zooming, shrinking, rotating, etc.?

a) Sampling
b) Interpolation
c) Filters
d) None of the mentioned

8) The type of Interpolation where the intensity of the FOUR neighbouring pixels is used to obtain intensity a new location is called _____

a) cubic interpolation
b) nearest neighbor interpolation
c) bilinear interpolation
d) bicubic interpolation

9) For line detection we use mask that is _____

a) Gaussian
b) Laplacian
c) Ideal
d) Butterworth

10) The process of extracting information from the image is called as _____

a) Image enhancement
b) Image restoration
c) Image Analysis
d) Image compression

11) Basic steps for filtering in the frequency domain: _____

a) Fourier transform
b) filter function
c) Inverse Fourier transform
d) all of these

12) Image negatives a gray level transformation is defined as: _____

a) $s = L - 1 - r$
b) $s = L - r$
c) $s = r - 1 - L$
d) None

13) _____ should stop when the objects of interest in an application have been isolated.

a) Segmentation
b) Fragment
c) Addition
d) none of above

14) What kind of information we can use for Image Representation and Description?

a) Boundary, shape
b) Region
c) Texture
d) All of these

SLR-BD-421

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Image Processing (BTN04609)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four **16**

a) Write a note on intensity level slicing.
b) What is geometric transformation?
c) Explain singular value decomposition and specify its properties.
d) What is adjacency & different types of adjacency?
e) What is contrast stretching?

Q.3 Attempt Any Two **12**

a) Explain Fourier Transform: Discrete and Continuous and Give Properties of Fourier Transform.
b) Explain different techniques to sharpen the image in frequency domain.
c) Specify the objective of image enhancement technique. What is meant by histogram equalization?

Section – II

Q.4 Attempt Any Four **16**

a) What is Image Segmentation? Explain line detection technique.
b) What is edge linking? How to achieve this using local processing method?
c) What is Data Compression and state its types?
d) What is the need of Image Compression?
e) Explain texture and statistical texture description.

Q.5 Attempt Any Two **12**

a) Explain Hough transform based edge linking.
b) With suitable example, explain Fourier descriptor. What are its advantages over other descriptor?
c) Explain region splitting and merging technique for image segmentation.

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Image Processing (BTN04609)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The process of extracting information from the image is called as _____
a) Image enhancement b) Image restoration
c) Image Analysis d) Image compression

2) Basic steps for filtering in the frequency domain: _____
a) Fourier transform b) filter function
c) Inverse Fourier transform d) all of these

3) Image negatives a gray level transformation is defined as: _____
a) $s = L - 1 - r$ b) $s = L - r$
c) $s = r - 1 - L$ d) None

4) _____ should stop when the objects of interest in an application have been isolated.
a) Segmentation b) Fragment
c) Addition d) none of above

5) What kind of information we can use for Image Representation and Description?
a) Boundary, shape b) Region
c) Texture d) All of these

6) A chain code: 10103322 –
a) The first difference = 3133030 b) The first difference = 3130030
c) The first difference = 3100030 d) none of above

7) region-based segmentation (seeded region growing)
a) advantage: With edge connectivity
b) advantage: With loose connectivity
c) advantage: With good connectivity
d) none of above

8) Giving one period of the periodic convolution is called _____
a) periodic convolution b) aperiodic convolution
c) correlation d) circular convolution

9) Fourier transform of two continuous functions, that are inverse of each other is called _____
a) Fourier series pair b) Fourier transform pair
c) Fourier series d) Fourier transform

10) A continuous image is digitized at ____ points.
a) random b) vertex
c) contour d) sampling

11) Images quantized with insufficient brightness levels will lead to the occurrence of _____
a) Pixilation b) blurring
c) False Contours d) none of the mentioned

12) What is the tool used in tasks such as zooming, shrinking, rotating, etc.?
a) Sampling b) Interpolation
c) Filters d) None of the mentioned

13) The type of Interpolation where the intensity of the FOUR neighbouring pixels is used to obtain intensity a new location is called _____
a) cubic interpolation
b) nearest neighbor interpolation
c) bilinear interpolation
d) bicubic interpolation

14) For line detection we use mask that is _____
a) Gaussian b) Laplacian
c) Ideal d) Butterworth

SLR-BD-421

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Image Processing (BTN04609)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four **16**

a) Write a note on intensity level slicing.
b) What is geometric transformation?
c) Explain singular value decomposition and specify its properties.
d) What is adjacency & different types of adjacency?
e) What is contrast stretching?

Q.3 Attempt Any Two **12**

a) Explain Fourier Transform: Discrete and Continuous and Give Properties of Fourier Transform.
b) Explain different techniques to sharpen the image in frequency domain.
c) Specify the objective of image enhancement technique. What is meant by histogram equalization?

Section – II

Q.4 Attempt Any Four **16**

a) What is Image Segmentation? Explain line detection technique.
b) What is edge linking? How to achieve this using local processing method?
c) What is Data Compression and state its types?
d) What is the need of Image Compression?
e) Explain texture and statistical texture description.

Q.5 Attempt Any Two **12**

a) Explain Hough transform based edge linking.
b) With suitable example, explain Fourier descriptor. What are its advantages over other descriptor?
c) Explain region splitting and merging technique for image segmentation.

Seat No.	

Set **P**

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Operating Systems (BTN04605)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) To ensure difficulties do not arise in the readers - writers problem, _____ are given exclusive access to the shared object.
a) readers b) writers
c) both a and b d) None of these

2) In the Many to One model, if a thread makes a blocking system call: ____
a) the entire process will be blocked
b) a part of the process will stay blocked, with the rest running
c) the entire process will run
d) None of these

3) Which of the following state transition is not possible?
a) ready ⟶ running b) running ⟶ waiting
c) ready ⟶ waiting d) waiting ⟶ ready

4) The interval from the time of submission of a process to the time of completion is termed as _____
a) waiting time b) turnaround time
c) response time d) throughput

5) The degree of multi-programming is: _____
a) the number of processes executed per unit time
b) the number of processes in the ready queue
c) the number of processes in the I/O queue
d) the number of processes in memory

6) The bounded buffer problem is also known as: _____
a) Readers – Writers problem
b) Dining – Philosophers problems
c) Producer – Consumer problem
d) None of these

7) Round robin scheduling falls under the category of: _____
a) Non preemptive scheduling b) Preemptive scheduling
c) both a and b d) None of these

8) Logical memory is broken into blocks of the same size called _____.
a) frames b) pages
c) backing store d) none of the mentioned

9) For every process there is a _____.
a) page table b) copy of page table
c) pointer to page table d) all of the mentioned

10) The circular wait condition can be prevented by _____.
a) defining a linear ordering of resource types
b) using thread
c) using pipes
d) all of the mentioned

11) In segmentation, each address is specified by _____
a) a segment number & offset b) an offset & value
c) a value & segment number d) a key & value

12) The segment limit contains the _____.
a) starting logical address of the process
b) starting physical address of the segment in memory
c) segment length
d) none of the mentioned

13) By using the specific system call, we can _____.
a) open the file b) read the file
c) write into the file d) all of the mentioned

14) _____ is a unique tag, usually a number identifies the file within the file system.
a) File identifier b) File name
c) File type d) None of the mentioned

Seat No.	

Set | P

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Operating Systems (BTN04605)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four: **16**

a) Write a short note on distributed operating systems.
b) Describe the Round Robin scheduling algorithm with one example.
c) State and explain the various states that a process can be in with a neat sketch of process state diagram.
d) Define thread. List some advantages of threads over the traditional processes.
e) Analyze bounded buffer problem as classical problems of synchronization.

Q.3 Attempt any two: **12**

a) Write short note on:
i) Semaphores
ii) System calls

b) Consider five processes P1, P2, P3 and P4 with their arrival times and with their required CPU burst in milliseconds

Process	CPU burst time (ms)	Arrival time
P1	7	0
P2	5	1
P3	2	3
P4	3	4

i) How will these processes be scheduled according to SJF scheduling algorithm?
ii) Draw the Gantt chart for SJF scheduling algorithm.
iii) Compute the average waiting time and average turnaround time.

c) Explain process creation and termination operations in detail.

Section – II

Q.4 Attempt any four: **16**

a) What is deadlock? Describe different deadlock handling policies.

b) How is memory allocated to new program in secondary storage? Describe briefly any two memory allocation methods.

c) What are the steps adopted to handle a page fault in demand paging in OS?

d) Consider page reference string 6, 7, 8, 9, 6, 7, 1, 6, 7, 8, 9, 1, 7, 9, 6. Find out the number of page faults if 3-page frames are provided in case of and optimal page replacement.

e) What is the concept of free space management in OS. Discuss commonly adopted free space techniques.

Q.5 Attempt any two: **12**

a) What is the degree of multiprogramming? How is degree of multiprogramming is related to CPU utilization? Describe thrashing and policies to avoid thrashing.

b) Describe various file access methods in OS.

c) Elaborate address translation in segmentation.

Seat No.	

Set **Q**

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Operating Systems (BTN04605)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Logical memory is broken into blocks of the same size called _____.
a) frames b) pages
c) backing store d) none of the mentioned

2) For every process there is a _____.
a) page table b) copy of page table
c) pointer to page table d) all of the mentioned

3) The circular wait condition can be prevented by _____.
a) defining a linear ordering of resource types
b) using thread
c) using pipes
d) all of the mentioned

4) In segmentation, each address is specified by _____
a) a segment number & offset b) an offset & value
c) a value & segment number d) a key & value

5) The segment limit contains the _____.
a) starting logical address of the process
b) starting physical address of the segment in memory
c) segment length
d) none of the mentioned

6) By using the specific system call, we can _____.
a) open the file b) read the file
c) write into the file d) all of the mentioned

7) _____ is a unique tag, usually a number identifies the file within the file system.

a) File identifier
b) File name
c) File type
d) None of the mentioned

8) To ensure difficulties do not arise in the readers - writers problem, _____ are given exclusive access to the shared object.

a) readers
b) writers
c) both a and b
d) None of these

9) In the Many to One model, if a thread makes a blocking system call: ____

a) the entire process will be blocked
b) a part of the process will stay blocked, with the rest running
c) the entire process will run
d) None of these

10) Which of the following state transition is not possible?

a) ready ⟶ running
b) running ⟶ waiting
c) ready ⟶ waiting
d) waiting ⟶ ready

11) The interval from the time of submission of a process to the time of completion is termed as _____

a) waiting time
b) turnaround time
c) response time
d) throughput

12) The degree of multi-programming is: _____

a) the number of processes executed per unit time
b) the number of processes in the ready queue
c) the number of processes in the I/O queue
d) the number of processes in memory

13) The bounded buffer problem is also known as: _____

a) Readers – Writers problem
b) Dining – Philosophers problems
c) Producer – Consumer problem
d) None of these

14) Round robin scheduling falls under the category of: _____

a) Non preemptive scheduling
b) Preemptive scheduling
c) both a and b
d) None of these

Seat No.	

Set **Q**

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Operating Systems (BTN04605)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four: **16**

a) Write a short note on distributed operating systems.
b) Describe the Round Robin scheduling algorithm with one example.
c) State and explain the various states that a process can be in with a neat sketch of process state diagram.
d) Define thread. List some advantages of threads over the traditional processes.
e) Analyze bounded buffer problem as classical problems of synchronization.

Q.3 Attempt any two: **12**

a) Write short note on:
i) Semaphores
ii) System calls

b) Consider five processes P1, P2, P3 and P4 with their arrival times and with their required CPU burst in milliseconds

Process	CPU burst time (ms)	Arrival time
P1	7	0
P2	5	1
P3	2	3
P4	3	4

i) How will these processes be scheduled according to SJF scheduling algorithm?
ii) Draw the Gantt chart for SJF scheduling algorithm.
iii) Compute the average waiting time and average turnaround time.

c) Explain process creation and termination operations in detail.

Section – II

Q.4 Attempt any four: **16**

a) What is deadlock? Describe different deadlock handling policies.

b) How is memory allocated to new program in secondary storage? Describe briefly any two memory allocation methods.

c) What are the steps adopted to handle a page fault in demand paging in OS?

d) Consider page reference string 6, 7, 8, 9, 6, 7, 1, 6, 7, 8, 9, 1, 7, 9, 6. Find out the number of page faults if 3-page frames are provided in case of and optimal page replacement.

e) What is the concept of free space management in OS. Discuss commonly adopted free space techniques.

Q.5 Attempt any two: **12**

a) What is the degree of multiprogramming? How is degree of multiprogramming is related to CPU utilization? Describe thrashing and policies to avoid thrashing.

b) Describe various file access methods in OS.

c) Elaborate address translation in segmentation.

Seat No.	

Set **R**

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Operating Systems (BTN04605)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In segmentation, each address is specified by _____
a) a segment number & offset b) an offset & value
c) a value & segment number d) a key & value

2) The segment limit contains the _____.
a) starting logical address of the process
b) starting physical address of the segment in memory
c) segment length
d) none of the mentioned

3) By using the specific system call, we can _____.
a) open the file b) read the file
c) write into the file d) all of the mentioned

4) _____ is a unique tag, usually a number identifies the file within the file system.
a) File identifier b) File name
c) File type d) None of the mentioned

5) To ensure difficulties do not arise in the readers - writers problem, _____ are given exclusive access to the shared object.
a) readers b) writers
c) both a and b d) None of these

6) In the Many to One model, if a thread makes a blocking system call: ____
a) the entire process will be blocked
b) a part of the process will stay blocked, with the rest running
c) the entire process will run
d) None of these

7) Which of the following state transition is not possible?

a) ready ⟶ running
b) running ⟶ waiting
c) ready ⟶ waiting
d) waiting ⟶ ready

8) The interval from the time of submission of a process to the time of completion is termed as _____

a) waiting time
b) turnaround time
c) response time
d) throughput

9) The degree of multi-programming is: _____

a) the number of processes executed per unit time
b) the number of processes in the ready queue
c) the number of processes in the I/O queue
d) the number of processes in memory

10) The bounded buffer problem is also known as: _____

a) Readers – Writers problem
b) Dining – Philosophers problems
c) Producer – Consumer problem
d) None of these

11) Round robin scheduling falls under the category of: _____

a) Non preemptive scheduling
b) Preemptive scheduling
c) both a and b
d) None of these

12) Logical memory is broken into blocks of the same size called _____.

a) frames
b) pages
c) backing store
d) none of the mentioned

13) For every process there is a _____.

a) page table
b) copy of page table
c) pointer to page table
d) all of the mentioned

14) The circular wait condition can be prevented by _____.

a) defining a linear ordering of resource types
b) using thread
c) using pipes
d) all of the mentioned

Seat No.	

Set **R**

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Operating Systems (BTN04605)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four: **16**

a) Write a short note on distributed operating systems.
b) Describe the Round Robin scheduling algorithm with one example.
c) State and explain the various states that a process can be in with a neat sketch of process state diagram.
d) Define thread. List some advantages of threads over the traditional processes.
e) Analyze bounded buffer problem as classical problems of synchronization.

Q.3 Attempt any two: **12**

a) Write short note on:
i) Semaphores
ii) System calls

b) Consider five processes P1, P2, P3 and P4 with their arrival times and with their required CPU burst in milliseconds

Process	CPU burst time (ms)	Arrival time
P1	7	0
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i) How will these processes be scheduled according to SJF scheduling algorithm?
ii) Draw the Gantt chart for SJF scheduling algorithm.
iii) Compute the average waiting time and average turnaround time.

c) Explain process creation and termination operations in detail.

Section – II

Q.4 Attempt any four: **16**

a) What is deadlock? Describe different deadlock handling policies.

b) How is memory allocated to new program in secondary storage? Describe briefly any two memory allocation methods.

c) What are the steps adopted to handle a page fault in demand paging in OS?

d) Consider page reference string 6, 7, 8, 9, 6, 7, 1, 6, 7, 8, 9, 1, 7, 9, 6. Find out the number of page faults if 3-page frames are provided in case of and optimal page replacement.

e) What is the concept of free space management in OS. Discuss commonly adopted free space techniques.

Q.5 Attempt any two: **12**

a) What is the degree of multiprogramming? How is degree of multiprogramming is related to CPU utilization? Describe thrashing and policies to avoid thrashing.

b) Describe various file access methods in OS.

c) Elaborate address translation in segmentation.

Seat No.	

Set **S**

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Operating Systems (BTN04605)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The bounded buffer problem is also known as: _____
a) Readers – Writers problem
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2) Round robin scheduling falls under the category of: _____
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11) In the Many to One model, if a thread makes a blocking system call: ____
a) the entire process will be blocked
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12) Which of the following state transition is not possible?
a) ready ⟶ running
b) running ⟶ waiting
c) ready ⟶ waiting
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13) The interval from the time of submission of a process to the time of completion is termed as _____
a) waiting time
b) turnaround time
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14) The degree of multi-programming is: _____
a) the number of processes executed per unit time
b) the number of processes in the ready queue
c) the number of processes in the I/O queue
d) the number of processes in memory

Seat No.	

Set | S

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Operating Systems (BTN04605)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four: **16**

a) Write a short note on distributed operating systems.
b) Describe the Round Robin scheduling algorithm with one example.
c) State and explain the various states that a process can be in with a neat sketch of process state diagram.
d) Define thread. List some advantages of threads over the traditional processes.
e) Analyze bounded buffer problem as classical problems of synchronization.

Q.3 Attempt any two: **12**

a) Write short note on:
i) Semaphores
ii) System calls

b) Consider five processes P1, P2, P3 and P4 with their arrival times and with their required CPU burst in milliseconds

Process	CPU burst time (ms)	Arrival time
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P2	5	1
P3	2	3
P4	3	4

i) How will these processes be scheduled according to SJF scheduling algorithm?
ii) Draw the Gantt chart for SJF scheduling algorithm.
iii) Compute the average waiting time and average turnaround time.

c) Explain process creation and termination operations in detail.

Section – II

Q.4 Attempt any four: **16**

a) What is deadlock? Describe different deadlock handling policies.

b) How is memory allocated to new program in secondary storage? Describe briefly any two memory allocation methods.

c) What are the steps adopted to handle a page fault in demand paging in OS?

d) Consider page reference string 6, 7, 8, 9, 6, 7, 1, 6, 7, 8, 9, 1, 7, 9, 6. Find out the number of page faults if 3-page frames are provided in case of and optimal page replacement.

e) What is the concept of free space management in OS. Discuss commonly adopted free space techniques.

Q.5 Attempt any two: **12**

a) What is the degree of multiprogramming? How is degree of multiprogramming is related to CPU utilization? Describe thrashing and policies to avoid thrashing.

b) Describe various file access methods in OS.

c) Elaborate address translation in segmentation.

SLR-BD-429

Seat No.	

Set P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Data Science Machine Learning (BTN04613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) _____ is a widely used and effective machine learning algorithm based on the idea of bagging.
a) Regression b) Classification
c) Decision Tree d) Random Forest

2) Sentiment analysis is an example of _____.
i) Regression
ii) Classification
iii) Clustering
iv) Reinforcement Learning
a) (i) only b) (i) & (ii)
c) (i) & (iii) d) (i), (ii) & (iii)

3) A Machine learning technique that helps in detecting the outliers in data _____.
a) Clustering b) Clustering
c) Anamoly Detection d) All of the above

4) Which ONE of the following are regression tasks?
a) Predict the age of a person
b) Predict the country from where the person comes from
c) Predict whether the price of petroleum will increase tomorrow
d) Predict whether a document is related to science

5) Real-Time decisions, Game Al, Learning Tasks, Skill Acquisition, and Robot Navigation are applications of which of the following.
a) Supervised Learning: Classification
b) Reinforcement Learning
c) Unsupervised Learning: Clustering
d) Unsupervised Learning: Regression

6) Logistic regression is _____ regression technique that is used to model data having _____ outcome.

a) Linear, Numeric
b) Linear, Binary
c) Non Linear, Numeric
d) Non Linear, Binary

7) In which of the following cases will K-means clustering fail to give good results?

i) Data point with outliers
ii) Data point with different densities
iii) Data point with non- convex shapes

a) (i) & (ii)
b) (ii) & (iii)
c) (i) & (iii)
d) All of the above

8) Which of the following statement is TRUE about the Association rule method?

a) It determines how strongly or how weakly two objects are connected
b) It determines the relation between two objects
c) Relation between particular objects
d) Relation between frequent item set

9) Which of the following is true about Naïve Bayes?

a) Assumes that all the features in the dataset are equally important
b) Assumes that all the features in the dataset are independent
c) Both A&B
d) None of the above

10) What is back propagation?

a) It is another name given to the curvy function in the Perceptron
b) It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn
c) It is another name given to the curvy function in the Perceptron
d) None of the above

11) What strategies can help reduce overfitting in decision trees?

i) Enforce a maximum depth for the tree
ii) Enforce a minimum number of samples in leaf nodes
iii) Pruning
iv) Make sure each leaf node is one pure class

a) All the above
b) (i), (ii) and (iii)
c) (i), (iii), (iv)
d) None of above

12) Applications of NN (Neural Network) _____.

a) Risk management
b) Data validation
c) Sales forecasting
d) All of the above

13) The Bayesian network can be used to answer any query by Using _____.

a) Full distribution
b) Joint distribution
c) Partial distribution
d) All of the above

14) Bayes rule can be used for: _____.

a) Solving queries
b) Increasing complexity
c) Answering probabilistic query
d) Decreasing Complexity

SLR-BD-429

Seat No.	

Set P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Data Science Machine Learning (BTN04613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Solve any four of the following. **16**
a) What is Machine Learning? Explain with two Examples.
b) Explain the Learning Vs Designing and Training Vs Testing.
c) What is Feature? Explain the Feature Extraction technique of ML.
d) Explain in brief the data processing of Machine Learning.
e) Explain the Assessing Performance of Regression?

Q.3 Solve any two of the following. **12**
a) Compare the Deep learning Vs Machine Learning.
b) What is Reinforcement Learning? Explain with Examples?
c) Write a note on Support Vector Machine (SVM) algorithm of ML?

Section – II

Q.4 Solve any four of the following. **16**
a) Explain any six types of Activation functions in ANN?
b) List the difference between Supervised and Unsupervised Machine learning.
c) Explain how to find pattern using association rule.
d) Write a note on DBSCAN.
e) Explain Hierarchical Clustering Technique of ML.

Q.5 Solve any two of the following. **12**
a) Explain Back-propagation algorithm of ANN.
b) Explain Medical diagnosis Application of ML.
c) Explain how Machine Learning is used for Traffic Prediction.

SLR-BD-429

Seat No.	

Set Q

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Data Science Machine Learning (BTN04613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) Which of the following statement is TRUE about the Association rule method?
a) It determines how strongly or how weakly two objects are connected
b) It determines the relation between two objects
c) Relation between particular objects
d) Relation between frequent item set

2) Which of the following is true about Naïve Bayes?
a) Assumes that all the features in the dataset are equally important
b) Assumes that all the features in the dataset are independent
c) Both A&B
d) None of the above

3) What is back propagation?
a) It is another name given to the curvy function in the Perceptron
b) It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn
c) It is another name given to the curvy function in the Perceptron
d) None of the above

4) What strategies can help reduce overfitting in decision trees?
i) Enforce a maximum depth for the tree
ii) Enforce a minimum number of samples in leaf nodes
iii) Pruning
iv) Make sure each leaf node is one pure class
a) All the above b) (i), (ii) and (iii)
c) (i), (iii), (iv) d) None of above

5) Applications of NN (Neural Network) _____.
a) Risk management b) Data validation
c) Sales forecasting d) All of the above

6) The Bayesian network can be used to answer any query by Using _____.
a) Full distribution
b) Joint distribution
c) Partial distribution
d) All of the above

7) Bayes rule can be used for: _____.
a) Solving queries
b) Increasing complexity
c) Answering probabilistic query
d) Decreasing Complexity

8) _____ is a widely used and effective machine learning algorithm based on the idea of bagging.
a) Regression b) Classification
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9) Sentiment analysis is an example of _____.
i) Regression
ii) Classification
iii) Clustering
iv) Reinforcement Learning
a) (i) only b) (i) & (ii)
c) (i) & (iii) d) (i), (ii) & (iii)

10) A Machine learning technique that helps in detecting the outliers in data _____.
a) Clustering b) Clustering
c) Anamoly Detection d) All of the above

11) Which ONE of the following are regression tasks?
a) Predict the age of a person
b) Predict the country from where the person comes from
c) Predict whether the price of petroleum will increase tomorrow
d) Predict whether a document is related to science

12) Real-Time decisions, Game AI, Learning Tasks, Skill Acquisition, and Robot Navigation are applications of which of the following.
a) Supervised Learning: Classification
b) Reinforcement Learning
c) Unsupervised Learning: Clustering
d) Unsupervised Learning: Regression

13) Logistic regression is _____ regression technique that is used to model data having _____ outcome.

a) Linear, Numeric
b) Linear, Binary
c) Non Linear, Numeric
d) Non Linear, Binary

14) In which of the following cases will K-means clustering fail to give good results?

i) Data point with outliers
ii) Data point with different densities
iii) Data point with non- convex shapes

a) (i) & (ii)
b) (ii) & (iii)
c) (i) & (iii)
d) All of the above

SLR-BD-429

Seat No.	

Set Q

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Data Science Machine Learning (BTN04613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Solve any four of the following. **16**
a) What is Machine Learning? Explain with two Examples.
b) Explain the Learning Vs Designing and Training Vs Testing.
c) What is Feature? Explain the Feature Extraction technique of ML.
d) Explain in brief the data processing of Machine Learning.
e) Explain the Assessing Performance of Regression?

Q.3 Solve any two of the following. **12**
a) Compare the Deep learning Vs Machine Learning.
b) What is Reinforcement Learning? Explain with Examples?
c) Write a note on Support Vector Machine (SVM) algorithm of ML?

Section – II

Q.4 Solve any four of the following. **16**
a) Explain any six types of Activation functions in ANN?
b) List the difference between Supervised and Unsupervised Machine learning.
c) Explain how to find pattern using association rule.
d) Write a note on DBSCAN.
e) Explain Hierarchical Clustering Technique of ML.

Q.5 Solve any two of the following. **12**
a) Explain Back-propagation algorithm of ANN.
b) Explain Medical diagnosis Application of ML.
c) Explain how Machine Learning is used for Traffic Prediction.

SLR-BD-429

Seat No.	

Set R

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Data Science Machine Learning (BTN04613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. 14

1) What strategies can help reduce overfitting in decision trees?
i) Enforce a maximum depth for the tree
ii) Enforce a minimum number of samples in leaf nodes
iii) Pruning
iv) Make sure each leaf node is one pure class
a) All the above b) (i), (ii) and (iii)
c) (i), (iii), (iv) d) None of above

2) Applications of NN (Neural Network) _____.
a) Risk management b) Data validation
c) Sales forecasting d) All of the above

3) The Bayesian network can be used to answer any query by Using _____.
a) Full distribution
b) Joint distribution
c) Partial distribution
d) All of the above

4) Bayes rule can be used for: _____.
a) Solving queries
b) Increasing complexity
c) Answering probabilistic query
d) Decreasing Complexity

5) _____ is a widely used and effective machine learning algorithm based on the idea of bagging.
a) Regression b) Classification
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6) Sentiment analysis is an example of _____.

i) Regression
ii) Classification
iii) Clustering
iv) Reinforcement Learning

a) (i) only
b) (i) & (ii)
c) (i) & (iii)
d) (i), (ii) & (iii)

7) A Machine learning technique that helps in detecting the outliers in data _____.

a) Clustering
b) Clustering
c) Anamoly Detection
d) All of the above

8) Which ONE of the following are regression tasks?

a) Predict the age of a person
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9) Real-Time decisions, Game AI, Learning Tasks, Skill Acquisition, and Robot Navigation are applications of which of the following.

a) Supervised Learning: Classification
b) Reinforcement Learning
c) Unsupervised Learning: Clustering
d) Unsupervised Learning: Regression

10) Logistic regression is _____ regression technique that is used to model data having _____ outcome.

a) Linear, Numeric
b) Linear, Binary
c) Non Linear, Numeric
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11) In which of the following cases will K-means clustering fail to give good results?

i) Data point with outliers
ii) Data point with different densities
iii) Data point with non- convex shapes

a) (i) & (ii)
b) (ii) & (iii)
c) (i) & (iii)
d) All of the above

12) Which of the following statement is TRUE about the Association rule method?

a) It determines how strongly or how weakly two objects are connected
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d) Relation between frequent item set

13) Which of the following is true about Naïve Bayes?
   a) Assumes that all the features in the dataset are equally important
   b) Assumes that all the features in the dataset are independent
   c) Both A&B
   d) None of the above

14) What is back propagation?
   a) It is another name given to the curvy function in the Perceptron
   b) It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn
   c) It is another name given to the curvy function in the Perceptron
   d) None of the above

Seat No.	

Set **R**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Data Science Machine Learning (BTN04613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
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Section – I

Q.2 Solve any four of the following. **16**
- **a)** What is Machine Learning? Explain with two Examples.
- **b)** Explain the Learning Vs Designing and Training Vs Testing.
- **c)** What is Feature? Explain the Feature Extraction technique of ML.
- **d)** Explain in brief the data processing of Machine Learning.
- **e)** Explain the Assessing Performance of Regression?

Q.3 Solve any two of the following. **12**
- **a)** Compare the Deep learning Vs Machine Learning.
- **b)** What is Reinforcement Learning? Explain with Examples?
- **c)** Write a note on Support Vector Machine (SVM) algorithm of ML?

Section – II

Q.4 Solve any four of the following. **16**
- **a)** Explain any six types of Activation functions in ANN?
- **b)** List the difference between Supervised and Unsupervised Machine learning.
- **c)** Explain how to find pattern using association rule.
- **d)** Write a note on DBSCAN.
- **e)** Explain Hierarchical Clustering Technique of ML.

Q.5 Solve any two of the following. **12**
- **a)** Explain Back-propagation algorithm of ANN.
- **b)** Explain Medical diagnosis Application of ML.
- **c)** Explain how Machine Learning is used for Traffic Prediction.

SLR-BD-429

Seat No.		Set	S

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Data Science Machine Learning (BTN04613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) Logistic regression is _____ regression technique that is used to model data having _____ outcome.
a) Linear, Numeric b) Linear, Binary
c) Non Linear, Numeric d) Non Linear, Binary

2) In which of the following cases will K-means clustering fail to give good results?
i) Data point with outliers
ii) Data point with different densities
iii) Data point with non- convex shapes
a) (i) & (ii) b) (ii) & (iii)
c) (i) & (iii) d) All of the above

3) Which of the following statement is TRUE about the Association rule method?
a) It determines how strongly or how weakly two objects are connected
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4) Which of the following is true about Naïve Bayes?
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5) What is back propagation?
a) It is another name given to the curvy function in the Perceptron
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i) Enforce a maximum depth for the tree
ii) Enforce a minimum number of samples in leaf nodes
iii) Pruning
iv) Make sure each leaf node is one pure class
a) All the above
b) (i), (ii) and (iii)
c) (i), (iii), (iv)
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7) Applications of NN (Neural Network) _____.
a) Risk management
b) Data validation
c) Sales forecasting
d) All of the above

8) The Bayesian network can be used to answer any query by Using _____.
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b) Joint distribution
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9) Bayes rule can be used for: _____.
a) Solving queries
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d) Decreasing Complexity

10) _____ is a widely used and effective machine learning algorithm based on the idea of bagging.
a) Regression
b) Classification
c) Decision Tree
d) Random Forest

11) Sentiment analysis is an example of _____.
i) Regression
ii) Classification
iii) Clustering
iv) Reinforcement Learning
a) (i) only
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c) (i) & (iii)
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12) A Machine learning technique that helps in detecting the outliers in data _____.
a) Clustering
b) Clustering
c) Anamoly Detection
d) All of the above

13) Which ONE of the following are regression tasks?
a) Predict the age of a person
b) Predict the country from where the person comes from
c) Predict whether the price of petroleum will increase tomorrow
d) Predict whether a document is related to science

14) Real-Time decisions, Game Al, Learning Tasks, Skill Acquisition, and Robot Navigation are applications of which of the following.
a) Supervised Learning: Classification
b) Reinforcement Learning
c) Unsupervised Learning: Clustering
d) Unsupervised Learning: Regression

SLR-BD-429

Seat No.		Set	S

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Data Science Machine Learning (BTN04613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Solve any four of the following. **16**
a) What is Machine Learning? Explain with two Examples.
b) Explain the Learning Vs Designing and Training Vs Testing.
c) What is Feature? Explain the Feature Extraction technique of ML.
d) Explain in brief the data processing of Machine Learning.
e) Explain the Assessing Performance of Regression?

Q.3 Solve any two of the following. **12**
a) Compare the Deep learning Vs Machine Learning.
b) What is Reinforcement Learning? Explain with Examples?
c) Write a note on Support Vector Machine (SVM) algorithm of ML?

Section – II

Q.4 Solve any four of the following. **16**
a) Explain any six types of Activation functions in ANN?
b) List the difference between Supervised and Unsupervised Machine learning.
c) Explain how to find pattern using association rule.
d) Write a note on DBSCAN.
e) Explain Hierarchical Clustering Technique of ML.

Q.5 Solve any two of the following. **12**
a) Explain Back-propagation algorithm of ANN.
b) Explain Medical diagnosis Application of ML.
c) Explain how Machine Learning is used for Traffic Prediction.

SLR-BD-430

Seat No.	

Set P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
IoT Cloud Platform (BTN04614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) What is the main purpose of the AWS dashboard?
a) Managing user accounts
b) Monitoring AWS service usage
c) Configuring virtual machines
d) Developing applications

2) What is the first step to create a new AWS account?
a) Choose a billing plan
b) Provide payment information
c) Verify email address
d) Set up multi-factor authentication

3) Which AWS account type has full administrative access and control over all AWS resources?
a) Root user
b) Non-root user
c) IAM user
d) Service account

4) In IAM, what is a group?
a) A collection of IAM policies
b) A group of users with similar access requirements
c) A role assigned to an IAM user
d) A policy that defines resource permissions

5) What is an IAM role in AWS?
a) A group of users with administrative privileges
b) A temporary session to assume different user identities
c) A policy that defines permissions for a specific resource
d) An identity with specific permissions that can be assumed by AWS services or users

6) Which component of IAM defines what actions are allowed or denied on AWS resources?

a) Users
b) Roles
c) Policies
d) Groups

7) Which AWS service provides firewall security for your VPC?

a) Amazon EC2
b) Amazon S3
c) Amazon VPC Security Groups
d) Amazon Route 53

8) What is NAT in the context of AWS VPC?

a) Network Address Translation
b) Network Access Token
c) Network Availability Test
d) Network Attached Storage

9) What is the primary purpose of Elastic Block Store (EBS) in EC2?

a) Storing and retrieving data from S3
b) Managing containerized applications
c) Providing virtual network connectivity
d) Offering persistent block-level storage for EC2 instances

10) Which of the following, is NOT an EC2 instance type?

a) t3.micro
b) m5.large
c) g2.2xlarge
d) n2.nano

11) What are CloudWatch dashboards in AWS?

a) Customizable visualizations of CloudWatch metrics and alarms
b) Configurable firewall rules for inbound and outbound traffic
c) Instances with preconfigured monitoring settings
d) Predefined templates for launching EC2 instances

12) What are the two monitoring types available in Amazon CloudWatch?

a) Basic and advanced
b) Real-time and historical
c) Manual and automated
d) Basic and detailed

13) What are objects in Amazon S3?

a) Containers for organizing multiple buckets
b) Virtual machines for running applications
c) Data entities stored in S3 buckets
d) Access control policies for S3 buckets

14) What is versioning in Amazon S3?

a) A feature for managing different versions of an object in a bucket
b) A way to categorize objects based on their content type
c) A process for automatically migrating data between S3 storage classes
d) A mechanism for distributing data across multiple S3 regions

SLR-BD-430

Seat No.		Set	P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
IoT Cloud Platform (BTN04614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any three questions. **12**

a) Describe the differences between SaaS, PaaS, and IaaS in the context of AWS.
b) What is virtualization and how does it work in AWS? How is it related to elasticity and scalability?
c) How can you create a new AWS account and what are the steps to delete an AWS account?
d) What is the AWS root user? Why is it important to understand the root user account?

Q.3 Attempt any two questions. **16**

a) What are some best practices for IAM in AWS? Discuss common IAM security risks and how to mitigate them.
b) What is the process for creating a VPC in AWS? Describe the key steps involved in creating a VPC and the options available for customizing its configuration.
c) What is a VPC endpoint? Describe the different types of VPC endpoints available in AWS and how they can be used to securely access AWS services.

Section – II

Q.4 Attempt any three questions. **12**

a) What are some best practices for managing EC2 instances effectively?
b) How can you optimize EC2 instance performance and cost efficiency?
c) What are the different types of EC2 instances available and how do they differ?
d) Explain the key elements of Amazon CloudWatch and their functions?

Q.5 Attempt any two questions. **16**

a) How does lifecycle management in S3 allow for the automatic transition of objects between different storage classes or deletion based on predefined rules?

b) How do you create a bucket in Amazon S3 and what are some considerations when naming a bucket?

c) What is ClassicLink in VPC? Explain how ClassicLink can be used to connect EC2 instances in VPC to instances in the EC2-Classic platform.

SLR-BD-430

Seat No.	

Set Q

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
IoT Cloud Platform (BTN04614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) What is NAT in the context of AWS VPC?
a) Network Address Translation b) Network Access Token
c) Network Availability Test d) Network Attached Storage

2) What is the primary purpose of Elastic Block Store (EBS) in EC2?
a) Storing and retrieving data from S3
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a) t3.micro b) m5.large
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c) Data entities stored in S3 buckets
d) Access control policies for S3 buckets

7) What is versioning in Amazon S3?
   a) A feature for managing different versions of an object in a bucket
   b) A way to categorize objects based on their content type
   c) A process for automatically migrating data between S3 storage classes
   d) A mechanism for distributing data across multiple S3 regions

8) What is the main purpose of the AWS dashboard?
   a) Managing user accounts
   b) Monitoring AWS service usage
   c) Configuring virtual machines
   d) Developing applications

9) What is the first step to create a new AWS account?
   a) Choose a billing plan
   b) Provide payment information
   c) Verify email address
   d) Set up multi-factor authentication

10) Which AWS account type has full administrative access and control over all AWS resources?
   a) Root user
   b) Non-root user
   c) IAM user
   d) Service account

11) In IAM, what is a group?
   a) A collection of IAM policies
   b) A group of users with similar access requirements
   c) A role assigned to an IAM user
   d) A policy that defines resource permissions

12) What is an IAM role in AWS?
   a) A group of users with administrative privileges
   b) A temporary session to assume different user identities
   c) A policy that defines permissions for a specific resource
   d) An identity with specific permissions that can be assumed by AWS services or users

13) Which component of IAM defines what actions are allowed or denied on AWS resources?
   a) Users
   b) Roles
   c) Policies
   d) Groups

14) Which AWS service provides firewall security for your VPC?
   a) Amazon EC2
   b) Amazon S3
   c) Amazon VPC Security Groups
   d) Amazon Route 53

SLR-BD-430

Seat No.	

Set Q

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
IoT Cloud Platform (BTN04614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any three questions. **12**

a) Describe the differences between SaaS, PaaS, and IaaS in the context of AWS.
b) What is virtualization and how does it work in AWS? How is it related to elasticity and scalability?
c) How can you create a new AWS account and what are the steps to delete an AWS account?
d) What is the AWS root user? Why is it important to understand the root user account?

Q.3 Attempt any two questions. **16**

a) What are some best practices for IAM in AWS? Discuss common IAM security risks and how to mitigate them.
b) What is the process for creating a VPC in AWS? Describe the key steps involved in creating a VPC and the options available for customizing its configuration.
c) What is a VPC endpoint? Describe the different types of VPC endpoints available in AWS and how they can be used to securely access AWS services.

Section – II

Q.4 Attempt any three questions. **12**

a) What are some best practices for managing EC2 instances effectively?
b) How can you optimize EC2 instance performance and cost efficiency?
c) What are the different types of EC2 instances available and how do they differ?
d) Explain the key elements of Amazon CloudWatch and their functions?

Q.5 Attempt any two questions. **16**

a) How does lifecycle management in S3 allow for the automatic transition of objects between different storage classes or deletion based on predefined rules?

b) How do you create a bucket in Amazon S3 and what are some considerations when naming a bucket?

c) What is ClassicLink in VPC? Explain how ClassicLink can be used to connect EC2 instances in VPC to instances in the EC2-Classic platform.

Seat No.	

Set **R**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
IoT Cloud Platform (BTN04614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) What are CloudWatch dashboards in AWS?
a) Customizable visualizations of CloudWatch metrics and alarms
b) Configurable firewall rules for inbound and outbound traffic
c) Instances with preconfigured monitoring settings
d) Predefined templates for launching EC2 instances

2) What are the two monitoring types available in Amazon CloudWatch?
a) Basic and advanced b) Real-time and historical
c) Manual and automated d) Basic and detailed

3) What are objects in Amazon S3?
a) Containers for organizing multiple buckets
b) Virtual machines for running applications
c) Data entities stored in S3 buckets
d) Access control policies for S3 buckets

4) What is versioning in Amazon S3?
a) A feature for managing different versions of an object in a bucket
b) A way to categorize objects based on their content type
c) A process for automatically migrating data between S3 storage classes
d) A mechanism for distributing data across multiple S3 regions

5) What is the main purpose of the AWS dashboard?
a) Managing user accounts
b) Monitoring AWS service usage
c) Configuring virtual machines
d) Developing applications

6) What is the first step to create a new AWS account?
a) Choose a billing plan
b) Provide payment information
c) Verify email address
d) Set up multi-factor authentication

7) Which AWS account type has full administrative access and control over all AWS resources?
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c) IAM user
d) Service account

8) In IAM, what is a group?
a) A collection of IAM policies
b) A group of users with similar access requirements
c) A role assigned to an IAM user
d) A policy that defines resource permissions

9) What is an IAM role in AWS?
a) A group of users with administrative privileges
b) A temporary session to assume different user identities
c) A policy that defines permissions for a specific resource
d) An identity with specific permissions that can be assumed by AWS services or users

10) Which component of IAM defines what actions are allowed or denied on AWS resources?
a) Users
b) Roles
c) Policies
d) Groups

11) Which AWS service provides firewall security for your VPC?
a) Amazon EC2
b) Amazon S3
c) Amazon VPC Security Groups
d) Amazon Route 53

12) What is NAT in the context of AWS VPC?
a) Network Address Translation
b) Network Access Token
c) Network Availability Test
d) Network Attached Storage

13) What is the primary purpose of Elastic Block Store (EBS) in EC2?
a) Storing and retrieving data from S3
b) Managing containerized applications
c) Providing virtual network connectivity
d) Offering persistent block-level storage for EC2 instances

14) Which of the following, is NOT an EC2 instance type?
a) t3.micro
b) m5.large
c) g2.2xlarge
d) n2.nano

SLR-BD-430

Seat No.	

Set R

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
IoT Cloud Platform (BTN04614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any three questions. **12**

a) Describe the differences between SaaS, PaaS, and IaaS in the context of AWS.
b) What is virtualization and how does it work in AWS? How is it related to elasticity and scalability?
c) How can you create a new AWS account and what are the steps to delete an AWS account?
d) What is the AWS root user? Why is it important to understand the root user account?

Q.3 Attempt any two questions. **16**

a) What are some best practices for IAM in AWS? Discuss common IAM security risks and how to mitigate them.
b) What is the process for creating a VPC in AWS? Describe the key steps involved in creating a VPC and the options available for customizing its configuration.
c) What is a VPC endpoint? Describe the different types of VPC endpoints available in AWS and how they can be used to securely access AWS services.

Section – II

Q.4 Attempt any three questions. **12**

a) What are some best practices for managing EC2 instances effectively?
b) How can you optimize EC2 instance performance and cost efficiency?
c) What are the different types of EC2 instances available and how do they differ?
d) Explain the key elements of Amazon CloudWatch and their functions?

Q.5 Attempt any two questions. **16**

a) How does lifecycle management in S3 allow for the automatic transition of objects between different storage classes or deletion based on predefined rules?

b) How do you create a bucket in Amazon S3 and what are some considerations when naming a bucket?

c) What is ClassicLink in VPC? Explain how ClassicLink can be used to connect EC2 instances in VPC to instances in the EC2-Classic platform.

SLR-BD-430

Seat No.		Set	S

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
IoT Cloud Platform (BTN04614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which component of IAM defines what actions are allowed or denied on AWS resources?
a) Users b) Roles
c) Policies d) Groups

2) Which AWS service provides firewall security for your VPC?
a) Amazon EC2
b) Amazon S3
c) Amazon VPC Security Groups
d) Amazon Route 53

3) What is NAT in the context of AWS VPC?
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c) Network Availability Test d) Network Attached Storage

4) What is the primary purpose of Elastic Block Store (EBS) in EC2?
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b) Managing containerized applications
c) Providing virtual network connectivity
d) Offering persistent block-level storage for EC2 instances

5) Which of the following, is NOT an EC2 instance type?
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a) Customizable visualizations of CloudWatch metrics and alarms
b) Configurable firewall rules for inbound and outbound traffic
c) Instances with preconfigured monitoring settings
d) Predefined templates for launching EC2 instances

7) What are the two monitoring types available in Amazon CloudWatch?
a) Basic and advanced
b) Real-time and historical
c) Manual and automated
d) Basic and detailed

8) What are objects in Amazon S3?
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c) Data entities stored in S3 buckets
d) Access control policies for S3 buckets

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d) A mechanism for distributing data across multiple S3 regions

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c) Configuring virtual machines
d) Developing applications

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b) Provide payment information
c) Verify email address
d) Set up multi-factor authentication

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c) IAM user
d) Service account

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b) A group of users with similar access requirements
c) A role assigned to an IAM user
d) A policy that defines resource permissions

14) What is an IAM role in AWS?
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b) A temporary session to assume different user identities
c) A policy that defines permissions for a specific resource
d) An identity with specific permissions that can be assumed by AWS services or users

SLR-BD-430

Seat No.		Set	S

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
IoT Cloud Platform (BTN04614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any three questions. **12**

a) Describe the differences between SaaS, PaaS, and IaaS in the context of AWS.
b) What is virtualization and how does it work in AWS? How is it related to elasticity and scalability?
c) How can you create a new AWS account and what are the steps to delete an AWS account?
d) What is the AWS root user? Why is it important to understand the root user account?

Q.3 Attempt any two questions. **16**

a) What are some best practices for IAM in AWS? Discuss common IAM security risks and how to mitigate them.
b) What is the process for creating a VPC in AWS? Describe the key steps involved in creating a VPC and the options available for customizing its configuration.
c) What is a VPC endpoint? Describe the different types of VPC endpoints available in AWS and how they can be used to securely access AWS services.

Section – II

Q.4 Attempt any three questions. **12**

a) What are some best practices for managing EC2 instances effectively?
b) How can you optimize EC2 instance performance and cost efficiency?
c) What are the different types of EC2 instances available and how do they differ?
d) Explain the key elements of Amazon CloudWatch and their functions?

Q.5 Attempt any two questions. **16**

a) How does lifecycle management in S3 allow for the automatic transition of objects between different storage classes or deletion based on predefined rules?

b) How do you create a bucket in Amazon S3 and what are some considerations when naming a bucket?

c) What is ClassicLink in VPC? Explain how ClassicLink can be used to connect EC2 instances in VPC to instances in the EC2-Classic platform.

SLR-BD-431

Seat No.	

Set P

Fourth.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Advanced Communication Engineering (BTN04701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

1) The modes in the reflex Klystron _____.
a) give same frequency but different transit time.
b) are caused by spurious frequency modulation.
c) are just for theoretical consideration.
d) result from excessive transit time across resonator gap

2) If Pi is incident power Pf is forward power Pb is back power then coupling factor (c) is given by _____.
a) c=10log10Pi/Pf b) c=20log19Pi/Pf
c) c=10log10Pf/Pi d) c=10log10Pi/Pb

3) Directivity of directional coupler is measure of _____.
a) how much incident power is being sampled
b) how well directional coupler distinguishes between forward and reverse travelling power
c) both a & b
d) none

4) Magic Tee is used as _____.
a) duplexer b) mixer
c) isolator d) both a & c

5) Wave guides can carry _____.
a) TE mode b) TM mode
c) Mixed mode d) All

6) Reflective attenuation comes into being when the frequency of the wave is _____.

a) <cut off frequency
b) >cut off frequency
c) Both
d) None

7) Magnetron is an _____.

a) Amplifier
b) Oscillator
c) Phase shifter
d) Both phase shifter and amplifier

8) The directive gain of a transmitting antenna is proportional to _____.

a) proportional to wavelength
b) inversely proportional to wavelength
c) proportional to square of wavelength
d) inversely proportional to square of wavelength

9) In a TWT the axial component of electric field advances along the tube.

a) at a velocity that is almost equal to speed of light
b) at a velocity that is a small fraction of speed of light
c) at a velocity that is about 50% of speed of light
d) at a velocity that may be even more than speed of light

10) In a backward wave oscillator, the wave _____.

a) travelling along the line winds itself back and forth
b) Processes only in forward direction
c) Processes only in backward direction
d) Either a) or c)

11) Which of the following is not the factor affecting range of radar _____?

a) Transmitter power
b) Frequency
c) Temperature
d) Target cross-sectional area

12) The location of target includes _____,_____and _____ parameter.

a) Range, Angle and Velocity.
b) Range, temperature and Velocity.
c) Temperature, Angle and Velocity.
d) Range, Angle and temperature.

13) Tracking system is used _____.

a) To collect data from different sensors & sends to the control earth station
b) For the determination of the current orbit and position of the space craft
c) For making changes in altitude & orbit correction
d) For controlling communication system

14) In a circular orbit the speed if revolution is _____ while in elliptical orbit it depends on _____ of the satellite above the earth.

a) Variable, height
b) Constant, width
c) Constant, height
d) Increases, height

Seat No.	

Set **P**

Fourth.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Advanced Communication Engineering (BTN04701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Two. **12**

a) Draw block diagram of Pulse radar system and explain working of each block.
b) Explain construction and working of π- mode magnetron. State its performance parameters.
c) Draw and explain working of directional coupler. Derive the scattering matrix of a directional coupler.

Q.3 Attempt Any Four. **16**

a) What is the Microwave frequency range, state its applications.
b) State the radar range equation and explain the factor effecting the radar range equation.
c) Explain why oscillations are sustained in Gunn diode.
d) Write a note on FM-CW Radar.
e) Explain construction and working of IMPATT diode.

Section – II

Q.4 Attempt Any Two. **12**

a) With suitable block diagrams explain earth station.
b) Describe construction and the operating principles of the semiconductor junction laser.
c) Explain working of DBS-TV receiver.

Q.5 Attempt Any Four. **16**

a) Compare pre assignment and demand assignment multiple access system.
b) List the application and benefits of fiber optic cables.
c) Explain bending losses in optical fiber.
d) Explain single conversion and double conversion transponder system.
e) Explain the procedure of locating the satellite in the orbit.

SLR-BD-431

Seat No.	

Set Q

Fourth.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Advanced Communication Engineering (BTN04701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. 14

1) The directive gain of a transmitting antenna is proportional to _____.
a) proportional to wavelength
b) inversely proportional to wavelength
c) proportional to square of wavelength
d) inversely proportional to square of wavelength

2) In a TWT the axial component of electric field advances along the tube.
a) at a velocity that is almost equal to speed of light
b) at a velocity that is a small fraction of speed of light
c) at a velocity that is about 50% of speed of light
d) at a velocity that may be even more than speed of light

3) In a backward wave oscillator, the wave _____.
a) travelling along the line winds itself back and forth
b) Processes only in forward direction
c) Processes only in backward direction
d) Either a) or c)

4) Which of the following is not the factor affecting range of radar _____?
a) Transmitter power b) Frequency
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5) The location of target includes _____,_____and _____ parameter.
a) Range, Angle and Velocity.
b) Range, temperature and Velocity.
c) Temperature, Angle and Velocity.
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6) Tracking system is used _____.
   a) To collect data from different sensors & sends to the control earth station
   b) For the determination of the current orbit and position of the space craft
   c) For making changes in altitude & orbit correction
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7) In a circular orbit the speed if revolution is _____ while in elliptical orbit it depends on _____ of the satellite above the earth.
   a) Variable, height b) Constant, width
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8) The modes in the reflex Klystron _____.
   a) give same frequency but different transit time.
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   c) are just for theoretical consideration.
   d) result from excessive transit time across resonator gap

9) If Pi is incident power Pf is forward power Pb is back power then coupling factor (c) is given by _____.
   a) c=10log10Pi/Pf b) c=20log19Pi/Pf
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10) Directivity of directional coupler is measure of _____.
   a) how much incident power is being sampled
   b) how well directional coupler distinguishes between forward and reverse travelling power
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11) Magic Tee is used as _____.
   a) duplexer b) mixer
   c) isolator d) both a & c

12) Wave guides can carry _____.
   a) TE mode b) TM mode
   c) Mixed mode d) All

13) Reflective attenuation comes into being when the frequency of the wave is _____.
   a) <cut off frequency b) >cut off frequency
   c) Both d) None

14) Magnetron is an _____.
   a) Amplifier
   b) Oscillator
   c) Phase shifter
   d) Both phase shifter and amplifier

SLR-BD-431

Seat No.	

Set Q

Fourth.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Advanced Communication Engineering (BTN04701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Two. **12**

a) Draw block diagram of Pulse radar system and explain working of each block.
b) Explain construction and working of π- mode magnetron. State its performance parameters.
c) Draw and explain working of directional coupler. Derive the scattering matrix of a directional coupler.

Q.3 Attempt Any Four. **16**

a) What is the Microwave frequency range, state its applications.
b) State the radar range equation and explain the factor effecting the radar range equation.
c) Explain why oscillations are sustained in Gunn diode.
d) Write a note on FM-CW Radar.
e) Explain construction and working of IMPATT diode.

Section – II

Q.4 Attempt Any Two. **12**

a) With suitable block diagrams explain earth station.
b) Describe construction and the operating principles of the semiconductor junction laser.
c) Explain working of DBS-TV receiver.

Q.5 Attempt Any Four. **16**

a) Compare pre assignment and demand assignment multiple access system.
b) List the application and benefits of fiber optic cables.
c) Explain bending losses in optical fiber.
d) Explain single conversion and double conversion transponder system.
e) Explain the procedure of locating the satellite in the orbit.

SLR-BD-431

Seat No.	

Set R

Fourth.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Advanced Communication Engineering (BTN04701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. 14

1) Which of the following is not the factor affecting range of radar _____?
a) Transmitter power b) Frequency
c) Temperature d) Target cross-sectional area

2) The location of target includes _____,_____and _____ parameter.
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Seat No.	

Set **R**

Fourth.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Advanced Communication Engineering (BTN04701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

Q.2 Attempt Any Two. **12**

a) Draw block diagram of Pulse radar system and explain working of each block.
b) Explain construction and working of π- mode magnetron. State its performance parameters.
c) Draw and explain working of directional coupler. Derive the scattering matrix of a directional coupler.

Q.3 Attempt Any Four. **16**

a) What is the Microwave frequency range, state its applications.
b) State the radar range equation and explain the factor effecting the radar range equation.
c) Explain why oscillations are sustained in Gunn diode.
d) Write a note on FM-CW Radar.
e) Explain construction and working of IMPATT diode.

Section – II

Q.4 Attempt Any Two. **12**

a) With suitable block diagrams explain earth station.
b) Describe construction and the operating principles of the semiconductor junction laser.
c) Explain working of DBS-TV receiver.

Q.5 Attempt Any Four. **16**

a) Compare pre assignment and demand assignment multiple access system.
b) List the application and benefits of fiber optic cables.
c) Explain bending losses in optical fiber.
d) Explain single conversion and double conversion transponder system.
e) Explain the procedure of locating the satellite in the orbit.

SLR-BD-431

Seat No.	

Set S

Fourth.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Advanced Communication Engineering (BTN04701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

1) Reflective attenuation comes into being when the frequency of the wave is _____.
a) <cut off frequency b) >cut off frequency
c) Both d) None

2) Magnetron is an _____.
a) Amplifier
b) Oscillator
c) Phase shifter
d) Both phase shifter and amplifier

3) The directive gain of a transmitting antenna is proportional to _____.
a) proportional to wavelength
b) inversely proportional to wavelength
c) proportional to square of wavelength
d) inversely proportional to square of wavelength

4) In a TWT the axial component of electric field advances along the tube.
a) at a velocity that is almost equal to speed of light
b) at a velocity that is a small fraction of speed of light
c) at a velocity that is about 50% of speed of light
d) at a velocity that may be even more than speed of light

5) In a backward wave oscillator, the wave _____.
a) travelling along the line winds itself back and forth
b) Processes only in forward direction
c) Processes only in backward direction
d) Either a) or c)

6) Which of the following is not the factor affecting range of radar _____?
a) Transmitter power b) Frequency
c) Temperature d) Target cross-sectional area

7) The location of target includes _____,_____and _____ parameter.
a) Range, Angle and Velocity.
b) Range, temperature and Velocity.
c) Temperature, Angle and Velocity.
d) Range, Angle and temperature.

8) Tracking system is used _____.
a) To collect data from different sensors & sends to the control earth station
b) For the determination of the current orbit and position of the space craft
c) For making changes in altitude & orbit correction
d) For controlling communication system

9) In a circular orbit the speed if revolution is _____ while in elliptical orbit it depends on _____ of the satellite above the earth.
a) Variable, height b) Constant, width
c) Constant, height d) Increases, height

10) The modes in the reflex Klystron _____.
a) give same frequency but different transit time.
b) are caused by spurious frequency modulation.
c) are just for theoretical consideration.
d) result from excessive transit time across resonator gap

11) If Pi is incident power Pf is forward power Pb is back power then coupling factor (c) is given by _____.
a) c=10log10Pi/Pf b) c=20log19Pi/Pf
c) c=10log10Pf/Pi d) c=10log10Pi/Pb

12) Directivity of directional coupler is measure of _____.
a) how much incident power is being sampled
b) how well directional coupler distinguishes between forward and reverse travelling power
c) both a & b
d) none

13) Magic Tee is used as _____.
a) duplexer b) mixer
c) isolator d) both a & c

14) Wave guides can carry _____.
a) TE mode b) TM mode
c) Mixed mode d) All

SLR-BD-431

Seat No.		Set	S

Fourth.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Advanced Communication Engineering (BTN04701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Two. **12**

a) Draw block diagram of Pulse radar system and explain working of each block.
b) Explain construction and working of π- mode magnetron. State its performance parameters.
c) Draw and explain working of directional coupler. Derive the scattering matrix of a directional coupler.

Q.3 Attempt Any Four. **16**

a) What is the Microwave frequency range, state its applications.
b) State the radar range equation and explain the factor effecting the radar range equation.
c) Explain why oscillations are sustained in Gunn diode.
d) Write a note on FM-CW Radar.
e) Explain construction and working of IMPATT diode.

Section – II

Q.4 Attempt Any Two. **12**

a) With suitable block diagrams explain earth station.
b) Describe construction and the operating principles of the semiconductor junction laser.
c) Explain working of DBS-TV receiver.

Q.5 Attempt Any Four. **16**

a) Compare pre assignment and demand assignment multiple access system.
b) List the application and benefits of fiber optic cables.
c) Explain bending losses in optical fiber.
d) Explain single conversion and double conversion transponder system.
e) Explain the procedure of locating the satellite in the orbit.

SLR-BD-432

Seat No.		Set	P

Fourth. Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Power Electronics (BTN04702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) R-C snubber is used in parallel with the thyristor to _____.
a) reduce dv/dt across it b) protect against di/dt
c) protect over current d) trigger thyristor

2) Thyristor is a _____.
a) Latching device b) Un- controlled device
c) latch proof device d) voltage controlled device

3) PIV for single phase full bridge rectifier is _____.
a) 2 Vm b) Vm
c) 3 Vm d) 4Vm

4) Ripple frequency for single phase semi converter is _____.
a) Same as supply frequency
b) Two times supply frequency
c) Three times supply frequency
d) Four times supply frequency

5) A converter which can operate as 3 pulse converter is a _____.
a) 3-phase half wave b) 3-phase full-converter
c) 1-phase semiconverter d) 1-phase dual converter

6) In Three phase full controlled bridge rectifier PIV across any thyristor is _____.
a) $\sqrt{2}\,V_m$ b) $\sqrt{3}\,V_m$
c) V_m d) $\sqrt{3}\,V_{LL}$

7) The average value of the output voltage in a step - down dc chopper is given by _____.

a) $V_0 = V_s$ b) $V_0 = K V_s$
c) $V_0 = V_s / K$ d) $V_0 = V_s / (1 – K)$

8) Class A and Class B choppers _____.

a) Two quadrant converters b) Three quadrant converters
c) Single quadrant converters d) None

9) In thyristor dc chopper _____ type of commutation results in best performance.

a) voltage commutation b) current commutation
c) load commutation d) supply commutation

10) Cycloconverter is a combination of _____.

a) Positive and negative converter
b) Two positive converter
c) Two negative converter
d) None

11) The number of thyristors required for single phase bridge type cycloconverters _____.

a) 8 b) 6
c) 4 d) 2

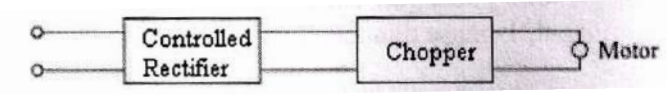
12) In Three phase 120° conduction mode _____.

a) At any instant of time two thyristors are ON
b) Triplen harmonics are absent
c) No possibility of short circuit
d) All above

13) Square wave PWM technique allows _____.

a) Voltage & harmonics control
b) only harmonics control
c) only voltage control
d) only frequency control

14) For the large D.C. motor control shown below, if the duty cycle of chopper circuit is increased then _____.



a) motor speed will increases
b) motor speed will decrease
c) the speed will not be effected
d) None of above

Seat No.	

Set **P**

Fourth. Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Power Electronics (BTN04702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any Four. **16**

a) Explain high di/dt and high dv/dt protection circuit of SCR.

b) A single phase fully controlled rectifier supplies an inductive load. Assuming I_L is constant 5A. Determine average DC voltage and supply rms current if supply voltage is 240V, 50Hz and firing angle is 90°.

c) Illustrate the different mechanisms by which thyristor may be turn on.

d) A three phase semiconverter is operated from three phase 410V 50Hz mains supply and delivers power to sufficiently large inductive load having resistance of 30Ω. If it is required that average output voltage should be 55% of maximum possible voltage. Calculate
1) Firing angle
2) Average dc load voltage

e) Derive an expression for average dc output voltage for three phase half wave controlled rectifier with resistive load for continuous conduction mode. Sketch voltage waveform for $\alpha = 30°$

Q.3 Attempt any two. **12**

a) Design microcontroller based firing scheme for single phase fully controlled rectifiers.

b) What do you meant by voltage commutation? Elaborate the process of commutation in class D auxiliary commutation. Sketch associated waveforms.

c) Derive an exp for average voltage and RMS voltage for three phase full wave controlled bridge rectifier with highly inductive load. Sketch voltage waveform for $\alpha = 60°$

Section – II

Q.4 Attempt any Four. **16**

a) Design the control scheme for three phase cycloconverter.

b) Derive an expression for output voltage, duty cycle and effective input resistance for step down chopper.

c) Explain operation of single phase half bridge voltage source inverter with resistive load. Draw associate waveforms.

d) With suitable circuit explain operation of basic parallel inverter. Draw associated waveforms.

e) With suitable circuit diagram explain working of Class C chopper.

Q.5 Attempt any two. **12**

a) Explain working of multiphase chopper circuit. Compare In phase and Phase shifted operating mode of multiphase chopper circuit.

b) With suitable block diagram analyze the speed control of AC drive using fuzzy logic controller.

c) Derive an expression of RMS output voltage for single pulse modulation technique. Prove that to eliminate n^{th} harmonic component from output voltage pulse width should be $2\pi/n$.

Seat No.		Set	Q

Fourth. Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Power Electronics (BTN04702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Class A and Class B choppers _____.
a) Two quadrant converters b) Three quadrant converters
c) Single quadrant converters d) None

2) In thyristor dc chopper _____ type of commutation results in best performance.
a) voltage commutation b) current commutation
c) load commutation d) supply commutation

3) Cycloconverter is a combination of _____.
a) Positive and negative converter
b) Two positive converter
c) Two negative converter
d) None

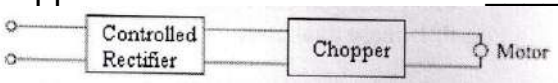
4) The number of thyristors required for single phase bridge type cycloconverters _____.
a) 8 b) 6
c) 4 d) 2

5) In Three phase 120° conduction mode _____.
a) At any instant of time two thyristors are ON
b) Triplen harmonics are absent
c) No possibility of short circuit
d) All above

6) Square wave PWM technique allows _____.

a) Voltage & harmonics control
b) only harmonics control
c) only voltage control
d) only frequency control

7) For the large D.C. motor control shown below, if the duty cycle of chopper circuit is increased then _____.



a) motor speed will increases
b) motor speed will decrease
c) the speed will not be effected
d) None of above

8) R-C snubber is used in parallel with the thyristor to _____.

a) reduce dv/dt across it
b) protect against di/dt
c) protect over current
d) trigger thyristor

9) Thyristor is a _____.

a) Latching device
b) Un- controlled device
c) latch proof device
d) voltage controlled device

10) PIV for single phase full bridge rectifier is _____.

a) 2 Vm
b) Vm
c) 3 Vm
d) 4Vm

11) Ripple frequency for single phase semi converter is _____.

a) Same as supply frequency
b) Two times supply frequency
c) Three times supply frequency
d) Four times supply frequency

12) A converter which can operate as 3 pulse converter is a _____.

a) 3-phase half wave
b) 3-phase full-converter
c) 1-phase semiconverter
d) 1-phase dual converter

13) In Three phase full controlled bridge rectifier PIV across any thyristor is _____.

a) $\sqrt{2}\,V_m$
b) $\sqrt{3}\,V_m$
c) V_m
d) $\sqrt{3}\,V_{LL}$

14) The average value of the output voltage in a step - down dc chopper is given by _____.

a) $V_0 = V_s$
b) $V_0 = K V_s$
c) $V_0 = V_s / K$
d) $V_0 = V_s / (1 - K)$

Seat No.		Set	Q

Fourth. Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Power Electronics (BTN04702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any Four. **16**

a) Explain high di/dt and high dv/dt protection circuit of SCR.

b) A single phase fully controlled rectifier supplies an inductive load. Assuming I_L is constant 5A. Determine average DC voltage and supply rms current if supply voltage is 240V, 50Hz and firing angle is 90°.

c) Illustrate the different mechanisms by which thyristor may be turn on.

d) A three phase semiconverter is operated from three phase 410V 50Hz mains supply and delivers power to sufficiently large inductive load having resistance of 30Ω. If it is required that average output voltage should be 55% of maximum possible voltage. Calculate
1) Firing angle
2) Average dc load voltage

e) Derive an expression for average dc output voltage for three phase half wave controlled rectifier with resistive load for continuous conduction mode. Sketch voltage waveform for $\alpha = 30°$

Q.3 Attempt any two. **12**

a) Design microcontroller based firing scheme for single phase fully controlled rectifiers.

b) What do you meant by voltage commutation? Elaborate the process of commutation in class D auxiliary commutation. Sketch associated waveforms.

c) Derive an exp for average voltage and RMS voltage for three phase full wave controlled bridge rectifier with highly inductive load. Sketch voltage waveform for $\alpha = 60°$

Section – II

Q.4 Attempt any Four. **16**

a) Design the control scheme for three phase cycloconverter.

b) Derive an expression for output voltage, duty cycle and effective input resistance for step down chopper.

c) Explain operation of single phase half bridge voltage source inverter with resistive load. Draw associate waveforms.

d) With suitable circuit explain operation of basic parallel inverter. Draw associated waveforms.

e) With suitable circuit diagram explain working of Class C chopper.

Q.5 Attempt any two. **12**

a) Explain working of multiphase chopper circuit. Compare In phase and Phase shifted operating mode of multiphase chopper circuit.

b) With suitable block diagram analyze the speed control of AC drive using fuzzy logic controller.

c) Derive an expression of RMS output voltage for single pulse modulation technique. Prove that to eliminate n^{th} harmonic component from output voltage pulse width should be $2\pi/n$.

Seat No.	

Set **R**

Fourth. Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Power Electronics (BTN04702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

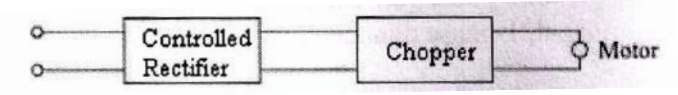
Q.1 Choose the correct Answer. **14**

1) The number of thyristors required for single phase bridge type cycloconverters _____.
a) 8 b) 6
c) 4 d) 2

2) In Three phase 120° conduction mode _____.
a) At any instant of time two thyristors are ON
b) Triplen harmonics are absent
c) No possibility of short circuit
d) All above

3) Square wave PWM technique allows _____.
a) Voltage & harmonics control
b) only harmonics control
c) only voltage control
d) only frequency control

4) For the large D.C. motor control shown below, if the duty cycle of chopper circuit is increased then _____.



a) motor speed will increases
b) motor speed will decrease
c) the speed will not be effected
d) None of above

5) R-C snubber is used in parallel with the thyristor to _____.
- a) reduce dv/dt across it
- b) protect against di/dt
- c) protect over current
- d) trigger thyristor

6) Thyristor is a _____.
- a) Latching device
- b) Un- controlled device
- c) latch proof device
- d) voltage controlled device

7) PIV for single phase full bridge rectifier is _____.
- a) 2 Vm
- b) Vm
- c) 3 Vm
- d) 4Vm

8) Ripple frequency for single phase semi converter is _____.
- a) Same as supply frequency
- b) Two times supply frequency
- c) Three times supply frequency
- d) Four times supply frequency

9) A converter which can operate as 3 pulse converter is a _____.
- a) 3-phase half wave
- b) 3-phase full-converter
- c) 1-phase semiconverter
- d) 1-phase dual converter

10) In Three phase full controlled bridge rectifier PIV across any thyristor is _____.
- a) $\sqrt{2}\,V_m$
- b) $\sqrt{3}\,V_m$
- c) V_m
- d) $\sqrt{3}\,V_{LL}$

11) The average value of the output voltage in a step - down dc chopper is given by _____.
- a) $V_0 = V_s$
- b) $V_0 = K V_s$
- c) $V_0 = V_s / K$
- d) $V_0 = V_s / (1 – K)$

12) Class A and Class B choppers _____.
- a) Two quadrant converters
- b) Three quadrant converters
- c) Single quadrant converters
- d) None

13) In thyristor dc chopper _____ type of commutation results in best performance.
- a) voltage commutation
- b) current commutation
- c) load commutation
- d) supply commutation

14) Cycloconverter is a combination of _____.
- a) Positive and negative converter
- b) Two positive converter
- c) Two negative converter
- d) None

SLR-BD-432

Seat No.		Set	R

Fourth. Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Power Electronics (BTN04702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any Four. **16**

a) Explain high di/dt and high dv/dt protection circuit of SCR.

b) A single phase fully controlled rectifier supplies an inductive load. Assuming I_L is constant 5A. Determine average DC voltage and supply rms current if supply voltage is 240V, 50Hz and firing angle is 90°.

c) Illustrate the different mechanisms by which thyristor may be turn on.

d) A three phase semiconverter is operated from three phase 410V 50Hz mains supply and delivers power to sufficiently large inductive load having resistance of 30Ω. If it is required that average output voltage should be 55% of maximum possible voltage. Calculate
1) Firing angle
2) Average dc load voltage

e) Derive an expression for average dc output voltage for three phase half wave controlled rectifier with resistive load for continuous conduction mode. Sketch voltage waveform for $\alpha = 30°$

Q.3 Attempt any two. **12**

a) Design microcontroller based firing scheme for single phase fully controlled rectifiers.

b) What do you meant by voltage commutation? Elaborate the process of commutation in class D auxiliary commutation. Sketch associated waveforms.

c) Derive an exp for average voltage and RMS voltage for three phase full wave controlled bridge rectifier with highly inductive load. Sketch voltage waveform for $\alpha = 60°$

Section – II

Q.4 Attempt any Four. **16**

a) Design the control scheme for three phase cycloconverter.

b) Derive an expression for output voltage, duty cycle and effective input resistance for step down chopper.

c) Explain operation of single phase half bridge voltage source inverter with resistive load. Draw associate waveforms.

d) With suitable circuit explain operation of basic parallel inverter. Draw associated waveforms.

e) With suitable circuit diagram explain working of Class C chopper.

Q.5 Attempt any two. **12**

a) Explain working of multiphase chopper circuit. Compare In phase and Phase shifted operating mode of multiphase chopper circuit.

b) With suitable block diagram analyze the speed control of AC drive using fuzzy logic controller.

c) Derive an expression of RMS output voltage for single pulse modulation technique. Prove that to eliminate n^{th} harmonic component from output voltage pulse width should be $2\pi/n$.

Seat No.		Set	S

Fourth. Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Power Electronics (BTN04702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In Three phase full controlled bridge rectifier PIV across any thyristor is _____.
a) $\sqrt{2}\,V_m$ b) $\sqrt{3}\,V_m$
c) V_m d) $\sqrt{3}\,V_{LL}$

2) The average value of the output voltage in a step - down dc chopper is given by _____.
a) $V_0 = V_s$ b) $V_0 = K V_s$
c) $V_0 = V_s / K$ d) $V_0 = V_s / (1 – K)$

3) Class A and Class B choppers _____.
a) Two quadrant converters b) Three quadrant converters
c) Single quadrant converters d) None

4) In thyristor dc chopper _____ type of commutation results in best performance.
a) voltage commutation b) current commutation
c) load commutation d) supply commutation

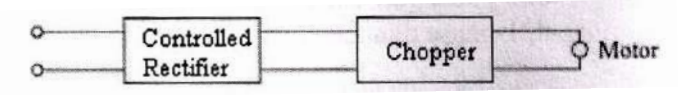
5) Cycloconverter is a combination of _____.
a) Positive and negative converter
b) Two positive converter
c) Two negative converter
d) None

6) The number of thyristors required for single phase bridge type cycloconverters _____.
a) 8 b) 6
c) 4 d) 2

7) In Three phase 120° conduction mode _____.
   a) At any instant of time two thyristors are ON
   b) Triplen harmonics are absent
   c) No possibility of short circuit
   d) All above

8) Square wave PWM technique allows _____.
   a) Voltage & harmonics control
   b) only harmonics control
   c) only voltage control
   d) only frequency control

9) For the large D.C. motor control shown below, if the duty cycle of chopper circuit is increased then _____.



   a) motor speed will increases
   b) motor speed will decrease
   c) the speed will not be effected
   d) None of above

10) R-C snubber is used in parallel with the thyristor to _____.
   a) reduce dv/dt across it b) protect against di/dt
   c) protect over current d) trigger thyristor

11) Thyristor is a _____.
   a) Latching device b) Un- controlled device
   c) latch proof device d) voltage controlled device

12) PIV for single phase full bridge rectifier is _____.
   a) 2 Vm b) Vm
   c) 3 Vm d) 4Vm

13) Ripple frequency for single phase semi converter is _____.
   a) Same as supply frequency
   b) Two times supply frequency
   c) Three times supply frequency
   d) Four times supply frequency

14) A converter which can operate as 3 pulse converter is a _____.
   a) 3-phase half wave b) 3-phase full-converter
   c) 1-phase semiconverter d) 1-phase dual converter

SLR-BD-432

Seat No.		Set	S

Fourth. Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Power Electronics (BTN04702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any Four. **16**

a) Explain high di/dt and high dv/dt protection circuit of SCR.

b) A single phase fully controlled rectifier supplies an inductive load. Assuming I_L is constant 5A. Determine average DC voltage and supply rms current if supply voltage is 240V, 50Hz and firing angle is 90°.

c) Illustrate the different mechanisms by which thyristor may be turn on.

d) A three phase semiconverter is operated from three phase 410V 50Hz mains supply and delivers power to sufficiently large inductive load having resistance of 30Ω. If it is required that average output voltage should be 55% of maximum possible voltage. Calculate
1) Firing angle
2) Average dc load voltage

e) Derive an expression for average dc output voltage for three phase half wave controlled rectifier with resistive load for continuous conduction mode. Sketch voltage waveform for $\alpha = 30°$

Q.3 Attempt any two. **12**

a) Design microcontroller based firing scheme for single phase fully controlled rectifiers.

b) What do you meant by voltage commutation? Elaborate the process of commutation in class D auxiliary commutation. Sketch associated waveforms.

c) Derive an exp for average voltage and RMS voltage for three phase full wave controlled bridge rectifier with highly inductive load. Sketch voltage waveform for $\alpha = 60°$

Section – II

Q.4 Attempt any Four. **16**

a) Design the control scheme for three phase cycloconverter.

b) Derive an expression for output voltage, duty cycle and effective input resistance for step down chopper.

c) Explain operation of single phase half bridge voltage source inverter with resistive load. Draw associate waveforms.

d) With suitable circuit explain operation of basic parallel inverter. Draw associated waveforms.

e) With suitable circuit diagram explain working of Class C chopper.

Q.5 Attempt any two. **12**

a) Explain working of multiphase chopper circuit. Compare In phase and Phase shifted operating mode of multiphase chopper circuit.

b) With suitable block diagram analyze the speed control of AC drive using fuzzy logic controller.

c) Derive an expression of RMS output voltage for single pulse modulation technique. Prove that to eliminate n^{th} harmonic component from output voltage pulse width should be $2\pi/n$.

SLR-BD-433

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Mobile Technology (BTN04703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following is a type of wireless communication.
a) LAN b) WAN
c) PAN d) All mentioned

2) Small scale fading describes the _____ fluctuations of the amplitude, phases of a signal.
a) Rapid b) Slow
c) Instantaneous d) Different

3) Slow frequency hopping is _____.
a) several hops per modulation
b) several modulations per hop
c) several symbols per modulation
d) none of the mentioned

4) Spread spectrum is _____ technique.
a) decoding
b) encoding
c) both encoding and decoding
d) none of mentioned

5) Which of the following memory devices stores information such as subscriber's identification number in GSM?
a) Register b) Flip flop
c) SIM d) SMS

6) Which one of the following enables us to use the entire bandwidth simultaneously?
a) TDMA b) CDMA
c) FDMA d) all mentioned

7) Which of the following uses wireless as the mode of communication for transferring or exchanging data between various mobiles over a short-range?
a) Ad hoc computing
b) Mobile computing
c) Bluetooth technology
d) None of the above

8) Mobile Computing allows transmission of data from one wireless-enabled device to another _____.
a) Any device
b) Wired device
c) Wireless-enabled device
d) All mentioned above

9) Which of the following is considered as the heart of the Global Systems for Mobiles (or GSM)?
a) Networks Switching Sub System
b) Operational Support Sub-system
c) base Station Subsystem
d) None of the above

10) Which one of the following can help in avoiding the interferences between the neighbouring base station?
a) Assigning different group of channels
b) Using transmitters with the different power level
c) Using different antennas
d) All of the above

11) The hexagon shape is used for radio coverage because _____.
a) It uses the maximum area for coverage
b) Fewer number of cells are required
c) It approximates a circular radiation pattern
d) All of the above

12) In mobile IP the _____ procedure the mobile node informs its home agent of its care-of address.
a) Discovery
b) Registration
c) Tunnelling
d) Termination

13) Mobile IP allows the mobile node to use two IP addresses called home address and _____.
a) Visitor Location Register
b) Virtual Address
c) Care of address
d) Temporary Address

14) GPRS uses the _____ architecture for voice.
a) NSS
b) CDMA
c) GSM
d) ESS

SLR-BD-433

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Mobile Technology (BTN04703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Answer any four. **16**

a) Explain following terms related to wireless communication.
1) modes of propagation
2) fading and shadowing

b) Describe various multiple access methods used in mobile communication.

c) Discuss functioning of FHSS in detail. What are the advantages and disadvantages of FHSS?

d) What is the necessity of hand-off in mobile communication? Describe various hand-off scenarios of GSM.

e) Demonstrate call initiation and call termination process in case of GSM system.

Q.3 Answer any two: **12**

a) Draw GSM architecture and describe different terms and their operations associated with GSM.

b) Elaborate GPRS architecture to enable packet data access in TDMA.

c) Consider total 40 channels available and cluster size of 4 is repeated 10 times to cover certain area, find total capacity of mobile network. What is the effect of interference in mobile communication? How the effect of interference can be reduced?

Section – II

Q.4 Answer any four. **16**

a) Differentiate between Bluetooth and wireless PAN standard.

b) What is Hidden & Exposed Terminal Problem in mobile network? How this problem can be resolved.

c) Describe architecture of infrastructure and ad-hoc networks.

d) What is tunneling? What is its requirement?

e) With suitable example describe concept of piconet and scatternet.

Q.5 Answer any two. **12**

a) What is Wi-Fi standard? Explain different types of Wi-Fi standards.

b) Draw protocol stack of Bluetooth and describe its operation.

c) How packet data is transferred from fixed node to a mobile node presently available in foreign network.

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Mobile Technology (BTN04703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) Mobile Computing allows transmission of data from one wireless-enabled device to another _____.
a) Any device b) Wired device
c) Wireless-enabled device d) All mentioned above

2) Which of the following is considered as the heart of the Global Systems for Mobiles (or GSM)?
a) Networks Switching Sub System
b) Operational Support Sub-system
c) base Station Subsystem
d) None of the above

3) Which one of the following can help in avoiding the interferences between the neighbouring base station?
a) Assigning different group of channels
b) Using transmitters with the different power level
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d) All of the above

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c) both encoding and decoding
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13) Which one of the following enables us to use the entire bandwidth simultaneously?
a) TDMA b) CDMA
c) FDMA d) all mentioned

14) Which of the following uses wireless as the mode of communication for transferring or exchanging data between various mobiles over a short-range?
a) Ad hoc computing b) Mobile computing
c) Bluetooth technology d) None of the above

SLR-BD-433

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Mobile Technology (BTN04703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

Q.2 Answer any four. **16**

a) Explain following terms related to wireless communication.
1) modes of propagation
2) fading and shadowing

b) Describe various multiple access methods used in mobile communication.

c) Discuss functioning of FHSS in detail. What are the advantages and disadvantages of FHSS?

d) What is the necessity of hand-off in mobile communication? Describe various hand-off scenarios of GSM.

e) Demonstrate call initiation and call termination process in case of GSM system.

Q.3 Answer any two: **12**

a) Draw GSM architecture and describe different terms and their operations associated with GSM.

b) Elaborate GPRS architecture to enable packet data access in TDMA.

c) Consider total 40 channels available and cluster size of 4 is repeated 10 times to cover certain area, find total capacity of mobile network. What is the effect of interference in mobile communication? How the effect of interference can be reduced?

Section – II

Q.4 Answer any four. **16**

a) Differentiate between Bluetooth and wireless PAN standard.

b) What is Hidden & Exposed Terminal Problem in mobile network? How this problem can be resolved.

c) Describe architecture of infrastructure and ad-hoc networks.

d) What is tunneling? What is its requirement?

e) With suitable example describe concept of piconet and scatternet.

Q.5 Answer any two. **12**

a) What is Wi-Fi standard? Explain different types of Wi-Fi standards.

b) Draw protocol stack of Bluetooth and describe its operation.

c) How packet data is transferred from fixed node to a mobile node presently available in foreign network.

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Mobile Technology (BTN04703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

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14) Which one of the following can help in avoiding the interferences between the neighbouring base station?
   a) Assigning different group of channels
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SLR-BD-433

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Mobile Technology (BTN04703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Answer any four. **16**

a) Explain following terms related to wireless communication.
1) modes of propagation
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b) Describe various multiple access methods used in mobile communication.

c) Discuss functioning of FHSS in detail. What are the advantages and disadvantages of FHSS?

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c) Consider total 40 channels available and cluster size of 4 is repeated 10 times to cover certain area, find total capacity of mobile network. What is the effect of interference in mobile communication? How the effect of interference can be reduced?

Section – II

Q.4 Answer any four. **16**

a) Differentiate between Bluetooth and wireless PAN standard.

b) What is Hidden & Exposed Terminal Problem in mobile network? How this problem can be resolved.

c) Describe architecture of infrastructure and ad-hoc networks.

d) What is tunneling? What is its requirement?

e) With suitable example describe concept of piconet and scatternet.

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a) What is Wi-Fi standard? Explain different types of Wi-Fi standards.

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c) How packet data is transferred from fixed node to a mobile node presently available in foreign network.

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Mobile Technology (BTN04703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which one of the following enables us to use the entire bandwidth simultaneously?
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c) FDMA d) all mentioned

2) Which of the following uses wireless as the mode of communication for transferring or exchanging data between various mobiles over a short-range?
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a) LAN
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c) PAN
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d) Different

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b) several modulations per hop
c) several symbols per modulation
d) none of the mentioned

13) Spread spectrum is _____ technique.
a) decoding
b) encoding
c) both encoding and decoding
d) none of mentioned

14) Which of the following memory devices stores information such as subscriber's identification number in GSM?
a) Register
b) Flip flop
c) SIM
d) SMS

SLR-BD-433

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Mobile Technology (BTN04703)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Answer any four. **16**

a) Explain following terms related to wireless communication.
1) modes of propagation
2) fading and shadowing

b) Describe various multiple access methods used in mobile communication.

c) Discuss functioning of FHSS in detail. What are the advantages and disadvantages of FHSS?

d) What is the necessity of hand-off in mobile communication? Describe various hand-off scenarios of GSM.

e) Demonstrate call initiation and call termination process in case of GSM system.

Q.3 Answer any two: **12**

a) Draw GSM architecture and describe different terms and their operations associated with GSM.

b) Elaborate GPRS architecture to enable packet data access in TDMA.

c) Consider total 40 channels available and cluster size of 4 is repeated 10 times to cover certain area, find total capacity of mobile network. What is the effect of interference in mobile communication? How the effect of interference can be reduced?

Section – II

Q.4 Answer any four. **16**

a) Differentiate between Bluetooth and wireless PAN standard.

b) What is Hidden & Exposed Terminal Problem in mobile network? How this problem can be resolved.

c) Describe architecture of infrastructure and ad-hoc networks.

d) What is tunneling? What is its requirement?

e) With suitable example describe concept of piconet and scatternet.

Q.5 Answer any two. **12**

a) What is Wi-Fi standard? Explain different types of Wi-Fi standards.

b) Draw protocol stack of Bluetooth and describe its operation.

c) How packet data is transferred from fixed node to a mobile node presently available in foreign network.

SLR-BD-434

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
CMOS VLSI Design (BTN04706)

Day & Date: Thursday 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) If n-transistor conducts and has large voltage between source and drain, then it is said to be in _____ region.
a) linear b) saturation
c) non saturation d) cut-off

2) In the region where inverter exhibits gain, the two transistors are in _____ region.
a) linear b) cut-off
c) non saturation d) saturation

3) Why the PUN is constructed using PMOS devices?
a) PMOS transistors produce "strong zeros".
b) PMOS transistors produce "strong ones".
c) PMOS transistors produce "high impedance".
d) None of the mentioned

4) In the positive latch, the D input is selected when clock is _____, and the output is held (using feedback) when clock is _____.
a) Low, high b) High, high
c) Low, low d) High, low

5) Increasing fan-out _____ the propagation delay.
a) increases b) decreases
c) does not affect d) exponentially decreases

6) Which of the following approaches may be used to reduce a delay in large fan-in circuits?
a) Transistor Sizing b) Progressive Transistor Sizing
c) Input Re-Ordering d) All of the above

7) A stored value remains valid as long as the supply voltage is applied to the circuit, hence the name _____.
a) Static b) Dynamic
c) Flip-flop d) Latch

8) What is the standard form of C^2MOS?
a) Common CMOS Register b) CMOS Clocked Register
c) Clocked CMOS Register d) None of these

9) In input Re-Ordering mechanism putting the critical-path transistors closer to the output of the gate can result in a _____
a) Speedup b) Voltage
c) Current d) Output impedance

10) When the pass transistor pulls a node high, the output only charges up to _____.
a) VDD – VTn b) VDD + VTn
c) VDD – VTp d) VDD + VTp

11) Static memories use _____ to create a bistable circuit _____ a circuit having two stable states that represent 0 and 1.
a) negative feedback b) no feedback
c) positive feedback d) all of these

12) Clocked sequential circuits are _____.
a) two phase overlapping clock
b) two phase non overlapping clock
c) four phase overlapping clock
d) four phase non overlapping clock

13) In Differential Cascade Voltage Switch Logic (or DCVSL), the pull-down networks PDN1 and PDN2 use NMOS devices and are _____.
a) mutually not exclusive
b) Both PDN1 and PDN2 turn ON at the same time
c) mutually exclusive
d) Both PDN1 and PDN2 turn OFF at the same time

14) The drain current is varied by: _____.
a) Gate to source voltage b) Gate current
c) Source Voltage d) None of the mentioned

SLR-BD-434

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
CMOS VLSI Design (BTN04706)

Day & Date: Thursday 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Solve: (Any Four) **16**

a) Explain in detail I-V characteristics of n-MOS transistor.
b) Draw the MOS Diffusion Capacitance Model and Explain the effective capacitance.
c) Explain Static and dynamic power Dissipation. Derive an expression for total power dissipation.
d) Implement Dynamic CMOS 2 input NAND Gate.
Gate and justify the implementation.
e) How Dynamic CMOS Logic is used in CMOS Design explain using example?

Q.3 Solve: (Any Two) **12**

a) Design and comment on number of transistors and power dissipation of Static CMOS 2 input NAND Gate and Ratioed Logic 2 input NAND Gate.
b) Discuss the any two approaches to be used to reduce delays in large fan-in circuits.
c) Synthesis compliment of A = P + Q + (B . C) Using complementary CMOS logic and justify it.

Section – II

Q.4 Solve: (Any Four) **16**

a) What is transmission gate? How it is used to implement Latch.
b) With help of diagram explain SR Latch implementation using CMOS Logic devices.
c) What is dynamic latch or register? How it operates?
d) Explain timing classification in interconnect design.
e) List different fast adder circuits and explain any one in detail.

Q.5 Solve: (Any Two) **12**

a) What is multiplexer based latch? Explain the use of multiplexer based latch to implement D Latch.

b) Explain briefly Plesiochronous interconnect and Asynchronous interconnect

c) What is synchronous design? What are the challenges in synchronous design?

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
CMOS VLSI Design (BTN04706)

Day & Date: Thursday 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the standard form of C^2MOS?
a) Common CMOS Register b) CMOS Clocked Register
c) Clocked CMOS Register d) None of these

2) In input Re-Ordering mechanism putting the critical-path transistors closer to the output of the gate can result in a _____
a) Speedup b) Voltage
c) Current d) Output impedance

3) When the pass transistor pulls a node high, the output only charges up to _____.
a) VDD – VTn b) VDD + VTn
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a) Gate to source voltage b) Gate current
c) Source Voltage d) None of the mentioned

8) If n-transistor conducts and has large voltage between source and drain, then it is said to be in _____ region.
a) linear b) saturation
c) non saturation d) cut-off

9) In the region where inverter exhibits gain, the two transistors are in _____ region.
a) linear b) cut-off
c) non saturation d) saturation

10) Why the PUN is constructed using PMOS devices?
a) PMOS transistors produce “strong zeros”.
b) PMOS transistors produce "strong ones”.
c) PMOS transistors produce “high impedance”.
d) None of the mentioned

11) In the positive latch, the D input is selected when clock is _____, and the output is held (using feedback) when clock is _____.
a) Low, high b) High, high
c) Low, low d) High, low

12) Increasing fan-out _____ the propagation delay.
a) increases b) decreases
c) does not affect d) exponentially decreases

13) Which of the following approaches may be used to reduce a delay in large fan-in circuits?
a) Transistor Sizing b) Progressive Transistor Sizing
c) Input Re-Ordering d) All of the above

14) A stored value remains valid as long as the supply voltage is applied to the circuit, hence the name _____.
a) Static b) Dynamic
c) Flip-flop d) Latch

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
CMOS VLSI Design (BTN04706)

Day & Date: Thursday 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Solve: (Any Four) **16**

a) Explain in detail I-V characteristics of n-MOS transistor.
b) Draw the MOS Diffusion Capacitance Model and Explain the effective capacitance.
c) Explain Static and dynamic power Dissipation. Derive an expression for total power dissipation.
d) Implement Dynamic CMOS 2 input NAND Gate.
Gate and justify the implementation.
e) How Dynamic CMOS Logic is used in CMOS Design explain using example?

Q.3 Solve: (Any Two) **12**

a) Design and comment on number of transistors and power dissipation of Static CMOS 2 input NAND Gate and Ratioed Logic 2 input NAND Gate.
b) Discuss the any two approaches to be used to reduce delays in large fan-in circuits.
c) Synthesis compliment of A = P + Q + (B . C) Using complementary CMOS logic and justify it.

Section – II

Q.4 Solve: (Any Four) **16**

a) What is transmission gate? How it is used to implement Latch.
b) With help of diagram explain SR Latch implementation using CMOS Logic devices.
c) What is dynamic latch or register? How it operates?
d) Explain timing classification in interconnect design.
e) List different fast adder circuits and explain any one in detail.

Q.5 Solve: (Any Two) **12**

a) What is multiplexer based latch? Explain the use of multiplexer based latch to implement D Latch.

b) Explain briefly Plesiochronous interconnect and Asynchronous interconnect

c) What is synchronous design? What are the challenges in synchronous design?

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
CMOS VLSI Design (BTN04706)

Day & Date: Thursday 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Static memories use _____ to create a bistable circuit _____ a circuit having two stable states that represent 0 and 1.
a) negative feedback b) no feedback
c) positive feedback d) all of these

2) Clocked sequential circuits are _____.
a) two phase overlapping clock
b) two phase non overlapping clock
c) four phase overlapping clock
d) four phase non overlapping clock

3) In Differential Cascade Voltage Switch Logic (or DCVSL), the pull-down networks PDN1 and PDN2 use NMOS devices and are _____.
a) mutually not exclusive
b) Both PDN1 and PDN2 turn ON at the same time
c) mutually exclusive
d) Both PDN1 and PDN2 turn OFF at the same time

4) The drain current is varied by: _____.
a) Gate to source voltage b) Gate current
c) Source Voltage d) None of the mentioned

5) If n-transistor conducts and has large voltage between source and drain, then it is said to be in _____ region.
a) linear b) saturation
c) non saturation d) cut-off

6) In the region where inverter exhibits gain, the two transistors are in _____ region.

a) linear b) cut-off
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7) Why the PUN is constructed using PMOS devices?

a) PMOS transistors produce “strong zeros”.
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8) In the positive latch, the D input is selected when clock is _____, and the output is held (using feedback) when clock is _____.

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c) Low, low d) High, low

9) Increasing fan-out _____ the propagation delay.

a) increases b) decreases
c) does not affect d) exponentially decreases

10) Which of the following approaches may be used to reduce a delay in large fan-in circuits?

a) Transistor Sizing b) Progressive Transistor Sizing
c) Input Re-Ordering d) All of the above

11) A stored value remains valid as long as the supply voltage is applied to the circuit, hence the name _____.

a) Static b) Dynamic
c) Flip-flop d) Latch

12) What is the standard form of C^2MOS?

a) Common CMOS Register b) CMOS Clocked Register
c) Clocked CMOS Register d) None of these

13) In input Re-Ordering mechanism putting the critical-path transistors closer to the output of the gate can result in a _____

a) Speedup b) Voltage
c) Current d) Output impedance

14) When the pass transistor pulls a node high, the output only charges up to _____.

a) VDD – VTn b) VDD + VTn
c) VDD – VTp d) VDD + VTp

SLR-BD-434

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
CMOS VLSI Design (BTN04706)

Day & Date: Thursday 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Solve: (Any Four) **16**

a) Explain in detail I-V characteristics of n-MOS transistor.
b) Draw the MOS Diffusion Capacitance Model and Explain the effective capacitance.
c) Explain Static and dynamic power Dissipation. Derive an expression for total power dissipation.
d) Implement Dynamic CMOS 2 input NAND Gate.
Gate and justify the implementation.
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Q.3 Solve: (Any Two) **12**

a) Design and comment on number of transistors and power dissipation of Static CMOS 2 input NAND Gate and Ratioed Logic 2 input NAND Gate.
b) Discuss the any two approaches to be used to reduce delays in large fan-in circuits.
c) Synthesis compliment of A = P + Q + (B . C) Using complementary CMOS logic and justify it.

Section – II

Q.4 Solve: (Any Four) **16**

a) What is transmission gate? How it is used to implement Latch.
b) With help of diagram explain SR Latch implementation using CMOS Logic devices.
c) What is dynamic latch or register? How it operates?
d) Explain timing classification in interconnect design.
e) List different fast adder circuits and explain any one in detail.

Q.5 Solve: (Any Two) **12**

a) What is multiplexer based latch? Explain the use of multiplexer based latch to implement D Latch.

b) Explain briefly Plesiochronous interconnect and Asynchronous interconnect

c) What is synchronous design? What are the challenges in synchronous design?

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
CMOS VLSI Design (BTN04706)

Day & Date: Thursday 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following approaches may be used to reduce a delay in large fan-in circuits?
a) Transistor Sizing b) Progressive Transistor Sizing
c) Input Re-Ordering d) All of the above

2) A stored value remains valid as long as the supply voltage is applied to the circuit, hence the name _____.
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c) Flip-flop d) Latch

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c) Current d) Output impedance

5) When the pass transistor pulls a node high, the output only charges up to _____.
a) VDD – VTn b) VDD + VTn
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10) If n-transistor conducts and has large voltage between source and drain, then it is said to be in _____ region.
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c) non saturation
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11) In the region where inverter exhibits gain, the two transistors are in _____ region.
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b) cut-off
c) non saturation
d) saturation

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d) None of the mentioned

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a) Low, high
b) High, high
c) Low, low
d) High, low

14) Increasing fan-out _____ the propagation delay.
a) increases
b) decreases
c) does not affect
d) exponentially decreases

SLR-BD-434

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
CMOS VLSI Design (BTN04706)

Day & Date: Thursday 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Solve: (Any Four) **16**

a) Explain in detail I-V characteristics of n-MOS transistor.
b) Draw the MOS Diffusion Capacitance Model and Explain the effective capacitance.
c) Explain Static and dynamic power Dissipation. Derive an expression for total power dissipation.
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Gate and justify the implementation.
e) How Dynamic CMOS Logic is used in CMOS Design explain using example?

Q.3 Solve: (Any Two) **12**

a) Design and comment on number of transistors and power dissipation of Static CMOS 2 input NAND Gate and Ratioed Logic 2 input NAND Gate.
b) Discuss the any two approaches to be used to reduce delays in large fan-in circuits.
c) Synthesis compliment of A = P + Q + (B . C) Using complementary CMOS logic and justify it.

Section – II

Q.4 Solve: (Any Four) **16**

a) What is transmission gate? How it is used to implement Latch.
b) With help of diagram explain SR Latch implementation using CMOS Logic devices.
c) What is dynamic latch or register? How it operates?
d) Explain timing classification in interconnect design.
e) List different fast adder circuits and explain any one in detail.

Q.5 Solve: (Any Two) **12**

a) What is multiplexer based latch? Explain the use of multiplexer based latch to implement D Latch.

b) Explain briefly Plesiochronous interconnect and Asynchronous interconnect

c) What is synchronous design? What are the challenges in synchronous design?

SLR-BD-435

Seat No.		Set	P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
PLC and Industrial Controllers (BTN04707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Which of the following application uses voltage to current converter?
a) Low voltage dc and ac voltmeter
b) Diode match finding
c) Light emitting diode
d) All of the mentioned

2) Which of the following is not of importance when a conveyor is designed?
a) Type of industry where the conveyor is being used
b) Type of material being carried by the conveyor
c) Cost
d) Length of travel of the conveyor

3) What do you mean by 'Conveyor control'?
a) Controlling the material flow, according to conveyor speed, to reduce power consumption
b) Controlling the conveyor speed, according to material flow, manually
c) Controlling the material flow, according to conveyor speed manually or using feedback drives
d) Controlling the conveyor speed, according to material flow to, reduce power consumption

4) Based on how binary information is entered or shifted out, shift registers are classified into _____ categories.
a) 2 b) 3
c) 4 d) 5

5) The PLC is used in _____.
a) machine tools
b) automated assembly equipment
c) moulding and extrusion machines
d) all of the above

6) Noise reduction techniques should be utilized to avoid interfering voltages that might be otherwise generated in the system.
a) True b) False

7) The objective of process control is to keep key process operating parameters within narrow bounds of the _____.
a) reference value b) spot
c) pith d) inception point

8) The most popular language for PLCs is: _____.
a) Ladder diagram b) C++
c) OOP+ d) VHDL

9) Very often relays and valves are connected to _____.
a) Input modules b) Output modules
c) Any of these d) None of the above

10) PLCs that have a fixed amount of I/O capability built into the unit are known as PLCs that have a fixed amount of I/O capability built into the unit are known as: _____.
a) Rack PLCs b) Monolithic PLCs
c) Modular PLCs d) None of these

11) Voltage to current converter is also called as _____.
a) Current series positive feedback amplifier
b) Voltage series negative feedback amplifier
c) Current series negative feedback amplifier
d) Voltage series positive feedback amplifier

12) In PLC programming, a retentive function is one that: _____.
a) defaults to the “on” state
b) comes last in the program
c) defaults to the “off” state
d) is not reset after a power cycle

13) Ladder logic programming consists primarily of: _____.
a) virtual relay contacts and coils
b) logic gate symbols with connecting lines
c) function blocks with connecting lines
d) text-based code
e) Hieroglyphics

14) The _____ of metals is a function of temperature and increases with increasing temperature.

a) Coefficient of material
b) Resistance
c) Conductivity
d) Kappa

SLR-BD-435

Seat No.	

Set P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
PLC and Industrial Controllers (BTN04707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Answer the following questions: (Any Four) **16**

a) Explain the function of ON-OFF delay timer.
b) Explain sequential function charts with suitable example.
c) Draw and explain the ladder diagrams of basic gates using two inputs.
d) Explain in detail subroutines used in PLC.
e) Draw and explain instruction list programming method using in PLC.

Q.3 Answer the following questions: (Any Two) **12**

a) What is Central heating system? Explain in detail.
b) Draw and explain applications of internal relay used in PLC.
c) State & explain the shift register with ladder diagram.

SECTION – II

Q.4 Answer the following questions: (Any Four) **16**

a) Compare between PI & PD controller.
b) Compare between hydraulic actuation system, pneumatic actuators.
c) What is P controller? Explain with mathematical model.
d) Explain the working of pressure sensor with suitable example.
e) Write short note on temperature sensors.

Q.5 Answer the following questions: (Any Two) **12**

a) Explain the advantages, disadvantages of PI, PD & PID controllers.
b) Explain different types of actuators with suitable example.
c) Explain Data Acquisition System using microcontrollers.

Seat No.		Set	Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
PLC and Industrial Controllers (BTN04707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page No. 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) The most popular language for PLCs is: _____.
a) Ladder diagram b) C++
c) OOP+ d) VHDL

2) Very often relays and valves are connected to _____.
a) Input modules b) Output modules
c) Any of these d) None of the above

3) PLCs that have a fixed amount of I/O capability built into the unit are known as PLCs that have a fixed amount of I/O capability built into the unit are known as: _____.
a) Rack PLCs b) Monolithic PLCs
c) Modular PLCs d) None of these

4) Voltage to current converter is also called as _____.
a) Current series positive feedback amplifier
b) Voltage series negative feedback amplifier
c) Current series negative feedback amplifier
d) Voltage series positive feedback amplifier

5) In PLC programming, a retentive function is one that: _____.
a) defaults to the "on" state
b) comes last in the program
c) defaults to the "off" state
d) is not reset after a power cycle

6) Ladder logic programming consists primarily of: _____.
a) virtual relay contacts and coils
b) logic gate symbols with connecting lines
c) function blocks with connecting lines
d) text-based code
e) Hieroglyphics

7) The _____ of metals is a function of temperature and increases with increasing temperature.
a) Coefficient of material b) Resistance
c) Conductivity d) Kappa

8) Which of the following application uses voltage to current converter?
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c) Light emitting diode
d) All of the mentioned

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c) Cost
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a) Controlling the material flow, according to conveyor speed, to reduce power consumption
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11) Based on how binary information is entered or shifted out, shift registers are classified into _____ categories.
a) 2 b) 3
c) 4 d) 5

12) The PLC is used in _____.
a) machine tools
b) automated assembly equipment
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d) all of the above

13) Noise reduction techniques should be utilized to avoid interfering voltages that might be otherwise generated in the system.
a) True b) False

14) The objective of process control is to keep key process operating parameters within narrow bounds of the _____.

a) reference value
b) spot
c) pith
d) inception point

SLR-BD-435

Seat No.	

Set Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
PLC and Industrial Controllers (BTN04707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Answer the following questions: (Any Four) **16**

a) Explain the function of ON-OFF delay timer.
b) Explain sequential function charts with suitable example.
c) Draw and explain the ladder diagrams of basic gates using two inputs.
d) Explain in detail subroutines used in PLC.
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Q.3 Answer the following questions: (Any Two) **12**

a) What is Central heating system? Explain in detail.
b) Draw and explain applications of internal relay used in PLC.
c) State & explain the shift register with ladder diagram.

SECTION – II

Q.4 Answer the following questions: (Any Four) **16**

a) Compare between PI & PD controller.
b) Compare between hydraulic actuation system, pneumatic actuators.
c) What is P controller? Explain with mathematical model.
d) Explain the working of pressure sensor with suitable example.
e) Write short note on temperature sensors.

Q.5 Answer the following questions: (Any Two) **12**

a) Explain the advantages, disadvantages of PI, PD & PID controllers.
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Seat No.		Set	R

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
PLC and Industrial Controllers (BTN04707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Voltage to current converter is also called as _____.
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b) Voltage series negative feedback amplifier
c) Current series negative feedback amplifier
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c) Modular PLCs
d) None of these

SLR-BD-435

Seat No.	

Set R

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
PLC and Industrial Controllers (BTN04707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Answer the following questions: (Any Four) **16**
a) Explain the function of ON-OFF delay timer.
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a) What is Central heating system? Explain in detail.
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SECTION – II

Q.4 Answer the following questions: (Any Four) **16**
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b) Compare between hydraulic actuation system, pneumatic actuators.
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Seat No.		Set	S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
PLC and Industrial Controllers (BTN04707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Noise reduction techniques should be utilized to avoid interfering voltages that might be otherwise generated in the system.
a) True b) False

2) The objective of process control is to keep key process operating parameters within narrow bounds of the _____.
a) reference value b) spot
c) pith d) inception point

3) The most popular language for PLCs is: _____.
a) Ladder diagram b) C++
c) OOP+ d) VHDL

4) Very often relays and valves are connected to _____.
a) Input modules b) Output modules
c) Any of these d) None of the above

5) PLCs that have a fixed amount of I/O capability built into the unit are known as PLCs that have a fixed amount of I/O capability built into the unit are known as: _____.
a) Rack PLCs b) Monolithic PLCs
c) Modular PLCs d) None of these

6) Voltage to current converter is also called as _____.
a) Current series positive feedback amplifier
b) Voltage series negative feedback amplifier
c) Current series negative feedback amplifier
d) Voltage series positive feedback amplifier

7) In PLC programming, a retentive function is one that: _____.
a) defaults to the “on” state
b) comes last in the program
c) defaults to the “off” state
d) is not reset after a power cycle

8) Ladder logic programming consists primarily of: _____.
a) virtual relay contacts and coils
b) logic gate symbols with connecting lines
c) function blocks with connecting lines
d) text-based code
e) Hieroglyphics

9) The _____ of metals is a function of temperature and increases with increasing temperature.
a) Coefficient of material
b) Resistance
c) Conductivity
d) Kappa

10) Which of the following application uses voltage to current converter?
a) Low voltage dc and ac voltmeter
b) Diode match finding
c) Light emitting diode
d) All of the mentioned

11) Which of the following is not of importance when a conveyor is designed?
a) Type of industry where the conveyor is being used
b) Type of material being carried by the conveyor
c) Cost
d) Length of travel of the conveyor

12) What do you mean by ‘Conveyor control’?
a) Controlling the material flow, according to conveyor speed, to reduce power consumption
b) Controlling the conveyor speed, according to material flow, manually
c) Controlling the material flow, according to conveyor speed manually or using feedback drives
d) Controlling the conveyor speed, according to material flow to, reduce power consumption

13) Based on how binary information is entered or shifted out, shift registers are classified into _____ categories.
a) 2
b) 3
c) 4
d) 5

14) The PLC is used in _____.

a) machine tools
b) automated assembly equipment
c) moulding and extrusion machines
d) all of the above

SLR-BD-435

Seat No.		Set	S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
PLC and Industrial Controllers (BTN04707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Answer the following questions: (Any Four) **16**
a) Explain the function of ON-OFF delay timer.
b) Explain sequential function charts with suitable example.
c) Draw and explain the ladder diagrams of basic gates using two inputs.
d) Explain in detail subroutines used in PLC.
e) Draw and explain instruction list programming method using in PLC.

Q.3 Answer the following questions: (Any Two) **12**
a) What is Central heating system? Explain in detail.
b) Draw and explain applications of internal relay used in PLC.
c) State & explain the shift register with ladder diagram.

SECTION – II

Q.4 Answer the following questions: (Any Four) **16**
a) Compare between PI & PD controller.
b) Compare between hydraulic actuation system, pneumatic actuators.
c) What is P controller? Explain with mathematical model.
d) Explain the working of pressure sensor with suitable example.
e) Write short note on temperature sensors.

Q.5 Answer the following questions: (Any Two) **12**
a) Explain the advantages, disadvantages of PI, PD & PID controllers.
b) Explain different types of actuators with suitable example.
c) Explain Data Acquisition System using microcontrollers.

SLR-BD-436

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Software Engineering (BTN04708)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is a primary objective of the software development process?
a) Generating user documentation
b) Meeting customer requirements
c) Reducing development costs
d) Enhancing project timelines

2) What is the primary goal of the Time Boxing model?
a) Minimizing development costs
b) Maximizing customer involvement
c) Controlling project duration
d) Improving code quality

3) Why is involving end-users in the requirement gathering process important?
a) To reduce project costs
b) To avoid documenting requirements
c) To complete the requirement process quickly
d) To get insights into the system's intended use and needs

4) What does a use case diagram represent in software engineering?
a) The flow of data in the system
b) The functionalities and interactions of the system with its users
c) The system's database structure
d) The system's performance metrics

5) Which design principle encourages extending the functionality of software module without modifying its source code?
a) Open Closed Principle b) Coupling
c) Cohesion d) Functional Design

6) Which design level focuses on refining the high-level design and making it more detailed and specific?

a) Conceptual Design b) High-Level Design
c) Detailed Design d) Technical Design

7) In design, what is the significance of "coupling"?

a) It refers to the strength of the relationship between software components
b) It refers to how well a component performs its intended function
c) It refers to the number of functions within a software component
d) It refers to the number of software components

8) What type of testing examines the software from the user's perspective without knowledge of its internal structure?

a) Black-box testing b) White-box testing
c) Functional testing d) System testing

9) What is the primary goal of software testing?

a) To find and fix bugs in the software
b) To design the software architecture
c) To write the initial code for the software
d) To create software documentation

10) What is the focus of "quality planning" in project management?

a) Identifying project risks
b) Planning for quality throughout the project
c) Identifying project requirements
d) Planning for project staffing

11) In project management, what does "staffing" primarily involve?

a) Allocating tasks to team members
b) Setting the project budget
c) Defining the project scope
d) Identifying potential risks

12) What does APM stand for in project management?

a) Agile Project Management
b) Advanced Project Metrics
c) Automated Project Management
d) Associated Project Methodology

13) What is a fundamental aspect of Agile methodologies like Scrum?

a) Extensive upfront planning
b) Fixed scope and requirements
c) Iterative cycles of work and continuous feedback
d) Linear progression of project phases

14) Which toolkit is often utilized to enhance project management efficiency and effectiveness?

a) Gantt Chart
b) APM Toolkit
c) RACI Matrix
d) SWOT Analysis

SLR-BD-436

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Software Engineering (BTN04708)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).
4) Draw neat diagrams.

SECTION – I

Q.2 Attempt: (Any Four) **16**

a) What is Software Engineering? Explain the steps involved in Software Development Life Cycle.

b) How time boxing model is useful in Software Development explain with help of example.

c) How Software Requirement Specification (SRS) document is important in Software Development explain with help of Characteristics of SRS.

d) With the help of Use case diagram explain Online commerce business model.

e) Explain the role of software architecture in the development of complex software systems. Discuss the key responsibilities and goals of software architects.

f) Explain the "Open Closed Principle" in software design and why it's essential for creating flexible and extensible software.

Q.3 Attempt: (Any Two) **12**

a) The Training Institute is in process of developing new student management software from Company PQR. With the help of Use case diagram explain Module of Student enrollment in the Course.

b) Explain the concept of "component and connector view" in software architecture and why it's important to visualize how different parts of the software connect.

c) With the help of example and neat diagram explain how Prototype Model is used in software development.

SECTION – II

Q.4 Attempt: (Any Four) **16**

a) What are the levels of Testing and illustrate its importance at every level?

b) Explain the concepts of black-box testing and white-box testing.

c) Differentiate between Procedural and Quantitative Approaches of Quality Planning.

d) Discuss risk management planning in software engineering projects. Explain the process of identifying, analyzing, and mitigating risks throughout the project lifecycle.

e) How the "iterative project management life cycle" works and why it is beneficial for managing projects?

f) Explain the role of the "APM Toolkit" in Agile Project Management and how it helps in managing projects efficiently.

Q.5 Attempt: (Any Two) **12**

a) What are Test Cases and Test Criteria? Prepare the test cases used for testing of User Authentication Page.

b) You are working as Software Development Team member illustrate with help of example following Terminologies used in the Agile Project Management.

1) Sprint
2) Sprint review
3) Scrum Master
4) Backlog
5) Sprint retrospective
6) Product Owner

c) With help of example explain Project management process.

SLR-BD-436

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Software Engineering (BTN04708)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page No. 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) What type of testing examines the software from the user's perspective without knowledge of its internal structure?
a) Black-box testing b) White-box testing
c) Functional testing d) System testing

2) What is the primary goal of software testing?
a) To find and fix bugs in the software
b) To design the software architecture
c) To write the initial code for the software
d) To create software documentation

3) What is the focus of "quality planning" in project management?
a) Identifying project risks
b) Planning for quality throughout the project
c) Identifying project requirements
d) Planning for project staffing

4) In project management, what does "staffing" primarily involve?
a) Allocating tasks to team members
b) Setting the project budget
c) Defining the project scope
d) Identifying potential risks

5) What does APM stand for in project management?
a) Agile Project Management
b) Advanced Project Metrics
c) Automated Project Management
d) Associated Project Methodology

6) What is a fundamental aspect of Agile methodologies like Scrum?
a) Extensive upfront planning
b) Fixed scope and requirements
c) Iterative cycles of work and continuous feedback
d) Linear progression of project phases

7) Which toolkit is often utilized to enhance project management efficiency and effectiveness?
a) Gantt Chart
b) APM Toolkit
c) RACI Matrix
d) SWOT Analysis

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d) Enhancing project timelines

9) What is the primary goal of the Time Boxing model?
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b) Maximizing customer involvement
c) Controlling project duration
d) Improving code quality

10) Why is involving end-users in the requirement gathering process important?
a) To reduce project costs
b) To avoid documenting requirements
c) To complete the requirement process quickly
d) To get insights into the system's intended use and needs

11) What does a use case diagram represent in software engineering?
a) The flow of data in the system
b) The functionalities and interactions of the system with its users
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d) Technical Design

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b) It refers to how well a component performs its intended function
c) It refers to the number of functions within a software component
d) It refers to the number of software components

SLR-BD-436

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Software Engineering (BTN04708)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).
4) Draw neat diagrams.

SECTION – I

Q.2 Attempt: (Any Four) **16**

a) What is Software Engineering? Explain the steps involved in Software Development Life Cycle.

b) How time boxing model is useful in Software Development explain with help of example.

c) How Software Requirement Specification (SRS) document is important in Software Development explain with help of Characteristics of SRS.

d) With the help of Use case diagram explain Online commerce business model.

e) Explain the role of software architecture in the development of complex software systems. Discuss the key responsibilities and goals of software architects.

f) Explain the "Open Closed Principle" in software design and why it's essential for creating flexible and extensible software.

Q.3 Attempt: (Any Two) **12**

a) The Training Institute is in process of developing new student management software from Company PQR. With the help of Use case diagram explain Module of Student enrollment in the Course.

b) Explain the concept of "component and connector view" in software architecture and why it's important to visualize how different parts of the software connect.

c) With the help of example and neat diagram explain how Prototype Model is used in software development.

SECTION – II

Q.4 Attempt: (Any Four) **16**

a) What are the levels of Testing and illustrate its importance at every level?

b) Explain the concepts of black-box testing and white-box testing.

c) Differentiate between Procedural and Quantitative Approaches of Quality Planning.

d) Discuss risk management planning in software engineering projects. Explain the process of identifying, analyzing, and mitigating risks throughout the project lifecycle.

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f) Explain the role of the "APM Toolkit" in Agile Project Management and how it helps in managing projects efficiently.

Q.5 Attempt: (Any Two) **12**

a) What are Test Cases and Test Criteria? Prepare the test cases used for testing of User Authentication Page.

b) You are working as Software Development Team member illustrate with help of example following Terminologies used in the Agile Project Management.

1) Sprint
2) Sprint review
3) Scrum Master
4) Backlog
5) Sprint retrospective
6) Product Owner

c) With help of example explain Project management process.

SLR-BD-436

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Software Engineering (BTN04708)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page No. 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In project management, what does "staffing" primarily involve?
a) Allocating tasks to team members
b) Setting the project budget
c) Defining the project scope
d) Identifying potential risks

2) What does APM stand for in project management?
a) Agile Project Management
b) Advanced Project Metrics
c) Automated Project Management
d) Associated Project Methodology

3) What is a fundamental aspect of Agile methodologies like Scrum?
a) Extensive upfront planning
b) Fixed scope and requirements
c) Iterative cycles of work and continuous feedback
d) Linear progression of project phases

4) Which toolkit is often utilized to enhance project management efficiency and effectiveness?
a) Gantt Chart b) APM Toolkit
c) RACI Matrix d) SWOT Analysis

5) What is a primary objective of the software development process?
a) Generating user documentation
b) Meeting customer requirements
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d) Enhancing project timelines

6) What is the primary goal of the Time Boxing model?
a) Minimizing development costs
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7) Why is involving end-users in the requirement gathering process important?
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8) What does a use case diagram represent in software engineering?
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b) The functionalities and interactions of the system with its users
c) The system's database structure
d) The system's performance metrics

9) Which design principle encourages extending the functionality of software module without modifying its source code?
a) Open Closed Principle
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d) Functional Design

10) Which design level focuses on refining the high-level design and making it more detailed and specific?
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12) What type of testing examines the software from the user's perspective without knowledge of its internal structure?
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d) System testing

13) What is the primary goal of software testing?
a) To find and fix bugs in the software
b) To design the software architecture
c) To write the initial code for the software
d) To create software documentation

14) What is the focus of "quality planning" in project management?

a) Identifying project risks
b) Planning for quality throughout the project
c) Identifying project requirements
d) Planning for project staffing

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Software Engineering (BTN04708)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).
4) Draw neat diagrams.

SECTION – I

Q.2 Attempt: (Any Four) **16**

a) What is Software Engineering? Explain the steps involved in Software Development Life Cycle.

b) How time boxing model is useful in Software Development explain with help of example.

c) How Software Requirement Specification (SRS) document is important in Software Development explain with help of Characteristics of SRS.

d) With the help of Use case diagram explain Online commerce business model.

e) Explain the role of software architecture in the development of complex software systems. Discuss the key responsibilities and goals of software architects.

f) Explain the "Open Closed Principle" in software design and why it's essential for creating flexible and extensible software.

Q.3 Attempt: (Any Two) **12**

a) The Training Institute is in process of developing new student management software from Company PQR. With the help of Use case diagram explain Module of Student enrollment in the Course.

b) Explain the concept of "component and connector view" in software architecture and why it's important to visualize how different parts of the software connect.

c) With the help of example and neat diagram explain how Prototype Model is used in software development.

SECTION – II

Q.4 Attempt: (Any Four) **16**

a) What are the levels of Testing and illustrate its importance at every level?

b) Explain the concepts of black-box testing and white-box testing.

c) Differentiate between Procedural and Quantitative Approaches of Quality Planning.

d) Discuss risk management planning in software engineering projects. Explain the process of identifying, analyzing, and mitigating risks throughout the project lifecycle.

e) How the "iterative project management life cycle" works and why it is beneficial for managing projects?

f) Explain the role of the "APM Toolkit" in Agile Project Management and how it helps in managing projects efficiently.

Q.5 Attempt: (Any Two) **12**

a) What are Test Cases and Test Criteria? Prepare the test cases used for testing of User Authentication Page.

b) You are working as Software Development Team member illustrate with help of example following Terminologies used in the Agile Project Management.

1) Sprint
2) Sprint review
3) Scrum Master
4) Backlog
5) Sprint retrospective
6) Product Owner

c) With help of example explain Project management process.

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Software Engineering (BTN04708)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page No. 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which design level focuses on refining the high-level design and making it more detailed and specific?
a) Conceptual Design b) High-Level Design
c) Detailed Design d) Technical Design

2) In design, what is the significance of "coupling"?
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13) What does a use case diagram represent in software engineering?
a) The flow of data in the system
b) The functionalities and interactions of the system with its users
c) The system's database structure
d) The system's performance metrics

14) Which design principle encourages extending the functionality of software module without modifying its source code?

a) Open Closed Principle
b) Coupling
c) Cohesion
d) Functional Design

SLR-BD-436

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Software Engineering (BTN04708)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).
4) Draw neat diagrams.

SECTION – I

Q.2 Attempt: (Any Four) **16**

a) What is Software Engineering? Explain the steps involved in Software Development Life Cycle.

b) How time boxing model is useful in Software Development explain with help of example.

c) How Software Requirement Specification (SRS) document is important in Software Development explain with help of Characteristics of SRS.

d) With the help of Use case diagram explain Online commerce business model.

e) Explain the role of software architecture in the development of complex software systems. Discuss the key responsibilities and goals of software architects.

f) Explain the "Open Closed Principle" in software design and why it's essential for creating flexible and extensible software.

Q.3 Attempt: (Any Two) **12**

a) The Training Institute is in process of developing new student management software from Company PQR. With the help of Use case diagram explain Module of Student enrollment in the Course.

b) Explain the concept of "component and connector view" in software architecture and why it's important to visualize how different parts of the software connect.

c) With the help of example and neat diagram explain how Prototype Model is used in software development.

SECTION – II

Q.4 Attempt: (Any Four) **16**

a) What are the levels of Testing and illustrate its importance at every level?

b) Explain the concepts of black-box testing and white-box testing.

c) Differentiate between Procedural and Quantitative Approaches of Quality Planning.

d) Discuss risk management planning in software engineering projects. Explain the process of identifying, analyzing, and mitigating risks throughout the project lifecycle.

e) How the "iterative project management life cycle" works and why it is beneficial for managing projects?

f) Explain the role of the "APM Toolkit" in Agile Project Management and how it helps in managing projects efficiently.

Q.5 Attempt: (Any Two) **12**

a) What are Test Cases and Test Criteria? Prepare the test cases used for testing of User Authentication Page.

b) You are working as Software Development Team member illustrate with help of example following Terminologies used in the Agile Project Management.

1) Sprint
2) Sprint review
3) Scrum Master
4) Backlog
5) Sprint retrospective
6) Product Owner

c) With help of example explain Project management process.

SLR-BD-438

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Data Science - Business Intelligence (BTN04712)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Information is transformed into _____ when it is used to make decisions and develop the corresponding actions.
a) data b) outcome
c) knowledge d) experience

2) In BI architecture, ETL stands for _____.
a) Evaluate, Transfer, Load b) Extract, Transform, Load
c) Execute, Translate, Launch d) Explore, Test, Learn

3) A decision-making system is primarily designed to: _____.
a) Solve structured problems only
b) Automate all business processes
c) Support structured, semi-structured, and unstructured decisions
d) Replace human decision-makers

4) Depending on scope, decisions can be classified as strategic, tactical and _____.
a) Accurate b) Operational
c) Sequential d) Procedural

5) Which of the following is NOT an application of data mining?
a) Fraud detection b) Predicting customer behavior
c) Data cleaning d) Market segmentation

6) Full form of OLAP: _____.
a) Online analytical process b) Online analog process
c) Online anal process d) Online analogy process

7) The star schema in a data warehouse typically represents: _____.
a) Unstructured data storage
b) A central fact table connected to dimension tables
c) A multidimensional OLAP cube
d) A transactional database

8) Which methodology is commonly used in Six Sigma for problem-solving?
a) ETL
b) DMAIC
c) OLAP
d) SCRUM

9) What does the financial perspective of the Balanced Scorecard focus on?
a) Employee training and development
b) Profitability, revenue growth, and cost management
c) Customer satisfaction metrics
d) Operational efficiency improvements

10) In a marketing case study, the concept of CLV (Customer Lifetime Value) refers to: _____.
a) The total cost of acquiring a customer
b) The duration of a marketing campaign
c) The average transaction size per customer
d) The projected revenue from a customer over their lifetime

11) Relational marketing focuses on: _____.
a) Increasing product prices to maximize profits
b) Building and maintaining long-term relationships with customers
c) Developing standalone marketing campaigns
d) Selling products through unrelated channels

12) Which of the following is not an optimization model?
a) Extra Capacity
b) Multiple Plants
c) Backlogging
d) Maximum Fixed Cost

13) Revenue management relies heavily on which of the following tools for market segmentation?
a) ERP software
b) Data mining models
c) Physical surveys
d) Infinite loop analysis

14) What does backlogging in logistic systems involve?
a) Pre-producing goods to meet future demand
b) Delaying a portion of demand fulfillment to a later period
c) Canceling all unfulfilled orders
d) Increasing inventory costs to meet demand

SLR-BD-438

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Data Science - Business Intelligence (BTN04712)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Answer the following question: (Any Four) **16**

a) Explain the role of mathematical models in BI systems.
b) Trace the evolution of information systems and explain how each stage contributed to modern decision-making tools.
c) Differentiate between data warehouses and data marts.
d) Elaborate the structured, unstructured and semi- structured types of decision according to their nature in a decision making process.
e) Describe the significance of making timely and effective decisions.

Q.3 Answer the following question: (Any Two) **12**

a) Explain the data mining process in detail and illustrate it with an appropriate diagram, highlighting its key steps and methodologies.
b) Explain the components of a Business Intelligence (BI) architecture in detail, and illustrate them with a clear diagram.
c) Describe the phases involved in the development of mathematical models for decision making, providing a detailed explanation of each phase.

Section – II

Q.4 Answer the following question: (Any Four) **16**

a) Explain the concept of supply chain optimization and its significance in logistics.
b) What are the four perspectives that balanced scorecard (BSC) suggests to use to view organizational performance?
c) List and describe the three major categories of business reports.
d) Explain relational marketing and discuss how it contributes to developing and maintaining customer relationships.
e) What is a revenue management system (RMS), and how does it support businesses in maximizing their revenue through dynamic pricing and inventory management?

Q.5 Answer the following question: (Any Two) **12**

a) Describe tactical planning and backlogging in context to optimization models for logistic planning.

b) Describe the basic charts and graphs used in data visualization with examples of situations where each type of chart is most effective.

c) What is salesforce management? Elaborate the decision process in salesforce management with suitable diagram.

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Data Science - Business Intelligence (BTN04712)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which methodology is commonly used in Six Sigma for problem-solving?
a) ETL b) DMAIC
c) OLAP d) SCRUM

2) What does the financial perspective of the Balanced Scorecard focus on?
a) Employee training and development
b) Profitability, revenue growth, and cost management
c) Customer satisfaction metrics
d) Operational efficiency improvements

3) In a marketing case study, the concept of CLV (Customer Lifetime Value) refers to: _____.
a) The total cost of acquiring a customer
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a) ERP software
b) Data mining models
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d) Infinite loop analysis

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c) Canceling all unfulfilled orders
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b) Automate all business processes
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d) Replace human decision-makers

11) Depending on scope, decisions can be classified as strategic, tactical and _____.

a) Accurate
b) Operational
c) Sequential
d) Procedural

12) Which of the following is NOT an application of data mining?

a) Fraud detection
b) Predicting customer behavior
c) Data cleaning
d) Market segmentation

13) Full form of OLAP: _____.

a) Online analytical process
b) Online analog process
c) Online anal process
d) Online analogy process

14) The star schema in a data warehouse typically represents: _____.

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SLR-BD-438

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Data Science - Business Intelligence (BTN04712)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Answer the following question: (Any Four) **16**

a) Explain the role of mathematical models in BI systems.
b) Trace the evolution of information systems and explain how each stage contributed to modern decision-making tools.
c) Differentiate between data warehouses and data marts.
d) Elaborate the structured, unstructured and semi- structured types of decision according to their nature in a decision making process.
e) Describe the significance of making timely and effective decisions.

Q.3 Answer the following question: (Any Two) **12**

a) Explain the data mining process in detail and illustrate it with an appropriate diagram, highlighting its key steps and methodologies.
b) Explain the components of a Business Intelligence (BI) architecture in detail, and illustrate them with a clear diagram.
c) Describe the phases involved in the development of mathematical models for decision making, providing a detailed explanation of each phase.

Section – II

Q.4 Answer the following question: (Any Four) **16**

a) Explain the concept of supply chain optimization and its significance in logistics.
b) What are the four perspectives that balanced scorecard (BSC) suggests to use to view organizational performance?
c) List and describe the three major categories of business reports.
d) Explain relational marketing and discuss how it contributes to developing and maintaining customer relationships.
e) What is a revenue management system (RMS), and how does it support businesses in maximizing their revenue through dynamic pricing and inventory management?

Q.5 Answer the following question: (Any Two) **12**

a) Describe tactical planning and backlogging in context to optimization models for logistic planning.

b) Describe the basic charts and graphs used in data visualization with examples of situations where each type of chart is most effective.

c) What is salesforce management? Elaborate the decision process in salesforce management with suitable diagram.

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Data Science - Business Intelligence (BTN04712)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Relational marketing focuses on: _____.
a) Increasing product prices to maximize profits
b) Building and maintaining long-term relationships with customers
c) Developing standalone marketing campaigns
d) Selling products through unrelated channels

2) Which of the following is not an optimization model?
a) Extra Capacity b) Multiple Plants
c) Backlogging d) Maximum Fixed Cost

3) Revenue management relies heavily on which of the following tools for market segmentation?
a) ERP software b) Data mining models
c) Physical surveys d) Infinite loop analysis

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9) Which of the following is NOT an application of data mining?
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c) Data cleaning d) Market segmentation

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c) Online anal process d) Online analogy process

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d) Operational efficiency improvements

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b) The duration of a marketing campaign
c) The average transaction size per customer
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SLR-BD-438

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Data Science - Business Intelligence (BTN04712)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Answer the following question: (Any Four) **16**

a) Explain the role of mathematical models in BI systems.
b) Trace the evolution of information systems and explain how each stage contributed to modern decision-making tools.
c) Differentiate between data warehouses and data marts.
d) Elaborate the structured, unstructured and semi- structured types of decision according to their nature in a decision making process.
e) Describe the significance of making timely and effective decisions.

Q.3 Answer the following question: (Any Two) **12**

a) Explain the data mining process in detail and illustrate it with an appropriate diagram, highlighting its key steps and methodologies.
b) Explain the components of a Business Intelligence (BI) architecture in detail, and illustrate them with a clear diagram.
c) Describe the phases involved in the development of mathematical models for decision making, providing a detailed explanation of each phase.

Section – II

Q.4 Answer the following question: (Any Four) **16**

a) Explain the concept of supply chain optimization and its significance in logistics.
b) What are the four perspectives that balanced scorecard (BSC) suggests to use to view organizational performance?
c) List and describe the three major categories of business reports.
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Q.5 Answer the following question: (Any Two) **12**

a) Describe tactical planning and backlogging in context to optimization models for logistic planning.

b) Describe the basic charts and graphs used in data visualization with examples of situations where each type of chart is most effective.

c) What is salesforce management? Elaborate the decision process in salesforce management with suitable diagram.

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Data Science - Business Intelligence (BTN04712)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Full form of OLAP: _____.
a) Online analytical process b) Online analog process
c) Online anal process d) Online analogy process

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3) Which methodology is commonly used in Six Sigma for problem-solving?
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c) Support structured, semi-structured, and unstructured decisions
d) Replace human decision-makers

13) Depending on scope, decisions can be classified as strategic, tactical and _____.
a) Accurate b) Operational
c) Sequential d) Procedural

14) Which of the following is NOT an application of data mining?
a) Fraud detection b) Predicting customer behavior
c) Data cleaning d) Market segmentation

SLR-BD-438

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Data Science - Business Intelligence (BTN04712)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Answer the following question: (Any Four) **16**

a) Explain the role of mathematical models in BI systems.
b) Trace the evolution of information systems and explain how each stage contributed to modern decision-making tools.
c) Differentiate between data warehouses and data marts.
d) Elaborate the structured, unstructured and semi- structured types of decision according to their nature in a decision making process.
e) Describe the significance of making timely and effective decisions.

Q.3 Answer the following question: (Any Two) **12**

a) Explain the data mining process in detail and illustrate it with an appropriate diagram, highlighting its key steps and methodologies.
b) Explain the components of a Business Intelligence (BI) architecture in detail, and illustrate them with a clear diagram.
c) Describe the phases involved in the development of mathematical models for decision making, providing a detailed explanation of each phase.

Section – II

Q.4 Answer the following question: (Any Four) **16**

a) Explain the concept of supply chain optimization and its significance in logistics.
b) What are the four perspectives that balanced scorecard (BSC) suggests to use to view organizational performance?
c) List and describe the three major categories of business reports.
d) Explain relational marketing and discuss how it contributes to developing and maintaining customer relationships.
e) What is a revenue management system (RMS), and how does it support businesses in maximizing their revenue through dynamic pricing and inventory management?

Q.5 Answer the following question: (Any Two) **12**

a) Describe tactical planning and backlogging in context to optimization models for logistic planning.

b) Describe the basic charts and graphs used in data visualization with examples of situations where each type of chart is most effective.

c) What is salesforce management? Elaborate the decision process in salesforce management with suitable diagram.

SLR-BD-439

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
IOT- Architecting IOT Solutions (BTN04714)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the AWS Well-Architected Framework used for?
a) AWS data analytics platform
b) Evaluating the security posture of AWS customers
c) Designing, building, and maintaining secure and efficient infrastructure for applications
d) AWS machine learning services

2) Which AWS service provides on-demand, scalable compute capacity in the cloud?
a) Amazon S3 b) Amazon RDS
c) Amazon EC2 d) Amazon Redshift

3) What AWS service helps manage and automate the deployment of applications across multiple Amazon EC2 instances?
a) Amazon S3 b) Amazon RDS
c) AWS Elastic Beanstalk d) Amazon DynamoDB

4) Which AWS Well-Architected Framework pillar emphasizes the importance of efficiently using resources to reduce costs without sacrificing performance?
a) Cost Optimization b) Operational Excellence
c) Reliability d) Performance Efficiency

5) What is the primary objective of the Performance Efficiency pillar in the AWS Well-Architected Framework?
a) Minimizing costs
b) Ensuring high availability
c) Achieving optimal system performance
d) Maximizing security

6) Which AWS Well-Architected Framework pillar focuses on the ability to recover from infrastructure or service failures and dynamically scale to meet demand?

a) Security
b) Cost Optimization
c) Reliability
d) Performance Efficiency

7) What is the main focus of the Operational Excellence pillar in the AWS Well-Architected Framework?

a) Ensuring high availability of resources
b) Optimizing and automating processes
c) Security and compliance
d) Cost optimization

8) In cloud security, Infrastructure Protection focuses on: _____.

a) Managing user access
b) Protecting the physical data centers
c) Detecting and responding to security incidents
d) Protecting the cloud infrastructure from attacks and vulnerabilities

9) What does Foundations address within the AWS Well-Architected Framework for Reliability?

a) Building the architectural base for workloads
b) Managing changes to the workload
c) Monitoring workload performance
d) Handling operational issues

10) What is the primary role of Foundations in ensuring Reliability within the AWS Well-Architected Framework?

a) Building a strong architectural base for your workloads
b) Managing workload changes
c) Monitoring performance and efficiency
d) Addressing operational issues

11) In the context of the AWS Well-Architected Framework, what is Failure Mode Analysis used for?

a) Identifying potential system failures
b) Ignoring system failures
c) Maximizing system performance
d) Reducing costs

12) Which aspect of Reliability focuses on the ability to quickly recover from failures, ensuring minimal service disruptions?

a) Foundations
b) Workload Architecture
c) Change Management
d) Resiliency

13) Cloud cost optimization is a process that involves: _____.

a) Increasing your cloud expenses
b) Minimizing cloud resource usage
c) Achieving the best value for your cloud investment
d) Eliminating cloud services

14) Which of the following cloud financial management practices focuses on selecting the most cost-effective cloud resources for your specific requirements?

a) Review
b) Trade Offs
c) Cost Optimization
d) Selection

SLR-BD-439

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
IOT- Architecting IOT Solutions (BTN04714)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Answer the following questions. (Any Three) **12**

a) How does AWS contribute to the scalability of applications?

b) Provide an in-depth introduction to Amazon Web Services (AWS) and its evolution in the cloud computing industry. Include some key milestones in AWS's history.

c) How does the AWS Well-Architected Framework address Performance Efficiency? Provide recommendations for optimizing performance in AWS.

d) What are the primary considerations and strategies for achieving Cost Optimization within the AWS Well-Architected Framework?

Q.3 Answer the following questions. (Any Two) **16**

a) Describe the process of selecting an appropriate AWS region for hosting applications. Consider factors like latency, compliance, and data sovereignty.

b) How can organizations strike a balance between innovation and stability in cloud operations while pursuing Operational Excellence?

c) Provide examples of tools and technologies that can assist organizations in managing and optimizing their cloud operations efficiently.

Section – II

Q.4 **Answer the following questions. (Any Three)** **12**

a) In the context of cloud security, what does "Incident Response" entail, and why is it crucial for organizations? Provide an overview of the incident response process.

b) Discuss the role of access controls and permissions in maintaining a secure cloud environment. How can organizations implement the principle of least privilege effectively?

c) Explain how workload architecture plays a crucial role in achieving reliability in a cloud environment. What are some architectural best practices?

d) How does regular performance review and monitoring contribute to maintaining a high level of Performance Efficiency in cloud-based systems?

Q.5 **Answer the following questions. (Any Two)** **16**

a) What are some common challenges organizations face when striving for reliability in cloud-based systems, and how can these challenges be mitigated?

b) Provide real-world examples of organizations that have successfully achieved high reliability in their cloud-based systems. What strategies and practices did they implement to achieve this?

c) Provide examples of cost-effective cloud resources and services that organizations can leverage to optimize their performance while minimizing costs.

SLR-BD-439

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
IOT- Architecting IOT Solutions (BTN04714)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

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c) Achieving optimal system performance
d) Maximizing security

13) Which AWS Well-Architected Framework pillar focuses on the ability to recover from infrastructure or service failures and dynamically scale to meet demand?

a) Security
b) Cost Optimization
c) Reliability
d) Performance Efficiency

14) What is the main focus of the Operational Excellence pillar in the AWS Well-Architected Framework?

a) Ensuring high availability of resources
b) Optimizing and automating processes
c) Security and compliance
d) Cost optimization

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
IOT- Architecting IOT Solutions (BTN04714)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 **Answer the following questions. (Any Three)** **12**

a) How does AWS contribute to the scalability of applications?

b) Provide an in-depth introduction to Amazon Web Services (AWS) and its evolution in the cloud computing industry. Include some key milestones in AWS's history.

c) How does the AWS Well-Architected Framework address Performance Efficiency? Provide recommendations for optimizing performance in AWS.

d) What are the primary considerations and strategies for achieving Cost Optimization within the AWS Well-Architected Framework?

Q.3 **Answer the following questions. (Any Two)** **16**

a) Describe the process of selecting an appropriate AWS region for hosting applications. Consider factors like latency, compliance, and data sovereignty.

b) How can organizations strike a balance between innovation and stability in cloud operations while pursuing Operational Excellence?

c) Provide examples of tools and technologies that can assist organizations in managing and optimizing their cloud operations efficiently.

Section – II

Q.4 **Answer the following questions. (Any Three)** **12**

a) In the context of cloud security, what does "Incident Response" entail, and why is it crucial for organizations? Provide an overview of the incident response process.

b) Discuss the role of access controls and permissions in maintaining a secure cloud environment. How can organizations implement the principle of least privilege effectively?

c) Explain how workload architecture plays a crucial role in achieving reliability in a cloud environment. What are some architectural best practices?

d) How does regular performance review and monitoring contribute to maintaining a high level of Performance Efficiency in cloud-based systems?

Q.5 **Answer the following questions. (Any Two)** **16**

a) What are some common challenges organizations face when striving for reliability in cloud-based systems, and how can these challenges be mitigated?

b) Provide real-world examples of organizations that have successfully achieved high reliability in their cloud-based systems. What strategies and practices did they implement to achieve this?

c) Provide examples of cost-effective cloud resources and services that organizations can leverage to optimize their performance while minimizing costs.

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
IOT- Architecting IOT Solutions (BTN04714)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In the context of the AWS Well-Architected Framework, what is Failure Mode Analysis used for?
a) Identifying potential system failures
b) Ignoring system failures
c) Maximizing system performance
d) Reducing costs

2) Which aspect of Reliability focuses on the ability to quickly recover from failures, ensuring minimal service disruptions?
a) Foundations b) Workload Architecture
c) Change Management d) Resiliency

3) Cloud cost optimization is a process that involves: _____.
a) Increasing your cloud expenses
b) Minimizing cloud resource usage
c) Achieving the best value for your cloud investment
d) Eliminating cloud services

4) Which of the following cloud financial management practices focuses on selecting the most cost-effective cloud resources for your specific requirements?
a) Review b) Trade Offs
c) Cost Optimization d) Selection

5) What is the AWS Well-Architected Framework used for?
a) AWS data analytics platform
b) Evaluating the security posture of AWS customers
c) Designing, building, and maintaining secure and efficient infrastructure for applications
d) AWS machine learning services

6) Which AWS service provides on-demand, scalable compute capacity in the cloud?

a) Amazon S3 b) Amazon RDS
c) Amazon EC2 d) Amazon Redshift

7) What AWS service helps manage and automate the deployment of applications across multiple Amazon EC2 instances?

a) Amazon S3 b) Amazon RDS
c) AWS Elastic Beanstalk d) Amazon DynamoDB

8) Which AWS Well-Architected Framework pillar emphasizes the importance of efficiently using resources to reduce costs without sacrificing performance?

a) Cost Optimization b) Operational Excellence
c) Reliability d) Performance Efficiency

9) What is the primary objective of the Performance Efficiency pillar in the AWS Well-Architected Framework?

a) Minimizing costs
b) Ensuring high availability
c) Achieving optimal system performance
d) Maximizing security

10) Which AWS Well-Architected Framework pillar focuses on the ability to recover from infrastructure or service failures and dynamically scale to meet demand?

a) Security b) Cost Optimization
c) Reliability d) Performance Efficiency

11) What is the main focus of the Operational Excellence pillar in the AWS Well-Architected Framework?

a) Ensuring high availability of resources
b) Optimizing and automating processes
c) Security and compliance
d) Cost optimization

12) In cloud security, Infrastructure Protection focuses on: _____.

a) Managing user access
b) Protecting the physical data centers
c) Detecting and responding to security incidents
d) Protecting the cloud infrastructure from attacks and vulnerabilities

13) What does Foundations address within the AWS Well-Architected Framework for Reliability?

a) Building the architectural base for workloads
b) Managing changes to the workload
c) Monitoring workload performance
d) Handling operational issues

14) What is the primary role of Foundations in ensuring Reliability within the AWS Well-Architected Framework?

a) Building a strong architectural base for your workloads
b) Managing workload changes
c) Monitoring performance and efficiency
d) Addressing operational issues

SLR-BD-439

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
IOT- Architecting IOT Solutions (BTN04714)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Answer the following questions. (Any Three) **12**

a) How does AWS contribute to the scalability of applications?

b) Provide an in-depth introduction to Amazon Web Services (AWS) and its evolution in the cloud computing industry. Include some key milestones in AWS's history.

c) How does the AWS Well-Architected Framework address Performance Efficiency? Provide recommendations for optimizing performance in AWS.

d) What are the primary considerations and strategies for achieving Cost Optimization within the AWS Well-Architected Framework?

Q.3 Answer the following questions. (Any Two) **16**

a) Describe the process of selecting an appropriate AWS region for hosting applications. Consider factors like latency, compliance, and data sovereignty.

b) How can organizations strike a balance between innovation and stability in cloud operations while pursuing Operational Excellence?

c) Provide examples of tools and technologies that can assist organizations in managing and optimizing their cloud operations efficiently.

Section – II

Q.4 **Answer the following questions. (Any Three)** **12**

a) In the context of cloud security, what does "Incident Response" entail, and why is it crucial for organizations? Provide an overview of the incident response process.

b) Discuss the role of access controls and permissions in maintaining a secure cloud environment. How can organizations implement the principle of least privilege effectively?

c) Explain how workload architecture plays a crucial role in achieving reliability in a cloud environment. What are some architectural best practices?

d) How does regular performance review and monitoring contribute to maintaining a high level of Performance Efficiency in cloud-based systems?

Q.5 **Answer the following questions. (Any Two)** **16**

a) What are some common challenges organizations face when striving for reliability in cloud-based systems, and how can these challenges be mitigated?

b) Provide real-world examples of organizations that have successfully achieved high reliability in their cloud-based systems. What strategies and practices did they implement to achieve this?

c) Provide examples of cost-effective cloud resources and services that organizations can leverage to optimize their performance while minimizing costs.

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
IOT- Architecting IOT Solutions (BTN04714)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which AWS Well-Architected Framework pillar focuses on the ability to recover from infrastructure or service failures and dynamically scale to meet demand?
a) Security
b) Cost Optimization
c) Reliability
d) Performance Efficiency

2) What is the main focus of the Operational Excellence pillar in the AWS Well-Architected Framework?
a) Ensuring high availability of resources
b) Optimizing and automating processes
c) Security and compliance
d) Cost optimization

3) In cloud security, Infrastructure Protection focuses on: _____.
a) Managing user access
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c) Detecting and responding to security incidents
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4) What does Foundations address within the AWS Well-Architected Framework for Reliability?
a) Building the architectural base for workloads
b) Managing changes to the workload
c) Monitoring workload performance
d) Handling operational issues

5) What is the primary role of Foundations in ensuring Reliability within the AWS Well-Architected Framework?
a) Building a strong architectural base for your workloads
b) Managing workload changes
c) Monitoring performance and efficiency
d) Addressing operational issues

6) In the context of the AWS Well-Architected Framework, what is Failure Mode Analysis used for?
a) Identifying potential system failures
b) Ignoring system failures
c) Maximizing system performance
d) Reducing costs

7) Which aspect of Reliability focuses on the ability to quickly recover from failures, ensuring minimal service disruptions?
a) Foundations
b) Workload Architecture
c) Change Management
d) Resiliency

8) Cloud cost optimization is a process that involves: _____.
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b) Minimizing cloud resource usage
c) Achieving the best value for your cloud investment
d) Eliminating cloud services

9) Which of the following cloud financial management practices focuses on selecting the most cost-effective cloud resources for your specific requirements?
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b) Trade Offs
c) Cost Optimization
d) Selection

10) What is the AWS Well-Architected Framework used for?
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b) Evaluating the security posture of AWS customers
c) Designing, building, and maintaining secure and efficient infrastructure for applications
d) AWS machine learning services

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b) Amazon RDS
c) Amazon EC2
d) Amazon Redshift

12) What AWS service helps manage and automate the deployment of applications across multiple Amazon EC2 instances?
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b) Amazon RDS
c) AWS Elastic Beanstalk
d) Amazon DynamoDB

13) Which AWS Well-Architected Framework pillar emphasizes the importance of efficiently using resources to reduce costs without sacrificing performance?

a) Cost Optimization
b) Operational Excellence
c) Reliability
d) Performance Efficiency

14) What is the primary objective of the Performance Efficiency pillar in the AWS Well-Architected Framework?

a) Minimizing costs
b) Ensuring high availability
c) Achieving optimal system performance
d) Maximizing security

SLR-BD-439

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
IOT- Architecting IOT Solutions (BTN04714)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Answer the following questions. (Any Three) **12**

a) How does AWS contribute to the scalability of applications?

b) Provide an in-depth introduction to Amazon Web Services (AWS) and its evolution in the cloud computing industry. Include some key milestones in AWS's history.

c) How does the AWS Well-Architected Framework address Performance Efficiency? Provide recommendations for optimizing performance in AWS.

d) What are the primary considerations and strategies for achieving Cost Optimization within the AWS Well-Architected Framework?

Q.3 Answer the following questions. (Any Two) **16**

a) Describe the process of selecting an appropriate AWS region for hosting applications. Consider factors like latency, compliance, and data sovereignty.

b) How can organizations strike a balance between innovation and stability in cloud operations while pursuing Operational Excellence?

c) Provide examples of tools and technologies that can assist organizations in managing and optimizing their cloud operations efficiently.

Section – II

Q.4 **Answer the following questions. (Any Three)** **12**

a) In the context of cloud security, what does "Incident Response" entail, and why is it crucial for organizations? Provide an overview of the incident response process.

b) Discuss the role of access controls and permissions in maintaining a secure cloud environment. How can organizations implement the principle of least privilege effectively?

c) Explain how workload architecture plays a crucial role in achieving reliability in a cloud environment. What are some architectural best practices?

d) How does regular performance review and monitoring contribute to maintaining a high level of Performance Efficiency in cloud-based systems?

Q.5 **Answer the following questions. (Any Two)** **16**

a) What are some common challenges organizations face when striving for reliability in cloud-based systems, and how can these challenges be mitigated?

b) Provide real-world examples of organizations that have successfully achieved high reliability in their cloud-based systems. What strategies and practices did they implement to achieve this?

c) Provide examples of cost-effective cloud resources and services that organizations can leverage to optimize their performance while minimizing costs.

SLR-BD-441

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Mechatronics (BTN04807)

Day & Date: Monday 26-05-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Which control system does not have a stability problem?
a) Open loop system b) Closed loop system
c) Both a. and b. d) None of the above

2) A sensor, for an input of 12V gives a digital output of a word of 10 bits. Resolution approximately is _____.
a) 0.0417 V b) 0.0217 V
c) 0.0117 V d) None of the above

3) A controller is essentially _____.
a) Sensor b) Clipper
c) Comparator d) Amplifier

4) DC motor speed control can be achieved using _____.
a) PWM b) Frequency modulation
c) Amplitude Modulation d) None of these

5) Cam converts _____ to _____.
a) force, energy
b) rotary motion, oscillatory motion
c) kinetic energy, potential energy
d) potential energy, kinetic energy

6) Gear trains are mechanisms which are very widely used to transfer and transform _____.
a) rotational motion b) kinetic energy
c) potential energy d) force

7) The minimum increment in input to which the sensor can respond is referred to as _____.

a) accuracy b) efficiency
c) resolution d) speed

8) In PID controller _____ parameter is responsible for oscillation.

a) KP b) KD
c) PO d) KI

9) Selection of the suitable actuations principle depends on: _____.

a) requirement forces b) amount of motion needed
c) accuracy d) all of the above

10) _____is used to control the operations of electro-mechanical devices especially in tough and hazardous industrial environments.

a) Microprocessor b) PLC
c) Microcontroller d) None of the above

11) _____converts the physical quantity such as the force or displacement into an equivalent electrical signal in the form of voltage or current.

a) Sensors b) Actuators
c) Transducers d) Amplifiers

12) A mechanism that converts any source of energy into action is called _____.

a) Sensor b) Actuator
c) LEDs d) All the above

13) _____ is/are thermal energy measurement sensor.

a) Infrared sensors
b) Thermocouples
c) Semiconductor temperature sensors
d) All of the above

14) Closed loop control systems are _____.

i) More stable than open loop systems.
ii) More complex to design than open loop systems

a) Both i) and ii) are true b) i) is true and ii) is false
c) i) is false and ii) is true d) Both i) and ii) are false

Seat No.	

Set **P**

Fourth. Y. (B. Tech) (Sem-II) (New)(CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Mechatronics (BTN04807)

Day & Date: Monday 26-05-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Attempt any Four. **16**

a) What are the key elements of Mechatronics system?
b) Explain in detail the adaptive control system.
c) What are different parameters used to decide the performance of sensors?
d) How linear cylinder can be used to produce rotation?
e) Write a short note on process control valve.

Q.3 Attempt any Two. **12**

a) How directional control spool and poppet valves operates?
b) How displacement can be measured using LVDT?
c) Write a short note on: Light sensor, proximity switches.

SECTION – II

Q.4 Attempt any Four. **16**

a) Draw and explain the mechanisms of Ratchet and Pawl.
b) List down the differences between traditional design approach and mechatronics approach.
c) Draw and explain the working of Belt drives.
d) Write a short note on relays and solenoids.
e) Explain the speed control of stepper motor.

Q.5 Attempt any Two. **12**

a) Define the factors to be considered for selection of motor drive systems.
b) Explain hardware components in digital camera.
c) Draw and explain hydraulic power supply.

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Mechatronics (BTN04807)

Day & Date: Monday 26-05-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) In PID controller _____ parameter is responsible for oscillation.
a) KP b) KD
c) PO d) KI

2) Selection of the suitable actuations principle depends on: _____.
a) requirement forces b) amount of motion needed
c) accuracy d) all of the above

3) _____is used to control the operations of electro-mechanical devices especially in tough and hazardous industrial environments.
a) Microprocessor b) PLC
c) Microcontroller d) None of the above

4) _____converts the physical quantity such as the force or displacement into an equivalent electrical signal in the form of voltage or current.
a) Sensors b) Actuators
c) Transducers d) Amplifiers

5) A mechanism that converts any source of energy into action is called _____.
a) Sensor b) Actuator
c) LEDs d) All the above

6) _____ is/are thermal energy measurement sensor.
a) Infrared sensors
b) Thermocouples
c) Semiconductor temperature sensors
d) All of the above

7) Closed loop control systems are _____.
i) More stable than open loop systems.
ii) More complex to design than open loop systems
a) Both i) and ii) are true
b) i) is true and ii) is false
c) i) is false and ii) is true
d) Both i) and ii) are false

8) Which control system does not have a stability problem?
a) Open loop system
b) Closed loop system
c) Both a. and b.
d) None of the above

9) A sensor, for an input of 12V gives a digital output of a word of 10 bits. Resolution approximately is _____.
a) 0.0417 V
b) 0.0217 V
c) 0.0117 V
d) None of the above

10) A controller is essentially _____.
a) Sensor
b) Clipper
c) Comparator
d) Amplifier

11) DC motor speed control can be achieved using _____.
a) PWM
b) Frequency modulation
c) Amplitude Modulation
d) None of these

12) Cam converts _____ to _____.
a) force, energy
b) rotary motion, oscillatory motion
c) kinetic energy, potential energy
d) potential energy, kinetic energy

13) Gear trains are mechanisms which are very widely used to transfer and transform _____.
a) rotational motion
b) kinetic energy
c) potential energy
d) force

14) The minimum increment in input to which the sensor can respond is referred to as _____.
a) accuracy
b) efficiency
c) resolution
d) speed

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-II) (New)(CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Mechatronics (BTN04807)

Day & Date: Monday 26-05-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Attempt any Four. **16**

a) What are the key elements of Mechatronics system?
b) Explain in detail the adaptive control system.
c) What are different parameters used to decide the performance of sensors?
d) How linear cylinder can be used to produce rotation?
e) Write a short note on process control valve.

Q.3 Attempt any Two. **12**

a) How directional control spool and poppet valves operates?
b) How displacement can be measured using LVDT?
c) Write a short note on: Light sensor, proximity switches.

SECTION – II

Q.4 Attempt any Four. **16**

a) Draw and explain the mechanisms of Ratchet and Pawl.
b) List down the differences between traditional design approach and mechatronics approach.
c) Draw and explain the working of Belt drives.
d) Write a short note on relays and solenoids.
e) Explain the speed control of stepper motor.

Q.5 Attempt any Two. **12**

a) Define the factors to be considered for selection of motor drive systems.
b) Explain hardware components in digital camera.
c) Draw and explain hydraulic power supply.

SLR-BD-441

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Mechatronics (BTN04807)

Day & Date: Monday 26-05-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

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2) A mechanism that converts any source of energy into action is called _____.
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4) Closed loop control systems are _____.
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13) Selection of the suitable actuations principle depends on: _____.

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c) accuracy d) all of the above

14) _____is used to control the operations of electro-mechanical devices especially in tough and hazardous industrial environments.

a) Microprocessor b) PLC
c) Microcontroller d) None of the above

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-II) (New)(CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Mechatronics (BTN04807)

Day & Date: Monday 26-05-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Attempt any Four. **16**

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b) Explain in detail the adaptive control system.
c) What are different parameters used to decide the performance of sensors?
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e) Write a short note on process control valve.

Q.3 Attempt any Two. **12**

a) How directional control spool and poppet valves operates?
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SECTION – II

Q.4 Attempt any Four. **16**

a) Draw and explain the mechanisms of Ratchet and Pawl.
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c) Draw and explain the working of Belt drives.
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e) Explain the speed control of stepper motor.

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a) Define the factors to be considered for selection of motor drive systems.
b) Explain hardware components in digital camera.
c) Draw and explain hydraulic power supply.

SLR-BD-441

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Mechatronics (BTN04807)

Day & Date: Monday 26-05-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Gear trains are mechanisms which are very widely used to transfer and transform _____.
a) rotational motion b) kinetic energy
c) potential energy d) force

2) The minimum increment in input to which the sensor can respond is referred to as _____.
a) accuracy b) efficiency
c) resolution d) speed

3) In PID controller _____ parameter is responsible for oscillation.
a) KP b) KD
c) PO d) KI

4) Selection of the suitable actuations principle depends on: _____.
a) requirement forces b) amount of motion needed
c) accuracy d) all of the above

5) _____is used to control the operations of electro-mechanical devices especially in tough and hazardous industrial environments.
a) Microprocessor b) PLC
c) Microcontroller d) None of the above

6) _____converts the physical quantity such as the force or displacement into an equivalent electrical signal in the form of voltage or current.
a) Sensors b) Actuators
c) Transducers d) Amplifiers

7) A mechanism that converts any source of energy into action is called _____.

a) Sensor b) Actuator
c) LEDs d) All the above

8) _____ is/are thermal energy measurement sensor.

a) Infrared sensors
b) Thermocouples
c) Semiconductor temperature sensors
d) All of the above

9) Closed loop control systems are _____.

i) More stable than open loop systems.
ii) More complex to design than open loop systems

a) Both i) and ii) are true b) i) is true and ii) is false
c) i) is false and ii) is true d) Both i) and ii) are false

10) Which control system does not have a stability problem?

a) Open loop system b) Closed loop system
c) Both a. and b. d) None of the above

11) A sensor, for an input of 12V gives a digital output of a word of 10 bits. Resolution approximately is _____.

a) 0.0417 V b) 0.0217 V
c) 0.0117 V d) None of the above

12) A controller is essentially _____.

a) Sensor b) Clipper
c) Comparator d) Amplifier

13) DC motor speed control can be achieved using _____.

a) PWM b) Frequency modulation
c) Amplitude Modulation d) None of these

14) Cam converts _____ to _____.

a) force, energy
b) rotary motion, oscillatory motion
c) kinetic energy, potential energy
d) potential energy, kinetic energy

SLR-BD-441

Seat No.	

Set S

Fourth. Y. (B. Tech) (Sem-II) (New)(CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Mechatronics (BTN04807)

Day & Date: Monday 26-05-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Attempt any Four. **16**

a) What are the key elements of Mechatronics system?
b) Explain in detail the adaptive control system.
c) What are different parameters used to decide the performance of sensors?
d) How linear cylinder can be used to produce rotation?
e) Write a short note on process control valve.

Q.3 Attempt any Two. **12**

a) How directional control spool and poppet valves operates?
b) How displacement can be measured using LVDT?
c) Write a short note on: Light sensor, proximity switches.

SECTION – II

Q.4 Attempt any Four. **16**

a) Draw and explain the mechanisms of Ratchet and Pawl.
b) List down the differences between traditional design approach and mechatronics approach.
c) Draw and explain the working of Belt drives.
d) Write a short note on relays and solenoids.
e) Explain the speed control of stepper motor.

Q.5 Attempt any Two. **12**

a) Define the factors to be considered for selection of motor drive systems.
b) Explain hardware components in digital camera.
c) Draw and explain hydraulic power supply.

SLR-BD-442

Seat No.		Set	P

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Cloud Computing (BTN04808)

Day & Date: Monday, 26-05-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Which of the following best defines cloud computing?
a) A method of storing data on local servers
b) A technology that enables access to computing resources over the internet
c) A system for encrypting data on personal devices
d) A process for managing physical infrastructure in data centres.

2) Which of the following is an example of a cloud computing service model?
a) Virtual Private Network (VPN)
b) Software as a Service (SaaS)
c) Local Area Network (LAN)
d) Hypertext Transfer Protocol (HTTP)

3) In which deployment model are computing resources distributed between an organization's private infrastructure and a public cloud provider, allowing for flexibility and scalability?
a) Public cloud b) Private cloud
c) Hybrid cloud d) Edge cloud

4) Which cloud infrastructure component is responsible for processing and executing tasks, such as running applications and performing calculations?
a) Compute b) Storage
c) Networking d) Security

5) What is the primary function of a hypervisor in virtualization technology?
a) To manage containerized applications
b) To virtualize hardware and create multiple virtual machines (VMs)
c) To provide isolation for software applications
d) To automate software deployment processes

6) In cloud computing, what type of storage is suitable for storing large volumes of unstructured data, such as documents, images, and videos?
a) Object storage
b) Block storage
c) File storage
d) Database storage

7) Which architectural principle emphasizes the use of loosely coupled components and services to maximize flexibility and scalability in cloud applications?
a) Monolithic architecture
b) Microservices architecture
c) Client-server architecture
d) Peer-to-peer architecture

8) Which design pattern involves automatically adjusting the number of resources allocated to an application based on current demand to ensure optimal performance and cost efficiency?
a) Auto-scaling
b) Load balancing
c) Circuit breaker
d) Retry

9) In cloud-native application architecture, what is the purpose of containerization technologies such as Docker and Kubernetes?
a) To deploy virtual machines
b) To isolate and package application components with their dependencies
c) To manage database connections
d) To optimize network performance

10) What role does Kubernetes play in container orchestration?
a) Monitoring network traffic
b) Automating the deployment, scaling, and management of containers
c) Managing virtual machines
d) Encrypting data at rest

11) Which of the following is a best practice to enhance cloud security?
a) Sharing passwords across multiple accounts
b) Storing sensitive data in plain text format
c) Implementing multi-factor authentication
d) Granting unrestricted access to all users

12) In cloud service management, what is the purpose of resource tagging?

a) Identifying and tracking resources for billing and cost allocation
b) Securing access to cloud resources
c) Optimizing network performance
d) Monitoring resource availability and uptime

13) What does IoT stand for?

a) Internet of Technology
b) Internet of Things
c) Internet of Telecommunications
d) Internet of Transactions

14) Which of the following is a component of the IoT architecture?

a) Cloud Gateway
b) Data Center
c) Mobile Application
d) All of the above

Seat No.	

Set **P**

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Cloud Computing (BTN04808)

Day & Date: Monday, 26-05-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Solve any Three. **12**

a) What is cloud computing? Explain characteristics of cloud computing.
b) What do you mean by container? Explain in detail.
c) Differentiate between Paas, Iaas and Saas.
d) Explain with suitable example what do you mean by Public & Private cloud.

Q.3 Solve any One. **08**

a) Discuss about benefit and challenges of cloud computing in detail.
b) Explain about Cloud Architecture and Design Principles.

Q.4 Solve any One. **08**

Explain any public cloud vendor in detail.

SECTION – II

Q.5 Solve any Three. **12**

a) What do you mean by Function as service (Faas)?
b) What are the challenges in IoT and cloud integration?
c) Explain about cloud security.
d) What is microservices architecture? Explain in detail.

Q.6 Solve any One. **08**

a) Draw & explain IoT Architecture and explain its component.
b) Explain in detail about cloud security & privacy.

Q.7 Solve any One. **08**

What do you mean by container orchestration? List different container orchestration technology & explain about Kubernetes.

Seat No.	

Set **Q**

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Cloud Computing (BTN04808)

Day & Date: Monday, 26-05-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Which design pattern involves automatically adjusting the number of resources allocated to an application based on current demand to ensure optimal performance and cost efficiency?
a) Auto-scaling b) Load balancing
c) Circuit breaker d) Retry

2) In cloud-native application architecture, what is the purpose of containerization technologies such as Docker and Kubernetes?
a) To deploy virtual machines
b) To isolate and package application components with their dependencies
c) To manage database connections
d) To optimize network performance

3) What role does Kubernetes play in container orchestration?
a) Monitoring network traffic
b) Automating the deployment, scaling, and management of containers
c) Managing virtual machines
d) Encrypting data at rest

4) Which of the following is a best practice to enhance cloud security?
a) Sharing passwords across multiple accounts
b) Storing sensitive data in plain text format
c) Implementing multi-factor authentication
d) Granting unrestricted access to all users

5) In cloud service management, what is the purpose of resource tagging?
a) Identifying and tracking resources for billing and cost allocation
b) Securing access to cloud resources
c) Optimizing network performance
d) Monitoring resource availability and uptime

6) What does IoT stand for?
a) Internet of Technology
b) Internet of Things
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d) Internet of Transactions

7) Which of the following is a component of the IoT architecture?
a) Cloud Gateway
b) Data Center
c) Mobile Application
d) All of the above

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d) Hypertext Transfer Protocol (HTTP)

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b) Private cloud
c) Hybrid cloud
d) Edge cloud

11) Which cloud infrastructure component is responsible for processing and executing tasks, such as running applications and performing calculations?
a) Compute
b) Storage
c) Networking
d) Security

12) What is the primary function of a hypervisor in virtualization technology?
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c) To provide isolation for software applications
d) To automate software deployment processes

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b) Block storage
c) File storage
d) Database storage

14) Which architectural principle emphasizes the use of loosely coupled components and services to maximize flexibility and scalability in cloud applications?

a) Monolithic architecture
b) Microservices architecture
c) Client-server architecture
d) Peer-to-peer architecture

Seat No.	

Set **Q**

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Cloud Computing (BTN04808)

Day & Date: Monday, 26-05-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Solve any Three. **12**

a) What is cloud computing? Explain characteristics of cloud computing.
b) What do you mean by container? Explain in detail.
c) Differentiate between Paas, Iaas and Saas.
d) Explain with suitable example what do you mean by Public & Private cloud.

Q.3 Solve any One. **08**

a) Discuss about benefit and challenges of cloud computing in detail.
b) Explain about Cloud Architecture and Design Principles.

Q.4 Solve any One. **08**

Explain any public cloud vendor in detail.

SECTION – II

Q.5 Solve any Three. **12**

a) What do you mean by Function as service (Faas)?
b) What are the challenges in IoT and cloud integration?
c) Explain about cloud security.
d) What is microservices architecture? Explain in detail.

Q.6 Solve any One. **08**

a) Draw & explain IoT Architecture and explain its component.
b) Explain in detail about cloud security & privacy.

Q.7 Solve any One. **08**

What do you mean by container orchestration? List different container orchestration technology & explain about Kubernetes.

Seat No.		Set	R

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Cloud Computing (BTN04808)

Day & Date: Monday, 26-05-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Which of the following is a best practice to enhance cloud security?
a) Sharing passwords across multiple accounts
b) Storing sensitive data in plain text format
c) Implementing multi-factor authentication
d) Granting unrestricted access to all users

2) In cloud service management, what is the purpose of resource tagging?
a) Identifying and tracking resources for billing and cost allocation
b) Securing access to cloud resources
c) Optimizing network performance
d) Monitoring resource availability and uptime

3) What does IoT stand for?
a) Internet of Technology
b) Internet of Things
c) Internet of Telecommunications
d) Internet of Transactions

4) Which of the following is a component of the IoT architecture?
a) Cloud Gateway b) Data Center
c) Mobile Application d) All of the above

5) Which of the following best defines cloud computing?
a) A method of storing data on local servers
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c) Hybrid cloud
d) Edge cloud

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a) Compute
b) Storage
c) Networking
d) Security

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a) To manage containerized applications
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12) Which design pattern involves automatically adjusting the number of resources allocated to an application based on current demand to ensure optimal performance and cost efficiency?
a) Auto-scaling
b) Load balancing
c) Circuit breaker
d) Retry

13) In cloud-native application architecture, what is the purpose of containerization technologies such as Docker and Kubernetes?

a) To deploy virtual machines
b) To isolate and package application components with their dependencies
c) To manage database connections
d) To optimize network performance

14) What role does Kubernetes play in container orchestration?

a) Monitoring network traffic
b) Automating the deployment, scaling, and management of containers
c) Managing virtual machines
d) Encrypting data at rest

SLR-BD-442

Seat No.	

Set R

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Cloud Computing (BTN04808)

Day & Date: Monday, 26-05-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Solve any Three. **12**
a) What is cloud computing? Explain characteristics of cloud computing.
b) What do you mean by container? Explain in detail.
c) Differentiate between Paas, Iaas and Saas.
d) Explain with suitable example what do you mean by Public & Private cloud.

Q.3 Solve any One. **08**
a) Discuss about benefit and challenges of cloud computing in detail.
b) Explain about Cloud Architecture and Design Principles.

Q.4 Solve any One. **08**
Explain any public cloud vendor in detail.

SECTION – II

Q.5 Solve any Three. **12**
a) What do you mean by Function as service (Faas)?
b) What are the challenges in IoT and cloud integration?
c) Explain about cloud security.
d) What is microservices architecture? Explain in detail.

Q.6 Solve any One. **08**
a) Draw & explain IoT Architecture and explain its component.
b) Explain in detail about cloud security & privacy.

Q.7 Solve any One. **08**
What do you mean by container orchestration? List different container orchestration technology & explain about Kubernetes.

Seat No.	

Set **S**

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Cloud Computing (BTN04808)

Day & Date: Monday, 26-05-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) In cloud computing, what type of storage is suitable for storing large volumes of unstructured data, such as documents, images, and videos?
a) Object storage b) Block storage
c) File storage d) Database storage

2) Which architectural principle emphasizes the use of loosely coupled components and services to maximize flexibility and scalability in cloud applications?
a) Monolithic architecture b) Microservices architecture
c) Client-server architecture d) Peer-to-peer architecture

3) Which design pattern involves automatically adjusting the number of resources allocated to an application based on current demand to ensure optimal performance and cost efficiency?
a) Auto-scaling b) Load balancing
c) Circuit breaker d) Retry

4) In cloud-native application architecture, what is the purpose of containerization technologies such as Docker and Kubernetes?
a) To deploy virtual machines
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c) To manage database connections
d) To optimize network performance

5) What role does Kubernetes play in container orchestration?
a) Monitoring network traffic
b) Automating the deployment, scaling, and management of containers
c) Managing virtual machines
d) Encrypting data at rest

6) Which of the following is a best practice to enhance cloud security?
a) Sharing passwords across multiple accounts
b) Storing sensitive data in plain text format
c) Implementing multi-factor authentication
d) Granting unrestricted access to all users

7) In cloud service management, what is the purpose of resource tagging?
a) Identifying and tracking resources for billing and cost allocation
b) Securing access to cloud resources
c) Optimizing network performance
d) Monitoring resource availability and uptime

8) What does IoT stand for?
a) Internet of Technology
b) Internet of Things
c) Internet of Telecommunications
d) Internet of Transactions

9) Which of the following is a component of the IoT architecture?
a) Cloud Gateway b) Data Center
c) Mobile Application d) All of the above

10) Which of the following best defines cloud computing?
a) A method of storing data on local servers
b) A technology that enables access to computing resources over the internet
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d) A process for managing physical infrastructure in data centres.

11) Which of the following is an example of a cloud computing service model?
a) Virtual Private Network (VPN)
b) Software as a Service (SaaS)
c) Local Area Network (LAN)
d) Hypertext Transfer Protocol (HTTP)

12) In which deployment model are computing resources distributed between an organization's private infrastructure and a public cloud provider, allowing for flexibility and scalability?
a) Public cloud b) Private cloud
c) Hybrid cloud d) Edge cloud

13) Which cloud infrastructure component is responsible for processing and executing tasks, such as running applications and performing calculations?

a) Compute
b) Storage
c) Networking
d) Security

14) What is the primary function of a hypervisor in virtualization technology?

a) To manage containerized applications
b) To virtualize hardware and create multiple virtual machines (VMs)
c) To provide isolation for software applications
d) To automate software deployment processes

SLR-BD-442

Seat No.		Set	S

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Cloud Computing (BTN04808)

Day & Date: Monday, 26-05-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Solve any Three. **12**
a) What is cloud computing? Explain characteristics of cloud computing.
b) What do you mean by container? Explain in detail.
c) Differentiate between Paas, Iaas and Saas.
d) Explain with suitable example what do you mean by Public & Private cloud.

Q.3 Solve any One. **08**
a) Discuss about benefit and challenges of cloud computing in detail.
b) Explain about Cloud Architecture and Design Principles.

Q.4 Solve any One. **08**
Explain any public cloud vendor in detail.

SECTION – II

Q.5 Solve any Three. **12**
a) What do you mean by Function as service (Faas)?
b) What are the challenges in IoT and cloud integration?
c) Explain about cloud security.
d) What is microservices architecture? Explain in detail.

Q.6 Solve any One. **08**
a) Draw & explain IoT Architecture and explain its component.
b) Explain in detail about cloud security & privacy.

Q.7 Solve any One. **08**
What do you mean by container orchestration? List different container orchestration technology & explain about Kubernetes.

SLR-BD-443

Seat No.	

Set P

Fourth.Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Electronic Instrumentation (BTN04802)

Day & Date: Wednesday 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Error is expressed as _____.
a) absolute error b) relative error
c) % error d) % accuracy

2) Error of measurement is the difference between _____.
a) True value & measured Value
b) Precision & True value
c) Measured Value & Precision
d) None of the above

3) Which of the following is not an advantage of implementing a quality system that conforms to ISO standards?
a) Improvement in employee involvement
b) Improvement in housekeeping
c) Improvement in customer satisfaction
d) Inefficient decision making

4) Which of the following cannot be considered a reason for implementing a quality system that conforms to ISO standards?
a) Improvement in safe working
b) Reduction in customer complaints
c) Increased inspection efforts
d) Decreased inspection efforts

5) A single channel data acquisition system consists of _____.
a) signal conditioner b) A/D converter
c) buffer d) All of the above

6) Spectrum Analyzer is time domain instrument.
a) True b) False

7) In FFT Spectrum Analyzer, the attenuator is used to _____.
a) reject unwanted signals
b) sets the level of the signals to be fed to the A/D converter
c) convert analog signals into digital signals
d) converts digital signals into analog signals

8) The full range of audibility in audio frequency oscillator is _____.
a) 0 to 20 Hz b) 20 Hz to 2 kHz
c) 20 Hz to 20 kHz d) 20 Hz to 20 MHz

9) In liquid crystal displays, the liquid crystal exhibits properties of _____.
a) Liquid b) Solids
c) Gases d) Both (a) and (b)

10) Data loggers contains microprocessor.
a) True b) False

SLR-BD-443

Seat No.		Set	P

Fourth.Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Electronic Instrumentation (BTN04802)

Day & Date: Wednesday 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Solve: (Any Two) **08**

a) Explain operation of function generator with help of block diagram.
b) Compare LED & LCD display.
c) Explain static characteristic of electronic instruments.

Q.3 Solve: (Any Two) **12**

a) Explain operation of a Standard Indirect Frequency Synthesizer using swallow counter.
b) Explain construction, operation and dynamic behavior of permanent magnet moving coil mechanism.
c) Explain the various types of static errors encountered in measurements.

Section – II

Q.4 Solve: (Any Two) **08**

a) What is meant by Quality Control and Quality Assurance? Differentiate between the two.
b) Explain working of multichannel DAS with suitable block diagram.
c) With help of suitable block diagram explain operation of Logic Analyzer.

Q.5 Solve: (Any Two) **12**

a) What is the purpose of ISO 9000 Quality Management System? Draw the ISO 9000 architecture.
b) What is DAS? Explain working of generalized DAS with suitable block diagram.
c) Explain with help of suitable block diagram the working of vector analyzer.

SLR-BD-443

Seat No.	

Set Q

Fourth.Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Electronic Instrumentation (BTN04802)

Day & Date: Wednesday 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Spec+trum Analyzer is time domain instrument.
a) True b) False

2) In FFT Spectrum Analyzer, the attenuator is used to _____.
a) reject unwanted signals
b) sets the level of the signals to be fed to the A/D converter
c) convert analog signals into digital signals
d) converts digital signals into analog signals

3) The full range of audibility in audio frequency oscillator is _____.
a) 0 to 20 Hz b) 20 Hz to 2 kHz
c) 20 Hz to 20 kHz d) 20 Hz to 20 MHz

4) In liquid crystal displays, the liquid crystal exhibits properties of _____.
a) Liquid b) Solids
c) Gases d) Both (a) and (b)

5) Data loggers contains microprocessor.
a) True b) False

6) Error is expressed as _____.
a) absolute error b) relative error
c) % error d) % accuracy

7) Error of measurement is the difference between _____.
a) True value & measured Value
b) Precision & True value
c) Measured Value & Precision
d) None of the above

8) Which of the following is not an advantage of implementing a quality system that conforms to ISO standards?
a) Improvement in employee involvement
b) Improvement in housekeeping
c) Improvement in customer satisfaction
d) Inefficient decision making

9) Which of the following cannot be considered a reason for implementing a quality system that conforms to ISO standards?
a) Improvement in safe working
b) Reduction in customer complaints
c) Increased inspection efforts
d) Decreased inspection efforts

10) A single channel data acquisition system consists of _____.
a) signal conditioner
b) A/D converter
c) buffer
d) All of the above

SLR-BD-443

Seat No.	

Set Q

Fourth.Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Electronic Instrumentation (BTN04802)

Day & Date: Wednesday 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Solve: (Any Two) **08**

a) Explain operation of function generator with help of block diagram.
b) Compare LED & LCD display.
c) Explain static characteristic of electronic instruments.

Q.3 Solve: (Any Two) **12**

a) Explain operation of a Standard Indirect Frequency Synthesizer using swallow counter.
b) Explain construction, operation and dynamic behavior of permanent magnet moving coil mechanism.
c) Explain the various types of static errors encountered in measurements.

Section – II

Q.4 Solve: (Any Two) **08**

a) What is meant by Quality Control and Quality Assurance? Differentiate between the two.
b) Explain working of multichannel DAS with suitable block diagram.
c) With help of suitable block diagram explain operation of Logic Analyzer.

Q.5 Solve: (Any Two) **12**

a) What is the purpose of ISO 9000 Quality Management System? Draw the ISO 9000 architecture.
b) What is DAS? Explain working of generalized DAS with suitable block diagram.
c) Explain with help of suitable block diagram the working of vector analyzer.

Seat No.	

Set **R**

Fourth.Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Electronic Instrumentation (BTN04802)

Day & Date: Wednesday 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) In liquid crystal displays, the liquid crystal exhibits properties of _____.
a) Liquid b) Solids
c) Gases d) Both (a) and (b)

2) Data loggers contains microprocessor.
a) True b) False

3) Error is expressed as _____.
a) absolute error b) relative error
c) % error d) % accuracy

4) Error of measurement is the difference between _____.
a) True value & measured Value
b) Precision & True value
c) Measured Value & Precision
d) None of the above

5) Which of the following is not an advantage of implementing a quality system that conforms to ISO standards?
a) Improvement in employee involvement
b) Improvement in housekeeping
c) Improvement in customer satisfaction
d) Inefficient decision making

6) Which of the following cannot be considered a reason for implementing a quality system that conforms to ISO standards?
a) Improvement in safe working
b) Reduction in customer complaints
c) Increased inspection efforts
d) Decreased inspection efforts

7) A single channel data acquisition system consists of _____.
a) signal conditioner b) A/D converter
c) buffer d) All of the above

8) Spectrum Analyzer is time domain instrument.
a) True b) False

9) In FFT Spectrum Analyzer, the attenuator is used to _____.
a) reject unwanted signals
b) sets the level of the signals to be fed to the A/D converter
c) convert analog signals into digital signals
d) converts digital signals into analog signals

10) The full range of audibility in audio frequency oscillator is _____.
a) 0 to 20 Hz b) 20 Hz to 2 kHz
c) 20 Hz to 20 kHz d) 20 Hz to 20 MHz

SLR-BD-443

Seat No.	

Set R

Fourth.Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Electronic Instrumentation (BTN04802)

Day & Date: Wednesday 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Solve: (Any Two) **08**

a) Explain operation of function generator with help of block diagram.
b) Compare LED & LCD display.
c) Explain static characteristic of electronic instruments.

Q.3 Solve: (Any Two) **12**

a) Explain operation of a Standard Indirect Frequency Synthesizer using swallow counter.
b) Explain construction, operation and dynamic behavior of permanent magnet moving coil mechanism.
c) Explain the various types of static errors encountered in measurements.

Section – II

Q.4 Solve: (Any Two) **08**

a) What is meant by Quality Control and Quality Assurance? Differentiate between the two.
b) Explain working of multichannel DAS with suitable block diagram.
c) With help of suitable block diagram explain operation of Logic Analyzer.

Q.5 Solve: (Any Two) **12**

a) What is the purpose of ISO 9000 Quality Management System? Draw the ISO 9000 architecture.
b) What is DAS? Explain working of generalized DAS with suitable block diagram.
c) Explain with help of suitable block diagram the working of vector analyzer.

SLR-BD-443

Seat No.	

Set S

Fourth.Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Electronic Instrumentation (BTN04802)

Day & Date: Wednesday 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which of the following is not an advantage of implementing a quality system that conforms to ISO standards?
a) Improvement in employee involvement
b) Improvement in housekeeping
c) Improvement in customer satisfaction
d) Inefficient decision making

2) Which of the following cannot be considered a reason for implementing a quality system that conforms to ISO standards?
a) Improvement in safe working
b) Reduction in customer complaints
c) Increased inspection efforts
d) Decreased inspection efforts

3) A single channel data acquisition system consists of _____.
a) signal conditioner b) A/D converter
c) buffer d) All of the above

4) Spectrum Analyzer is time domain instrument.
a) True b) False

5) In FFT Spectrum Analyzer, the attenuator is used to _____.
a) reject unwanted signals
b) sets the level of the signals to be fed to the A/D converter
c) convert analog signals into digital signals
d) converts digital signals into analog signals

6) The full range of audibility in audio frequency oscillator is _____.
a) 0 to 20 Hz b) 20 Hz to 2 kHz
c) 20 Hz to 20 kHz d) 20 Hz to 20 MHz

7) In liquid crystal displays, the liquid crystal exhibits properties of _____.

a) Liquid b) Solids
c) Gases d) Both (a) and (b)

8) Data loggers contains microprocessor.

a) True b) False

9) Error is expressed as _____.

a) absolute error b) relative error
c) % error d) % accuracy

10) Error of measurement is the difference between _____.

a) True value & measured Value
b) Precision & True value
c) Measured Value & Precision
d) None of the above

SLR-BD-443

Seat No.		Set	S

Fourth.Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Electronic Instrumentation (BTN04802)

Day & Date: Wednesday 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Solve: (Any Two) **08**

a) Explain operation of function generator with help of block diagram.
b) Compare LED & LCD display.
c) Explain static characteristic of electronic instruments.

Q.3 Solve: (Any Two) **12**

a) Explain operation of a Standard Indirect Frequency Synthesizer using swallow counter.
b) Explain construction, operation and dynamic behavior of permanent magnet moving coil mechanism.
c) Explain the various types of static errors encountered in measurements.

Section – II

Q.4 Solve: (Any Two) **08**

a) What is meant by Quality Control and Quality Assurance? Differentiate between the two.
b) Explain working of multichannel DAS with suitable block diagram.
c) With help of suitable block diagram explain operation of Logic Analyzer.

Q.5 Solve: (Any Two) **12**

a) What is the purpose of ISO 9000 Quality Management System? Draw the ISO 9000 architecture.
b) What is DAS? Explain working of generalized DAS with suitable block diagram.
c) Explain with help of suitable block diagram the working of vector analyzer.

SLR-BD-445

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Cyber Security (BTN04804)

Day & Date: Wednesday 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options. 10

1) What is the primary objective of cyber security?
a) Enhancing network speed
b) Protecting digital assets
c) Promoting online anonymity
d) Monitoring internet traffic

2) Which group of hackers typically aims to exploit vulnerabilities for personal gain?
a) White-hats b) Black-hats
c) Grey-hats d) Green-hats

3) What is the main purpose of ransomware attacks?
a) Extracting sensitive information
b) Disrupting network connectivity
c) Blocking access to data
d) Spreading malicious software

4) What term describes the process of verifying the identity of a user or system?
a) Authorization b) Authentication
c) Verification d) Validation

5) Which type of malware is specifically designed to record keystrokes?
a) Spyware b) Worm
c) Trojan d) Adware

6) What is the primary function of intrusion detection systems (IDS)?
a) Encrypting network traffic
b) Monitoring for suspicious activity
c) Filtering spam emails
d) Accelerating internet speed

7) What is the primary goal of Distributed Denial of Service (DDoS) attacks?
a) Stealing personal information
b) Disrupting services
c) Modifying network configurations
d) Gaining unauthorized access

8) What technology is commonly used to authenticate users over a network?
a) Biometrics
b) MAC filtering
c) IP addressing
d) Port scanning

9) Which cryptographic technique involves converting plaintext into a fixed-size hash?
a) Encryption
b) Hashing
c) Salting
d) Decryption

10) What is the purpose of encryption in data security?
a) Ensuring data integrity
b) Increasing network speed
c) Blocking unauthorized access
d) Hiding data from attackers

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Cyber Security (BTN04804)

Day & Date: Wednesday 28-05-2025 Max. Marks:40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt Any Five. **20**

a) Explain the significance of Black-hat vs White-hat hackers in cyber security.
b) Detail the methods employed by cyber attackers to execute phishing attacks.
c) How does malware pose a threat to digital security? Discuss defense mechanisms against it.
d) Analyze the impact of password thefts and discuss strategies to mitigate such attacks.
e) What is the role of authorization and authentication in ensuring account security?
f) Elaborate on the importance of encryption in safeguarding sensitive information.

Section – II

Q.3 Attempt Any Five. **20**

a) Discuss the fundamentals of network tapping and its implications for network security.
b) Outline the steps involved in setting up a robust firewall configuration to protect against cyber threats.
c) Explain the vulnerabilities associated with cloud computing and suggest measures to strengthen its security.
d) Describe the standards and protocols essential for securing wireless networks from potential attacks.
e) How does cryptography contribute to data confidentiality? Illustrate with examples.
f) Analyze the role of network design in preventing and mitigating cyber-attacks.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Cyber Security (BTN04804)

Day & Date: Wednesday 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options. 10

1) What is the primary function of intrusion detection systems (IDS)?
a) Encrypting network traffic
b) Monitoring for suspicious activity
c) Filtering spam emails
d) Accelerating internet speed

2) What is the primary goal of Distributed Denial of Service (DDoS) attacks?
a) Stealing personal information
b) Disrupting services
c) Modifying network configurations
d) Gaining unauthorized access

3) What technology is commonly used to authenticate users over a network?
a) Biometrics b) MAC filtering
c) IP addressing d) Port scanning

4) Which cryptographic technique involves converting plaintext into a fixed-size hash?
a) Encryption b) Hashing
c) Salting d) Decryption

5) What is the purpose of encryption in data security?
a) Ensuring data integrity
b) Increasing network speed
c) Blocking unauthorized access
d) Hiding data from attackers

6) What is the primary objective of cyber security?
a) Enhancing network speed
b) Protecting digital assets
c) Promoting online anonymity
d) Monitoring internet traffic

7) Which group of hackers typically aims to exploit vulnerabilities for personal gain?
a) White-hats
b) Black-hats
c) Grey-hats
d) Green-hats

8) What is the main purpose of ransomware attacks?
a) Extracting sensitive information
b) Disrupting network connectivity
c) Blocking access to data
d) Spreading malicious software

9) What term describes the process of verifying the identity of a user or system?
a) Authorization
b) Authentication
c) Verification
d) Validation

10) Which type of malware is specifically designed to record keystrokes?
a) Spyware
b) Worm
c) Trojan
d) Adware

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Cyber Security (BTN04804)

Day & Date: Wednesday 28-05-2025 Max. Marks:40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt Any Five. **20**

a) Explain the significance of Black-hat vs White-hat hackers in cyber security.
b) Detail the methods employed by cyber attackers to execute phishing attacks.
c) How does malware pose a threat to digital security? Discuss defense mechanisms against it.
d) Analyze the impact of password thefts and discuss strategies to mitigate such attacks.
e) What is the role of authorization and authentication in ensuring account security?
f) Elaborate on the importance of encryption in safeguarding sensitive information.

Section – II

Q.3 Attempt Any Five. **20**

a) Discuss the fundamentals of network tapping and its implications for network security.
b) Outline the steps involved in setting up a robust firewall configuration to protect against cyber threats.
c) Explain the vulnerabilities associated with cloud computing and suggest measures to strengthen its security.
d) Describe the standards and protocols essential for securing wireless networks from potential attacks.
e) How does cryptography contribute to data confidentiality? Illustrate with examples.
f) Analyze the role of network design in preventing and mitigating cyber-attacks.

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Cyber Security (BTN04804)

Day & Date: Wednesday 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options. 10

1) Which cryptographic technique involves converting plaintext into a fixed-size hash?
a) Encryption b) Hashing
c) Salting d) Decryption

2) What is the purpose of encryption in data security?
a) Ensuring data integrity
b) Increasing network speed
c) Blocking unauthorized access
d) Hiding data from attackers

3) What is the primary objective of cyber security?
a) Enhancing network speed
b) Protecting digital assets
c) Promoting online anonymity
d) Monitoring internet traffic

4) Which group of hackers typically aims to exploit vulnerabilities for personal gain?
a) White-hats b) Black-hats
c) Grey-hats d) Green-hats

5) What is the main purpose of ransomware attacks?
a) Extracting sensitive information
b) Disrupting network connectivity
c) Blocking access to data
d) Spreading malicious software

6) What term describes the process of verifying the identity of a user or system?

a) Authorization
b) Authentication
c) Verification
d) Validation

7) Which type of malware is specifically designed to record keystrokes?

a) Spyware
b) Worm
c) Trojan
d) Adware

8) What is the primary function of intrusion detection systems (IDS)?

a) Encrypting network traffic
b) Monitoring for suspicious activity
c) Filtering spam emails
d) Accelerating internet speed

9) What is the primary goal of Distributed Denial of Service (DDoS) attacks?

a) Stealing personal information
b) Disrupting services
c) Modifying network configurations
d) Gaining unauthorized access

10) What technology is commonly used to authenticate users over a network?

a) Biometrics
b) MAC filtering
c) IP addressing
d) Port scanning

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Cyber Security (BTN04804)

Day & Date: Wednesday 28-05-2025 Max. Marks:40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt Any Five. **20**

a) Explain the significance of Black-hat vs White-hat hackers in cyber security.
b) Detail the methods employed by cyber attackers to execute phishing attacks.
c) How does malware pose a threat to digital security? Discuss defense mechanisms against it.
d) Analyze the impact of password thefts and discuss strategies to mitigate such attacks.
e) What is the role of authorization and authentication in ensuring account security?
f) Elaborate on the importance of encryption in safeguarding sensitive information.

Section – II

Q.3 Attempt Any Five. **20**

a) Discuss the fundamentals of network tapping and its implications for network security.
b) Outline the steps involved in setting up a robust firewall configuration to protect against cyber threats.
c) Explain the vulnerabilities associated with cloud computing and suggest measures to strengthen its security.
d) Describe the standards and protocols essential for securing wireless networks from potential attacks.
e) How does cryptography contribute to data confidentiality? Illustrate with examples.
f) Analyze the role of network design in preventing and mitigating cyber-attacks.

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Cyber Security (BTN04804)

Day & Date: Wednesday 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options. 10

1) What is the main purpose of ransomware attacks?
a) Extracting sensitive information
b) Disrupting network connectivity
c) Blocking access to data
d) Spreading malicious software

2) What term describes the process of verifying the identity of a user or system?
a) Authorization b) Authentication
c) Verification d) Validation

3) Which type of malware is specifically designed to record keystrokes?
a) Spyware b) Worm
c) Trojan d) Adware

4) What is the primary function of intrusion detection systems (IDS)?
a) Encrypting network traffic
b) Monitoring for suspicious activity
c) Filtering spam emails
d) Accelerating internet speed

5) What is the primary goal of Distributed Denial of Service (DDoS) attacks?
a) Stealing personal information
b) Disrupting services
c) Modifying network configurations
d) Gaining unauthorized access

6) What technology is commonly used to authenticate users over a network?

a) Biometrics
b) MAC filtering
c) IP addressing
d) Port scanning

7) Which cryptographic technique involves converting plaintext into a fixed-size hash?

a) Encryption
b) Hashing
c) Salting
d) Decryption

8) What is the purpose of encryption in data security?

a) Ensuring data integrity
b) Increasing network speed
c) Blocking unauthorized access
d) Hiding data from attackers

9) What is the primary objective of cyber security?

a) Enhancing network speed
b) Protecting digital assets
c) Promoting online anonymity
d) Monitoring internet traffic

10) Which group of hackers typically aims to exploit vulnerabilities for personal gain?

a) White-hats
b) Black-hats
c) Grey-hats
d) Green-hats

SLR-BD-445

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS ENGINEERING
Cyber Security (BTN04804)

Day & Date: Wednesday 28-05-2025 Max. Marks:40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt Any Five. **20**

a) Explain the significance of Black-hat vs White-hat hackers in cyber security.
b) Detail the methods employed by cyber attackers to execute phishing attacks.
c) How does malware pose a threat to digital security? Discuss defense mechanisms against it.
d) Analyze the impact of password thefts and discuss strategies to mitigate such attacks.
e) What is the role of authorization and authentication in ensuring account security?
f) Elaborate on the importance of encryption in safeguarding sensitive information.

Section – II

Q.3 Attempt Any Five. **20**

a) Discuss the fundamentals of network tapping and its implications for network security.
b) Outline the steps involved in setting up a robust firewall configuration to protect against cyber threats.
c) Explain the vulnerabilities associated with cloud computing and suggest measures to strengthen its security.
d) Describe the standards and protocols essential for securing wireless networks from potential attacks.
e) How does cryptography contribute to data confidentiality? Illustrate with examples.
f) Analyze the role of network design in preventing and mitigating cyber-attacks.

Seat No.	

Set **P**

T.Y. (B. Tech) (Computer Science & Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025
Artificial Intelligence (BTN03501)

Day & Date: Saturday 17-05-2025 Max. Marks: 70

Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following is the branch of Artificial Intelligence?
a) Machine Learning b) Cyber forensics
c) Full-Stack Developer d) Network Design

2) What is the goal of Artificial Intelligence?
a) To solve artificial problems
b) To extract scientific causes
c) To explain various sorts of intelligence
d) To solve real-world problems

3) Which of the following machine requires input from the humans but can interpret the outputs themselves?
a) Actuators b) Sensor
c) Agents d) Al system

4) Procedural Domain Knowledge in a rule-based system is classified in the form of _____.
a) Control Rules b) Production Rules
c) Meta Rules d) None of the above

5) Which algorithm is used in the Game tree to make decisions of Win/Lose?
a) Heuristic Search Algorithm b) DFS/BFS algorithm
c) Greedy Search Algorithm d) Min/Max algorithm

6) Which term describes the common-sense of the judgmental part of problem-solving?
a) Values-based b) Critical
c) Analytical d) Heuristic

7) The Bayesian Network gives _____.
a) A complete description of the problem
b) Partial Description of the domain
c) Both a & b
d) None of the above

8) Which statement is valid for the Heuristic function?
a) The heuristic function is used to solve mathematical problems.
b) The heuristic function takes parameters of type string and returns an integer value.
c) The heuristic function does not have any return type.
d) The heuristic function calculates the cost of an optimal path between the pair of states.

9) The decision tree algorithm reaches its destination using _____.
a) Single Test b) Two Test
c) Sequence of test d) No Test

10) Which is not a property of representation of knowledge?
a) Representational Verification
b) Representational Adequacy
c) Inferential Adequacy
d) Inferential Efficiency

11) What are the main components of the expert systems?
a) Inference Engine
b) Knowledge Base
c) Inference Engine & Knowledge Base
d) None of the mentioned

12) Reinforcement learning is a _____.
a) Prediction-based learning technique
b) Feedback-based learning technique
c) History results-based learning technique
d) None

13) Bayesian Belief Network is also known as?
a) Belief network b) decision network
c) Bayesian model d) All of the above

14) _____ or modelling is the method using which we program a computer to exhibit human intelligence.
a) Simulation b) Psychic Amelioration
c) Duplication d) Cognitization

Seat No.	

Set P

T.Y. (B. Tech) (Computer Science & Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025
Artificial Intelligence (BTN03501)

Day & Date: Saturday 17-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Solve any four of the following. **16**

a) Describe Al Scopes in detail.
b) Give a difference between informed & uninformed search.
c) Explain constraint satisfaction problem or constraint propagation.
d) What are the different issues in knowledge representation?
e) Define and describe frames in slot and filler structure in detail with example.

Q.3 Solve any two of the followings. **12**

a) Will Breadth first search always find optimal Solution. Why explain with example?
b) Write a note on intelligent agents and their types with the example.
c) Explain the semantic net in detail in K-R system.

Section – II

Q.4 Solve any four of the following. **16**

a) Discuss the need and structure of Bayesian Networks.
b) Write a case study on the past, present and future of Al.
c) What is Q learning in Al explain in detail.
d) Differentiate between supervised learning and unsupervised learning.
e) Write a note on Utility Theory.

Q.5 Solve any two of the followings. **12**

a) Explain Markov Decision Process and its working with good example.
b) Explain probability and Baye's Theorem in certainty factor and Rule-Based systems.
c) Elaborate Reinforcement learning with example.

Seat No.	

Set Q

T.Y. (B. Tech) (Computer Science & Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025
Artificial Intelligence (BTN03501)

Day & Date: Saturday 17-05-2025 Max. Marks: 70

Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which statement is valid for the Heuristic function?
a) The heuristic function is used to solve mathematical problems.
b) The heuristic function takes parameters of type string and returns an integer value.
c) The heuristic function does not have any return type.
d) The heuristic function calculates the cost of an optimal path between the pair of states.

2) The decision tree algorithm reaches its destination using _____.
a) Single Test b) Two Test
c) Sequence of test d) No Test

3) Which is not a property of representation of knowledge?
a) Representational Verification
b) Representational Adequacy
c) Inferential Adequacy
d) Inferential Efficiency

4) What are the main components of the expert systems?
a) Inference Engine
b) Knowledge Base
c) Inference Engine & Knowledge Base
d) None of the mentioned

5) Reinforcement learning is a _____.
a) Prediction-based learning technique
b) Feedback-based learning technique
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6) Bayesian Belief Network is also known as?
a) Belief network b) decision network
c) Bayesian model d) All of the above

7) _____ or modelling is the method using which we program a computer to exhibit human intelligence.
a) Simulation b) Psychic Amelioration
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8) Which of the following is the branch of Artificial Intelligence?
a) Machine Learning b) Cyber forensics
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9) What is the goal of Artificial Intelligence?
a) To solve artificial problems
b) To extract scientific causes
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10) Which of the following machine requires input from the humans but can interpret the outputs themselves?
a) Actuators b) Sensor
c) Agents d) Al system

11) Procedural Domain Knowledge in a rule-based system is classified in the form of _____.
a) Control Rules b) Production Rules
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12) Which algorithm is used in the Game tree to make decisions of Win/Lose?
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13) Which term describes the common-sense of the judgmental part of problem-solving?
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Seat No.	

Set R

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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Seat No.	

Set R

T.Y. (B. Tech) (Computer Science & Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025
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Section – I

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Section – II

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Seat No.	

Set S

T.Y. (B. Tech) (Computer Science & Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025
Artificial Intelligence (BTN03501)

Day & Date: Saturday 17-05-2025 Max. Marks: 70

Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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Seat No.	

Set | **S**

T.Y. (B. Tech) (Computer Science & Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025
Artificial Intelligence (BTN03501)

Day & Date: Saturday 17-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Solve any four of the following. **16**

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Section – II

Q.4 Solve any four of the following. **16**

a) Discuss the need and structure of Bayesian Networks.
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c) Elaborate Reinforcement learning with example.

SLR-BD-449

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Operating Systems (BTN03502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) SPOOLING stands for _____.
a) Spontaneous primary operation online
b) Simultaneous peripheral operation on line
c) Small peripheral operation online
d) None of these

2) _____ is a program that acts as an intermediary between a user of a computer and the computer hardware.
a) A Computer Graphics b) An Overview System
c) A Computer Organization d) An operating system

3) _____ systems were developed to provide interactive use of a computer system at a reasonable cost.
a) Time-sharing b) Multiprogramming
c) Object Oriented d) Batch

4) Dispatch Latency is _____.
a) The time taken by the dispatcher to stop one process and start another
b) The time taken by processor to write a file on disk
c) The Time taken by the dispatcher to bring a process from Swap Space
d) None of the above

5) Aging is _____.
a) Keeping track of cache contents
b) keeping track of what pages are currently residing in memory
c) keeping track of how many times a given page is referenced
d) Increasing the priority of jobs to ensure termination in finite time

6) The segment of code in which the process may change common variables, update tables, write into files is known as: _____.
a) Entry Section b) Remainder Section
c) Critical section d) Exit section

7) The requirements for the solution to critical section problem are _____.
a) Mutual Exclusion b) Progress
c) Bounded Waiting d) All of the above

8) The content of need matrix is _____.
a) Allocation – Available b) Max – Available
c) Allocation – Max d) Max – Allocation

9) A system is in a safe state only if there exists a _____.
a) safe allocation b) safe resource
c) safe sequence d) All of these

10) Thrashing _____.
a) is a natural consequence of virtual memory systems
b) is a high paging activity
c) always occurs on large computers
d) can always be avoided by swapping

11) The _____ algorithm selects the request with the least seek time from the current head position.
a) SSTF Disk Scheduling b) FCFS Disk Scheduling
c) SCAN Scheduling d) C-SCAN Scheduling

12) The _____ is the time for the disk arm to move the heads to the cylinder containing the desired sector.
a) Rotational Latency b) Seek Time
c) Bandwidth d) None of these

13) Suppose that a disk drive has 200 cylinders numbered 0 to 199. Consider a disk queue with I/O requests on the following cylinders in their arriving order: 54, 95, 73, 130, 25, 48, 110, 30, 45, 180, and 190. The disk head is assumed to be at cylinder 24. Starting from the current head position, what is the total distance (in cylinders) the disk arm moves to satisfy all the pending requests for the FCFS disk-scheduling algorithm?
a) 580 cylinders b) 589 cylinders
c) 643 cylinders d) 570 cylinders

14) A problem encountered in multitasking when a process is perpetually denied necessary resources is called _____.
a) aging b) starvation
c) inversion d) deadlock

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Operating Systems (BTN03502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any Three. **12**

a) Differentiate between Multiprogramming and Multitasking Operating Systems.
b) Explain Process Life Cycle with diagram.
c) Explain CPU I/O burst Cycle.
d) Explain Multilevel Feedback Queue Scheduling in Detail.

Q.3 Attempt any One. **08**

a) Explain the concept of Operating System along with its functions
b) Apply Priority scheduling and SJF Scheduling algorithm on following example.

Process	Burst Time	Priority
P0	8	2
P1	5	4
P2	7	3
P3	10	1
P4	6	5

1) Draw Gant Chart for both algorithms
2) Calculate total Waiting time & average Waiting time for both algorithms
3) Calculate total turnaround time & average total turnaround time for both algorithms
4) State which algorithm is best along with reason.

Q.4 Explain classical problems of Synchronization in terms of Dining Philosopher problem. **08**

Section – II

Q.5 Attempt any Three. **12**

a) Explain Segmentation as non-contiguous memory management scheme.

b) Explain Deadlock Characterization in detail

c) Explain Demand paging in detail

d) Suppose that a disk drive has 500 cylinders numbered 0 to 499. The drive currently serves a request at cylinder 143; the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is 86, 170, 213, 474, 148, 109, 222, 450, and 330. Starting from the current head position, what is the total distance (in cylinders) the disk arm moves to satisfy all the pending requests for the SSTF disk-scheduling algorithm.

Q.6 Attempt any One. **08**

a) Explain methods for Handing deadlock in detail.

b) Consider following page reference string
5, 0, 2, 1, 0, 3, 0, 2, 4, 3, 0, 3, 2, 1, 3.

Apply FIFO, LRU and Optimal and solve example with 3 frames

1) Calculate total no. of page faults for each algorithm
2) Calculate page faults rate for each algorithm
3) Which algorithm gives minimum page fault?

Q.7 Attempt the following. **08**

Consider a system with five processes Po through P4 and three resource types A, B, C. Resource type A has 10 instances, resource type B has 5 instances, and resource type C has 7 instances. Suppose that, at time to, the following snapshot of the system has been taken:

Process	Allocation			Max			Available		
P0	A	B	C	A	B	C	A	B	C
P1	0	1	0	7	5	3	3	3	2
P2	2	0	0	3	2	2			
P3	3	0	2	9	0	2			
P4	2	1	1	2	2	2			
P5	0	0	2	4	3	3			

1) Find content of need matrix
2) Find whether system in safe state or not
3) Find all possible safe sequence
4) If process P2 arrives with request (1,0,2) Will it granted

Seat No.	

Set **Q**

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Seat No.	

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Section – I

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Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Operating Systems (BTN03502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) The _____ algorithm selects the request with the least seek time from the current head position.
a) SSTF Disk Scheduling b) FCFS Disk Scheduling
c) SCAN Scheduling d) C-SCAN Scheduling

2) The _____ is the time for the disk arm to move the heads to the cylinder containing the desired sector.
a) Rotational Latency b) Seek Time
c) Bandwidth d) None of these

3) Suppose that a disk drive has 200 cylinders numbered 0 to 199. Consider a disk queue with I/O requests on the following cylinders in their arriving order: 54, 95, 73, 130, 25, 48, 110, 30, 45, 180, and 190. The disk head is assumed to be at cylinder 24. Starting from the current head position, what is the total distance (in cylinders) the disk arm moves to satisfy all the pending requests for the FCFS disk-scheduling algorithm?
a) 580 cylinders b) 589 cylinders
c) 643 cylinders d) 570 cylinders

4) A problem encountered in multitasking when a process is perpetually denied necessary resources is called _____.
a) aging b) starvation
c) inversion d) deadlock

5) SPOOLING stands for _____.
a) Spontaneous primary operation online
b) Simultaneous peripheral operation on line
c) Small peripheral operation online
d) None of these

6) _____ is a program that acts as an intermediary between a user of a computer and the computer hardware.

a) A Computer Graphics b) An Overview System
c) A Computer Organization d) An operating system

7) _____ systems were developed to provide interactive use of a computer system at a reasonable cost.

a) Time-sharing b) Multiprogramming
c) Object Oriented d) Batch

8) Dispatch Latency is _____.

a) The time taken by the dispatcher to stop one process and start another
b) The time taken by processor to write a file on disk
c) The Time taken by the dispatcher to bring a process from Swap Space
d) None of the above

9) Aging is _____.

a) Keeping track of cache contents
b) keeping track of what pages are currently residing in memory
c) keeping track of how many times a given page is referenced
d) Increasing the priority of jobs to ensure termination in finite time

10) The segment of code in which the process may change common variables, update tables, write into files is known as: _____.

a) Entry Section b) Remainder Section
c) Critical section d) Exit section

11) The requirements for the solution to critical section problem are _____.

a) Mutual Exclusion b) Progress
c) Bounded Waiting d) All of the above

12) The content of need matrix is _____.

a) Allocation – Available b) Max – Available
c) Allocation – Max d) Max – Allocation

13) A system is in a safe state only if there exists a _____.

a) safe allocation b) safe resource
c) safe sequence d) All of these

14) Thrashing _____.

a) is a natural consequence of virtual memory systems
b) is a high paging activity
c) always occurs on large computers
d) can always be avoided by swapping

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Operating Systems (BTN03502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Differentiate between Multiprogramming and Multitasking Operating Systems.
b) Explain Process Life Cycle with diagram.
c) Explain CPU I/O burst Cycle.
d) Explain Multilevel Feedback Queue Scheduling in Detail.

Q.3 Attempt any One. **08**

a) Explain the concept of Operating System along with its functions
b) Apply Priority scheduling and SJF Scheduling algorithm on following example.

Process	Burst Time	Priority
P0	8	2
P1	5	4
P2	7	3
P3	10	1
P4	6	5

1) Draw Gant Chart for both algorithms
2) Calculate total Waiting time & average Waiting time for both algorithms
3) Calculate total turnaround time & average total turnaround time for both algorithms
4) State which algorithm is best along with reason.

Q.4 Explain classical problems of Synchronization in terms of Dining Philosopher problem. **08**

Section – II

Q.5 Attempt any Three. **12**

a) Explain Segmentation as non-contiguous memory management scheme.

b) Explain Deadlock Characterization in detail

c) Explain Demand paging in detail

d) Suppose that a disk drive has 500 cylinders numbered 0 to 499. The drive currently serves a request at cylinder 143; the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is 86, 170, 213, 474, 148, 109, 222, 450, and 330. Starting from the current head position, what is the total distance (in cylinders) the disk arm moves to satisfy all the pending requests for the SSTF disk-scheduling algorithm.

Q.6 Attempt any One. **08**

a) Explain methods for Handing deadlock in detail.

b) Consider following page reference string
5, 0, 2, 1, 0, 3, 0, 2, 4, 3, 0, 3, 2, 1, 3.

Apply FIFO, LRU and Optimal and solve example with 3 frames

1) Calculate total no. of page faults for each algorithm
2) Calculate page faults rate for each algorithm
3) Which algorithm gives minimum page fault?

Q.7 Attempt the following. **08**

Consider a system with five processes Po through P4 and three resource types A, B, C. Resource type A has 10 instances, resource type B has 5 instances, and resource type C has 7 instances. Suppose that, at time to, the following snapshot of the system has been taken:

Process	Allocation			Max			Available		
P0	A	B	C	A	B	C	A	B	C
P1	0	1	0	7	5	3	3	3	2
P2	2	0	0	3	2	2			
P3	3	0	2	9	0	2			
P4	2	1	1	2	2	2			
P5	0	0	2	4	3	3			

1) Find content of need matrix
2) Find whether system in safe state or not
3) Find all possible safe sequence
4) If process P2 arrives with request (1,0,2) Will it granted

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Operating Systems (BTN03502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The segment of code in which the process may change common variables, update tables, write into files is known as: _____.
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5) Thrashing _____.
a) is a natural consequence of virtual memory systems
b) is a high paging activity
c) always occurs on large computers
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6) The _____ algorithm selects the request with the least seek time from the current head position.
a) SSTF Disk Scheduling b) FCFS Disk Scheduling
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8) Suppose that a disk drive has 200 cylinders numbered 0 to 199. Consider a disk queue with I/O requests on the following cylinders in their arriving order: 54, 95, 73, 130, 25, 48, 110, 30, 45, 180, and 190. The disk head is assumed to be at cylinder 24. Starting from the current head position, what is the total distance (in cylinders) the disk arm moves to satisfy all the pending requests for the FCFS disk-scheduling algorithm?

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Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Operating Systems (BTN03502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any Three. **12**

a) Differentiate between Multiprogramming and Multitasking Operating Systems.
b) Explain Process Life Cycle with diagram.
c) Explain CPU I/O burst Cycle.
d) Explain Multilevel Feedback Queue Scheduling in Detail.

Q.3 Attempt any One. **08**

a) Explain the concept of Operating System along with its functions
b) Apply Priority scheduling and SJF Scheduling algorithm on following example.

Process	Burst Time	Priority
P0	8	2
P1	5	4
P2	7	3
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P4	6	5

1) Draw Gant Chart for both algorithms
2) Calculate total Waiting time & average Waiting time for both algorithms
3) Calculate total turnaround time & average total turnaround time for both algorithms
4) State which algorithm is best along with reason.

Q.4 Explain classical problems of Synchronization in terms of Dining Philosopher problem. **08**

Section – II

Q.5 Attempt any Three. **12**

a) Explain Segmentation as non-contiguous memory management scheme.

b) Explain Deadlock Characterization in detail

c) Explain Demand paging in detail

d) Suppose that a disk drive has 500 cylinders numbered 0 to 499. The drive currently serves a request at cylinder 143; the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is 86, 170, 213, 474, 148, 109, 222, 450, and 330. Starting from the current head position, what is the total distance (in cylinders) the disk arm moves to satisfy all the pending requests for the SSTF disk-scheduling algorithm.

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a) Explain methods for Handing deadlock in detail.

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Apply FIFO, LRU and Optimal and solve example with 3 frames

1) Calculate total no. of page faults for each algorithm
2) Calculate page faults rate for each algorithm
3) Which algorithm gives minimum page fault?

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Consider a system with five processes Po through P4 and three resource types A, B, C. Resource type A has 10 instances, resource type B has 5 instances, and resource type C has 7 instances. Suppose that, at time to, the following snapshot of the system has been taken:

Process	Allocation			Max			Available		
P0	A	B	C	A	B	C	A	B	C
P1	0	1	0	7	5	3	3	3	2
P2	2	0	0	3	2	2			
P3	3	0	2	9	0	2			
P4	2	1	1	2	2	2			
P5	0	0	2	4	3	3			

1) Find content of need matrix
2) Find whether system in safe state or not
3) Find all possible safe sequence
4) If process P2 arrives with request (1,0,2) Will it granted

SLR-BD-450

Seat No.		Set	P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Database Engineering (BTN03503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ describes what data are stored in the database, and what relationships exist among those data.
a) Physical level b) Logical level
c) View level d) None

2) In which data model, entities are organised in a graph, in which some entities can be accessed through several path _____.
a) Semi structured Data Model b) Network data model
c) Object-Based Data Model d) Hierarchical data model

3) If entity sets participating in a relationship set are distinct, then roles are _____.
a) Explicit b) Implicit
c) Cannot say d) None

4) Identify the correct relational algebra query for the following output.

Input

A	B	C	D
α	α	1	7
α	β	5	7
β	β	12	3
β	β	23	10

Output

A	B	C	D
α	α	1	7
β	β	23	10

a) $\sigma C = D \wedge D > 5(r)$ b) $\sigma A = B \wedge D < 5(r)$
c) $\sigma A = B \wedge D > 5(r)$ d) None

5) For the class (class_name, age) table, find the names and average age of all classes where the average age of students is greater than 10. Identify the correct, SQL Query for this statement.

a)
```
SELECT class_name, age
FROM class
GROUP BY class_name
HAVING AVG(age) > 10;
```

b)
```
SELECT class_name, age
FROM class
HAVING AVG(age) > 10
GROUP BY class_name;
```

c)
```
SELECT class_name, AVG (age)
FROM class
GROUP BY class_name
HAVING AVG(age) > 10;
```

d)
```
SELECT class_name, AVG (age)
FROM class
HAVING AVG(age) > 10
GROUP BY class_name;
```

6) If 4 sections of ECE-101 were taught in the Fall 2009 semester and 2 sections of ECE-101 were taught in the Spring 2010 semester, then the result of intersect operation would be _____ tuples with ECE-101 in the result.

a) 2 b) 4
c) 6 d) 8

7) For $\mathrm{R} = (\mathrm{A}, \mathrm{B}, \mathrm{C}, \mathrm{G}, \mathrm{H}, \mathrm{I})$ and $\mathrm{F} = \{\mathrm{A} \rightarrow \mathrm{B}, \mathrm{A} \rightarrow \mathrm{C}, \mathrm{CG} \rightarrow \mathrm{H}, \mathrm{CG} \rightarrow \mathrm{I}, \mathrm{B} \rightarrow \mathrm{H}\}$ What is $(\mathrm{AG})^{+}$?

a) ABCGH b) ABCG
c) ABCGHI d) BCGHI

8) In B+ tree, each node that is not a root or a leaf has between _____.

a) $\lceil n/2 \rceil$ and n children b) $\lfloor n/2 \rfloor$ and n children
c) $n/2$ and n children d) None

9) While performing the operation deletion on B+-tree, if the node has too few entries due to the removal, then _____.

a) Redistribute pointers b) Merge siblings
c) Delete node d) None

10) Which of the following is/ are examples of non-volatile storage?

a) Main memory
b) Secondary storage devices
c) The information replicated in several nonvolatile storage media (usually disk) with independent failure modes
d) None

11) A transaction may obtain locks, but may not release any lock in _____.

a) Growing phase b) Shrinking phase
c) Both d) None

12) Let li and lj be two Instructions of transactions Ti and Tj respectively. Instructions li and lj do not conflict if and only if _____.

a) li = read(Q), lj = read(Q) b) li = read(Q), lj = write(Q)
c) li = write(Q), lj = read(Q) d) li = write(Q), lj = write(Q)

13) When a transaction Ti issues a read(Q) operation, the system issues a _____ instruction followed by the _____ instruction.

a) lock-S(Q), read(Q) b) read(Q), lock-S(Q)
c) read(Q), lock-X(Q) d) None

14) Non-volatile storage contents are assumed to not be corrupted by system crash in case of _____.

a) Logical error b) System error
c) Fail-stop assumption d) Disk failure

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Database Engineering (BTN03503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three. **12**

a) List and explain the data models.

b) Consider the following database schema. Write the queries using tuple relational calculus

branch (branch_name, branch_city, assets)
customer (customer_name, customer_street, customer_city)
loan (loan_number, branch_name, amount)
borrower (customer_name, loan number)
account (account_number, branch_name, balance)
depositor (customer_name, account_number)

1) Find all customers who have an account at a bank.
2) Find all customers who have a loan or an account or both.
3) Find all customers who have a loan but not an account
4) Find all customers who have a loan and an account or both.

c) Explain constraints on generalization with example.

d) Find Prime and Non Prime Attributes using Functional Dependencies:

1) R(ABCDEF) having FDs $\{AB \rightarrow C, C \rightarrow D, D \rightarrow E, F \rightarrow B, E \rightarrow F\}$
2) R(ABCDEF) having FDs $\{AB \rightarrow C, C \rightarrow DE, E \rightarrow F, C \rightarrow B\}$

Q.3 Find if a given functional dependency is implied from a set of Functional Dependencies for: **08**

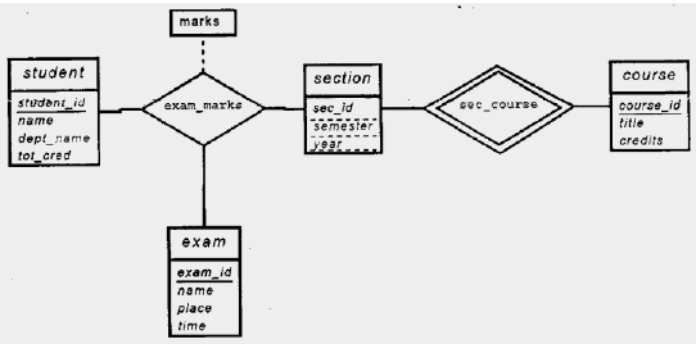
$AB \rightarrow CD, AF \rightarrow D, DE \rightarrow F, C \rightarrow G, F \rightarrow E, G \rightarrow A$

a) Check: $CF \rightarrow DF$
b) Check: $BG \rightarrow E$
c) Check: $AF \rightarrow G$
d) Check: $AB \rightarrow EF$

OR

Consider the E-R diagram in given Figure,

a) List the entity sets along with attributes and their primary keys.
b) List Relationship along with attributes and their primary keys.
c) Reduce this ER model to relational model



Q.4 Explain the following joins with example in SQL. **08**

a) Inner join using conditions NATURAL, ON and USING
b) Right outer join using conditions NATURAL, ON and USING
c) Left outer join using conditions NATURAL, ON and USING
d) Full outer join using conditions NATURAL, ON and USING

Section – II

Q.5 **Solve any three.** **12**

a) What are bitmap indices? In the following table, new_emp is the column to be indexed. What is the content of the bitmap index? (Consider 4-bit data)

employee				
emp_id	emp_name	job	new_emp	salary
e-123	riju	analyst	yes	35000
e-345	neha	salesperson	no	30000
e-567	suresh	clerk	no	25000
e-998	sneha	manager	yes	50000

b) Explain ACID properties.
c) Explain various types of failure that may occur in the system.
d) Explain the concept of lock granularity concurrency control mechanism.

Q.6 Explain log based recovery. Also explain immediate database modification and deferred modification scheme with example. **08**

OR

Explain B- tree with an example. Also explain the insertion and deletion in B+ tree with example.

Q.7 Explain Deadlock with example. Also explain deadlock prevention. **08**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Database Engineering (BTN03503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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A	B	C	D
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13) If 4 sections of ECE-101 were taught in the Fall 2009 semester and 2 sections of ECE-101 were taught in the Spring 2010 semester, then the result of intersect operation would be _____ tuples with ECE-101 in the result.

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14) For $\mathrm{R} = (\mathrm{A}, \mathrm{B}, \mathrm{C}, \mathrm{G}, \mathrm{H}, \mathrm{I})$ and $\mathrm{F} = \{\mathrm{A} \rightarrow \mathrm{B}, \mathrm{A} \rightarrow \mathrm{C}, \mathrm{CG} \rightarrow \mathrm{H}, \mathrm{CG} \rightarrow \mathrm{I}, \mathrm{B} \rightarrow \mathrm{H}\}$ What is $(\mathrm{AG})^{+}$?

a) ABCGH b) ABCG
c) ABCGHI d) BCGHI

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Database Engineering (BTN03503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

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account (account_number, branch_name, balance)
depositor (customer_name, account_number)

1) Find all customers who have an account at a bank.
2) Find all customers who have a loan or an account or both.
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c) Explain constraints on generalization with example.

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b) List Relationship along with attributes and their primary keys.
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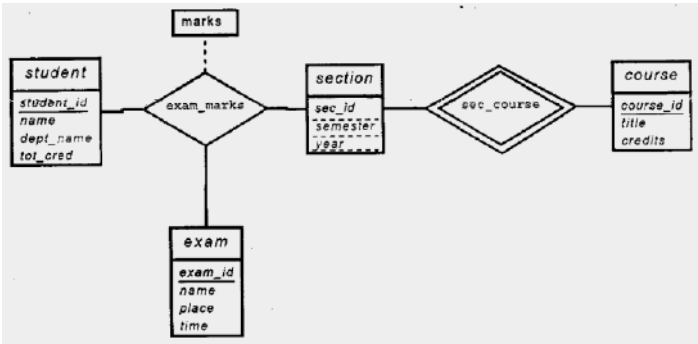

Q.4 Explain the following joins with example in SQL. **08**

a) Inner join using conditions NATURAL, ON and USING
b) Right outer join using conditions NATURAL, ON and USING
c) Left outer join using conditions NATURAL, ON and USING
d) Full outer join using conditions NATURAL, ON and USING

Section – II

Q.5 **Solve any three.** **12**

a) What are bitmap indices? In the following table, new_emp is the column to be indexed. What is the content of the bitmap index? (Consider 4-bit data)

employee				
emp_id	emp_name	job	new_emp	salary
e-123	riju	analyst	yes	35000
e-345	neha	salesperson	no	30000
e-567	suresh	clerk	no	25000
e-998	sneha	manager	yes	50000

b) Explain ACID properties.
c) Explain various types of failure that may occur in the system.
d) Explain the concept of lock granularity concurrency control mechanism.

Q.6 Explain log based recovery. Also explain immediate database modification and deferred modification scheme with example. **08**

OR

Explain B- tree with an example. Also explain the insertion and deletion in B+ tree with example.

Q.7 Explain Deadlock with example. Also explain deadlock prevention. **08**

SLR-BD-450

Seat No.	

Set R

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Database Engineering (BTN03503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) A transaction may obtain locks, but may not release any lock in _____.
a) Growing phase b) Shrinking phase
c) Both d) None

2) Let li and lj be two Instructions of transactions Ti and Tj respectively. Instructions li and lj do not conflict if and only if _____.
a) li = read(Q), lj = read(Q) b) li = read(Q), lj = write(Q)
c) li = write(Q), lj = read(Q) d) li = write(Q), lj = write(Q)

3) When a transaction Ti issues a read(Q) operation, the system issues a _____ instruction followed by the _____ instruction.
a) lock-S(Q), read(Q) b) read(Q), lock-S(Q)
c) read(Q), lock-X(Q) d) None

4) Non-volatile storage contents are assumed to not be corrupted by system crash in case of _____.
a) Logical error b) System error
c) Fail-stop assumption d) Disk failure

5) _____ describes what data are stored in the database, and what relationships exist among those data.
a) Physical level b) Logical level
c) View level d) None

6) In which data model, entities are organised in a graph, in which some entities can be accessed through several path _____.
a) Semi structured Data Model b) Network data model
c) Object-Based Data Model d) Hierarchical data model

7) If entity sets participating in a relationship set are distinct, then roles are _____.

a) Explicit
b) Implicit
c) Cannot say
d) None

8) Identify the correct relational algebra query for the following output.

Input

A	B	C	D
α	α	1	7
α	β	5	7
β	β	12	3
β	β	23	10

Output

A	B	C	D
α	α	1	7
β	β	23	10

a) $\sigma C = D \wedge D > 5(r)$
b) $\sigma A = B \wedge D < 5(r)$
c) $\sigma A = B \wedge D > 5(r)$
d) None

9) For the class (class_name, age) table, find the names and average age of all classes where the average age of students is greater than 10. Identify the correct, SQL Query for this statement.

a)
```
SELECT class_name, age
FROM class
GROUP BY class_name
HAVING AVG(age) > 10;
```
b)
```
SELECT class_name, age
FROM class
HAVING AVG(age) > 10
GROUP BY class_name;
```
c)
```
SELECT class_name, AVG (age)
FROM class
GROUP BY class_name
HAVING AVG(age) > 10;
```
d)
```
SELECT class_name, AVG (age)
FROM class
HAVING AVG(age) > 10
GROUP BY class_name;
```

10) If 4 sections of ECE-101 were taught in the Fall 2009 semester and 2 sections of ECE-101 were taught in the Spring 2010 semester, then the result of intersect operation would be _____ tuples with ECE-101 in the result.

a) 2
b) 4
c) 6
d) 8

11) For $R = (A, B, C, G, H, I)$ and $F = \{A \rightarrow B, A \rightarrow C, CG \rightarrow H, CG \rightarrow I, B \rightarrow H\}$ What is $(AG)^+$?

a) $ABCGH$ b) $ABCG$

c) $ABCGHI$ d) $BCGHI$

12) In B+ tree, each node that is not a root or a leaf has between _____.

a) $\lceil n/2 \rceil$ and n children b) $\lfloor n/2 \rfloor$ and n children

c) $n/2$ and n children d) None

13) While performing the operation deletion on B+-tree, if the node has too few entries due to the removal, then _____.

a) Redistribute pointers b) Merge siblings

c) Delete node d) None

14) Which of the following is/ are examples of non-volatile storage?

a) Main memory

b) Secondary storage devices

c) The information replicated in several nonvolatile storage media (usually disk) with independent failure modes

d) None

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Database Engineering (BTN03503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three. **12**

a) List and explain the data models.

b) Consider the following database schema. Write the queries using tuple relational calculus

branch (branch_name, branch_city, assets)
customer (customer_name, customer_street, customer_city)
loan (loan_number, branch_name, amount)
borrower (customer_name, loan number)
account (account_number, branch_name, balance)
depositor (customer_name, account_number)

1) Find all customers who have an account at a bank.
2) Find all customers who have a loan or an account or both.
3) Find all customers who have a loan but not an account
4) Find all customers who have a loan and an account or both.

c) Explain constraints on generalization with example.

d) Find Prime and Non Prime Attributes using Functional Dependencies:

1) R(ABCDEF) having FDs $\{AB \rightarrow C, C \rightarrow D, D \rightarrow E, F \rightarrow B, E \rightarrow F\}$
2) R(ABCDEF) having FDs $\{AB \rightarrow C, C \rightarrow DE, E \rightarrow F, C \rightarrow B\}$

Q.3 Find if a given functional dependency is implied from a set of Functional Dependencies for: **08**

$AB \rightarrow CD, AF \rightarrow D, DE \rightarrow F, C \rightarrow G, F \rightarrow E, G \rightarrow A$

a) Check: $CF \rightarrow DF$
b) Check: $BG \rightarrow E$
c) Check: $AF \rightarrow G$
d) Check: $AB \rightarrow EF$

OR

Consider the E-R diagram in given Figure,

a) List the entity sets along with attributes and their primary keys.
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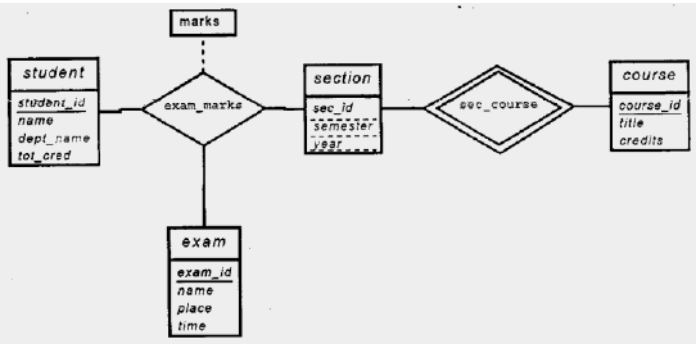

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a) Inner join using conditions NATURAL, ON and USING
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Section – II

Q.5 **Solve any three.** **12**

a) What are bitmap indices? In the following table, new_emp is the column to be indexed. What is the content of the bitmap index? (Consider 4-bit data)

employee				
emp_id	emp_name	job	new_emp	salary
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Seat No.		Set	S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Database Engineering (BTN03503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

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1) If 4 sections of ECE-101 were taught in the Fall 2009 semester and 2 sections of ECE-101 were taught in the Spring 2010 semester, then the result of intersect operation would be _____ tuples with ECE-101 in the result.
a) 2 b) 4
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2) For $\mathrm{R} = (\mathrm{A}, \mathrm{B}, \mathrm{C}, \mathrm{G}, \mathrm{H}, \mathrm{I})$ and $\mathrm{F} = \{\mathrm{A} \rightarrow \mathrm{B}, \mathrm{A} \rightarrow \mathrm{C}, \mathrm{CG} \rightarrow \mathrm{H}, \mathrm{CG} \rightarrow \mathrm{I}, \mathrm{B} \rightarrow \mathrm{H}\}$ What is $(\mathrm{AG})^{+}$?
a) ABCGH b) ABCG
c) ABCGHI d) BCGHI

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a) $\lceil n/2 \rceil$ and n children b) $\lfloor n/2 \rfloor$ and n children
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GROUP BY class_name
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GROUP BY class_name;
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c)
```
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GROUP BY class_name
HAVING AVG(age) > 10;
```

d)
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SELECT class_name, AVG (age)
FROM class
HAVING AVG(age) > 10
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```

Seat No.		Set	S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Database Engineering (BTN03503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three. **12**

a) List and explain the data models.

b) Consider the following database schema. Write the queries using tuple relational calculus

branch (branch_name, branch_city, assets)
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1) Find all customers who have an account at a bank.
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3) Find all customers who have a loan but not an account
4) Find all customers who have a loan and an account or both.

c) Explain constraints on generalization with example.

d) Find Prime and Non Prime Attributes using Functional Dependencies:

1) R(ABCDEF) having FDs $\{AB \rightarrow C, C \rightarrow D, D \rightarrow E, F \rightarrow B, E \rightarrow F\}$
2) R(ABCDEF) having FDs $\{AB \rightarrow C, C \rightarrow DE, E \rightarrow F, C \rightarrow B\}$

Q.3 Find if a given functional dependency is implied from a set of Functional Dependencies for: **08**

$AB \rightarrow CD, AF \rightarrow D, DE \rightarrow F, C \rightarrow G, F \rightarrow E, G \rightarrow A$

a) Check: $CF \rightarrow DF$
b) Check: $BG \rightarrow E$
c) Check: $AF \rightarrow G$
d) Check: $AB \rightarrow EF$

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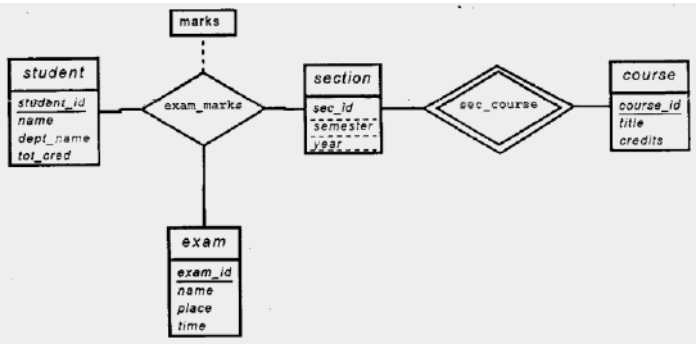
c) Reduce this ER model to relational model



Q.4 Explain the following joins with example in SQL. **08**

a) Inner join using conditions NATURAL, ON and USING
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Section – II

Q.5 **Solve any three.** **12**

a) What are bitmap indices? In the following table, new_emp is the column to be indexed. What is the content of the bitmap index? (Consider 4-bit data)

employee				
emp_id	emp_name	job	new_emp	salary
e-123	riju	analyst	yes	35000
e-345	neha	salesperson	no	30000
e-567	suresh	clerk	no	25000
e-998	sneha	manager	yes	50000

b) Explain ACID properties.
c) Explain various types of failure that may occur in the system.
d) Explain the concept of lock granularity concurrency control mechanism.

Q.6 Explain log based recovery. Also explain immediate database modification and deferred modification scheme with example. **08**

OR

Explain B- tree with an example. Also explain the insertion and deletion in B+ tree with example.

Q.7 Explain Deadlock with example. Also explain deadlock prevention. **08**

SLR-BD-451

Seat No.		Set	P

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Design and Analysis of Algorithm (BTN03504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Problems that cannot be solved by any algorithm are called?
a) tractable problems b) intractable problems
c) undecidable problems d) decidable problem

2) Halting problem is an example for?
a) decidable problem b) undecidable problem
c) complete problem d) trackable problem

3) Which of the problems cannot be solved by a backtracking method?
a) n-queen problem b) subset sum problem
c) hamiltonian circuit problem d) travelling salesman problem

4) Backtracking algorithm is implemented by constructing a tree of choices called as?
a) State-space tree b) State-chart tree
c) Node tree d) Backtracking tree

5) The problem of placing n queens in a chessboard such that no two queens attack each other is called as?
a) n-queen problem
b) eight queens puzzle
c) four queens puzzle
d) 1-queen problem

6) Which of the following standard algorithms is not Dynamic Programming based?
a) Bellman-Ford Algorithm for single source shortest path
b) Floyd Warshall Algorithm for all pairs shortest paths
c) 0-1 Knapsack problem
d) Prim\'s Minimum Spanning Tree

7) Prims algorithm is based on _____ method.

a) Divide and conquer method b) Dynamic programming
c) Greedy method d) Branch and bound

8) What is the objective of the knapsack problem?

a) To get maximum total value in the knapsack
b) To get minimum total value in the knapsack
c) To get maximum weight in the knapsack
d) To get minimum weight in the knapsack

9) What is the time complexity of Huffman Coding?

a) O(N) b) O(NlogN)
c) $O(N(logN)^2)$ d) $O(N^2)$

10) Which of the following sorting algorithms is the fastest?

a) Merge sort b) Quick sort
c) Insertion sort d) Shell sort

11) How many subarrays does the quicksort algorithm divide the entire array into?

a) one b) two
c) three d) four

12) What will be the best case time complexity of merge sort?

a) O(n log n) b) $O(n^2)$
c) $O(n^2 \log n)$ d) $O(n \log n^2)$

13) What is a recursive algorithm?

a) An algorithm that uses loops to iterate through data
b) An algorithm that calls itself to solve a problem
c) An algorithm that relies on external libraries
d) An algorithm that only works on recursive data structures

14) The worst case occurs in quick sort when _____.

a) Pivot is the median of the array
b) Pivot is the smallest element
c) Pivot is the middle element
d) None of the mentioned

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Design and Analysis of Algorithm (BTN03504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three: **12**

a) Explain practical complexity in detail.

b) Find the time complexity of following algorithm.

```
Algorithm Add(a,b,c,m,n)
{
    for i:=1 to m do
        for j:=1 to n do
            c[i,j]:=a[i,j] + b[i,j];
}
```

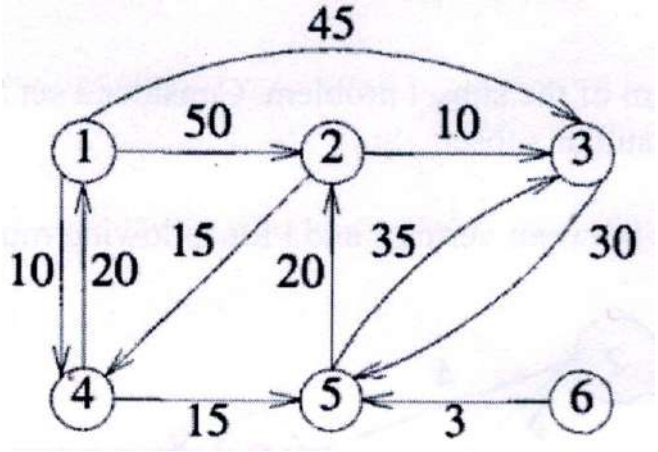
c) Write and explain an algorithm for recursive maximum and minimum.

d) Find an optimal merge pattern for 10 files whose lengths are 28, 32, 12, 5, 84, 53, 91, 35, 3 and 11

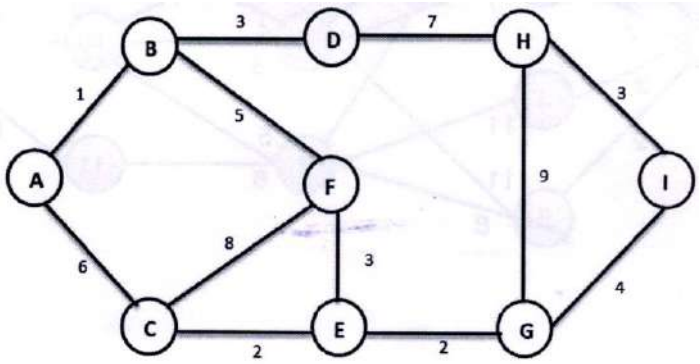
Q.3 Attempt any one: **08**

a) Obtain a set of optimal Huffman codes for message (m1, m2, m3, ...,m7) with relative frequencies (a1, a2, a3,..., a7) = (4, 5, 7, 8, 10, 12, 20). Draw the decode tree for this set of codes

b) Find the shortest path from 1 to all other cities by using the Greedy method.



Q.4 Write Prim's algorithm and find minimum cost spanning tree of following graph. **08**



Section – II

Q.5 **Attempt any Three:** **12**

a) Write a short note on flow shop scheduling.

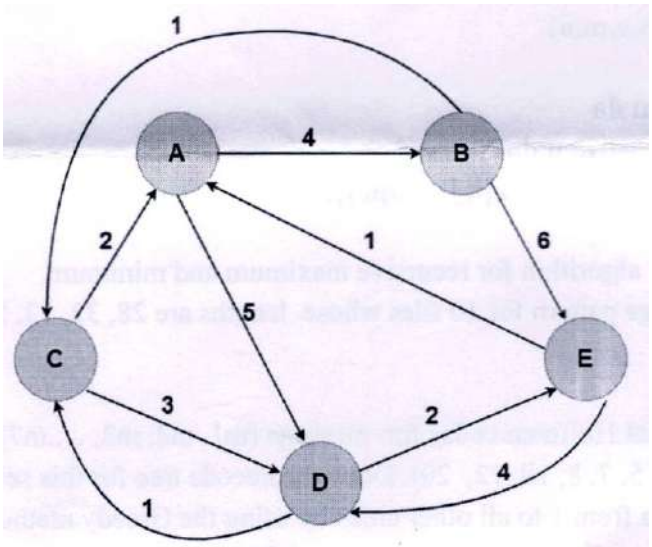
b) State and explain graph coloring problems.

c) Write notes on P, NP, NP-Complete and NP-Hard.

d) Draw portion of solution space tree for 4- Queen problem using backtracking.

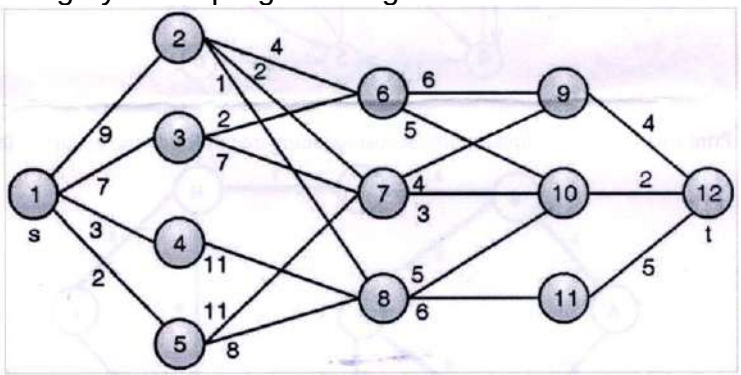
Q.6 **Attempt any one:** **08**

a) Find all pairs shortest path using dynamic programming for the following diagraph.



b) Write a short note on the sum of the subset problem. Consider a set S= {5, 10, 12, 13, 15, 18} and m=35. solve it for obtaining a sub of subset.

Q.7 Find minimum path cost between vertex s and t for following multistage graph using dynamic programming. **08**



Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Design and Analysis of Algorithm (BTN03504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

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c) four queens puzzle
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13) Which of the following standard algorithms is not Dynamic Programming based?
a) Bellman-Ford Algorithm for single source shortest path
b) Floyd Warshall Algorithm for all pairs shortest paths
c) 0-1 Knapsack problem
d) Prim\’s Minimum Spanning Tree

14) Prims algorithm is based on _____ method.
a) Divide and conquer method b) Dynamic programming
c) Greedy method d) Branch and bound

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Design and Analysis of Algorithm (BTN03504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three: **12**

a) Explain practical complexity in detail.

b) Find the time complexity of following algorithm.

```
Algorithm Add(a,b,c,m,n)
{
    for i:=1 to m do
        for j:=1 to n do
            c[i,j]:=a[i,j] + b[i,j];
}
```

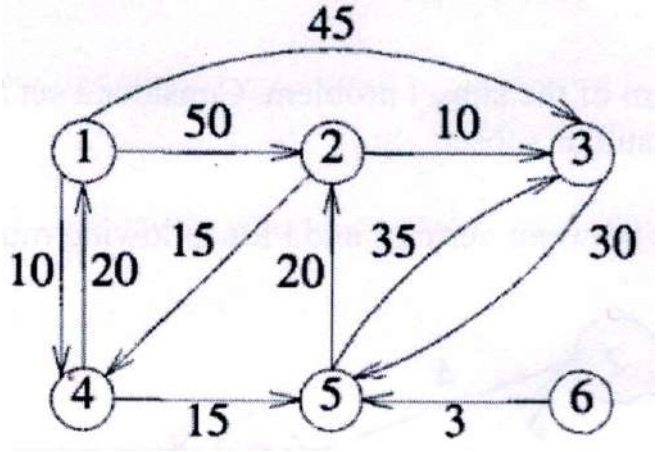
c) Write and explain an algorithm for recursive maximum and minimum.

d) Find an optimal merge pattern for 10 files whose lengths are 28, 32, 12, 5, 84, 53, 91, 35, 3 and 11

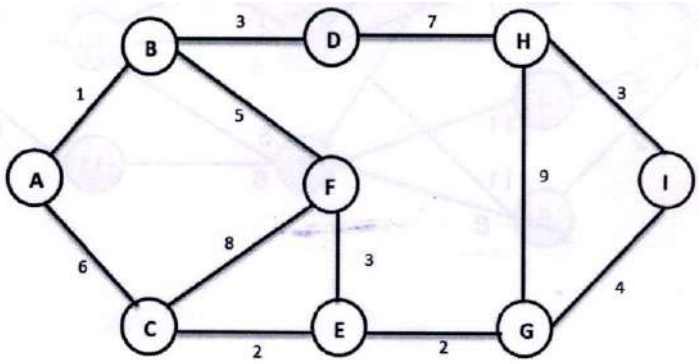
Q.3 Attempt any one: **08**

a) Obtain a set of optimal Huffman codes for message (m1, m2, m3, ...,m7) with relative frequencies (a1, a2, a3,..., a7) = (4, 5, 7, 8, 10, 12, 20). Draw the decode tree for this set of codes

b) Find the shortest path from 1 to all other cities by using the Greedy method.



Q.4 Write Prim's algorithm and find minimum cost spanning tree of following graph. **08**



Section – II

Q.5 **Attempt any Three:** **12**

a) Write a short note on flow shop scheduling.

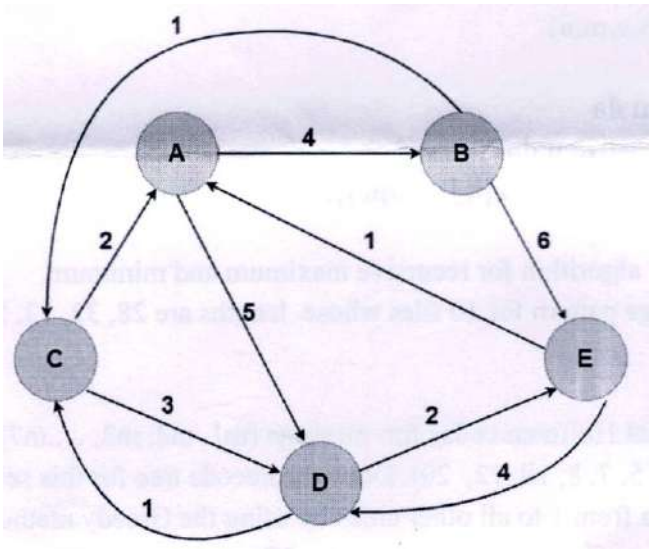
b) State and explain graph coloring problems.

c) Write notes on P, NP, NP-Complete and NP-Hard.

d) Draw portion of solution space tree for 4- Queen problem using backtracking.

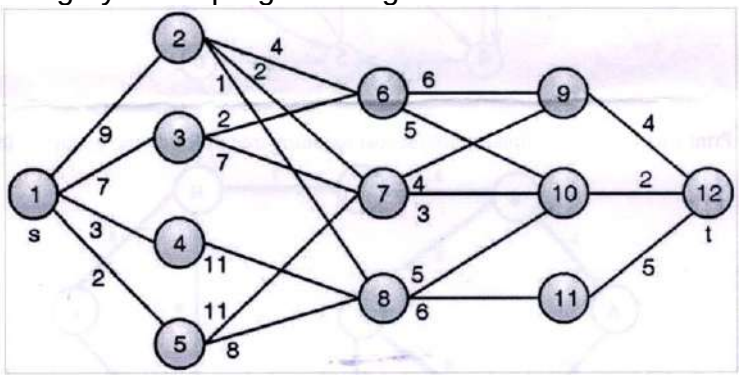
Q.6 **Attempt any one:** **08**

a) Find all pairs shortest path using dynamic programming for the following diagraph.



b) Write a short note on the sum of the subset problem. Consider a set S= {5, 10, 12, 13, 15, 18} and m=35. solve it for obtaining a sub of subset.

Q.7 Find minimum path cost between vertex s and t for following multistage graph using dynamic programming. **08**



Seat No.	

Set R

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Design and Analysis of Algorithm (BTN03504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) How many subarrays does the quicksort algorithm divide the entire array into?
a) one b) two
c) three d) four

2) What will be the best case time complexity of merge sort?
a) O(n log n) b) $O(n^2)$
c) $O(n^2 \log n)$ d) $O(n \log n^2)$

3) What is a recursive algorithm?
a) An algorithm that uses loops to iterate through data
b) An algorithm that calls itself to solve a problem
c) An algorithm that relies on external libraries
d) An algorithm that only works on recursive data structures

4) The worst case occurs in quick sort when _____.
a) Pivot is the median of the array
b) Pivot is the smallest element
c) Pivot is the middle element
d) None of the mentioned

5) Problems that cannot be solved by any algorithm are called?
a) tractable problems b) intractable problems
c) undecidable problems d) decidable problem

6) Halting problem is an example for?
a) decidable problem b) undecidable problem
c) complete problem d) trackable problem

7) Which of the problems cannot be solved by a backtracking method?
a) n-queen problem b) subset sum problem
c) hamiltonian circuit problem d) travelling salesman problem

8) Backtracking algorithm is implemented by constructing a tree of choices called as?

a) State-space tree
b) State-chart tree
c) Node tree
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9) The problem of placing n queens in a chessboard such that no two queens attack each other is called as?

a) n-queen problem
b) eight queens puzzle
c) four queens puzzle
d) 1-queen problem

10) Which of the following standard algorithms is not Dynamic Programming based?

a) Bellman-Ford Algorithm for single source shortest path
b) Floyd Warshall Algorithm for all pairs shortest paths
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11) Prims algorithm is based on _____ method.

a) Divide and conquer method
b) Dynamic programming
c) Greedy method
d) Branch and bound

12) What is the objective of the knapsack problem?

a) To get maximum total value in the knapsack
b) To get minimum total value in the knapsack
c) To get maximum weight in the knapsack
d) To get minimum weight in the knapsack

13) What is the time complexity of Huffman Coding?

a) O(N)
b) O(NlogN)
c) $O(N(\log N)^2)$
d) $O(N^2)$

14) Which of the following sorting algorithms is the fastest?

a) Merge sort
b) Quick sort
c) Insertion sort
d) Shell sort

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Design and Analysis of Algorithm (BTN03504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three: **12**

a) Explain practical complexity in detail.

b) Find the time complexity of following algorithm.

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Algorithm Add(a,b,c,m,n)
{
    for i:=1 to m do
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}
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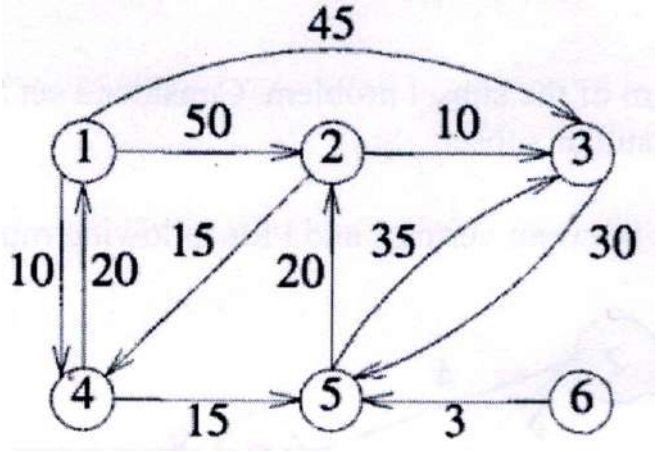
c) Write and explain an algorithm for recursive maximum and minimum.

d) Find an optimal merge pattern for 10 files whose lengths are 28, 32, 12, 5, 84, 53, 91, 35, 3 and 11

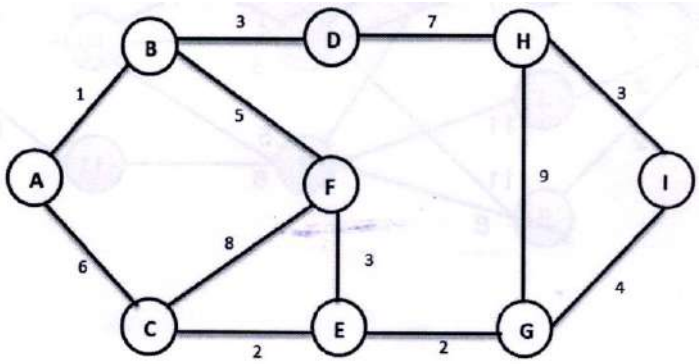
Q.3 Attempt any one: **08**

a) Obtain a set of optimal Huffman codes for message (m1, m2, m3, ...,m7) with relative frequencies (a1, a2, a3,..., a7) = (4, 5, 7, 8, 10, 12, 20). Draw the decode tree for this set of codes

b) Find the shortest path from 1 to all other cities by using the Greedy method.



Q.4 Write Prim's algorithm and find minimum cost spanning tree of following graph. **08**



Section – II

Q.5 **Attempt any Three:** **12**

a) Write a short note on flow shop scheduling.

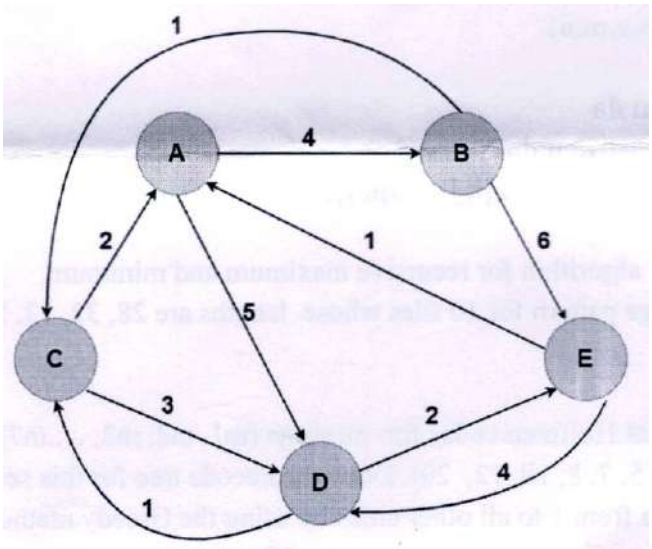
b) State and explain graph coloring problems.

c) Write notes on P, NP, NP-Complete and NP-Hard.

d) Draw portion of solution space tree for 4- Queen problem using backtracking.

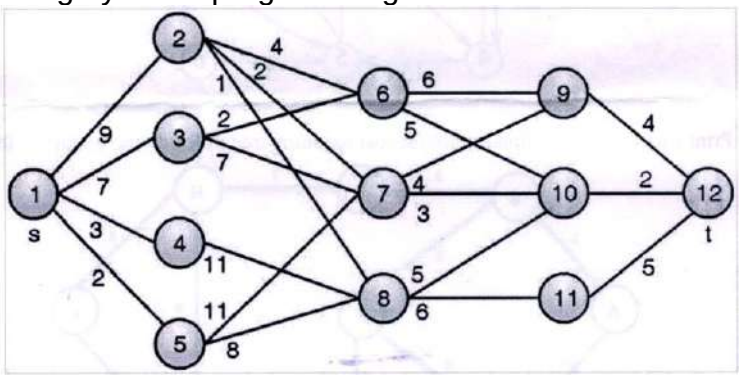
Q.6 **Attempt any one:** **08**

a) Find all pairs shortest path using dynamic programming for the following diagraph.



b) Write a short note on the sum of the subset problem. Consider a set S= {5, 10, 12, 13, 15, 18} and m=35. solve it for obtaining a sub of subset.

Q.7 Find minimum path cost between vertex s and t for following multistage graph using dynamic programming. **08**



Seat No.		Set	S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Design and Analysis of Algorithm (BTN03504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

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1) Which of the following standard algorithms is not Dynamic Programming based?
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d) Prim\'s Minimum Spanning Tree

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13) Backtracking algorithm is implemented by constructing a tree of choices called as?
a) State-space tree b) State-chart tree
c) Node tree d) Backtracking tree

14) The problem of placing n queens in a chessboard such that no two queens attack each other is called as?
a) n-queen problem
b) eight queens puzzle
c) four queens puzzle
d) 1-queen problem

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Design and Analysis of Algorithm (BTN03504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three: **12**

a) Explain practical complexity in detail.

b) Find the time complexity of following algorithm.

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Algorithm Add(a,b,c,m,n)
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        for j:=1 to n do
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}
```

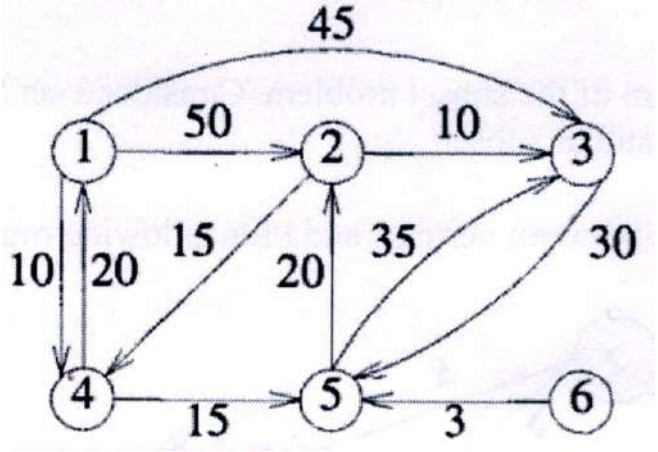
c) Write and explain an algorithm for recursive maximum and minimum.

d) Find an optimal merge pattern for 10 files whose lengths are 28, 32, 12, 5, 84, 53, 91, 35, 3 and 11

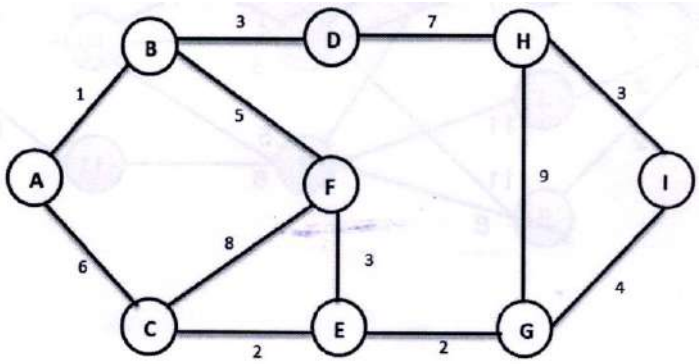
Q.3 Attempt any one: **08**

a) Obtain a set of optimal Huffman codes for message (m1, m2, m3, ...,m7) with relative frequencies (a1, a2, a3,..., a7) = (4, 5, 7, 8, 10, 12, 20). Draw the decode tree for this set of codes

b) Find the shortest path from 1 to all other cities by using the Greedy method.



Q.4 Write Prim's algorithm and find minimum cost spanning tree of following graph. **08**



Section – II

Q.5 **Attempt any Three:** **12**

a) Write a short note on flow shop scheduling.

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d) Draw portion of solution space tree for 4- Queen problem using backtracking.

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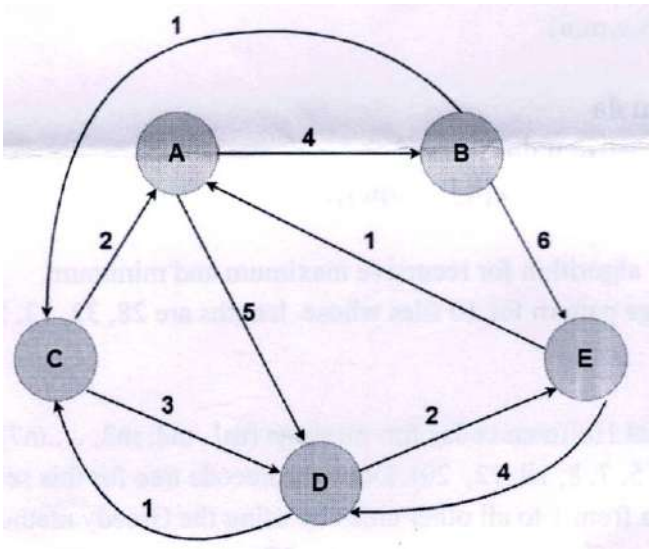
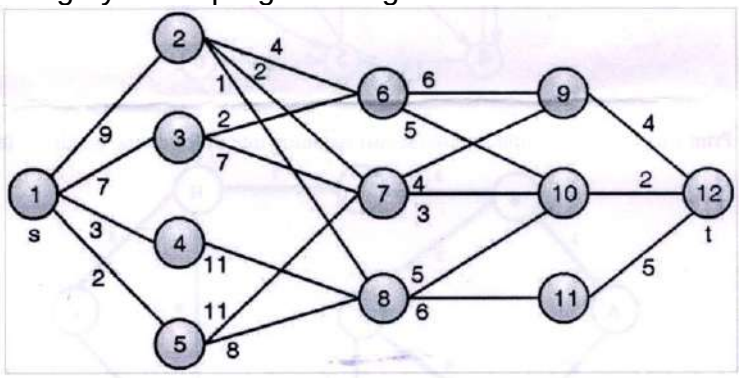


b) Write a short note on the sum of the subset problem. Consider a set S= {5, 10, 12, 13, 15, 18} and m=35. solve it for obtaining a sub of subset.

Q.7 Find minimum path cost between vertex s and t for following multistage graph using dynamic programming. **08**



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Seat No.	

Set P

T. Y (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Reinforcement Learning (BTN03512)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) What is the primary challenge addressed by the k-armed bandit problem?
a) Learning a policy for continuous state spaces.
b) Managing a multi-agent environment.
c) Balancing exploration and exploitation.
d) Reducing computational complexity in deep learning.

2) Which of the following is true about reinforcement learning?
a) The agent gets rewards or penalty according to the action
b) It's an online learning
c) The target of an agent is to maximize the rewards
d) All of the above

3) Among the following option identify the one which is not a type of learning _____
a) Supervised Learning
b) Semi Unsupervised learning
c) Unsupervised Learning
d) Reinforcement Learning

4) Which of the following RL element learn from trial and error?
a) Agent b) Reward Signal
c) State d) Action

5) Which is the Application of RL?
a) Robotics b) Data processing
c) Self Driving Car d) All the Above

6) Which component of RL deals with the mapping from states to actions?
a) Policy b) Reward function
c) Value function d) Model

7) In the context of the k-armed Bandit Problem, what does "k" represent?
a) The number of episodes in the learning process
b) The number of states in the environment
c) The number of possible actions or choices
d) The discount factor for future rewards

8) Which of the following algorithms is specifically designed for solving the k-armed Bandit Problem?
a) Monte Carlo Tree Search (MCTS)
b) Proximal Policy Optimization (PPO)
c) Q-Learning
d) K-Means Clustering

9) In reinforcement learning, what is the primary purpose of dynamic programming?
a) To model the environment dynamics accurately
b) To solve problems by breaking them down into simpler subproblems and storing the solutions process
c) To design complex neural network architectures for learning
d) To implement trial and error learning strategies

10) Which of the following elements of reinforcement learning imitates the behavior of the environment?
a) Policy b) Reward Signal
c) Value Function d) Model of the environment

11) What do you mean by SARSA in reinforcement learning?
a) State action reward state action
b) State achievement rewards state action
c) State act reward achievement
d) State act reward act

12) What is the primary advantage of Temporal Difference Learning over Monte Carlo methods?
a) It requires complete episodes for learning.
b) It updates value estimates based on other learned estimates.
c) It uses only one-step updates.
d) It does not require exploration of the state space.

13) How many tuples does MDP consist of?
a) 2 b) 3
c) 4 d) 5

14) The matrix created during the Q- learning algorithm is commonly known as ____

a) Query-table
b) Q-table
c) Quick-matrix
d) Table

Seat No.	

Set | P

T. Y (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Reinforcement Learning (BTN03512)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

Q.2 Attempt Any Four **16**

a) Draw the neat sketch of Reinforcement learning and explain it.
b) What role do Exploration and Exploitation take w.r.t Reinforcement learning?
c) Explain the Concept Goals, Rewards and Return.
d) Define the Unified Notation for Episodic and Continuing Tasks in Reinforcement learning and explain its purpose.
e) Explain the concepts of Optimality and Approximation in Reinforcement Learning.

Q.3 Attempt Any One **06**

a) Discuss Positive and negative Reinforcement Learning with real time example.
b) What is the Markov property? Explain concept of MDP with its elements.

Q.4 List and explain each element of Reinforcement Learning. **06**

Section – II

Q.5 Attempt Any Four **16**

a) Illustrate the working of SARSA (On-Policy TD control) method.
b) Describe Monte Carlo Methods.
c) Explain Asynchronous Dynamic Programming
d) Explain TD-Gammon is a RL algorithm with its features.
e) Explain the significance of Go and AlphaGo in the context of reinforcement learning.

Q.6 Attempt Any One. **06**

a) What is Prioritized sweeping? Why it is needed? Explain it in detail
b) Design Dyna-Q architecture and explain it.

Q.7 Differentiate between model based and model free learning. **06**

Seat No.	

Set **Q**

T. Y (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Reinforcement Learning (BTN03512)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

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d) The discount factor for future rewards

Seat No.	

Set **Q**

T. Y (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Reinforcement Learning (BTN03512)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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Section – II

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d) Explain TD-Gammon is a RL algorithm with its features.
e) Explain the significance of Go and AlphaGo in the context of reinforcement learning.

Q.6 Attempt Any One. **06**

a) What is Prioritized sweeping? Why it is needed? Explain it in detail
b) Design Dyna-Q architecture and explain it.

Q.7 Differentiate between model based and model free learning. **06**

Seat No.	

Set R

T. Y (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Reinforcement Learning (BTN03512)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) What do you mean by SARSA in reinforcement learning?
a) State action reward state action
b) State achievement rewards state action
c) State act reward achievement
d) State act reward act

2) What is the primary advantage of Temporal Difference Learning over Monte Carlo methods?
a) It requires complete episodes for learning.
b) It updates value estimates based on other learned estimates.
c) It uses only one-step updates.
d) It does not require exploration of the state space.

3) How many tuples does MDP consist of?
a) 2 b) 3
c) 4 d) 5

4) The matrix created during the Q- learning algorithm is commonly known as ____
a) Query-table b) Q-table
c) Quick-matrix d) Table

5) What is the primary challenge addressed by the k-armed bandit problem?
a) Learning a policy for continuous state spaces.
b) Managing a multi-agent environment.
c) Balancing exploration and exploitation.
d) Reducing computational complexity in deep learning.

6) Which of the following is true about reinforcement learning?
a) The agent gets rewards or penalty according to the action
b) It's an online learning
c) The target of an agent is to maximize the rewards
d) All of the above

7) Among the following option identify the one which is not a type of learning _____
a) Supervised Learning
b) Semi Unsupervised learning
c) Unsupervised Learning
d) Reinforcement Learning

8) Which of the following RL element learn from trial and error?
a) Agent b) Reward Signal
c) State d) Action

9) Which is the Application of RL?
a) Robotics b) Data processing
c) Self Driving Car d) All the Above

10) Which component of RL deals with the mapping from states to actions?
a) Policy b) Reward function
c) Value function d) Model

11) In the context of the k-armed Bandit Problem, what does "k" represent?
a) The number of episodes in the learning process
b) The number of states in the environment
c) The number of possible actions or choices
d) The discount factor for future rewards

12) Which of the following algorithms is specifically designed for solving the k-armed Bandit Problem?
a) Monte Carlo Tree Search (MCTS)
b) Proximal Policy Optimization (PPO)
c) Q-Learning
d) K-Means Clustering

13) In reinforcement learning, what is the primary purpose of dynamic programming?
a) To model the environment dynamics accurately
b) To solve problems by breaking them down into simpler subproblems and storing the solutions process
c) To design complex neural network architectures for learning
d) To implement trial and error learning strategies

14) Which of the following elements of reinforcement learning imitates the behavior of the environment?

a) Policy
b) Reward Signal
c) Value Function
d) Model of the environment

Seat No.	

Set **R**

T. Y (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Reinforcement Learning (BTN03512)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Four **16**

a) Draw the neat sketch of Reinforcement learning and explain it.
b) What role do Exploration and Exploitation take w.r.t Reinforcement learning?
c) Explain the Concept Goals, Rewards and Return.
d) Define the Unified Notation for Episodic and Continuing Tasks in Reinforcement learning and explain its purpose.
e) Explain the concepts of Optimality and Approximation in Reinforcement Learning.

Q.3 Attempt Any One **06**

a) Discuss Positive and negative Reinforcement Learning with real time example.
b) What is the Markov property? Explain concept of MDP with its elements.

Q.4 List and explain each element of Reinforcement Learning. **06**

Section – II

Q.5 Attempt Any Four **16**

a) Illustrate the working of SARSA (On-Policy TD control) method.
b) Describe Monte Carlo Methods.
c) Explain Asynchronous Dynamic Programming
d) Explain TD-Gammon is a RL algorithm with its features.
e) Explain the significance of Go and AlphaGo in the context of reinforcement learning.

Q.6 Attempt Any One. **06**

a) What is Prioritized sweeping? Why it is needed? Explain it in detail
b) Design Dyna-Q architecture and explain it.

Q.7 Differentiate between model based and model free learning. **06**

Seat No.	

Set **S**

T. Y (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Reinforcement Learning (BTN03512)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which component of RL deals with the mapping from states to actions?
a) Policy b) Reward function
c) Value function d) Model

2) In the context of the k-armed Bandit Problem, what does "k" represent?
a) The number of episodes in the learning process
b) The number of states in the environment
c) The number of possible actions or choices
d) The discount factor for future rewards

3) Which of the following algorithms is specifically designed for solving the k-armed Bandit Problem?
a) Monte Carlo Tree Search (MCTS)
b) Proximal Policy Optimization (PPO)
c) Q-Learning
d) K-Means Clustering

4) In reinforcement learning, what is the primary purpose of dynamic programming?
a) To model the environment dynamics accurately
b) To solve problems by breaking them down into simpler subproblems and storing the solutions process
c) To design complex neural network architectures for learning
d) To implement trial and error learning strategies

5) Which of the following elements of reinforcement learning imitates the behavior of the environment?
a) Policy b) Reward Signal
c) Value Function d) Model of the environment

6) What do you mean by SARSA in reinforcement learning?
a) State action reward state action
b) State achievement rewards state action
c) State act reward achievement
d) State act reward act

7) What is the primary advantage of Temporal Difference Learning over Monte Carlo methods?
a) It requires complete episodes for learning.
b) It updates value estimates based on other learned estimates.
c) It uses only one-step updates.
d) It does not require exploration of the state space.

8) How many tuples does MDP consist of?
a) 2 b) 3
c) 4 d) 5

9) The matrix created during the Q- learning algorithm is commonly known as _____
a) Query-table b) Q-table
c) Quick-matrix d) Table

10) What is the primary challenge addressed by the k-armed bandit problem?
a) Learning a policy for continuous state spaces.
b) Managing a multi-agent environment.
c) Balancing exploration and exploitation.
d) Reducing computational complexity in deep learning.

11) Which of the following is true about reinforcement learning?
a) The agent gets rewards or penalty according to the action
b) It's an online learning
c) The target of an agent is to maximize the rewards
d) All of the above

12) Among the following option identify the one which is not a type of learning _____
a) Supervised Learning
b) Semi Unsupervised learning
c) Unsupervised Learning
d) Reinforcement Learning

13) Which of the following RL element learn from trial and error?
a) Agent b) Reward Signal
c) State d) Action

14) Which is the Application of RL?
a) Robotics b) Data processing
c) Self Driving Car d) All the Above

SLR-BD-452

Seat No.		Set	S

T. Y (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Reinforcement Learning (BTN03512)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Four **16**
- **a)** Draw the neat sketch of Reinforcement learning and explain it.
- **b)** What role do Exploration and Exploitation take w.r.t Reinforcement learning?
- **c)** Explain the Concept Goals, Rewards and Return.
- **d)** Define the Unified Notation for Episodic and Continuing Tasks in Reinforcement learning and explain its purpose.
- **e)** Explain the concepts of Optimality and Approximation in Reinforcement Learning.

Q.3 Attempt Any One **06**
- **a)** Discuss Positive and negative Reinforcement Learning with real time example.
- **b)** What is the Markov property? Explain concept of MDP with its elements.

Q.4 List and explain each element of Reinforcement Learning. **06**

Section – II

Q.5 Attempt Any Four **16**
- **a)** Illustrate the working of SARSA (On-Policy TD control) method.
- **b)** Describe Monte Carlo Methods.
- **c)** Explain Asynchronous Dynamic Programming
- **d)** Explain TD-Gammon is a RL algorithm with its features.
- **e)** Explain the significance of Go and AlphaGo in the context of reinforcement learning.

Q.6 Attempt Any One. **06**
- **a)** What is Prioritized sweeping? Why it is needed? Explain it in detail
- **b)** Design Dyna-Q architecture and explain it.

Q.7 Differentiate between model based and model free learning. **06**

SLR-BD-453

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Data Preprocessing & Visualization (BTN03513)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) _____ will automatically adjust the axis aspect ratio to match the input data in contour plot.
a) plt.imshow() b) plt.contour()
c) plt.contourf() d) All of the mentioned

2) Which principle is important in data visualization design?
a) Complexity b) Clarity
c) Randomness d) Ambiguity

3) Which function would you use in Matplotlib to create a line plot?
a) plt.bar() b) plt.scatter()
c) plt.plot() d) plt.pie()

4) Data preparation phase include _____ activity
a) Access and combine the data table
b) Look for error
c) Transform data
d) All of the above

5) Which method is commonly used to handle missing values in a dataset?
a) Drop rows b) Fill with median
c) Replace with a constant d) All of the above

6) What is NumPy primarily used for in Python?
a) String manipulation b) Data visualization
c) Numerical computing d) File handling

7) Each column of the table describes a _____ and each row describes an _____

a) Variable, attributes
b) Variables, Observation
c) Variable, features
d) All of the above

8) Multivariate data analysis can be visualized using which of the following chart?

a) Scatter plot matrix
b) Star plots
c) Spider web chart
d) All of the mentioned

9) What is the output of dataframe, head() method?

a) return only the first row
b) return only headers or column name of the DataFrame
c) return the first five rows of the DataFrame
d) throw an exception as it expects parameter(number) in parenthesis

10) In python, Alpha typically refers to the _____ level of a color.

a) Transparency
b) Visibility
c) Clearance
d) Combination

11) Which of the following method is use to show topographical features both on land and under the ocean using Basemap library?

a) bluemarble()
b) etopo()
c) lcc()
d) None

12) Which of the following array is use for getting and setting smaller subarrays within a larger array?

a) Indexing of arrays
b) Reshaping of arrays
c) Slicing of arrays
d) Joining and splitting of arrays

13) The _____ transformation display the range is between 0 and 1.

a) min-max transformation
b) z-score transformation
c) Standard deviation
d) decimal scaling transformation

14) In a dataset, variables like height and weight are examples of which type of variable?

a) Categorical
b) Continuous
c) Ordinal
d) Nominal

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Data Preprocessing & Visualization (BTN03513)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four (each carried 4 marks) **16**

a) Define the term observation and variable. Describe the types of variables in detail with example.
b) How missing data is handled while preparing the data tables?
c) Write a short note on confidence intervals.
d) Elaborate the process of making sense of data.
e) What do you mean by Fancy Indexing?

Q.3 Attempt Any Two **12**

a) Here are the runs scored by a cricket team in a league of 12 matches - 100, 120, 110, 150, 110, 140, 130, 170, 120, 220, 140, 110. Draw a box plot for the given data and identify the outlier.
b) What do you mean by Central Tendency? Calculate the following statistics with suitable example.
(i) Mode, (ii) Median, (iii) Mean, (iv) Range, (v) Variance,
(vi) Standard deviation
c) Visualize the strong positive correlation between two variables using correlation coefficient method. Use suitable example.

Section – II

Q.4 Attempt Any Four. (each carried 4 marks) **16**

a) Define Exploratory Data Analysis and Elaborate the steps of EDA.
b) Elaborate the features of Pandas.
c) Elaborate Two-Way Contingency Tables with suitable example.
d) What is hierarchical indexing?
e) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.5 Attempt Any Two **12**

a) Write the Python code to draw the Scatter Plot, Bar Chart, Histogram using Matplotlib and Seaborn.

b) What are the steps to combine dataset using append, concat & Merge, join in pandas.

c) Design a Radar Chart for product comparison and describe the findings. Let the product is 4 types of smartphones, the axes might include “battery life”, “camera quality”, “screen size”, "processor speed”, “price”. Also list out the benefits and limitations of using Radar chart.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Data Preprocessing & Visualization (BTN03513)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) Multivariate data analysis can be visualized using which of the following chart?
a) Scatter plot matrix b) Star plots
c) Spider web chart d) All of the mentioned

2) What is the output of dataframe, head() method?
a) return only the first row
b) return only headers or column name of the DataFrame
c) return the first five rows of the DataFrame
d) throw an exception as it expects parameter(number) in parenthesis

3) In python, Alpha typically refers to the _____ level of a color.
a) Transparency b) Visibility
c) Clearance d) Combination

4) Which of the following method is use to show topographical features both on land and under the ocean using Basemap library?
a) bluemarble() b) etopo()
c) lcc() d) None

5) Which of the following array is use for getting and setting smaller subarrays within a larger array?
a) Indexing of arrays b) Reshaping of arrays
c) Slicing of arrays d) Joining and splitting of arrays

6) The _____ transformation display the range is between 0 and 1.
a) min-max transformation
b) z-score transformation
c) Standard deviation
d) decimal scaling transformation

7) In a dataset, variables like height and weight are examples of which type of variable?
a) Categorical b) Continuous
c) Ordinal d) Nominal

8) _____ will automatically adjust the axis aspect ratio to match the input data in contour plot.
a) plt.imshow() b) plt.contour()
c) plt.contourf() d) All of the mentioned

9) Which principle is important in data visualization design?
a) Complexity b) Clarity
c) Randomness d) Ambiguity

10) Which function would you use in Matplotlib to create a line plot?
a) plt.bar() b) plt.scatter()
c) plt.plot() d) plt.pie()

11) Data preparation phase include _____ activity
a) Access and combine the data table
b) Look for error
c) Transform data
d) All of the above

12) Which method is commonly used to handle missing values in a dataset?
a) Drop rows b) Fill with median
c) Replace with a constant d) All of the above

13) What is NumPy primarily used for in Python?
a) String manipulation b) Data visualization
c) Numerical computing d) File handling

14) Each column of the table describes a _____ and each row describes an _____
a) Variable, attributes b) Variables, Observation
c) Variable, features d) All of the above

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Data Preprocessing & Visualization (BTN03513)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four (each carried 4 marks) **16**

a) Define the term observation and variable. Describe the types of variables in detail with example.
b) How missing data is handled while preparing the data tables?
c) Write a short note on confidence intervals.
d) Elaborate the process of making sense of data.
e) What do you mean by Fancy Indexing?

Q.3 Attempt Any Two **12**

a) Here are the runs scored by a cricket team in a league of 12 matches - 100, 120, 110, 150, 110, 140, 130, 170, 120, 220, 140, 110. Draw a box plot for the given data and identify the outlier.
b) What do you mean by Central Tendency? Calculate the following statistics with suitable example.
(i) Mode, (ii) Median, (iii) Mean, (iv) Range, (v) Variance,
(vi) Standard deviation
c) Visualize the strong positive correlation between two variables using correlation coefficient method. Use suitable example.

Section – II

Q.4 Attempt Any Four. (each carried 4 marks) **16**

a) Define Exploratory Data Analysis and Elaborate the steps of EDA.
b) Elaborate the features of Pandas.
c) Elaborate Two-Way Contingency Tables with suitable example.
d) What is hierarchical indexing?
e) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.5 Attempt Any Two **12**

a) Write the Python code to draw the Scatter Plot, Bar Chart, Histogram using Matplotlib and Seaborn.

b) What are the steps to combine dataset using append, concat & Merge, join in pandas.

c) Design a Radar Chart for product comparison and describe the findings. Let the product is 4 types of smartphones, the axes might include “battery life”, “camera quality”, “screen size”, "processor speed”, “price”. Also list out the benefits and limitations of using Radar chart.

Seat No.	

Set R

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Data Preprocessing & Visualization (BTN03513)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) Which of the following method is use to show topographical features both on land and under the ocean using Basemap library?
a) bluemarble() b) etopo()
c) lcc() d) None

2) Which of the following array is use for getting and setting smaller subarrays within a larger array?
a) Indexing of arrays b) Reshaping of arrays
c) Slicing of arrays d) Joining and splitting of arrays

3) The _____ transformation display the range is between 0 and 1.
a) min-max transformation
b) z-score transformation
c) Standard deviation
d) decimal scaling transformation

4) In a dataset, variables like height and weight are examples of which type of variable?
a) Categorical b) Continuous
c) Ordinal d) Nominal

5) _____ will automatically adjust the axis aspect ratio to match the input data in contour plot.
a) plt.imshow() b) plt.contour()
c) plt.contourf() d) All of the mentioned

6) Which principle is important in data visualization design?
a) Complexity b) Clarity
c) Randomness d) Ambiguity

7) Which function would you use in Matplotlib to create a line plot?
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8) Data preparation phase include _____ activity
a) Access and combine the data table
b) Look for error
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d) All of the above

9) Which method is commonly used to handle missing values in a dataset?
a) Drop rows b) Fill with median
c) Replace with a constant d) All of the above

10) What is NumPy primarily used for in Python?
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11) Each column of the table describes a _____ and each row describes an _____
a) Variable, attributes b) Variables, Observation
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12) Multivariate data analysis can be visualized using which of the following chart?
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13) What is the output of dataframe, head() method?
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b) return only headers or column name of the DataFrame
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d) throw an exception as it expects parameter(number) in parenthesis

14) In python, Alpha typically refers to the _____ level of a color.
a) Transparency b) Visibility
c) Clearance d) Combination

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Data Preprocessing & Visualization (BTN03513)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four (each carried 4 marks) **16**

a) Define the term observation and variable. Describe the types of variables in detail with example.
b) How missing data is handled while preparing the data tables?
c) Write a short note on confidence intervals.
d) Elaborate the process of making sense of data.
e) What do you mean by Fancy Indexing?

Q.3 Attempt Any Two **12**

a) Here are the runs scored by a cricket team in a league of 12 matches - 100, 120, 110, 150, 110, 140, 130, 170, 120, 220, 140, 110. Draw a box plot for the given data and identify the outlier.
b) What do you mean by Central Tendency? Calculate the following statistics with suitable example.
(i) Mode, (ii) Median, (iii) Mean, (iv) Range, (v) Variance,
(vi) Standard deviation
c) Visualize the strong positive correlation between two variables using correlation coefficient method. Use suitable example.

Section – II

Q.4 Attempt Any Four. (each carried 4 marks) **16**

a) Define Exploratory Data Analysis and Elaborate the steps of EDA.
b) Elaborate the features of Pandas.
c) Elaborate Two-Way Contingency Tables with suitable example.
d) What is hierarchical indexing?
e) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.5 Attempt Any Two **12**

a) Write the Python code to draw the Scatter Plot, Bar Chart, Histogram using Matplotlib and Seaborn.

b) What are the steps to combine dataset using append, concat & Merge, join in pandas.

c) Design a Radar Chart for product comparison and describe the findings. Let the product is 4 types of smartphones, the axes might include “battery life”, “camera quality”, “screen size”, "processor speed”, “price”. Also list out the benefits and limitations of using Radar chart.

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Data Preprocessing & Visualization (BTN03513)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) What is NumPy primarily used for in Python?
a) String manipulation b) Data visualization
c) Numerical computing d) File handling

2) Each column of the table describes a _____ and each row describes an _____
a) Variable, attributes b) Variables, Observation
c) Variable, features d) All of the above

3) Multivariate data analysis can be visualized using which of the following chart?
a) Scatter plot matrix b) Star plots
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4) What is the output of dataframe, head() method?
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6) Which of the following method is use to show topographical features both on land and under the ocean using Basemap library?
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a) min-max transformation
b) z-score transformation
c) Standard deviation
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b) Continuous
c) Ordinal
d) Nominal

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b) Clarity
c) Randomness
d) Ambiguity

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a) plt.bar()
b) plt.scatter()
c) plt.plot()
d) plt.pie()

13) Data preparation phase include _____ activity

a) Access and combine the data table
b) Look for error
c) Transform data
d) All of the above

14) Which method is commonly used to handle missing values in a dataset?

a) Drop rows
b) Fill with median
c) Replace with a constant
d) All of the above

SLR-BD-453

Seat No.	

Set S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Data Preprocessing & Visualization (BTN03513)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four (each carried 4 marks) **16**

a) Define the term observation and variable. Describe the types of variables in detail with example.
b) How missing data is handled while preparing the data tables?
c) Write a short note on confidence intervals.
d) Elaborate the process of making sense of data.
e) What do you mean by Fancy Indexing?

Q.3 Attempt Any Two **12**

a) Here are the runs scored by a cricket team in a league of 12 matches - 100, 120, 110, 150, 110, 140, 130, 170, 120, 220, 140, 110. Draw a box plot for the given data and identify the outlier.
b) What do you mean by Central Tendency? Calculate the following statistics with suitable example.
(i) Mode, (ii) Median, (iii) Mean, (iv) Range, (v) Variance,
(vi) Standard deviation
c) Visualize the strong positive correlation between two variables using correlation coefficient method. Use suitable example.

Section – II

Q.4 Attempt Any Four. (each carried 4 marks) **16**

a) Define Exploratory Data Analysis and Elaborate the steps of EDA.
b) Elaborate the features of Pandas.
c) Elaborate Two-Way Contingency Tables with suitable example.
d) What is hierarchical indexing?
e) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.5 Attempt Any Two **12**

a) Write the Python code to draw the Scatter Plot, Bar Chart, Histogram using Matplotlib and Seaborn.

b) What are the steps to combine dataset using append, concat & Merge, join in pandas.

c) Design a Radar Chart for product comparison and describe the findings. Let the product is 4 types of smartphones, the axes might include “battery life”, “camera quality”, “screen size”, "processor speed”, “price”. Also list out the benefits and limitations of using Radar chart.

SLR-BD-454

Seat No.	

Set P

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Network Security and Secure Coding (BTN03514)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) An organization employs hundreds of office workers that use computers to perform their tasks. What is the best plan for informing employees about security issues?
a) Include security policy in the employee handbook
b) Perform security awareness training at the time of hire and annually thereafter
c) Perform security awareness training at the time of hire
d) Require employees to sign the corporate security policy

2) An information system that processes sensitive information is configured to require a valid user id and strong password from any user. This process of accepting and validating this information is known as:
a) Authentication b) Strong authentication
c) Two-factor authentication d) Single sign-on

3) In cryptography, what is cipher?
a) algorithm for performing encryption and decryption
b) encrypted message
c) both (a) and (b)
d) none of the mentioned

4) The is the original message before transformation.
a) ciphertext b) plaintext
c) secret-text d) none of the above

5) _____ is the term used in computer security to protect your data from getting disclosed.
a) Integrity b) Authentication
c) Confidentiality d) Availability

6) Which of the following cannot be achieved by the digital signature in symmetric key encryption?

a) Message authentication b) Data integrity
c) Non-repudiation d) Security of the message

7) What is the existence of weakness in a system or network is known as?

a) Attack b) Exploit
c) Vulnerability d) Threat

8) A _____ attack attempts to learn or make use of information from the system but does not affect system resources.

a) active b) passive
c) none of the above d) all of the above

9) In an asymmetric-key cipher, the sender uses the _____ key.

a) private b) public
c) either (a) or (b) d) neither (a) nor (b)

10) In SHA-512, the message is divided into blocks of size _____ bits for the hash computation.

a) 1024 b) 512
c) 256 d) 1248

11) MACs are also called _____.

a) testword b) checkword
c) testbits d) none of the mentioned

12) Which one of the following is not an application hash functions?

a) One-way password file b) Key wrapping
c) Virus Detection d) Intrusion detection

13) What is the value of opad in the HMAC structure?

a) 00111110 b) 00110010
c) 10110110 d) 01011100

14) What is the PGP stand for?

a) Permuted Gap Permission b) Permuted Great Privacy
c) Pretty Good Permission d) None of the mentioned

Seat No.	

Set **P**

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Network Security and Secure Coding (BTN03514)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four questions. **16**

a) Write a note on Security Services.
b) What is SHA? Explain with diagram.
c) Give a difference between Active Attack and Passive Attack.
d) Define & Explain Model of network security in detail.
e) Explain in detail message authentication code and its requirements.

Q.3 Solve any two questions. **12**

a) Explain the purpose of X.509 standard.
b) What is Digital Signature? Differentiate digital signature from digital certificate.
c) Explain with neat diagram Man in Middle Attack.

Section – II

Q.4 Solve any four questions. **16**

a) List any 4 services offered by PGP explain it.
b) Define Firewall & its need.
c) Draw and explain IP Security Architecture
d) What is S/MIME? Explain in detail.
e) Identify the three classes of Intruders.

Q.5 Solve any two questions. **12**

a) Explain intrusion detection system (IDS) in detail with suitable diagrams.
b) Explain Secure Architecture with its principles.
c) Illustrate the various types of firewalls with neat diagrams.

Seat No.	

Set Q

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Network Security and Secure Coding (BTN03514)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) A _____ attack attempts to learn or make use of information from the system but does not affect system resources.
a) active b) passive
c) none of the above d) all of the above

2) In an asymmetric-key cipher, the sender uses the _____ key.
a) private b) public
c) either (a) or (b) d) neither (a) nor (b)

3) In SHA-512, the message is divided into blocks of size _____ bits for the hash computation.
a) 1024 b) 512
c) 256 d) 1248

4) MACs are also called _____.
a) testword b) checkword
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a) 00111110 b) 00110010
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7) What is the PGP stand for?
a) Permuted Gap Permission b) Permuted Great Privacy
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a) Include security policy in the employee handbook
b) Perform security awareness training at the time of hire and annually thereafter
c) Perform security awareness training at the time of hire
d) Require employees to sign the corporate security policy

9) An information system that processes sensitive information is configured to require a valid user id and strong password from any user. This process of accepting and validating this information is known as:

a) Authentication
b) Strong authentication
c) Two-factor authentication
d) Single sign-on

10) In cryptography, what is cipher?

a) algorithm for performing encryption and decryption
b) encrypted message
c) both (a) and (b)
d) none of the mentioned

11) The is the original message before transformation.

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b) plaintext
c) secret-text
d) none of the above

12) _____ is the term used in computer security to protect your data from getting disclosed.

a) Integrity
b) Authentication
c) Confidentiality
d) Availability

13) Which of the following cannot be achieved by the digital signature in symmetric key encryption?

a) Message authentication
b) Data integrity
c) Non-repudiation
d) Security of the message

14) What is the existence of weakness in a system or network is known as?

a) Attack
b) Exploit
c) Vulnerability
d) Threat

SLR-BD-454

Seat No.	

Set Q

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Network Security and Secure Coding (BTN03514)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four questions. **16**

a) Write a note on Security Services.
b) What is SHA? Explain with diagram.
c) Give a difference between Active Attack and Passive Attack.
d) Define & Explain Model of network security in detail.
e) Explain in detail message authentication code and its requirements.

Q.3 Solve any two questions. **12**

a) Explain the purpose of X.509 standard.
b) What is Digital Signature? Differentiate digital signature from digital certificate.
c) Explain with neat diagram Man in Middle Attack.

Section – II

Q.4 Solve any four questions. **16**

a) List any 4 services offered by PGP explain it.
b) Define Firewall & its need.
c) Draw and explain IP Security Architecture
d) What is S/MIME? Explain in detail.
e) Identify the three classes of Intruders.

Q.5 Solve any two questions. **12**

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c) Illustrate the various types of firewalls with neat diagrams.

SLR-BD-454

Seat No.	

Set R

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Network Security and Secure Coding (BTN03514)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) MACs are also called _____.
a) testword b) checkword
c) testbits d) none of the mentioned

2) Which one of the following is not an application hash functions?
a) One-way password file b) Key wrapping
c) Virus Detection d) Intrusion detection

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13) In an asymmetric-key cipher, the sender uses the _____ key.

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SLR-BD-454

Seat No.	

Set R

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Network Security and Secure Coding (BTN03514)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four questions. **16**
- **a)** Write a note on Security Services.
- **b)** What is SHA? Explain with diagram.
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- **a)** Explain the purpose of X.509 standard.
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Section – II

Q.4 Solve any four questions. **16**
- **a)** List any 4 services offered by PGP explain it.
- **b)** Define Firewall & its need.
- **c)** Draw and explain IP Security Architecture
- **d)** What is S/MIME? Explain in detail.
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SLR-BD-454

Seat No.	

Set S

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Network Security and Secure Coding (BTN03514)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which of the following cannot be achieved by the digital signature in symmetric key encryption?
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13) The is the original message before transformation.
a) ciphertext b) plaintext
c) secret-text d) none of the above

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a) Integrity b) Authentication
c) Confidentiality d) Availability

SLR-BD-454

Seat No.	

Set S

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE & ENGINEERING
Network Security and Secure Coding (BTN03514)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four questions. **16**
- **a)** Write a note on Security Services.
- **b)** What is SHA? Explain with diagram.
- **c)** Give a difference between Active Attack and Passive Attack.
- **d)** Define & Explain Model of network security in detail.
- **e)** Explain in detail message authentication code and its requirements.

Q.3 Solve any two questions. **12**
- **a)** Explain the purpose of X.509 standard.
- **b)** What is Digital Signature? Differentiate digital signature from digital certificate.
- **c)** Explain with neat diagram Man in Middle Attack.

Section – II

Q.4 Solve any four questions. **16**
- **a)** List any 4 services offered by PGP explain it.
- **b)** Define Firewall & its need.
- **c)** Draw and explain IP Security Architecture
- **d)** What is S/MIME? Explain in detail.
- **e)** Identify the three classes of Intruders.

Q.5 Solve any two questions. **12**
- **a)** Explain intrusion detection system (IDS) in detail with suitable diagrams.
- **b)** Explain Secure Architecture with its principles.
- **c)** Illustrate the various types of firewalls with neat diagrams.

SLR-BD-455

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Economics (BTN03506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive b) Monopoly
c) Oligopoly d) Monopolistic

2) Average revenue is _____
a) Total revenue divided by the number of units sold
b) Revenue earned by all the units of the output
c) Revenue earned by the average sized firm in the industry
d) Net addition made to the total revenue by selling one more unit of a commodity

3) Which of these is an economic activity?
a) Father teaching his son at home instead of spending on coaching
b) A housewife making food for the family on her own
c) A hair dresser doing hair cut designing on payment
d) A singer giving a show on his son's wedding anniversary

4) Which of the following is NOT an account in the Balance of Payments?
a) Current Account b) Capital Account
c) Financial Account d) Future Account

5) Which of the following is not a regulatory institution in Indian financial system?
a) RBI b) CIBIL
c) SEBI d) IRDA

6) In a mixed economy which sector (s) is 1 are found _____

a) Private only
b) Public only
c) None
d) Both (a) Private and (b)Public

7) Who is known as father of economics?

a) Adam Smith
b) Prof. A. Samulson
c) Alfred Marshall
d) J. R. Hicks

8) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False
b) True
c) Partly true
d) Partly False

9) Which one of the following is not the function of money?

a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

10) Which one of the following cost can never become zero?

a) Average cost
b) Fixed cost
c) Marginal cost
d) Variable cost

SLR-BD-455

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Economics (BTN03506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Economics (BTN03506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) In a mixed economy which sector (s) is 1 are found _____
a) Private only b) Public only
c) None d) Both (a) Private and (b)Public

1) Who is known as father of economics?
a) Adam Smith b) Prof. A. Samulson
c) Alfred Marshall d) J. R. Hicks

3) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
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   d) Net addition made to the total revenue by selling one more unit of a commodity

8) Which of these is an economic activity?
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9) Which of the following is NOT an account in the Balance of Payments?
   a) Current Account
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   d) Future Account

10) Which of the following is not a regulatory institution in Indian financial system?
   a) RBI
   b) CIBIL
   c) SEBI
   d) IRDA

SLR-BD-455

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Economics (BTN03506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Economics (BTN03506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which one of the following is not the function of money?
a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

2) Which one of the following cost can never become zero?
a) Average cost b) Fixed cost
c) Marginal cost d) Variable cost

3) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive b) Monopoly
c) Oligopoly d) Monopolistic

4) Average revenue is _____
a) Total revenue divided by the number of units sold
b) Revenue earned by all the units of the output
c) Revenue earned by the average sized firm in the industry
d) Net addition made to the total revenue by selling one more unit of a commodity

5) Which of these is an economic activity?
a) Father teaching his son at home instead of spending on coaching
b) A housewife making food for the family on her own
c) A hair dresser doing hair cut designing on payment
d) A singer giving a show on his son's wedding anniversary

6) Which of the following is NOT an account in the Balance of Payments?

a) Current Account b) Capital Account
c) Financial Account d) Future Account

7) Which of the following is not a regulatory institution in Indian financial system?

a) RBI b) CIBIL
c) SEBI d) IRDA

8) In a mixed economy which sector (s) is 1 are found _____

a) Private only b) Public only
c) None d) Both (a) Private and (b)Public

9) Who is known as father of economics?

a) Adam Smith b) Prof. A. Samulson
c) Alfred Marshall d) J. R. Hicks

10) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False b) True
c) Partly true d) Partly False

SLR-BD-455

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Economics (BTN03506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Economics (BTN03506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which of these is an economic activity?
a) Father teaching his son at home instead of spending on coaching
b) A housewife making food for the family on her own
c) A hair dresser doing hair cut designing on payment
d) A singer giving a show on his son's wedding anniversary

2) Which of the following is NOT an account in the Balance of Payments?
a) Current Account b) Capital Account
c) Financial Account d) Future Account

3) Which of the following is not a regulatory institution in Indian financial system?
a) RBI b) CIBIL
c) SEBI d) IRDA

4) In a mixed economy which sector (s) is 1 are found _____
a) Private only b) Public only
c) None d) Both (a) Private and (b)Public

5) Who is known as father of economics?
a) Adam Smith b) Prof. A. Samulson
c) Alfred Marshall d) J. R. Hicks

6) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

7) Which one of the following is not the function of money?
a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

8) Which one of the following cost can never become zero?
a) Average cost
b) Fixed cost
c) Marginal cost
d) Variable cost

9) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive
b) Monopoly
c) Oligopoly
d) Monopolistic

10) Average revenue is _____
a) Total revenue divided by the number of units sold
b) Revenue earned by all the units of the output
c) Revenue earned by the average sized firm in the industry
d) Net addition made to the total revenue by selling one more unit of a commodity

SLR-BD-455

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Economics (BTN03506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

SLR-BD-456

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN03507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) What protects the intellectual property created by artists?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

2) If a company develops a new technology that improves its main product, what type of intellectual property can they use to stop others from copying their invention?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

3) All of the following are examples of intellectual property protections except _____.
a) Copyrights b) Patents
c) Contracts d) Trademarks

4) The first Patent Law was enacted in India in the year _____
a) 1856 b) 1880
c) 1905 d) 1850

5) How long does intellectual property last? (after the death of the author)
a) 10 yrs b) 30 yrs
c) 60 yrs d) 70 yrs

6) Which of the following can you copyright?
a) Literary work b) Ideas
c) Choreographic work d) Fashion

7) Which of the following identifies as a trademark?

a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

8) What is the subject matter of a patent?

a) Art b) Invention
c) Goods d) Ideas

9) What is copyright meant for?

a) Film work b) Books
c) Essay d) All of these

10) In which article is intellectual property rights outlined?

a) Article 15 b) Article 27
c) Article 13 d) Article 20

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN03507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?
b) Explain Outlines concepts of confidentiality and information security.
c) Explain the Comparison of the Indian IPR system with international IPR frameworks.

Q.3 Solve any Four: **20**

a) Explain the role of Engineers and Managers in technology development in project commercialization.
b) Write a short note on the shifting paradigms of R&D and their linkage to IPR.
c) Explain Copyright issues in creative works.
d) Discuss the importance of Law on Industrial designs.
e) Explain commercial exploitation and infringement.
f) Write a short note on IPR and Electronic Commerce.

SLR-BD-456

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN03507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) Which of the following can you copyright?
a) Literary work b) Ideas
c) Choreographic work d) Fashion

2) Which of the following identifies as a trademark?
a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

3) What is the subject matter of a patent?
a) Art b) Invention
c) Goods d) Ideas

4) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

5) In which article is intellectual property rights outlined?
a) Article 15 b) Article 27
c) Article 13 d) Article 20

6) What protects the intellectual property created by artists?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

7) If a company develops a new technology that improves its main product, what type of intellectual property can they use to stop others from copying their invention?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

8) All of the following are examples of intellectual property protections except _____.

a) Copyrights b) Patents
c) Contracts d) Trademarks

9) The first Patent Law was enacted in India in the year _____

a) 1856 b) 1880
c) 1905 d) 1850

10) How long does intellectual property last? (after the death of the author)

a) 10 yrs b) 30 yrs
c) 60 yrs d) 70 yrs

SLR-BD-456

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN03507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?
b) Explain Outlines concepts of confidentiality and information security.
c) Explain the Comparison of the Indian IPR system with international IPR frameworks.

Q.3 Solve any Four: **20**

a) Explain the role of Engineers and Managers in technology development in project commercialization.
b) Write a short note on the shifting paradigms of R&D and their linkage to IPR.
c) Explain Copyright issues in creative works.
d) Discuss the importance of Law on Industrial designs.
e) Explain commercial exploitation and infringement.
f) Write a short note on IPR and Electronic Commerce.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN03507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

2) In which article is intellectual property rights outlined?
a) Article 15 b) Article 27
c) Article 13 d) Article 20

3) What protects the intellectual property created by artists?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

4) If a company develops a new technology that improves its main product, what type of intellectual property can they use to stop others from copying their invention?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

5) All of the following are examples of intellectual property protections except _____.
a) Copyrights b) Patents
c) Contracts d) Trademarks

6) The first Patent Law was enacted in India in the year _____
a) 1856 b) 1880
c) 1905 d) 1850

7) How long does intellectual property last? (after the death of the author)

a) 10 yrs b) 30 yrs
c) 60 yrs d) 70 yrs

8) Which of the following can you copyright?

a) Literary work b) Ideas
c) Choreographic work d) Fashion

9) Which of the following identifies as a trademark?

a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

10) What is the subject matter of a patent?

a) Art b) Invention
c) Goods d) Ideas

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN03507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?
b) Explain Outlines concepts of confidentiality and information security.
c) Explain the Comparison of the Indian IPR system with international IPR frameworks.

Q.3 Solve any Four: **20**

a) Explain the role of Engineers and Managers in technology development in project commercialization.
b) Write a short note on the shifting paradigms of R&D and their linkage to IPR.
c) Explain Copyright issues in creative works.
d) Discuss the importance of Law on Industrial designs.
e) Explain commercial exploitation and infringement.
f) Write a short note on IPR and Electronic Commerce.

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN03507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) All of the following are examples of intellectual property protections except _____.
a) Copyrights b) Patents
c) Contracts d) Trademarks

2) The first Patent Law was enacted in India in the year _____
a) 1856 b) 1880
c) 1905 d) 1850

3) How long does intellectual property last? (after the death of the author)
a) 10 yrs b) 30 yrs
c) 60 yrs d) 70 yrs

4) Which of the following can you copyright?
a) Literary work b) Ideas
c) Choreographic work d) Fashion

5) Which of the following identifies as a trademark?
a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

6) What is the subject matter of a patent?
a) Art b) Invention
c) Goods d) Ideas

7) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

8) In which article is intellectual property rights outlined?

a) Article 15 b) Article 27
c) Article 13 d) Article 20

9) What protects the intellectual property created by artists?

a) Copyright b) Patents
c) Trademarks d) Registered Designs

10) If a company develops a new technology that improves its main product, what type of intellectual property can they use to stop others from copying their invention?

a) Copyright b) Patents
c) Trademarks d) Registered Designs

SLR-BD-456

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN03507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?
b) Explain Outlines concepts of confidentiality and information security.
c) Explain the Comparison of the Indian IPR system with international IPR frameworks.

Q.3 Solve any Four: **20**

a) Explain the role of Engineers and Managers in technology development in project commercialization.
b) Write a short note on the shifting paradigms of R&D and their linkage to IPR.
c) Explain Copyright issues in creative works.
d) Discuss the importance of Law on Industrial designs.
e) Explain commercial exploitation and infringement.
f) Write a short note on IPR and Electronic Commerce.

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Introduction to Sociology (BTN03508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Name of state having highest percentage of literacy level.
a) West Bengal b) Punjab
c) Kerala d) Maharashtra

2) Functions of Social Institutes is ____.
a) To meet fundamental needs of society
b) To improve the Society
c) To meet the needs of Family
d) None of above

3) Social change is change in ____.
a) Society b) Community
c) Individual d) Education

4) Which is recognized as one of the first environmental movements in country?
a) Chipko Movement
b) Kisan Movement
c) Lok satta Movement
d) Naramada Bachao Andolan

5) Science that deals with the relationship between living organism with their physical environment and each other is called ____.
a) Ecosystem b) Biodiversity
c) Environment d) Ecology

6) In which year the term sociology was coined?

a) 1798 b) 1815
c) 1839 d) 1857

7) The word sociology is made up of two words. These are ____.

a) Societies and logy b) Societia and logistia
c) Socious and logos d) Socia and logos

8) Who is the father of Sociology?

a) Karl Max b) Herbert Spencer
c) Auguste Comte d) Charles Darwin

9) The major component of demography are:

a) Mortality b) Fertility
c) Migration d) All of these

10) India occupies _____ rank among the population of the different countries of world.

a) Third b) First
c) Forth d) Second

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Introduction to Sociology (BTN03508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a) What is Sociology? And explain with concept like social structure, role, norms, values etc. **10**

b) Explain with detail trends of Urbanization in developing countries and world. **10**

c) Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development. **10**

d) Explain with detail social movements like protest, reformist, radical in India. **10**

e) Explain in detail demographic change in India & world along with Human Ecology. **10**

f) Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Introduction to Sociology (BTN03508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) In which year the term sociology was coined?
a) 1798 b) 1815
c) 1839 d) 1857

2) The word sociology is made up of two words. These are ____.
a) Societies and logy b) Societia and logistia
c) Socious and logos d) Socia and logos

3) Who is the father of Sociology?
a) Karl Max b) Herbert Spencer
c) Auguste Comte d) Charles Darwin

4) The major component of demography are:
a) Mortality b) Fertility
c) Migration d) All of these

5) India occupies _____ rank among the population of the different countries of world.
a) Third b) First
c) Forth d) Second

6) Name of state having highest percentage of literacy level.
a) West Bengal b) Punjab
c) Kerala d) Maharashtra

7) Functions of Social Institutes is ____.
a) To meet fundamental needs of society
b) To improve the Society
c) To meet the needs of Family
d) None of above

8) Social change is change in ____.

a) Society b) Community
c) Individual d) Education

9) Which is recognized as one of the first environmental movements in country?

a) Chipko Movement
b) Kisan Movement
c) Lok satta Movement
d) Naramada Bachao Andolan

10) Science that deals with the relationship between living organism with their physical environment and each other is called ____.

a) Ecosystem b) Biodiversity
c) Environment d) Ecology

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Introduction to Sociology (BTN03508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a)	What is Sociology? And explain with concept like social structure, role, norms, values etc.	**10**
b)	Explain with detail trends of Urbanization in developing countries and world.	**10**
c)	Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development.	**10**
d)	Explain with detail social movements like protest, reformist, radical in India.	**10**
e)	Explain in detail demographic change in India & world along with Human Ecology.	**10**
f)	Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization.	**10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Introduction to Sociology (BTN03508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) The major component of demography are:
a) Mortality b) Fertility
c) Migration d) All of these

2) India occupies _____ rank among the population of the different countries of world.
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c) Forth d) Second

3) Name of state having highest percentage of literacy level.
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b) Kisan Movement
c) Lok satta Movement
d) Naramada Bachao Andolan

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9) The word sociology is made up of two words. These are ____.

a) Societies and logy b) Societia and logistia
c) Socious and logos d) Socia and logos

10) Who is the father of Sociology?

a) Karl Max b) Herbert Spencer
c) Auguste Comte d) Charles Darwin

SLR-BD-457

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Introduction to Sociology (BTN03508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a)	What is Sociology? And explain with concept like social structure, role, norms, values etc.	**10**
b)	Explain with detail trends of Urbanization in developing countries and world.	**10**
c)	Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development.	**10**
d)	Explain with detail social movements like protest, reformist, radical in India.	**10**
e)	Explain in detail demographic change in India & world along with Human Ecology.	**10**
f)	Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization.	**10**

Seat No.	

Set | S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Introduction to Sociology (BTN03508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Social change is change in ____.
a) Society b) Community
c) Individual d) Education

2) Which is recognized as one of the first environmental movements in country?
a) Chipko Movement
b) Kisan Movement
c) Lok satta Movement
d) Naramada Bachao Andolan

3) Science that deals with the relationship between living organism with their physical environment and each other is called ____.
a) Ecosystem b) Biodiversity
c) Environment d) Ecology

4) In which year the term sociology was coined?
a) 1798 b) 1815
c) 1839 d) 1857

5) The word sociology is made up of two words. These are ____.
a) Societies and logy b) Societia and logistia
c) Socious and logos d) Socia and logos

6) Who is the father of Sociology?
a) Karl Max b) Herbert Spencer
c) Auguste Comte d) Charles Darwin

7) The major component of demography are:
a) Mortality b) Fertility
c) Migration d) All of these

8) India occupies _____ rank among the population of the different countries of world.

a) Third
b) First
c) Forth
d) Second

9) Name of state having highest percentage of literacy level.

a) West Bengal
b) Punjab
c) Kerala
d) Maharashtra

10) Functions of Social Institutes is ____.

a) To meet fundamental needs of society
b) To improve the Society
c) To meet the needs of Family
d) None of above

SLR-BD-457

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Introduction to Sociology (BTN03508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a)	What is Sociology? And explain with concept like social structure, role, norms, values etc.	**10**
b)	Explain with detail trends of Urbanization in developing countries and world.	**10**
c)	Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development.	**10**
d)	Explain with detail social movements like protest, reformist, radical in India.	**10**
e)	Explain in detail demographic change in India & world along with Human Ecology.	**10**
f)	Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization.	**10**

SLR-BD-458

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Stress and Coping (BTN03509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) What is stress?
a) A state of physical tiredness
b) The body's response to a demand or challenge
c) A type of exercise
d) A form of relaxation

2) Which of the following is a healthy way to cope with stress?
a) Concentrating the stressor
b) Engaging in regular physical activity
c) Investing time on social media
d) Consuming excessive amounts of caffeine

3) Which of the following is a relaxation technique often used for stress management?
a) Procrastination b) Meditation
c) Caffeine consumption d) Multitasking

4) What is the purpose of time management in stress reduction?
a) To increase stress by overloading schedules
b) To create a sense of urgency
c) To prioritize tasks and reduce overwhelm
d) To eliminate breaks and relaxation time

5) Which of the following is a potential source of social support?
a) Isolation from friends and family
b) Engaging in negative self-talk
c) Seeking help from friends, family, or support groups
d) Avoiding all forms of communication

6) When a task appears overwhelming, it is best to _____
a) Put it aside till later
b) Drink alcohol to relax
c) Break it down into smaller task
d) Avoid the task

7) Anxiety can cause the following moods _____
a) Irritable
b) Nervous
c) Anxious
d) All of the above

8) The following are the characteristics of Positive Stress.
a) It improves performance
b) It feels exciting
c) It motivates
d) All of the above

9) A good way to prevent stress is _____
a) Drinking beverages high in caffeine
b) Sitting ideal doing nothing
c) Overeating
d) Taking time out for relaxation

10) Absenteeism, turnover and less productivity are _____ symptoms of stress.
a) Medical
b) Psychological
c) Behavioral
d) None of these

SLR-BD-458

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Stress and Coping (BTN03509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Stress and Coping (BTN03509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
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4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) When a task appears overwhelming, it is best to _____
a) Put it aside till later
b) Drink alcohol to relax
c) Break it down into smaller task
d) Avoid the task

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a) Irritable b) Nervous
c) Anxious d) All of the above

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a) Medical b) Psychological
c) Behavioral d) None of these

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a) A state of physical tiredness
b) The body's response to a demand or challenge
c) A type of exercise
d) A form of relaxation

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c) Investing time on social media
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a) Procrastination
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9) What is the purpose of time management in stress reduction?
a) To increase stress by overloading schedules
b) To create a sense of urgency
c) To prioritize tasks and reduce overwhelm
d) To eliminate breaks and relaxation time

10) Which of the following is a potential source of social support?
a) Isolation from friends and family
b) Engaging in negative self-talk
c) Seeking help from friends, family, or support groups
d) Avoiding all forms of communication

SLR-BD-458

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Stress and Coping (BTN03509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Stress and Coping (BTN03509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) A good way to prevent stress is _____
a) Drinking beverages high in caffeine
b) Sitting ideal doing nothing
c) Overeating
d) Taking time out for relaxation

2) Absenteeism, turnover and less productivity are _____ symptoms of stress.
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b) To create a sense of urgency
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b) Drink alcohol to relax
c) Break it down into smaller task
d) Avoid the task

9) Anxiety can cause the following moods _____
a) Irritable b) Nervous
c) Anxious d) All of the above

10) The following are the characteristics of Positive Stress.
a) It improves performance
b) It feels exciting
c) It motivates
d) All of the above

SLR-BD-458

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Stress and Coping (BTN03509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Stress and Coping (BTN03509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) Which of the following is a relaxation technique often used for stress management?
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c) Caffeine consumption d) Multitasking

2) What is the purpose of time management in stress reduction?
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d) To eliminate breaks and relaxation time

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c) Break it down into smaller task
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5) Anxiety can cause the following moods _____
a) Irritable b) Nervous
c) Anxious d) All of the above

6) The following are the characteristics of Positive Stress.
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d) All of the above

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a) Drinking beverages high in caffeine
b) Sitting ideal doing nothing
c) Overeating
d) Taking time out for relaxation

8) Absenteeism, turnover and less productivity are _____ symptoms of stress.
a) Medical
b) Psychological
c) Behavioral
d) None of these

9) What is stress?
a) A state of physical tiredness
b) The body's response to a demand or challenge
c) A type of exercise
d) A form of relaxation

10) Which of the following is a healthy way to cope with stress?
a) Concentrating the stressor
b) Engaging in regular physical activity
c) Investing time on social media
d) Consuming excessive amounts of caffeine

SLR-BD-458

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Stress and Coping (BTN03509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

SLR-BD-459

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Professional Ethics and Human Value (BTN03510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values, and beliefs
c) Only Values d) Psychology

2) Word ethichs is definded as a _____
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

3) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) Authority

4) The study on ethics helps to know the people's _____.
a) Learn good or bad things
b) Copyright
c) Morality
d) Beliefs, values, and morals

5) The objectives of professional ethics in engineering are _____.
a) To understand the moral values that ought to guide the Engineering profession
b) To resolve the moral issues in the profession, and
c) To justify the moral judgment concerning the profession
d) All the above

6) The main core human values are _____.

a) Right conduct b) Peace
c) Both a & b d) None of these

7) Preconditioning is ____.

a) Assuming without knowing b) Knowing without assuming
c) Only assuming d) Only knowing

8) Value education deals with ____.

a) What is universally valuable to all of us
b) What is conductive to our individual and collective of us
c) Enables to be in harmony with ourselves, other and rest of nature
d) All of the above

9) Courage is the tendency to accept and face ____.

a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

10) Human life is lived at four levels individuals, family, society and ____.

a) Nature b) Nurture
c) World d) Universe

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Professional Ethics and Human Value (BTN03510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

SLR-BD-459

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Professional Ethics and Human Value (BTN03510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) The main core human values are _____.
a) Right conduct b) Peace
c) Both a & b d) None of these

2) Preconditioning is ____.
a) Assuming without knowing b) Knowing without assuming
c) Only assuming d) Only knowing

3) Value education deals with ____.
a) What is universally valuable to all of us
b) What is conductive to our individual and collective of us
c) Enables to be in harmony with ourselves, other and rest of nature
d) All of the above

4) Courage is the tendency to accept and face ____.
a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

5) Human life is lived at four levels individuals, family, society and ____.
a) Nature b) Nurture
c) World d) Universe

6) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values, and beliefs
c) Only Values d) Psychology

7) Word ethichs is definded as a _____
   a) Motivation
   b) Set of attitudes concerned with the value of work
   c) Attitude
   d) Values

8) _____ is defined as the duty, obligation or even authority.
   a) Work
   b) Responsibility
   c) Democracy
   d) Authority

9) The study on ethics helps to know the people's _____.
   a) Learn good or bad things
   b) Copyright
   c) Morality
   d) Beliefs, values, and morals

10) The objectives of professional ethics in engineering are _____.
   a) To understand the moral values that ought to guide the Engineering profession
   b) To resolve the moral issues in the profession, and
   c) To justify the moral judgment concerning the profession
   d) All the above

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Professional Ethics and Human Value (BTN03510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Professional Ethics and Human Value (BTN03510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) Courage is the tendency to accept and face ____.
a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

2) Human life is lived at four levels individuals, family, society and ____.
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3) Ethics is the word that refers to _____.
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d) Values

5) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) Authority

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b) Copyright
c) Morality
d) Beliefs, values, and morals

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   a) To understand the moral values that ought to guide the Engineering profession
   b) To resolve the moral issues in the profession, and
   c) To justify the moral judgment concerning the profession
   d) All the above

8) The main core human values are _____.
   a) Right conduct b) Peace
   c) Both a & b d) None of these

9) Preconditioning is ____.
   a) Assuming without knowing b) Knowing without assuming
   c) Only assuming d) Only knowing

10) Value education deals with ____.
   a) What is universally valuable to all of us
   b) What is conductive to our individual and collective of us
   c) Enables to be in harmony with ourselves, other and rest of nature
   d) All of the above

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Professional Ethics and Human Value (BTN03510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Professional Ethics and Human Value (BTN03510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) Authority

2) The study on ethics helps to know the people's _____.
a) Learn good or bad things
b) Copyright
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6) Value education deals with ____.
   a) What is universally valuable to all of us
   b) What is conductive to our individual and collective of us
   c) Enables to be in harmony with ourselves, other and rest of nature
   d) All of the above

7) Courage is the tendency to accept and face ____.
   a) Self-confidence
   b) Risks and difficult tasks in rational ways
   c) Physical courage
   d) Social courage

8) Human life is lived at four levels individuals, family, society and ____.
   a) Nature b) Nurture
   c) World d) Universe

9) Ethics is the word that refers to _____.
   a) Human tendency b) Morals, values, and beliefs
   c) Only Values d) Psychology

10) Word ethichs is definded as a _____
   a) Motivation
   b) Set of attitudes concerned with the value of work
   c) Attitude
   d) Values

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
COMPUTER SCIENCE AND ENGINEERING
Professional Ethics and Human Value (BTN03510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

SLR-BD-460

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
System Programming (BTN03601)

Day & Date: Tuesday, 27-May-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions **14**

1) Execution gap is the gap between _____
a) Application Domain & Execution Domain
b) Programming Language Domain & Execution Domain
c) Application Domain & Programming Language Domain
d) None of the above

2) Which of the following is/are advanced assembler directives?
a) START b) READ
c) EQU d) PRINT

3) _____ statement indicates an action to be performed during the execution of the assembled program.
a) Declarative b) Imperative
c) Assembler directives d) All of above

4) Assembly language program is called _____
a) Object program b) Source program
c) Oriented program d) All of these

5) The statement used to perform auxiliary function is _____
a) Model statement b) Conditional statement
c) Preprocessor statement d) prototype statement

6) A macro prototype statement consists of _____
a) Actual parameters b) Formal Parameters
c) Model statements d) none of these

7) A model statement is a statement from which a/an _____ language statement may be generated during macro expansion.
a) Machine b) Assembly
c) Target d) None

8) _____ are generated as output of semantic analysis.
a) Parse Trees b) Tokens
c) Sequence of actions d) Intermediate representation

9) Reduction in frequency means _____
a) Replacing run time computation by compile time computation
b) Removing loop invariant computation
c) Removing common sub expression
d) Replacing a costly operation by a relatively cheaper one

10) Compiler bridges a semantic gap between which domains?
a) Application & Execution b) Application & PL
c) PL & execution d) none of these

11) After actual locations for main storage are known, a _____ adjusts relative addresses to these actual locations.
a) Relocating loader b) Locating loader
c) Default loader d) None of these

12) Binding of external reference to the link time address is called _____
a) Translation b) Loading
c) Linking d) None of these

13) In absolute loader function of linking is done by _____
a) Linker b) Loader
c) Programmer d) Assembler

14) In direct linking loader which is not related with object program?
a) ESD b) RLD
c) BSS d) TXT

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
System Programming (BTN03601)

Day & Date: Tuesday, 27-May-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) List and explain advanced assembler directives.
b) Describe concept of grammar along with its type.
c) Explain types of assembly statements.
d) Explain concept Macro expansion.

Q.3 Attempt any two. **16**

a) Explain the concept of
i) Front end of Toy compiler ii) Back end of Toy compiler
b) List and explain fundamental of language specification.
c) Consider the following code generate
1. Symbol table 2. Literal table 3. Mnemonic table 4. Pool table
5. Intermediate code.

```
        START    200
        MOVER    AREG,    ='5'   200) +04   1   211
        MOV EM   AREG,    A      201) +05   1   217
LOOP    MOVER    AREG,    A      202) +04   1   217
        MOVER    AREG,    B      203) +05   3   218
        ADD      CREG,    B      204) +01   3   212
        …..
        BC       ANY,     NEXT   210) +07   6   214
        LTORG
                 = '5'           211) +00   0   005
                 = '1'           212) +00   0   001
        ……
NEXT    SUB      AREG,    = '1'  214) +02   1   219
        BC       LT, BACK        215) +07   1   202
LAST    STOP                     216) +00   0   000
        ORIGIN   LOOP   +1
        MULT     C      REG, B   204) +03   3   218
        ORIGIN   LAST   +1
A       DS       1               217)
BACK    EQU      LOOP
B       DS       1               218)
        END
                 = '1'           219) +00   0   001
```

Section – II

Q.4 Attempt any three **12**

a) Explain the concept of control flow analysis and data flow analysis.
b) Explain operand descriptor and register descriptor used in compilation of expressions.
c) Explain Relocation and linking concepts.
d) Explain the concept of Interpreter in detail.

Q.5 Attempt any Two. **16**

a) Explain compilation of expressions in detail.
b) Discuss linking for overlays in detail.
c) List different loading schemes and explain any two.

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
System Programming (BTN03601)

Day & Date: Tuesday, 27-May-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions **14**

1) _____ are generated as output of semantic analysis.
a) Parse Trees b) Tokens
c) Sequence of actions d) Intermediate representation

2) Reduction in frequency means _____
a) Replacing run time computation by compile time computation
b) Removing loop invariant computation
c) Removing common sub expression
d) Replacing a costly operation by a relatively cheaper one

3) Compiler bridges a semantic gap between which domains?
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a) Linker b) Loader
c) Programmer d) Assembler

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a) ESD b) RLD
c) BSS d) TXT

8) Execution gap is the gap between _____
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b) Programming Language Domain & Execution Domain
c) Application Domain & Programming Language Domain
d) None of the above

9) Which of the following is/are advanced assembler directives?
a) START b) READ
c) EQU d) PRINT

10) _____ statement indicates an action to be performed during the execution of the assembled program.
a) Declarative b) Imperative
c) Assembler directives d) All of above

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c) Oriented program d) All of these

12) The statement used to perform auxiliary function is _____
a) Model statement b) Conditional statement
c) Preprocessor statement d) prototype statement

13) A macro prototype statement consists of _____
a) Actual parameters b) Formal Parameters
c) Model statements d) none of these

14) A model statement is a statement from which a/an _____ language statement may be generated during macro expansion.
a) Machine b) Assembly
c) Target d) None

Seat No.	Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
System Programming (BTN03601)

Day & Date: Tuesday, 27-May-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) List and explain advanced assembler directives.
b) Describe concept of grammar along with its type.
c) Explain types of assembly statements.
d) Explain concept Macro expansion.

Q.3 Attempt any two. **16**

a) Explain the concept of
i) Front end of Toy compiler ii) Back end of Toy compiler
b) List and explain fundamental of language specification.
c) Consider the following code generate
1. Symbol table 2. Literal table 3. Mnemonic table 4. Pool table
5. Intermediate code.

```
        START    200
        MOVER    AREG,    ='5'   200) +04   1   211
        MOV EM   AREG,    A      201) +05   1   217
LOOP    MOVER    AREG,    A      202) +04   1   217
        MOVER    AREG,    B      203) +05   3   218
        ADD      CREG,    B      204) +01   3   212
        …..
        BC       ANY,     NEXT   210) +07   6   214
        LTORG
                 = '5'           211) +00   0   005
                 = '1'           212) +00   0   001
        ……
NEXT    SUB      AREG,    = '1'  214) +02   1   219
        BC       LT, BACK        215) +07   1   202
LAST    STOP                     216) +00   0   000
        ORIGIN   LOOP   +1
        MULT     C      REG, B   204) +03   3   218
        ORIGIN   LAST   +1
A       DS       1               217)
BACK    EQU      LOOP
B       DS       1               218)
        END
                 = '1'           219) +00   0   001
```

Section – II

Q.4 Attempt any three **12**

a) Explain the concept of control flow analysis and data flow analysis.
b) Explain operand descriptor and register descriptor used in compilation of expressions.
c) Explain Relocation and linking concepts.
d) Explain the concept of Interpreter in detail.

Q.5 Attempt any Two. **16**

a) Explain compilation of expressions in detail.
b) Discuss linking for overlays in detail.
c) List different loading schemes and explain any two.

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
System Programming (BTN03601)

Day & Date: Tuesday, 27-May-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions **14**

1) After actual locations for main storage are known, a _____ adjusts relative addresses to these actual locations.
a) Relocating loader b) Locating loader
c) Default loader d) None of these

2) Binding of external reference to the link time address is called _____
a) Translation b) Loading
c) Linking d) None of these

3) In absolute loader function of linking is done by _____
a) Linker b) Loader
c) Programmer d) Assembler

4) In direct linking loader which is not related with object program?
a) ESD b) RLD
c) BSS d) TXT

5) Execution gap is the gap between _____
a) Application Domain & Execution Domain
b) Programming Language Domain & Execution Domain
c) Application Domain & Programming Language Domain
d) None of the above

6) Which of the following is/are advanced assembler directives?
a) START b) READ
c) EQU d) PRINT

7) _____ statement indicates an action to be performed during the execution of the assembled program.
a) Declarative b) Imperative
c) Assembler directives d) All of above

8) Assembly language program is called _____
a) Object program b) Source program
c) Oriented program d) All of these

9) The statement used to perform auxiliary function is _____
a) Model statement b) Conditional statement
c) Preprocessor statement d) prototype statement

10) A macro prototype statement consists of _____
a) Actual parameters b) Formal Parameters
c) Model statements d) none of these

11) A model statement is a statement from which a/an _____ language statement may be generated during macro expansion.
a) Machine b) Assembly
c) Target d) None

12) _____ are generated as output of semantic analysis.
a) Parse Trees b) Tokens
c) Sequence of actions d) Intermediate representation

13) Reduction in frequency means _____
a) Replacing run time computation by compile time computation
b) Removing loop invariant computation
c) Removing common sub expression
d) Replacing a costly operation by a relatively cheaper one

14) Compiler bridges a semantic gap between which domains?
a) Application & Execution b) Application & PL
c) PL & execution d) none of these

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
System Programming (BTN03601)

Day & Date: Tuesday, 27-May-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) List and explain advanced assembler directives.
b) Describe concept of grammar along with its type.
c) Explain types of assembly statements.
d) Explain concept Macro expansion.

Q.3 Attempt any two. **16**

a) Explain the concept of
i) Front end of Toy compiler ii) Back end of Toy compiler
b) List and explain fundamental of language specification.
c) Consider the following code generate
1. Symbol table 2. Literal table 3. Mnemonic table 4. Pool table
5. Intermediate code.

```
        START    200
        MOVER    AREG,    ='5'   200) +04   1   211
        MOV EM   AREG,    A      201) +05   1   217
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        ADD      CREG,    B      204) +01   3   212
        …..
        BC       ANY,     NEXT   210) +07   6   214
        LTORG
                 = '5'           211) +00   0   005
                 = '1'           212) +00   0   001
        ……
NEXT    SUB      AREG,    = '1'  214) +02   1   219
        BC       LT, BACK        215) +07   1   202
LAST    STOP                     216) +00   0   000
        ORIGIN   LOOP   +1
        MULT     C      REG, B   204) +03   3   218
        ORIGIN   LAST   +1
A       DS       1               217)
BACK    EQU      LOOP
B       DS       1               218)
        END
                 = '1'           219) +00   0   001
```

Section – II

Q.4 Attempt any three **12**

a) Explain the concept of control flow analysis and data flow analysis.
b) Explain operand descriptor and register descriptor used in compilation of expressions.
c) Explain Relocation and linking concepts.
d) Explain the concept of Interpreter in detail.

Q.5 Attempt any Two. **16**

a) Explain compilation of expressions in detail.
b) Discuss linking for overlays in detail.
c) List different loading schemes and explain any two.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
System Programming (BTN03601)

Day & Date: Tuesday, 27-May-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions **14**

1) A macro prototype statement consists of _____
a) Actual parameters b) Formal Parameters
c) Model statements d) none of these

2) A model statement is a statement from which a/an _____ language statement may be generated during macro expansion.
a) Machine b) Assembly
c) Target d) None

3) _____ are generated as output of semantic analysis.
a) Parse Trees b) Tokens
c) Sequence of actions d) Intermediate representation

4) Reduction in frequency means _____
a) Replacing run time computation by compile time computation
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5) Compiler bridges a semantic gap between which domains?
a) Application & Execution b) Application & PL
c) PL & execution d) none of these

6) After actual locations for main storage are known, a _____ adjusts relative addresses to these actual locations.
a) Relocating loader b) Locating loader
c) Default loader d) None of these

7) Binding of external reference to the link time address is called _____
a) Translation b) Loading
c) Linking d) None of these

8) In absolute loader function of linking is done by _____
a) Linker b) Loader
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9) In direct linking loader which is not related with object program?
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10) Execution gap is the gap between _____
a) Application Domain & Execution Domain
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c) Application Domain & Programming Language Domain
d) None of the above

11) Which of the following is/are advanced assembler directives?
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12) _____ statement indicates an action to be performed during the execution of the assembled program.
a) Declarative b) Imperative
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13) Assembly language program is called _____
a) Object program b) Source program
c) Oriented program d) All of these

14) The statement used to perform auxiliary function is _____
a) Model statement b) Conditional statement
c) Preprocessor statement d) prototype statement

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
System Programming (BTN03601)

Day & Date: Tuesday, 27-May-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) List and explain advanced assembler directives.
b) Describe concept of grammar along with its type.
c) Explain types of assembly statements.
d) Explain concept Macro expansion.

Q.3 Attempt any two. **16**

a) Explain the concept of
i) Front end of Toy compiler ii) Back end of Toy compiler
b) List and explain fundamental of language specification.
c) Consider the following code generate
1. Symbol table 2. Literal table 3. Mnemonic table 4. Pool table
5. Intermediate code.

```
        START    200
        MOVER    AREG,    ='5'   200) +04   1   211
        MOV EM   AREG,    A      201) +05   1   217
LOOP    MOVER    AREG,    A      202) +04   1   217
        MOVER    AREG,    B      203) +05   3   218
        ADD      CREG,    B      204) +01   3   212
        …..
        BC       ANY,     NEXT   210) +07   6   214
        LTORG
                 = '5'           211) +00   0   005
                 = '1'           212) +00   0   001
        ……
NEXT    SUB      AREG,    = '1'  214) +02   1   219
        BC       LT, BACK        215) +07   1   202
LAST    STOP                     216) +00   0   000
        ORIGIN   LOOP   +1
        MULT     C      REG, B   204) +03   3   218
        ORIGIN   LAST   +1
A       DS       1               217)
BACK    EQU      LOOP
B       DS       1               218)
        END
                 = '1'           219) +00   0   001
```

Section – II

Q.4 Attempt any three **12**

a) Explain the concept of control flow analysis and data flow analysis.
b) Explain operand descriptor and register descriptor used in compilation of expressions.
c) Explain Relocation and linking concepts.
d) Explain the concept of Interpreter in detail.

Q.5 Attempt any Two. **16**

a) Explain compilation of expressions in detail.
b) Discuss linking for overlays in detail.
c) List different loading schemes and explain any two.

SLR-BD-461

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Internet of Things (BTN03602)

Day & Date: Thursday, 29-May-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions **14**

1) Which is not an application of IoT?
a) Smart home b) E-Commerce
c) Industrial Automation d) Healthcare

2) Which communication technology is commonly used in IoT?
a) Wi-Fi b) Bluetooth
c) Zigbee d) All of these

3) Sensors are responsible for _____
a) Sending commands b) Sensing data
c) Controlling applications d) None

4) Which of the following protocol is used for data communication?
a) MQTT b) HTTPS
c) POP3 d) DNS

5) Which IEEE standard is used for low power IoT communication?
a) IEEE 802.15.4 b) IEEE 802.11
c) IEEE 802.3 d) IEEE 802.1

6) Which business model is associated with IoT innovation?
a) Subscription based b) Pay-per-use
c) Value creation d) All of these

7) IoT in agriculture used for _____
a) Crop monitoring b) Predictive maintenance
c) Industrial automation d) None

8) Which of the following is a primary concern in IoT security?
a) Cost b) Privacy
c) Scalability d) Speed

9) Which layer of IoT uses 6L0WPAN?
a) Application Layer b) Network Layer
c) Physical Layer d) Transport Layer

10) Which technology is used for proximity communication in IoT?
a) Bluetooth b) RFID
c) ZigBee d) All of these

11) IoT uses _____ to integrate physical devices with digital networks.
a) Sensors and actuators b) Only sensors
c) Only actuators d) Big data tools

12) What is the logical design of IoT primarily concerned with?
a) Physical devices
b) Energy sources
c) Functional blocks and communication models
d) Protocol hardware

13) REST service is characterized by _____
a) Bi-directional model b) Request response model
c) Full duplex model d) Unidirectional model

14) What are the key components of a M2M system?
a) Vortex DDS b) Protocols
c) Sensors and wi-fi d) Smart homes

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Internet of Things (BTN03602)

Day & Date: Thursday, 29-May-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
4) Assume suitable data if necessary.

Section – I

Q.2 Solve any three of the following questions **12**

a) Define actuator. Explain different types of it.
b) Explain the features of IoT.
c) Describe an example of IoT service that uses publish-subscriber model.
d) Differentiate between servo motor and stepper motor.

Q.3 Solve any Two **16**

a) Explain Level-1 and level-4 of IoT deployment template with example.
b) What is participatory sensing? Explain Automotive and industrial IoT in detail.
c) Write a note on IoT communication technologies.

Section – II

Q.4 Solve any Three **12**

a) Write a short note on 6LowPAN Protocol
b) Define use case and misuse case. Draw use case and misuse case diagram for smart irrigation system.
c) Write an applications of IoT for healthcare monitoring.
d) Explain REST in detail.

Q.5 Solve any Two **16**

a) Explain CoAP Protocol in detail.
b) Write a note on Value creation in IoT and Business model innovation for IoT.
c) Explain IoT security tomography and layered attacker model.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Internet of Things (BTN03602)

Day & Date: Thursday, 29-May-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions **14**

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a) Bi-directional model b) Request response model
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a) Vortex DDS b) Protocols
c) Sensors and wi-fi d) Smart homes

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a) Smart home b) E-Commerce
c) Industrial Automation d) Healthcare

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c) Zigbee d) All of these

10) Sensors are responsible for _____
a) Sending commands b) Sensing data
c) Controlling applications d) None

11) Which of the following protocol is used for data communication?
a) MQTT b) HTTPS
c) POP3 d) DNS

12) Which IEEE standard is used for low power IoT communication?
a) IEEE 802.15.4 b) IEEE 802.11
c) IEEE 802.3 d) IEEE 802.1

13) Which business model is associated with IoT innovation?
a) Subscription based b) Pay-per-use
c) Value creation d) All of these

14) IoT in agriculture used for _____
a) Crop monitoring b) Predictive maintenance
c) Industrial automation d) None

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Internet of Things (BTN03602)

Day & Date: Thursday, 29-May-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
4) Assume suitable data if necessary.

Section – I

Q.2 Solve any three of the following questions **12**

a) Define actuator. Explain different types of it.
b) Explain the features of IoT.
c) Describe an example of IoT service that uses publish-subscriber model.
d) Differentiate between servo motor and stepper motor.

Q.3 Solve any Two **16**

a) Explain Level-1 and level-4 of IoT deployment template with example.
b) What is participatory sensing? Explain Automotive and industrial IoT in detail.
c) Write a note on IoT communication technologies.

Section – II

Q.4 Solve any Three **12**

a) Write a short note on 6LowPAN Protocol
b) Define use case and misuse case. Draw use case and misuse case diagram for smart irrigation system.
c) Write an applications of IoT for healthcare monitoring.
d) Explain REST in detail.

Q.5 Solve any Two **16**

a) Explain CoAP Protocol in detail.
b) Write a note on Value creation in IoT and Business model innovation for IoT.
c) Explain IoT security tomography and layered attacker model.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Internet of Things (BTN03602)

Day & Date: Thursday, 29-May-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions **14**

1) IoT uses _____ to integrate physical devices with digital networks.
a) Sensors and actuators b) Only sensors
c) Only actuators d) Big data tools

2) What is the logical design of IoT primarily concerned with?
a) Physical devices
b) Energy sources
c) Functional blocks and communication models
d) Protocol hardware

3) REST service is characterized by _____
a) Bi-directional model b) Request response model
c) Full duplex model d) Unidirectional model

4) What are the key components of a M2M system?
a) Vortex DDS b) Protocols
c) Sensors and wi-fi d) Smart homes

5) Which is not an application of IoT?
a) Smart home b) E-Commerce
c) Industrial Automation d) Healthcare

6) Which communication technology is commonly used in IoT?
a) Wi-Fi b) Bluetooth
c) Zigbee d) All of these

7) Sensors are responsible for _____
a) Sending commands b) Sensing data
c) Controlling applications d) None

8) Which of the following protocol is used for data communication?
a) MQTT b) HTTPS
c) POP3 d) DNS

9) Which IEEE standard is used for low power IoT communication?
a) IEEE 802.15.4 b) IEEE 802.11
c) IEEE 802.3 d) IEEE 802.1

10) Which business model is associated with IoT innovation?
a) Subscription based b) Pay-per-use
c) Value creation d) All of these

11) IoT in agriculture used for _____
a) Crop monitoring b) Predictive maintenance
c) Industrial automation d) None

12) Which of the following is a primary concern in IoT security?
a) Cost b) Privacy
c) Scalability d) Speed

13) Which layer of IoT uses 6L0WPAN?
a) Application Layer b) Network Layer
c) Physical Layer d) Transport Layer

14) Which technology is used for proximity communication in IoT?
a) Bluetooth b) RFID
c) ZigBee d) All of these

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Internet of Things (BTN03602)

Day & Date: Thursday, 29-May-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
4) Assume suitable data if necessary.

Section – I

Q.2 Solve any three of the following questions **12**

a) Define actuator. Explain different types of it.
b) Explain the features of IoT.
c) Describe an example of IoT service that uses publish-subscriber model.
d) Differentiate between servo motor and stepper motor.

Q.3 Solve any Two **16**

a) Explain Level-1 and level-4 of IoT deployment template with example.
b) What is participatory sensing? Explain Automotive and industrial IoT in detail.
c) Write a note on IoT communication technologies.

Section – II

Q.4 Solve any Three **12**

a) Write a short note on 6LowPAN Protocol
b) Define use case and misuse case. Draw use case and misuse case diagram for smart irrigation system.
c) Write an applications of IoT for healthcare monitoring.
d) Explain REST in detail.

Q.5 Solve any Two **16**

a) Explain CoAP Protocol in detail.
b) Write a note on Value creation in IoT and Business model innovation for IoT.
c) Explain IoT security tomography and layered attacker model.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Internet of Things (BTN03602)

Day & Date: Thursday, 29-May-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions **14**

1) Which business model is associated with IoT innovation?
a) Subscription based b) Pay-per-use
c) Value creation d) All of these

2) IoT in agriculture used for _____
a) Crop monitoring b) Predictive maintenance
c) Industrial automation d) None

3) Which of the following is a primary concern in IoT security?
a) Cost b) Privacy
c) Scalability d) Speed

4) Which layer of IoT uses 6L0WPAN?
a) Application Layer b) Network Layer
c) Physical Layer d) Transport Layer

5) Which technology is used for proximity communication in IoT?
a) Bluetooth b) RFID
c) ZigBee d) All of these

6) IoT uses _____ to integrate physical devices with digital networks.
a) Sensors and actuators b) Only sensors
c) Only actuators d) Big data tools

7) What is the logical design of IoT primarily concerned with?
a) Physical devices
b) Energy sources
c) Functional blocks and communication models
d) Protocol hardware

8) REST service is characterized by _____
a) Bi-directional model b) Request response model
c) Full duplex model d) Unidirectional model

9) What are the key components of a M2M system?
a) Vortex DDS b) Protocols
c) Sensors and wi-fi d) Smart homes

10) Which is not an application of IoT?
a) Smart home b) E-Commerce
c) Industrial Automation d) Healthcare

11) Which communication technology is commonly used in IoT?
a) Wi-Fi b) Bluetooth
c) Zigbee d) All of these

12) Sensors are responsible for _____
a) Sending commands b) Sensing data
c) Controlling applications d) None

13) Which of the following protocol is used for data communication?
a) MQTT b) HTTPS
c) POP3 d) DNS

14) Which IEEE standard is used for low power IoT communication?
a) IEEE 802.15.4 b) IEEE 802.11
c) IEEE 802.3 d) IEEE 802.1

SLR-BD-461

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Internet of Things (BTN03602)

Day & Date: Thursday, 29-May-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
4) Assume suitable data if necessary.

Section – I

Q.2 Solve any three of the following questions **12**

a) Define actuator. Explain different types of it.
b) Explain the features of IoT.
c) Describe an example of IoT service that uses publish-subscriber model.
d) Differentiate between servo motor and stepper motor.

Q.3 Solve any Two **16**

a) Explain Level-1 and level-4 of IoT deployment template with example.
b) What is participatory sensing? Explain Automotive and industrial IoT in detail.
c) Write a note on IoT communication technologies.

Section – II

Q.4 Solve any Three **12**

a) Write a short note on 6LowPAN Protocol
b) Define use case and misuse case. Draw use case and misuse case diagram for smart irrigation system.
c) Write an applications of IoT for healthcare monitoring.
d) Explain REST in detail.

Q.5 Solve any Two **16**

a) Explain CoAP Protocol in detail.
b) Write a note on Value creation in IoT and Business model innovation for IoT.
c) Explain IoT security tomography and layered attacker model.

SLR-BD-462

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Software Engineering (BTN03603)

Day & Date: Monday, 02-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives: **14**

1) SDLC stands for _____
a) System Development Life cycle
b) Software Development Life cycle
c) Software Design Life Cycle
d) System Design Life Cycle

2) What is the sequence of maturity levels in CMM framework?
a) Initial, defined, repeatable, managed, and optimizing
b) Initial, defined, repeatable, optimizing, and managed
c) Initial, repeatable, defined, managed, and optimizing
d) Initial, repeatable, defined, optimizing, and managed

3) The second step in software development life cycle is _____
a) System Design
b) Requirement analysis and specification
c) System Testing
d) Coding

4) _____ is defined as the auditing and reporting procedures used to provide the stakeholders with data needed to make well-informed decisions.
a) Quality Control b) Quality Assurance
c) Quality Assessment d) None of these

5) _____ cohesion occurs when there is no meaningful relationship among the elements of a module.
a) Logical b) Temporal
c) Coincidental d) Sequential

6) Black box testing is also called as_____.
a) structural testing b) interface testing
c) stress testing d) Functional testing

7) _____ analysis is the key to learning from the past so to provide future improvements.
a) Project closure b) Functional closure
c) Quality closure d) Risk

8) _____ provide quantitative information to the Management process.
a) Quality b) Metrics
c) Schedule d) Planning

9) CMM means _____
a) Common Maturity Model
b) Cost Maturity Model
c) Capability Maturity Model
d) All

10) An SRS provides a reference for _____ of the final product.
a) Verification b) Implementation
c) Validation d) Justification

11) White Box Testing is also called as _____
a) functional testing b) structural testing
c) stress testing d) interface testing

12) _____ coupling occurs due to methods of a class invoking methods of other classes.
a) Component b) Interaction
c) Inheritance d) Simple

13) Which is the worst type of coupling?
a) Control coupling b) Data coupling
c) Content coupling d) None of the above

14) CMM provides a general roadmap to _____
a) Test the software b) Develop the software
c) Improve the software process d) All of these

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Software Engineering (BTN03603)

Day & Date: Monday, 02-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. (Each carries 4 marks) **12**

a) What are the different components of SRS?
b) What are the different characteristics of a software process?
c) Explain prototyping model. Give its strength and weaknesses.
d) Explain requirement process.
e) What is cohesion? Describe all types of cohesion used in design.

Q.3 Attempt Any Two. (Each carries 8 marks) **16**

a) What is SRS? Explain different need and characteristics of SRS.
b) Explain in detail coupling and cohesion.
c) Describe Spiral model of software development in detail.

Section – II

Q.4 Attempt Any Three. (Each carries 4 marks) **12**

a) Describe black box testing in detail.
b) Write a short note on CMM.
c) Write a short note on iterative project management life cycle.
d) Explain quality concepts and quality planning.
e) Describe new management responsibilities in agile project management.

Q.5 Attempt Any Two (Each carries 8 marks) **16**

a) Describe white box testing in detail.
b) What is risk management? Explain in detail risk management activities.
c) Explain defect analysis and prevention.

Seat No.	

Set | Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Software Engineering (BTN03603)

Day & Date: Monday, 02-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives: **14**

1) _____ provide quantitative information to the Management process.
a) Quality b) Metrics
c) Schedule d) Planning

2) CMM means _____
a) Common Maturity Model
b) Cost Maturity Model
c) Capability Maturity Model
d) All

3) An SRS provides a reference for _____ of the final product.
a) Verification b) Implementation
c) Validation d) Justification

4) White Box Testing is also called as _____
a) functional testing b) structural testing
c) stress testing d) interface testing

5) _____ coupling occurs due to methods of a class invoking methods of other classes.
a) Component b) Interaction
c) Inheritance d) Simple

6) Which is the worst type of coupling?
a) Control coupling b) Data coupling
c) Content coupling d) None of the above

7) CMM provides a general roadmap to _____
a) Test the software b) Develop the software
c) Improve the software process d) All of these

8) SDLC stands for _____
a) System Development Life cycle
b) Software Development Life cycle
c) Software Design Life Cycle
d) System Design Life Cycle

9) What is the sequence of maturity levels in CMM framework?
a) Initial, defined, repeatable, managed, and optimizing
b) Initial, defined, repeatable, optimizing, and managed
c) Initial, repeatable, defined, managed, and optimizing
d) Initial, repeatable, defined, optimizing, and managed

10) The second step in software development life cycle is _____
a) System Design
b) Requirement analysis and specification
c) System Testing
d) Coding

11) _____ is defined as the auditing and reporting procedures used to provide the stakeholders with data needed to make well-informed decisions.
a) Quality Control
b) Quality Assurance
c) Quality Assessment
d) None of these

12) _____ cohesion occurs when there is no meaningful relationship among the elements of a module.
a) Logical
b) Temporal
c) Coincidental
d) Sequential

13) Black box testing is also called as_____.
a) structural testing
b) interface testing
c) stress testing
d) Functional testing

14) _____ analysis is the key to learning from the past so to provide future improvements.
a) Project closure
b) Functional closure
c) Quality closure
d) Risk

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Software Engineering (BTN03603)

Day & Date: Monday, 02-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. (Each carries 4 marks) **12**

a) What are the different components of SRS?
b) What are the different characteristics of a software process?
c) Explain prototyping model. Give its strength and weaknesses.
d) Explain requirement process.
e) What is cohesion? Describe all types of cohesion used in design.

Q.3 Attempt Any Two. (Each carries 8 marks) **16**

a) What is SRS? Explain different need and characteristics of SRS.
b) Explain in detail coupling and cohesion.
c) Describe Spiral model of software development in detail.

Section – II

Q.4 Attempt Any Three. (Each carries 4 marks) **12**

a) Describe black box testing in detail.
b) Write a short note on CMM.
c) Write a short note on iterative project management life cycle.
d) Explain quality concepts and quality planning.
e) Describe new management responsibilities in agile project management.

Q.5 Attempt Any Two (Each carries 8 marks) **16**

a) Describe white box testing in detail.
b) What is risk management? Explain in detail risk management activities.
c) Explain defect analysis and prevention.

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Software Engineering (BTN03603)

Day & Date: Monday, 02-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives: **14**

1) White Box Testing is also called as _____
a) functional testing b) structural testing
c) stress testing d) interface testing

2) _____ coupling occurs due to methods of a class invoking methods of other classes.
a) Component b) Interaction
c) Inheritance d) Simple

3) Which is the worst type of coupling?
a) Control coupling b) Data coupling
c) Content coupling d) None of the above

4) CMM provides a general roadmap to _____
a) Test the software b) Develop the software
c) Improve the software process d) All of these

5) SDLC stands for _____
a) System Development Life cycle
b) Software Development Life cycle
c) Software Design Life Cycle
d) System Design Life Cycle

6) What is the sequence of maturity levels in CMM framework?
a) Initial, defined, repeatable, managed, and optimizing
b) Initial, defined, repeatable, optimizing, and managed
c) Initial, repeatable, defined, managed, and optimizing
d) Initial, repeatable, defined, optimizing, and managed

7) The second step in software development life cycle is _____
a) System Design
b) Requirement analysis and specification
c) System Testing
d) Coding

8) _____ is defined as the auditing and reporting procedures used to provide the stakeholders with data needed to make well-informed decisions.
a) Quality Control
b) Quality Assurance
c) Quality Assessment
d) None of these

9) _____ cohesion occurs when there is no meaningful relationship among the elements of a module.
a) Logical
b) Temporal
c) Coincidental
d) Sequential

10) Black box testing is also called as_____.
a) structural testing
b) interface testing
c) stress testing
d) Functional testing

11) _____ analysis is the key to learning from the past so to provide future improvements.
a) Project closure
b) Functional closure
c) Quality closure
d) Risk

12) _____ provide quantitative information to the Management process.
a) Quality
b) Metrics
c) Schedule
d) Planning

13) CMM means _____
a) Common Maturity Model
b) Cost Maturity Model
c) Capability Maturity Model
d) All

14) An SRS provides a reference for _____ of the final product.
a) Verification
b) Implementation
c) Validation
d) Justification

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Software Engineering (BTN03603)

Day & Date: Monday, 02-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. (Each carries 4 marks) **12**

a) What are the different components of SRS?
b) What are the different characteristics of a software process?
c) Explain prototyping model. Give its strength and weaknesses.
d) Explain requirement process.
e) What is cohesion? Describe all types of cohesion used in design.

Q.3 Attempt Any Two. (Each carries 8 marks) **16**

a) What is SRS? Explain different need and characteristics of SRS.
b) Explain in detail coupling and cohesion.
c) Describe Spiral model of software development in detail.

Section – II

Q.4 Attempt Any Three. (Each carries 4 marks) **12**

a) Describe black box testing in detail.
b) Write a short note on CMM.
c) Write a short note on iterative project management life cycle.
d) Explain quality concepts and quality planning.
e) Describe new management responsibilities in agile project management.

Q.5 Attempt Any Two (Each carries 8 marks) **16**

a) Describe white box testing in detail.
b) What is risk management? Explain in detail risk management activities.
c) Explain defect analysis and prevention.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Software Engineering (BTN03603)

Day & Date: Monday, 02-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives: **14**

1) Black box testing is also called as_____.
a) structural testing b) interface testing
c) stress testing d) Functional testing

2) _____ analysis is the key to learning from the past so to provide future improvements.
a) Project closure b) Functional closure
c) Quality closure d) Risk

3) _____ provide quantitative information to the Management process.
a) Quality b) Metrics
c) Schedule d) Planning

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b) Cost Maturity Model
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d) All

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c) Validation d) Justification

6) White Box Testing is also called as _____
a) functional testing b) structural testing
c) stress testing d) interface testing

7) _____ coupling occurs due to methods of a class invoking methods of other classes.
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c) Inheritance d) Simple

8) Which is the worst type of coupling?
a) Control coupling b) Data coupling
c) Content coupling d) None of the above

9) CMM provides a general roadmap to _____
a) Test the software b) Develop the software
c) Improve the software process d) All of these

10) SDLC stands for _____
a) System Development Life cycle
b) Software Development Life cycle
c) Software Design Life Cycle
d) System Design Life Cycle

11) What is the sequence of maturity levels in CMM framework?
a) Initial, defined, repeatable, managed, and optimizing
b) Initial, defined, repeatable, optimizing, and managed
c) Initial, repeatable, defined, managed, and optimizing
d) Initial, repeatable, defined, optimizing, and managed

12) The second step in software development life cycle is _____
a) System Design
b) Requirement analysis and specification
c) System Testing
d) Coding

13) _____ is defined as the auditing and reporting procedures used to provide the stakeholders with data needed to make well-informed decisions.
a) Quality Control b) Quality Assurance
c) Quality Assessment d) None of these

14) _____ cohesion occurs when there is no meaningful relationship among the elements of a module.
a) Logical b) Temporal
c) Coincidental d) Sequential

SLR-BD-462

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Software Engineering (BTN03603)

Day & Date: Monday, 02-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. (Each carries 4 marks) **12**

a) What are the different components of SRS?
b) What are the different characteristics of a software process?
c) Explain prototyping model. Give its strength and weaknesses.
d) Explain requirement process.
e) What is cohesion? Describe all types of cohesion used in design.

Q.3 Attempt Any Two. (Each carries 8 marks) **16**

a) What is SRS? Explain different need and characteristics of SRS.
b) Explain in detail coupling and cohesion.
c) Describe Spiral model of software development in detail.

Section – II

Q.4 Attempt Any Three. (Each carries 4 marks) **12**

a) Describe black box testing in detail.
b) Write a short note on CMM.
c) Write a short note on iterative project management life cycle.
d) Explain quality concepts and quality planning.
e) Describe new management responsibilities in agile project management.

Q.5 Attempt Any Two (Each carries 8 marks) **16**

a) Describe white box testing in detail.
b) What is risk management? Explain in detail risk management activities.
c) Explain defect analysis and prevention.

SLR-BD-463

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Cloud Computing (BTN03606)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Data should be _____ and _____ in an _____ form for security purpose.
a) Transferred, stored, decrypted
b) Stored, encrypted, transferred
c) Transferred, stored, encrypted
d) None of these

2) Which of the following are the features of cloud computing?
a) Security b) Availability
c) Large Network Access d) All of the mentioned

3) Which component allocates hardware resources to virtual machines?
a) Guest operating system
b) Hypervisor
c) Host operating system
d) Virtual disk manager

4) Which virtualization technology is developed by VMware?
a) Hyper-V b) VirtualBox
c) KVM d) vSphere

5) What is the main advantage of using virtual machines for software testing and development?
a) Ability to run games and graphics-intensive applications
b) Access to a faster internet connection
c) Isolation of testing environments from the host system
d) Integration of multiple operating systems into a single environment

6) What does the “multi-tenancy” feature in SaaS refer to?
a) The ability to serve multiple tenants at different physical locations
b) Running the same software instance for all customers
c) The ability to have multiple user accounts in the same organization
d) Hosting data on multiple servers for redundancy

7) Which of the following is NOT a benefit of SaaS?
a) Centralized management
b) High level of customization
c) Accessible from anywhere with an internet connection
d) Lower total cost of ownership

8) Which of the following is the SaaS's characteristics?
a) Usually, the license is subscription-based or usage-based and is billed on a recurring basis.
b) The software and the service are observed and maintained usually by the vendor.
c) Software mostly available over the internet across the world and can be provided according to the demand through the browser.
d) All of the above

9) _____ refers to cloud users being able to take their tools, applications, virtual images etc. and use them in another cloud environment without having to do any rework.
a) Portability
b) Interoperability
c) Multitenancy
d) None of the Above

10) _____ is a formal contract between a Service Provider (SP) and a Service Consumer (SC).
a) SLO
b) SLA
c) KPI
d) Utility Premium

11) For businesses, the greatest value of IaaS is through a concept known as _____ which is a process of offloading tasks to the cloud during times when the most compute resources are needed.
a) cloud bursting
b) cloud enabler
c) cloud spanning
d) cloud portability

12) Google Apps is a suite of cloud computing _____ applications that includes e-mail (Gmail), Organizer (Google Calendar), Word Processing documents (Google Docs), and others.
a) IaaS
b) PaaS
c) SaaS
d) None of the Above

13) On which one of the following utility computing is based?
a) Grid Computing Model
b) SOA Model
c) Virtual isolation Model
d) Pay-per-Use model

14) _____ where a VM can be moved from one physical machine to another even as it continues to execute.

a) Load balancing
b) Migration
c) Live migration
d) Server consolidation

SLR-BD-463

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Cloud Computing (BTN03606)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three **12**

a) What are the layers and types of clouds?
b) Explain the challenges and risks in cloud computing.
c) What is mean by migrating in cloud computing? Why we use Migrating?
d) Explain the SaaS characteristics.

Q.3 Attempt any two **16**

a) Write a note on Eucalyptus features with its architecture.
b) What is open SaaS? Explain SaaS implementation based on SOA with diagram.
c) Explain the concept of seven-step model of migration into a cloud.

Section – II

Q.4 Attempt any three **12**

a) Explain the implementation guidelines for Aneka hybrid cloud.
b) Write a note on security service boundary.
c) Explain auditing and compliance in terms of cloud security.
d) Write a note on Windows Azure identity standards.

Q.5 Attempt any two **16**

a) Explain securing data stored in the cloud in terms of:
i) Brokered cloud storage access
ii) Storage location and tenancy
b) Explain autonomic behavior of Comet cloud.
c) Write a note on Commercial and Business Considerations-A Cloud User's Viewpoint.

Seat No.	

Set | Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Cloud Computing (BTN03606)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which of the following is the SaaS's characteristics?
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c) cloud spanning d) cloud portability

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6) On which one of the following utility computing is based?

a) Grid Computing Model b) SOA Model
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7) _____ where a VM can be moved from one physical machine to another even as it continues to execute.

a) Load balancing b) Migration
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8) Data should be _____ and _____ in an _____ form for security purpose.

a) Transferred, stored, decrypted
b) Stored, encrypted, transferred
c) Transferred, stored, encrypted
d) None of these

9) Which of the following are the features of cloud computing?

a) Security b) Availability
c) Large Network Access d) All of the mentioned

10) Which component allocates hardware resources to virtual machines?

a) Guest operating system
b) Hypervisor
c) Host operating system
d) Virtual disk manager

11) Which virtualization technology is developed by VMware?

a) Hyper-V b) VirtualBox
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12) What is the main advantage of using virtual machines for software testing and development?

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c) The ability to have multiple user accounts in the same organization
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b) High level of customization
c) Accessible from anywhere with an internet connection
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SLR-BD-463

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Cloud Computing (BTN03606)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any three **12**

a) What are the layers and types of clouds?
b) Explain the challenges and risks in cloud computing.
c) What is mean by migrating in cloud computing? Why we use Migrating?
d) Explain the SaaS characteristics.

Q.3 Attempt any two **16**

a) Write a note on Eucalyptus features with its architecture.
b) What is open SaaS? Explain SaaS implementation based on SOA with diagram.
c) Explain the concept of seven-step model of migration into a cloud.

Section – II

Q.4 Attempt any three **12**

a) Explain the implementation guidelines for Aneka hybrid cloud.
b) Write a note on security service boundary.
c) Explain auditing and compliance in terms of cloud security.
d) Write a note on Windows Azure identity standards.

Q.5 Attempt any two **16**

a) Explain securing data stored in the cloud in terms of:
i) Brokered cloud storage access
ii) Storage location and tenancy
b) Explain autonomic behavior of Comet cloud.
c) Write a note on Commercial and Business Considerations-A Cloud User's Viewpoint.

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Cloud Computing (BTN03606)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

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

1) For businesses, the greatest value of IaaS is through a concept known as _____ which is a process of offloading tasks to the cloud during times when the most compute resources are needed.
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c) cloud spanning d) cloud portability

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SLR-BD-463

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Cloud Computing (BTN03606)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any three **12**

a) What are the layers and types of clouds?
b) Explain the challenges and risks in cloud computing.
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a) Write a note on Eucalyptus features with its architecture.
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Section – II

Q.4 Attempt any three **12**

a) Explain the implementation guidelines for Aneka hybrid cloud.
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c) Explain auditing and compliance in terms of cloud security.
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Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Cloud Computing (BTN03606)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) What does the "multi-tenancy" feature in SaaS refer to?
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SLR-BD-463

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Cloud Computing (BTN03606)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three **12**

a) What are the layers and types of clouds?
b) Explain the challenges and risks in cloud computing.
c) What is mean by migrating in cloud computing? Why we use Migrating?
d) Explain the SaaS characteristics.

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a) Write a note on Eucalyptus features with its architecture.
b) What is open SaaS? Explain SaaS implementation based on SOA with diagram.
c) Explain the concept of seven-step model of migration into a cloud.

Section – II

Q.4 Attempt any three **12**

a) Explain the implementation guidelines for Aneka hybrid cloud.
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c) Explain auditing and compliance in terms of cloud security.
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Q.5 Attempt any two **16**

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Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Network Security (BTN03608)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following **14**

1) Caesar Cipher is an example of _____
a) Poly-alphabetic Cipher b) Mono-alphabetic Cipher
c) Multi-alphabetic Cipher d) Bi-alphabetic Cipher

2) What is the rule for encryption in playfair cipher if the letters in a pair appear in same column?
a) they are replaced by the letter appearing immediately below them respectively
b) they are replaced by the letter appearing immediately right to them respectively
c) they are replaced by the letters at the corner of the row
d) that pair is neglected

3) The DES algorithm has a key length of _____
a) 128 Bits b) 32 Bits
c) 64 Bits d) 16 Bits

4) Which one of the following is not a cryptographic algorithm - JUPITER, Blowfish, RC6, Rijndael and Serpent?
a) JUPITER b) Blowfish
c) Serpent d) Rijndael

5) How many rounds does the AES-192 perform?
a) 10 b) 12
c) 14 d) 16

6) _____ is the method for keeping sensitive information in email communication & accounts secure against unofficial access, loss, or compromise.
a) Email security b) Email hacking
c) Email protection d) Email safeguarding

7) With respect to IEEE 802.11 Wireless LAN, MSDU stands for _____
a) MAC service data unit
b) Main server data user
c) Multiframe service datagram usage
d) MAC server device usage

8) The authentication scheme CMAC indicates _____
a) Clock MAC b) Cipher-based MAC
c) Caesar MAC d) None of above

9) The process of verifying the identity of a user _____
a) Authentication b) Identification
c) Validation d) Verification

10) SHA-1 produces a hash value of _____
a) 256 bits b) 160 bits
c) 180 bits d) 128 bits

11) Which of the following are used to create a message digest by the network security protocols?
a) RSA b) SHA-1
c) DES d) MD5

12) Rail fence technique is _____
a) Substitution technique b) Transposition technique
c) Mono alphabetic cipher d) none of these

13) PGP (Pretty Good Privacy) provides _____
a) Non repudiation b) Integrity
c) Both a and b d) None of above

14) Which component is included in IP security?
a) Authentication Header (AH)
b) Encapsulating Security Payload (ESP)
c) Internet key Exchange (IKE)
d) All of the mentioned

SLR-BD-465

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
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Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four questions. **16**
- **a)** Explain Caeser Cipher with example.
- **b)** Describe OSI Security Architecture.
- **c)** Differentiate between Active Attack and Passive Attack.
- **d)** Describe Diffie - Hellman key exchange algorithm.
- **e)** Write a note on: Cryptographic Hash Functions

Q.3 Solve any two questions. **12**
- **a)** Explain the DES encryption algorithm with a diagram.
- **b)** What is SHA? Explain in detail.
- **c)** Explain Digital Signatures and the Elgamal Digital Signature Scheme in detail.

Section – II

Q.4 Solve any four questions. **16**
- **a)** Explain CMAC with the help of diagram.
- **b)** Differentiate between CCM and GCM.
- **c)** Write a note on MACs Based on Block Ciphers DAA.
- **d)** What is S/MIME? Explain in detail.
- **e)** What are IP Security Policy? Elaborate it.

Q.5 Solve any two questions. **12**
- **a)** What is HMAC? Draw the HMAC structure and write and explain the HMAC Algorithm.
- **b)** Internet Mail Architecture and Email Formats.
- **c)** Explain Pseudorandom Number Generation Using Hash Functions and MACs.

SLR-BD-465

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Network Security (BTN03608)

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Duration: 30 Minutes Marks:14

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Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
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Network Security (BTN03608)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
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- **a)** Explain the DES encryption algorithm with a diagram.
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SLR-BD-465

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Network Security (BTN03608)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following **14**

1) Which of the following are used to create a message digest by the network security protocols?
a) RSA b) SHA-1
c) DES d) MD5

2) Rail fence technique is _____
a) Substitution technique b) Transposition technique
c) Mono alphabetic cipher d) none of these

3) PGP (Pretty Good Privacy) provides _____
a) Non repudiation b) Integrity
c) Both a and b d) None of above

4) Which component is included in IP security?
a) Authentication Header (AH)
b) Encapsulating Security Payload (ESP)
c) Internet key Exchange (IKE)
d) All of the mentioned

5) Caesar Cipher is an example of _____
a) Poly-alphabetic Cipher b) Mono-alphabetic Cipher
c) Multi-alphabetic Cipher d) Bi-alphabetic Cipher

6) What is the rule for encryption in playfair cipher if the letters in a pair appear in same column?
a) they are replaced by the letter appearing immediately below them respectively
b) they are replaced by the letter appearing immediately right to them respectively
c) they are replaced by the letters at the corner of the row
d) that pair is neglected

7) The DES algorithm has a key length of _____
a) 128 Bits b) 32 Bits
c) 64 Bits d) 16 Bits

8) Which one of the following is not a cryptographic algorithm - JUPITER, Blowfish, RC6, Rijndael and Serpent?
a) JUPITER b) Blowfish
c) Serpent d) Rijndael

9) How many rounds does the AES-192 perform?
a) 10 b) 12
c) 14 d) 16

10) _____ is the method for keeping sensitive information in email communication & accounts secure against unofficial access, loss, or compromise.
a) Email security b) Email hacking
c) Email protection d) Email safeguarding

11) With respect to IEEE 802.11 Wireless LAN, MSDU stands for _____
a) MAC service data unit
b) Main server data user
c) Multiframe service datagram usage
d) MAC server device usage

12) The authentication scheme CMAC indicates _____
a) Clock MAC b) Cipher-based MAC
c) Caesar MAC d) None of above

13) The process of verifying the identity of a user _____
a) Authentication b) Identification
c) Validation d) Verification

14) SHA-1 produces a hash value of _____
a) 256 bits b) 160 bits
c) 180 bits d) 128 bits

SLR-BD-465

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Network Security (BTN03608)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four questions. **16**
- **a)** Explain Caeser Cipher with example.
- **b)** Describe OSI Security Architecture.
- **c)** Differentiate between Active Attack and Passive Attack.
- **d)** Describe Diffie - Hellman key exchange algorithm.
- **e)** Write a note on: Cryptographic Hash Functions

Q.3 Solve any two questions. **12**
- **a)** Explain the DES encryption algorithm with a diagram.
- **b)** What is SHA? Explain in detail.
- **c)** Explain Digital Signatures and the Elgamal Digital Signature Scheme in detail.

Section – II

Q.4 Solve any four questions. **16**
- **a)** Explain CMAC with the help of diagram.
- **b)** Differentiate between CCM and GCM.
- **c)** Write a note on MACs Based on Block Ciphers DAA.
- **d)** What is S/MIME? Explain in detail.
- **e)** What are IP Security Policy? Elaborate it.

Q.5 Solve any two questions. **12**
- **a)** What is HMAC? Draw the HMAC structure and write and explain the HMAC Algorithm.
- **b)** Internet Mail Architecture and Email Formats.
- **c)** Explain Pseudorandom Number Generation Using Hash Functions and MACs.

SLR-BD-465

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Network Security (BTN03608)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following **14**

1) _____ is the method for keeping sensitive information in email communication & accounts secure against unofficial access, loss, or compromise.
a) Email security b) Email hacking
c) Email protection d) Email safeguarding

2) With respect to IEEE 802.11 Wireless LAN, MSDU stands for _____
a) MAC service data unit
b) Main server data user
c) Multiframe service datagram usage
d) MAC server device usage

3) The authentication scheme CMAC indicates _____
a) Clock MAC b) Cipher-based MAC
c) Caesar MAC d) None of above

4) The process of verifying the identity of a user _____
a) Authentication b) Identification
c) Validation d) Verification

5) SHA-1 produces a hash value of _____
a) 256 bits b) 160 bits
c) 180 bits d) 128 bits

6) Which of the following are used to create a message digest by the network security protocols?
a) RSA b) SHA-1
c) DES d) MD5

7) Rail fence technique is _____
a) Substitution technique b) Transposition technique
c) Mono alphabetic cipher d) none of these

8) PGP (Pretty Good Privacy) provides _____
a) Non repudiation b) Integrity
c) Both a and b d) None of above

9) Which component is included in IP security?
a) Authentication Header (AH)
b) Encapsulating Security Payload (ESP)
c) Internet key Exchange (IKE)
d) All of the mentioned

10) Caesar Cipher is an example of _____
a) Poly-alphabetic Cipher b) Mono-alphabetic Cipher
c) Multi-alphabetic Cipher d) Bi-alphabetic Cipher

11) What is the rule for encryption in playfair cipher if the letters in a pair appear in same column?
a) they are replaced by the letter appearing immediately below them respectively
b) they are replaced by the letter appearing immediately right to them respectively
c) they are replaced by the letters at the corner of the row
d) that pair is neglected

12) The DES algorithm has a key length of _____
a) 128 Bits b) 32 Bits
c) 64 Bits d) 16 Bits

13) Which one of the following is not a cryptographic algorithm - JUPITER, Blowfish, RC6, Rijndael and Serpent?
a) JUPITER b) Blowfish
c) Serpent d) Rijndael

14) How many rounds does the AES-192 perform?
a) 10 b) 12
c) 14 d) 16

SLR-BD-465

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Network Security (BTN03608)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four questions. **16**
- **a)** Explain Caeser Cipher with example.
- **b)** Describe OSI Security Architecture.
- **c)** Differentiate between Active Attack and Passive Attack.
- **d)** Describe Diffie - Hellman key exchange algorithm.
- **e)** Write a note on: Cryptographic Hash Functions

Q.3 Solve any two questions. **12**
- **a)** Explain the DES encryption algorithm with a diagram.
- **b)** What is SHA? Explain in detail.
- **c)** Explain Digital Signatures and the Elgamal Digital Signature Scheme in detail.

Section – II

Q.4 Solve any four questions. **16**
- **a)** Explain CMAC with the help of diagram.
- **b)** Differentiate between CCM and GCM.
- **c)** Write a note on MACs Based on Block Ciphers DAA.
- **d)** What is S/MIME? Explain in detail.
- **e)** What are IP Security Policy? Elaborate it.

Q.5 Solve any two questions. **12**
- **a)** What is HMAC? Draw the HMAC structure and write and explain the HMAC Algorithm.
- **b)** Internet Mail Architecture and Email Formats.
- **c)** Explain Pseudorandom Number Generation Using Hash Functions and MACs.

SLR-BD-466

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Management (BTN03609)

Day & Date: Friday, 06-June-2025 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions **10**

1) A person who saves someone or something from any danger is called a _____
a) Savior b) Guardian
c) Game Player d) Social Servant

2) The virtues which represent the coordination among team members which means working successfully with other professionals.
a) Proficiency Virtue b) Ethics
c) Teamwork Virtue d) Work Ethics

3) What are different types of renewable resources?
a) Sun b) Wind
c) Water d) All of the above

4) _____ refers to the description of the meaning of concepts, principles and issues related to engineering ethics.
a) Conceptual Inquiry b) Descriptive Inquiry
c) Normative Inquiry d) None of the above

5) _____ is a structured system of processes by which companies and corporations are directed and controlled.
a) Sustainable development b) Corporate governance
c) Trustworthiness d) None of the above

6) The capacity to understand and act on moral reasons is called as _____
a) Accountability b) Social Responsibility
c) Obligation d) All of the above

7) _____ which deals with the problems of Individuals, Professionals and companies.

a) Macro-ethics
b) Micro-ethics
c) Sense of ethics
d) None of these

8) _____ means that information should be provided in easily understandable forms and media; that it should be freely available and directly accessible to those who will be affected by governance policies and practices.

a) Responsiveness
b) Participation
c) Efficiency
d) Transparency

9) _____ is a field that identifies resource use, measures and communicates costs of company's or national economic impact on the environment.

a) Environment
b) Sustainability
c) Environmental accounting
d) None of the above

10) _____ refers to the condition where the doubt lies in whether the action refers to good or bad.

a) Vagueness
b) Conflicting reasons
c) Disagreement
d) none of these

SLR-BD-466

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Management (BTN03609)

Day & Date: Friday, 06-June-2025 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following question: (Any Two) **10**

a) What is engineering ethics?
b) What are the different types of Inquiries made in solving ethical problems?
c) Explain what are Moral Dilemmas?

Q.3 Answer the following question: (Any Two) **10**

a) Define following terms:
i) Profession and main criteria for profession
ii) Professional and Professionalism
b) Explain engineers as experimenters.
c) Write a note on
i) Public Spirited Virtues
ii) Proficiency Virtue

Section – II

Q.4 Answer the following question: (Any Two) **10**

a) Differentiate renewable resources and non-renewable resources.
b) Explain the fellowships for higher studies & research in New and Renewable Energy.
c) What are the impacts of climate change on water resources based on reliable data and information?

Q.5 Answer the following question: (Any Two) **10**

a) Explain Munasinghe's Approach to Sustainable Development.
b) Explain the objective of Good Governance in Sustainable Development.
c) What is a Corporate Governance? Explain sustainability framework of corporate governance.

Seat No.	

Set | Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Management (BTN03609)

Day & Date: Friday, 06-June-2025 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions **10**

1) The capacity to understand and act on moral reasons is called as _____
a) Accountability b) Social Responsibility
c) Obligation d) All of the above

2) _____ which deals with the problems of Individuals, Professionals and companies.
a) Macro-ethics b) Micro-ethics
c) Sense of ethics d) None of these

3) _____ means that information should be provided in easily understandable forms and media; that it should be freely available and directly accessible to those who will be affected by governance policies and practices.
a) Responsiveness b) Participation
c) Efficiency d) Transparency

4) _____ is a field that identifies resource use, measures and communicates costs of company's or national economic impact on the environment.
a) Environment b) Sustainability
c) Environmental accounting d) None of the above

5) _____ refers to the condition where the doubt lies in whether the action refers to good or bad.
a) Vagueness b) Conflicting reasons
c) Disagreement d) none of these

6) A person who saves someone or something from any danger is called a _____
a) Savior b) Guardian
c) Game Player d) Social Servant

7) The virtues which represent the coordination among team members which means working successfully with other professionals.

a) Proficiency Virtue
b) Ethics
c) Teamwork Virtue
d) Work Ethics

8) What are different types of renewable resources?

a) Sun
b) Wind
c) Water
d) All of the above

9) _____ refers to the description of the meaning of concepts, principles and issues related to engineering ethics.

a) Conceptual Inquiry
b) Descriptive Inquiry
c) Normative Inquiry
d) None of the above

10) _____ is a structured system of processes by which companies and corporations are directed and controlled.

a) Sustainable development
b) Corporate governance
c) Trustworthiness
d) None of the above

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Management (BTN03609)

Day & Date: Friday, 06-June-2025 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following question: (Any Two) **10**

a) What is engineering ethics?
b) What are the different types of Inquiries made in solving ethical problems?
c) Explain what are Moral Dilemmas?

Q.3 Answer the following question: (Any Two) **10**

a) Define following terms:
i) Profession and main criteria for profession
ii) Professional and Professionalism
b) Explain engineers as experimenters.
c) Write a note on
i) Public Spirited Virtues
ii) Proficiency Virtue

Section – II

Q.4 Answer the following question: (Any Two) **10**

a) Differentiate renewable resources and non-renewable resources.
b) Explain the fellowships for higher studies & research in New and Renewable Energy.
c) What are the impacts of climate change on water resources based on reliable data and information?

Q.5 Answer the following question: (Any Two) **10**

a) Explain Munasinghe's Approach to Sustainable Development.
b) Explain the objective of Good Governance in Sustainable Development.
c) What is a Corporate Governance? Explain sustainability framework of corporate governance.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Management (BTN03609)

Day & Date: Friday, 06-June-2025 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions **10**

1) _____ is a field that identifies resource use, measures and communicates costs of company's or national economic impact on the environment.
a) Environment b) Sustainability
c) Environmental accounting d) None of the above

2) _____ refers to the condition where the doubt lies in whether the action refers to good or bad.
a) Vagueness b) Conflicting reasons
c) Disagreement d) none of these

3) A person who saves someone or something from any danger is called a _____
a) Savior b) Guardian
c) Game Player d) Social Servant

4) The virtues which represent the coordination among team members which means working successfully with other professionals.
a) Proficiency Virtue b) Ethics
c) Teamwork Virtue d) Work Ethics

5) What are different types of renewable resources?
a) Sun b) Wind
c) Water d) All of the above

6) _____ refers to the description of the meaning of concepts, principles and issues related to engineering ethics.
a) Conceptual Inquiry b) Descriptive Inquiry
c) Normative Inquiry d) None of the above

7) _____ is a structured system of processes by which companies and corporations are directed and controlled.

a) Sustainable development
b) Corporate governance
c) Trustworthiness
d) None of the above

8) The capacity to understand and act on moral reasons is called as _____

a) Accountability
b) Social Responsibility
c) Obligation
d) All of the above

9) _____ which deals with the problems of Individuals, Professionals and companies.

a) Macro-ethics
b) Micro-ethics
c) Sense of ethics
d) None of these

10) _____ means that information should be provided in easily understandable forms and media; that it should be freely available and directly accessible to those who will be affected by governance policies and practices.

a) Responsiveness
b) Participation
c) Efficiency
d) Transparency

SLR-BD-466

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Management (BTN03609)

Day & Date: Friday, 06-June-2025 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following question: (Any Two) **10**

a) What is engineering ethics?
b) What are the different types of Inquiries made in solving ethical problems?
c) Explain what are Moral Dilemmas?

Q.3 Answer the following question: (Any Two) **10**

a) Define following terms:
i) Profession and main criteria for profession
ii) Professional and Professionalism
b) Explain engineers as experimenters.
c) Write a note on
i) Public Spirited Virtues
ii) Proficiency Virtue

Section – II

Q.4 Answer the following question: (Any Two) **10**

a) Differentiate renewable resources and non-renewable resources.
b) Explain the fellowships for higher studies & research in New and Renewable Energy.
c) What are the impacts of climate change on water resources based on reliable data and information?

Q.5 Answer the following question: (Any Two) **10**

a) Explain Munasinghe's Approach to Sustainable Development.
b) Explain the objective of Good Governance in Sustainable Development.
c) What is a Corporate Governance? Explain sustainability framework of corporate governance.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Management (BTN03609)

Day & Date: Friday, 06-June-2025 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions **10**

1) What are different types of renewable resources?
a) Sun b) Wind
c) Water d) All of the above

2) _____ refers to the description of the meaning of concepts, principles and issues related to engineering ethics.
a) Conceptual Inquiry b) Descriptive Inquiry
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a) Macro-ethics b) Micro-ethics
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c) Efficiency d) Transparency

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b) Sustainability
c) Environmental accounting
d) None of the above

8) _____ refers to the condition where the doubt lies in whether the action refers to good or bad.

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c) Disagreement
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a) Savior
b) Guardian
c) Game Player
d) Social Servant

10) The virtues which represent the coordination among team members which means working successfully with other professionals.

a) Proficiency Virtue
b) Ethics
c) Teamwork Virtue
d) Work Ethics

SLR-BD-466

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Management (BTN03609)

Day & Date: Friday, 06-June-2025 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following question: (Any Two) **10**
- **a)** What is engineering ethics?
- **b)** What are the different types of Inquiries made in solving ethical problems?
- **c)** Explain what are Moral Dilemmas?

Q.3 Answer the following question: (Any Two) **10**
- **a)** Define following terms:
  i) Profession and main criteria for profession
  ii) Professional and Professionalism
- **b)** Explain engineers as experimenters.
- **c)** Write a note on
  i) Public Spirited Virtues
  ii) Proficiency Virtue

Section – II

Q.4 Answer the following question: (Any Two) **10**
- **a)** Differentiate renewable resources and non-renewable resources.
- **b)** Explain the fellowships for higher studies & research in New and Renewable Energy.
- **c)** What are the impacts of climate change on water resources based on reliable data and information?

Q.5 Answer the following question: (Any Two) **10**
- **a)** Explain Munasinghe's Approach to Sustainable Development.
- **b)** Explain the objective of Good Governance in Sustainable Development.
- **c)** What is a Corporate Governance? Explain sustainability framework of corporate governance.

SLR-BD-467

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Engineering Economics and Management (BTN03610)

Day & Date: Friday, 06-June-2025 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) Which of the following conclusions is true about the statement "Rich people should be Taxed more"?
a) The statement rich people should be taxed more is an example of positive economic analysis
b) The statement rich people should be taxed more is an example of productive economic analysis
c) The statement rich people should be taxed more is an example of normative economic analysis
d) The statement rich people should be taxed more is an example of negative economic analysis

2) The branch of economics that deals with the allocation of resources is _____
a) Econometrics b) Macroeconomics
c) Microeconomics d) None of the above

3) Which of the following statements is the actual meaning of scarcity?
a) The actual meaning of scarcity is that there is an increase in the resources
b) The actual meaning of scarcity is that there is a shortage in the resources
c) The actual meaning of scarcity is that there is no change in the resources
d) None of the above

4) Which of the following is a sign of a free economy?
a) The prices are regulated
b) The prices are partly regulated
c) The prices are determined with the help of the forces of demand and supply
d) None of these

5) Lowest order of Maslow Hierarchy of needs theory is _____
a) Safety needs
b) Esteem needs
c) Self- Actualization needs
d) Physiological needs

6) Which of the following is a part of microeconomics?
a) Factor pricing
b) National income
c) Both a and b are correct
d) Both a and b are incorrect

7) What is meant by monetary policy?
a) The process by which the parliament controls the money supply
b) The process by which the central bank or monetary authority of a country controls the supply of money.
c) The process by which International Market controls the money supply
d) None of the above

8) Who is the Central monetary policy Authority in India?
a) RBI
b) Finance Ministry
c) Parliament
d) Prime Minister

9) Organizational models are _____
a) Multinational model
b) International model
c) Global organizational model
d) All of the above

10) In which economy do consumers and producers make choices based on market forces of supply and demand?
a) Market economy
b) Open economy
c) Controlled economy
d) Command economy

SLR-BD-467

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Engineering Economics and Management (BTN03610)

Day & Date: Friday, 06-June-2025 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any 4 questions from no.2 to 7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Law of Demand and Supply
b) Write difference between Microeconomics & Macroeconomics.

Q.3 Discuss Marketing Mix, concepts of marketing. **10**

Q.4 Explain National Income; stock and flow concept, NI at current price & constant price. **10**

Q.5 Explain concepts of marketing, demand forecasting and methods. **10**

Q.6 Discuss the features of new economic policy in India. **10**

Q.7 Write short notes. **10**
a) Finance Management; meaning, scope, sources, functions
b) Organizational Structure

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Engineering Economics and Management (BTN03610)

Day & Date: Friday, 06-June-2025 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) Which of the following is a part of microeconomics?
a) Factor pricing b) National income
c) Both a and b are correct d) Both a and b are incorrect

2) What is meant by monetary policy?
a) The process by which the parliament controls the money supply
b) The process by which the central bank or monetary authority of a country controls the supply of money.
c) The process by which International Market controls the money supply
d) None of the above

3) Who is the Central monetary policy Authority in India?
a) RBI b) Finance Ministry
c) Parliament d) Prime Minister

4) Organizational models are _____
a) Multinational model b) International model
c) Global organizational model d) All of the above

5) In which economy do consumers and producers make choices based on market forces of supply and demand?
a) Market economy b) Open economy
c) Controlled economy d) Command economy

6) Which of the following conclusions is true about the statement "Rich people should be Taxed more"?

a) The statement rich people should be taxed more is an example of positive economic analysis
b) The statement rich people should be taxed more is an example of productive economic analysis
c) The statement rich people should be taxed more is an example of normative economic analysis
d) The statement rich people should be taxed more is an example of negative economic analysis

7) The branch of economics that deals with the allocation of resources is _____

a) Econometrics
b) Macroeconomics
c) Microeconomics
d) None of the above

8) Which of the following statements is the actual meaning of scarcity?

a) The actual meaning of scarcity is that there is an increase in the resources
b) The actual meaning of scarcity is that there is a shortage in the resources
c) The actual meaning of scarcity is that there is no change in the resources
d) None of the above

9) Which of the following is a sign of a free economy?

a) The prices are regulated
b) The prices are partly regulated
c) The prices are determined with the help of the forces of demand and supply
d) None of these

10) Lowest order of Maslow Hierarchy of needs theory is _____

a) Safety needs
b) Esteem needs
c) Self- Actualization needs
d) Physiological needs

SLR-BD-467

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Engineering Economics and Management (BTN03610)

Day & Date: Friday, 06-June-2025 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any 4 questions from no.2 to 7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Law of Demand and Supply
b) Write difference between Microeconomics & Macroeconomics.

Q.3 Discuss Marketing Mix, concepts of marketing. **10**

Q.4 Explain National Income; stock and flow concept, NI at current price & constant price. **10**

Q.5 Explain concepts of marketing, demand forecasting and methods. **10**

Q.6 Discuss the features of new economic policy in India. **10**

Q.7 Write short notes. **10**
a) Finance Management; meaning, scope, sources, functions
b) Organizational Structure

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Engineering Economics and Management (BTN03610)

Day & Date: Friday, 06-June-2025 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

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3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) Organizational models are _____
a) Multinational model b) International model
c) Global organizational model d) All of the above

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c) Parliament
d) Prime Minister

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Engineering Economics and Management (BTN03610)

Day & Date: Friday, 06-June-2025 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any 4 questions from no.2 to 7.
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Q.5 Explain concepts of marketing, demand forecasting and methods. **10**

Q.6 Discuss the features of new economic policy in India. **10**

Q.7 Write short notes. **10**
a) Finance Management; meaning, scope, sources, functions
b) Organizational Structure

Seat No.	

Set | S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Engineering Economics and Management (BTN03610)

Day & Date: Friday, 06-June-2025 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) Which of the following statements is the actual meaning of scarcity?
a) The actual meaning of scarcity is that there is an increase in the resources
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d) The statement rich people should be taxed more is an example of negative economic analysis

10) The branch of economics that deals with the allocation of resources is _____

a) Econometrics b) Macroeconomics
c) Microeconomics d) None of the above

SLR-BD-467

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Engineering Economics and Management (BTN03610)

Day & Date: Friday, 06-June-2025 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any 4 questions from no.2 to 7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Law of Demand and Supply
b) Write difference between Microeconomics & Macroeconomics.

Q.3 Discuss Marketing Mix, concepts of marketing. **10**

Q.4 Explain National Income; stock and flow concept, NI at current price & constant price. **10**

Q.5 Explain concepts of marketing, demand forecasting and methods. **10**

Q.6 Discuss the features of new economic policy in India. **10**

Q.7 Write short notes. **10**
a) Finance Management; meaning, scope, sources, functions
b) Organizational Structure

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Disaster Management (BTN03611)

Day & Date: Friday, 06-June-2025 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:10

Q.1 Choose the correct alternative from the options. 10

1) Tsunami results from _____
a) an Earthquake b) a volcanic eruption
c) a tropical disturbance d) a tropical depression

2) Arson, civil disorder, and terrorism fall under _____
a) political disaster b) industrial disaster
c) human disaster d) sociological disaster

3) Weapons that can be widely dispersed in gas, liquid and solid forms are _____
a) biological weapons b) nuclear weapons
c) radiological weapons d) chemical weapons

4) Disaster management is a science because _____
a) it involves skill in conducting human activity
b) it involves an ongoing scientific investigation and research to find ways for better management of disasters
c) it attains perfection through practice
d) creative and innovative techniques are its pre-requisites

5) The rating parameters for capacity assessment does not include _____
a) sufficient b) satisfactory
c) needs improvement d) deficient

6) The first phase of disaster management cycle is _____
a) preparedness b) mitigation
c) response d) recovery

7) The second emotional phase of disaster affected people is _____
a) acute phase b) reaction phase
c) recovery phase d) reorientation phase

8) Providing food, water and medical help activity belongs to_____ phase of disaster management.

a) Response b) Preparedness
c) Recovery d) Mitigation

9) An example of an anthropogenic disaster is ____

a) a road accident b) an earth tremor
c) a landslide d) a volcanic eruption

10) _____ Phase starts after the immediate threat to human life has subsided.

a) Recovery b) Preparedness
c) Response d) Mitigation

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Disaster Management (BTN03611)

Day & Date: Friday, 06-June-2025 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve: (Any One) **10**
a) Write an account on geomorphic (geological) hazards.
b) Which things we need to consider for the selection of sites for industries and residential buildings? Explain.

Q.3 Solve: (Any One) **10**
a) Discuss the types of disaster, giving suitable example.
b) Describe Disaster mitigation meaning and concept.

Section – II

Q.4 Solve: (Any Two) **10**
a) Elaborate the cyclone early warning system.
b) After disaster, which are the essential services should be made functional on a priority basis according to you?
c) Discuss the role of Indian Meteorological observatories in disaster mitigation activities.

Q.5 Solve: (Any One) **10**
a) Consider a war disaster circumstances in border region of your country, being a Disaster Manager, how will you manage this disaster? Discuss with reference to the Disaster Management Cycle.
b) Discuss major medium- and long-term recovery aspects with example.

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Disaster Management (BTN03611)

Day & Date: Friday, 06-June-2025 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

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3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:10

Q.1 Choose the correct alternative from the options. **10**

1) The first phase of disaster management cycle is _____
a) preparedness b) mitigation
c) response d) recovery

2) The second emotional phase of disaster affected people is _____
a) acute phase b) reaction phase
c) recovery phase d) reorientation phase

3) Providing food, water and medical help activity belongs to_____ phase of disaster management.
a) Response b) Preparedness
c) Recovery d) Mitigation

4) An example of an anthropogenic disaster is ____
a) a road accident b) an earth tremor
c) a landslide d) a volcanic eruption

5) _____ Phase starts after the immediate threat to human life has subsided.
a) Recovery b) Preparedness
c) Response d) Mitigation

6) Tsunami results from _____
a) an Earthquake b) a volcanic eruption
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7) Arson, civil disorder, and terrorism fall under _____
a) political disaster b) industrial disaster
c) human disaster d) sociological disaster

8) Weapons that can be widely dispersed in gas, liquid and solid forms are _____

a) biological weapons
b) nuclear weapons
c) radiological weapons
d) chemical weapons

9) Disaster management is a science because _____

a) it involves skill in conducting human activity
b) it involves an ongoing scientific investigation and research to find ways for better management of disasters
c) it attains perfection through practice
d) creative and innovative techniques are its pre-requisites

10) The rating parameters for capacity assessment does not include _____

a) sufficient
b) satisfactory
c) needs improvement
d) deficient

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Disaster Management (BTN03611)

Day & Date: Friday, 06-June-2025 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve: (Any One) **10**

a) Write an account on geomorphic (geological) hazards.

b) Which things we need to consider for the selection of sites for industries and residential buildings? Explain.

Q.3 Solve: (Any One) **10**

a) Discuss the types of disaster, giving suitable example.

b) Describe Disaster mitigation meaning and concept.

Section – II

Q.4 Solve: (Any Two) **10**

a) Elaborate the cyclone early warning system.

b) After disaster, which are the essential services should be made functional on a priority basis according to you?

c) Discuss the role of Indian Meteorological observatories in disaster mitigation activities.

Q.5 Solve: (Any One) **10**

a) Consider a war disaster circumstances in border region of your country, being a Disaster Manager, how will you manage this disaster? Discuss with reference to the Disaster Management Cycle.

b) Discuss major medium- and long-term recovery aspects with example.

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Disaster Management (BTN03611)

Day & Date: Friday, 06-June-2025 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:10

Q.1 Choose the correct alternative from the options. 10

1) An example of an anthropogenic disaster is ____
a) a road accident b) an earth tremor
c) a landslide d) a volcanic eruption

2) _____ Phase starts after the immediate threat to human life has subsided.
a) Recovery b) Preparedness
c) Response d) Mitigation

3) Tsunami results from _____
a) an Earthquake b) a volcanic eruption
c) a tropical disturbance d) a tropical depression

4) Arson, civil disorder, and terrorism fall under _____
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a) sufficient b) satisfactory
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8) The first phase of disaster management cycle is _____

a) preparedness b) mitigation
c) response d) recovery

9) The second emotional phase of disaster affected people is _____

a) acute phase b) reaction phase
c) recovery phase d) reorientation phase

10) Providing food, water and medical help activity belongs to_____ phase of disaster management.

a) Response b) Preparedness
c) Recovery d) Mitigation

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Disaster Management (BTN03611)

Day & Date: Friday, 06-June-2025 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve: (Any One) **10**
a) Write an account on geomorphic (geological) hazards.
b) Which things we need to consider for the selection of sites for industries and residential buildings? Explain.

Q.3 Solve: (Any One) **10**
a) Discuss the types of disaster, giving suitable example.
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Section – II

Q.4 Solve: (Any Two) **10**
a) Elaborate the cyclone early warning system.
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Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Disaster Management (BTN03611)

Day & Date: Friday, 06-June-2025 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

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3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:10

Q.1 Choose the correct alternative from the options. 10

1) Weapons that can be widely dispersed in gas, liquid and solid forms are _____
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b) a volcanic eruption
c) a tropical disturbance
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Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE & ENGINEERING
Disaster Management (BTN03611)

Day & Date: Friday, 06-June-2025 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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Section – II

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Seat No.		Set	P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Natural Language Processing (BTN03612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Types Questions **14**

1) Which of the following includes major tasks of NLP?
a) Automatic Summarization b) Discourse Analysis
c) Machine Translation d) All of the mentioned

2) Choose from the following areas where NLP can be useful.
a) Automatic Text Summarization
b) Automatic Question-Answering Systems.
c) Information Retrieval
d) All of the mentioned

3) What is Morphological Segmentation?
a) Does Discourse Analysis
b) Separate words into individual morphemes and identify the class of morphemes
c) Is an extension of propositional logic
d) None of the mentioned.

4) Natural Language generation is the main task of Natural language processing.
a) True b) False

5) IR (information Retrieval) and IE (information Extraction) are the two same thing.
a) True b) False

6) Many words have more than one meaning; we have to select the meaning which makes the most sense in context. This can be resolved by _____
a) Fuzzy Logic b) Word Sense Disambiguation
c) Sallow Semantic Analysis d) All of the mentioned

7) In linguistic morphology _____ is the process for reducing inflected words to their root form.

a) Rooting
b) Stemming
c) Text-Proofing
d) Both Rooting & Stemming.

8) Which NLP task involves determining the grammatical structure of a sentence, including its parts of speech (e.g., noun, verb, adjective)?

a) Named Entity Recognition
b) Sentiment Analysis
c) Part-of-Speech Tagging
d) Machine Translation

9) Which of the following is a common preprocessing step in NLP for converting text to a uniform format by removing punctuation, capitalization, and stop words?

a) Stemming
b) Tokenization
c) Lemmatization
d) Normalization

10) What is the purpose of “lemmatization’’ in NLP?

a) To group words into topics
b) To split text into individual words or tokens
c) To reduce words to their base or dictionary form
d) To recognize named entities

11) _____ is the step in which an input sentence is converted into a hierarchical structure that corresponds to the units of meaning in the sentence.

a) Syntactic Processing
b) Semantic Processing
c) Graph Processing
d) All of the mentioned

12) “I saw bats” contains which type of ambiguity?

a) Syntactic
b) Semantic
c) Lexical
d) Anaphoric

13) Parsing determines Parse Trees (Grammatical Analysis) for a given sentence.

a) True
b) False

14) Which is a collection of documents?

a) Ngrams
b) Corpus
c) Tokenization
d) Stopwords

SLR-BD-469

Seat No.		Set	P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Natural Language Processing (BTN03612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four: **16**

a) Write a short note on Wiktionary.
b) What the advantages and disadvantages of NLP?
c) Write a short note on phases of NLP.
d) Define inside and outside probability of parse tree.
e) Explain Lexical knowledge Networks in detail.

Q.3 Attempt Any Two. **12**

a) Find the possible parse trees of the given probabilistic grammar and find most likely parse tree.
S→NP VP 1.0 DT→ The 1.0
NP→DT NN 0.5 NN→ gunman 0.5
NP→NNS 0.3 NN→ building 0.5
NP→NP PP 0.2 VBD→ sprayed 1.0
PP→P NP 1.0 NNS→ bullets 1.0
VP→VP PP 0.6 P→ with 1.0
VP→VBD NP 0.4
Sentence: The gunman sprayed the building with bullets.
b) What is wordnet and explain different relations in wordnet with example?
c) Explain different semantic roles with example.

Section – II

Q.4 Attempt Any Four. **16**

a) Write short note on Phonetics and Morphology.
b) Explain need of Name Entity Recognition with example.
c) Explain Morphological diversity of Indian Languages
d) Explain Universal Networking Language with example.
e) Explain Morphology and morphological paradigms in detail.

Q.5 Attempt Any Two. **12**

a) Explain Sentiment analysis with example.
b) Write a short note in Baum Welch Algorithm.
c) Explain passage merging and answer merging multilingual question answering system.

Seat No.		Set	Q

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Natural Language Processing (BTN03612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Types Questions **14**

1) Which NLP task involves determining the grammatical structure of a sentence, including its parts of speech (e.g., noun, verb, adjective)?
a) Named Entity Recognition b) Sentiment Analysis
c) Part-of-Speech Tagging d) Machine Translation

2) Which of the following is a common preprocessing step in NLP for converting text to a uniform format by removing punctuation, capitalization, and stop words?
a) Stemming b) Tokenization
c) Lemmatization d) Normalization

3) What is the purpose of "lemmatization'' in NLP?
a) To group words into topics
b) To split text into individual words or tokens
c) To reduce words to their base or dictionary form
d) To recognize named entities

4) _____ is the step in which an input sentence is converted into a hierarchical structure that corresponds to the units of meaning in the sentence.
a) Syntactic Processing b) Semantic Processing
c) Graph Processing d) All of the mentioned

5) "I saw bats" contains which type of ambiguity?
a) Syntactic b) Semantic
c) Lexical d) Anaphoric

6) Parsing determines Parse Trees (Grammatical Analysis) for a given sentence.
a) True b) False

7) Which is a collection of documents?
a) Ngrams b) Corpus
c) Tokenization d) Stopwords

8) Which of the following includes major tasks of NLP?
a) Automatic Summarization b) Discourse Analysis
c) Machine Translation d) All of the mentioned

9) Choose from the following areas where NLP can be useful.
a) Automatic Text Summarization
b) Automatic Question-Answering Systems.
c) Information Retrieval
d) All of the mentioned

10) What is Morphological Segmentation?
a) Does Discourse Analysis
b) Separate words into individual morphemes and identify the class of morphemes
c) Is an extension of propositional logic
d) None of the mentioned.

11) Natural Language generation is the main task of Natural language processing.
a) True b) False

12) IR (information Retrieval) and IE (information Extraction) are the two same thing.
a) True b) False

13) Many words have more than one meaning; we have to select the meaning which makes the most sense in context. This can be resolved by _____
a) Fuzzy Logic b) Word Sense Disambiguation
c) Sallow Semantic Analysis d) All of the mentioned

14) In linguistic morphology _____ is the process for reducing inflected words to their root form.
a) Rooting b) Stemming
c) Text-Proofing d) Both Rooting & Stemming.

SLR-BD-469

Seat No.		Set	Q

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Natural Language Processing (BTN03612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four: **16**

a) Write a short note on Wiktionary.
b) What the advantages and disadvantages of NLP?
c) Write a short note on phases of NLP.
d) Define inside and outside probability of parse tree.
e) Explain Lexical knowledge Networks in detail.

Q.3 Attempt Any Two. **12**

a) Find the possible parse trees of the given probabilistic grammar and find most likely parse tree.
S→NP VP 1.0 DT→ The 1.0
NP→DT NN 0.5 NN→ gunman 0.5
NP→NNS 0.3 NN→ building 0.5
NP→NP PP 0.2 VBD→ sprayed 1.0
PP→P NP 1.0 NNS→ bullets 1.0
VP→VP PP 0.6 P→ with 1.0
VP→VBD NP 0.4
Sentence: The gunman sprayed the building with bullets.
b) What is wordnet and explain different relations in wordnet with example?
c) Explain different semantic roles with example.

Section – II

Q.4 Attempt Any Four. **16**

a) Write short note on Phonetics and Morphology.
b) Explain need of Name Entity Recognition with example.
c) Explain Morphological diversity of Indian Languages
d) Explain Universal Networking Language with example.
e) Explain Morphology and morphological paradigms in detail.

Q.5 Attempt Any Two. **12**

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b) Write a short note in Baum Welch Algorithm.
c) Explain passage merging and answer merging multilingual question answering system.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Natural Language Processing (BTN03612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Types Questions **14**

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SLR-BD-469

Seat No.		Set	R

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Natural Language Processing (BTN03612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt Any Four: **16**

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Q.3 Attempt Any Two. **12**

a) Find the possible parse trees of the given probabilistic grammar and find most likely parse tree.
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VP→VP PP 0.6 P→ with 1.0
VP→VBD NP 0.4
Sentence: The gunman sprayed the building with bullets.
b) What is wordnet and explain different relations in wordnet with example?
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Section – II

Q.4 Attempt Any Four. **16**

a) Write short note on Phonetics and Morphology.
b) Explain need of Name Entity Recognition with example.
c) Explain Morphological diversity of Indian Languages
d) Explain Universal Networking Language with example.
e) Explain Morphology and morphological paradigms in detail.

Q.5 Attempt Any Two. **12**

a) Explain Sentiment analysis with example.
b) Write a short note in Baum Welch Algorithm.
c) Explain passage merging and answer merging multilingual question answering system.

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Natural Language Processing (BTN03612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Types Questions **14**

1) Many words have more than one meaning; we have to select the meaning which makes the most sense in context. This can be resolved by _____
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2) In linguistic morphology _____ is the process for reducing inflected words to their root form.
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c) Tokenization d) Stopwords

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b) Automatic Question-Answering Systems.
c) Information Retrieval
d) All of the mentioned

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a) Does Discourse Analysis
b) Separate words into individual morphemes and identify the class of morphemes
c) Is an extension of propositional logic
d) None of the mentioned.

13) Natural Language generation is the main task of Natural language processing.

a) True b) False

14) IR (information Retrieval) and IE (information Extraction) are the two same thing.

a) True b) False

SLR-BD-469

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Natural Language Processing (BTN03612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four: **16**

a) Write a short note on Wiktionary.
b) What the advantages and disadvantages of NLP?
c) Write a short note on phases of NLP.
d) Define inside and outside probability of parse tree.
e) Explain Lexical knowledge Networks in detail.

Q.3 Attempt Any Two. **12**

a) Find the possible parse trees of the given probabilistic grammar and find most likely parse tree.
S→NP VP 1.0 DT→ The 1.0
NP→DT NN 0.5 NN→ gunman 0.5
NP→NNS 0.3 NN→ building 0.5
NP→NP PP 0.2 VBD→ sprayed 1.0
PP→P NP 1.0 NNS→ bullets 1.0
VP→VP PP 0.6 P→ with 1.0
VP→VBD NP 0.4
Sentence: The gunman sprayed the building with bullets.
b) What is wordnet and explain different relations in wordnet with example?
c) Explain different semantic roles with example.

Section – II

Q.4 Attempt Any Four. **16**

a) Write short note on Phonetics and Morphology.
b) Explain need of Name Entity Recognition with example.
c) Explain Morphological diversity of Indian Languages
d) Explain Universal Networking Language with example.
e) Explain Morphology and morphological paradigms in detail.

Q.5 Attempt Any Two. **12**

a) Explain Sentiment analysis with example.
b) Write a short note in Baum Welch Algorithm.
c) Explain passage merging and answer merging multilingual question answering system.

SLR-BD-470

Seat No.	

Set P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (BTN03613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) In Python _____ package offers all the functionality needed to create and manipulate matrices.
a) Scipy b) Numpy
c) Sklearn d) None

2) Which machine learning models are trained to make a series of decisions based on the rewards and feedback they receive for their actions?
a) Supervised learning b) Unsupervised learning
c) Reinforcement learning d) All of the above

3) A feature F1 can take certain value: 'Poor', 'Average', 'Good', 'Excellent' and represents performance of students from a college. Here feature type is _____.
a) Nominal b) Ordinal and categorical
c) Boolean d) None

4) Which of the following is true about bagging?
1. Bagging can be parallel
2. The aim of bagging is to reduce bias not variance
3. Bagging helps in reducing overfitting
a) 1 and 2 b) 2 and 3
c) 1 and 3 d) All of these

5) _____ is a resampling procedure used to evaluate machine learning models on a limited data sample.
a) Cross Validation b) Testing
c) Training d) None

6) Which of following steps are required to apply machine learning technique to support business strategy.

a) What is the business problem you are trying to solve
b) When are the hidden data resources that you can take advantage
c) How can you prepare to get your data
d) All

7) _____ are displays in which you plot the performance of one or more machine learning algorithms with respect to the quantity of data they use for training.

a) Learning curves
b) Under fitting
c) Overfitting
d) All of above

8) If you're looking for an image filter, you can clean up your images using _____.

a) Median filter
b) Total variation denoising
c) Gaussian filter
d) All of these

9) Cross validation is based on _____ method.

a) under fitting
b) overfitting
c) k-fold
d) none

10) Regression is defined as _____.

a) Mathematical relationship between the dependent and independent variable
b) Technique of classification
c) Technique of clustering
d) All

11) In _____ model you build your machine learning models in two (or sometimes even more) stages.

a) stacking
b) averaging
c) testing multiple
d) hyper parameter

12) _____ is the approach to machine learning that is based on neuroscience.

a) Connectionism
b) Neuron
c) Deep learning
d) All of above

13) _____ ways improves machine learning model.

a) error curve method
b) testing multiple model
c) SDLC Model
d) None

14) _____ is a form of Al that enables a system to learn from data rather than through explicit programming.

a) Deep Learning
b) Collective intelligence
c) Machine Learning
d) None of these

Seat No.	

Set | P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (BTN03613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt Any Four. **16**

a) What are the categorical data? What is its significance in classification problems?
b) Calculate Mean, Median, Mode and standard deviation of 11,22,33,33,44
c) Explain application of machine learning
d) Consider a classification problem with two classes the proportion of positive at node is 30%. Calculate the value of entropy at this node.
e) How Do You Handle Missing or Corrupted Data in a Dataset?

Q.3 Attempt Any One. **06**

a) Explain Machine Learning Cycle
b) A bag I contains 4 white and 6 black balls while another Bag II contains 4 white and 3 black balls. One ball is drawn at random from one of the bags, and it is found to be black. Find the probability that it was drawn from Bag I.

Q.4 Attempt the following. **06**

What is cost function explain its different types.

Section – II

Q.5 Attempt Any Four. **16**

a) Elaborate on the concept of the CART algorithm for decision trees.
b) Write a short note on applying feature engineering.
c) Write short note on Searching for the best hyper parameters.
d) What are the benefits of using Random Forests over Decision Trees?
e) Explain Averaging model.

Q.6 Attempt Any One. **06**

a) Explain LOOCV and K-fold cross validation methods.
b) Explain the discovering the Incredible perceptron.

Q.7 Attempt the following. **06**

What are the ‘training Set’ and ‘test Set’ in a Machine Learning Model? How Much Data Will You Allocate for Your Training, Validation, and Test Sets?

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (BTN03613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

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

1) If you're looking for an image filter, you can clean up your images using _____.
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c) k-fold d) none

3) Regression is defined as _____.
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4) In _____ model you build your machine learning models in two (or sometimes even more) stages.
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8) In Python _____ package offers all the functionality needed to create and manipulate matrices.

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11) Which of the following is true about bagging?

1. Bagging can be parallel
2. The aim of bagging is to reduce bias not variance
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SLR-BD-470

Seat No.		Set	Q

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (BTN03613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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Section – II

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Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (BTN03613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

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a) 1 and 2
b) 2 and 3
c) 1 and 3
d) All of these

9) _____ is a resampling procedure used to evaluate machine learning models on a limited data sample.

a) Cross Validation
b) Testing
c) Training
d) None

10) Which of following steps are required to apply machine learning technique to support business strategy.

a) What is the business problem you are trying to solve
b) When are the hidden data resources that you can take advantage
c) How can you prepare to get your data
d) All

11) _____ are displays in which you plot the performance of one or more machine learning algorithms with respect to the quantity of data they use for training.

a) Learning curves
b) Under fitting
c) Overfitting
d) All of above

12) If you're looking for an image filter, you can clean up your images using _____.

a) Median filter
b) Total variation denoising
c) Gaussian filter
d) All of these

13) Cross validation is based on _____ method.

a) under fitting
b) overfitting
c) k-fold
d) none

14) Regression is defined as _____.

a) Mathematical relationship between the dependent and independent variable
b) Technique of classification
c) Technique of clustering
d) All

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (BTN03613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt Any Four. **16**

a) What are the categorical data? What is its significance in classification problems?
b) Calculate Mean, Median, Mode and standard deviation of 11,22,33,33,44
c) Explain application of machine learning
d) Consider a classification problem with two classes the proportion of positive at node is 30%. Calculate the value of entropy at this node.
e) How Do You Handle Missing or Corrupted Data in a Dataset?

Q.3 Attempt Any One. **06**

a) Explain Machine Learning Cycle
b) A bag I contains 4 white and 6 black balls while another Bag II contains 4 white and 3 black balls. One ball is drawn at random from one of the bags, and it is found to be black. Find the probability that it was drawn from Bag I.

Q.4 Attempt the following. **06**

What is cost function explain its different types.

Section – II

Q.5 Attempt Any Four. **16**

a) Elaborate on the concept of the CART algorithm for decision trees.
b) Write a short note on applying feature engineering.
c) Write short note on Searching for the best hyper parameters.
d) What are the benefits of using Random Forests over Decision Trees?
e) Explain Averaging model.

Q.6 Attempt Any One. **06**

a) Explain LOOCV and K-fold cross validation methods.
b) Explain the discovering the Incredible perceptron.

Q.7 Attempt the following. **06**

What are the ‘training Set’ and ‘test Set’ in a Machine Learning Model? How Much Data Will You Allocate for Your Training, Validation, and Test Sets?

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (BTN03613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which of following steps are required to apply machine learning technique to support business strategy.
a) What is the business problem you are trying to solve
b) When are the hidden data resources that you can take advantage
c) How can you prepare to get your data
d) All

2) _____ are displays in which you plot the performance of one or more machine learning algorithms with respect to the quantity of data they use for training.
a) Learning curves b) Under fitting
c) Overfitting d) All of above

3) If you're looking for an image filter, you can clean up your images using _____.
a) Median filter b) Total variation denoising
c) Gaussian filter d) All of these

4) Cross validation is based on _____ method.
a) under fitting b) overfitting
c) k-fold d) none

5) Regression is defined as _____.
a) Mathematical relationship between the dependent and independent variable
b) Technique of classification
c) Technique of clustering
d) All

6) In _____ model you build your machine learning models in two (or sometimes even more) stages.
a) stacking b) averaging
c) testing multiple d) hyper parameter

7) _____ is the approach to machine learning that is based on neuroscience.
a) Connectionism b) Neuron
c) Deep learning d) All of above

8) _____ ways improves machine learning model.
a) error curve method b) testing multiple model
c) SDLC Model d) None

9) _____ is a form of Al that enables a system to learn from data rather than through explicit programming.
a) Deep Learning b) Collective intelligence
c) Machine Learning d) None of these

10) In Python _____ package offers all the functionality needed to create and manipulate matrices.
a) Scipy b) Numpy
c) Sklearn d) None

11) Which machine learning models are trained to make a series of decisions based on the rewards and feedback they receive for their actions?
a) Supervised learning b) Unsupervised learning
c) Reinforcement learning d) All of the above

12) A feature F1 can take certain value: 'Poor', 'Average', 'Good', 'Excellent' and represents performance of students from a college. Here feature type is _____.
a) Nominal b) Ordinal and categorical
c) Boolean d) None

13) Which of the following is true about bagging?
1. Bagging can be parallel
2. The aim of bagging is to reduce bias not variance
3. Bagging helps in reducing overfitting

a) 1 and 2 b) 2 and 3
c) 1 and 3 d) All of these

14) _____ is a resampling procedure used to evaluate machine learning models on a limited data sample.
a) Cross Validation b) Testing
c) Training d) None

SLR-BD-470

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (BTN03613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt Any Four. **16**

a) What are the categorical data? What is its significance in classification problems?
b) Calculate Mean, Median, Mode and standard deviation of 11,22,33,33,44
c) Explain application of machine learning
d) Consider a classification problem with two classes the proportion of positive at node is 30%. Calculate the value of entropy at this node.
e) How Do You Handle Missing or Corrupted Data in a Dataset?

Q.3 Attempt Any One. **06**

a) Explain Machine Learning Cycle
b) A bag I contains 4 white and 6 black balls while another Bag II contains 4 white and 3 black balls. One ball is drawn at random from one of the bags, and it is found to be black. Find the probability that it was drawn from Bag I.

Q.4 Attempt the following. **06**

What is cost function explain its different types.

Section – II

Q.5 Attempt Any Four. **16**

a) Elaborate on the concept of the CART algorithm for decision trees.
b) Write a short note on applying feature engineering.
c) Write short note on Searching for the best hyper parameters.
d) What are the benefits of using Random Forests over Decision Trees?
e) Explain Averaging model.

Q.6 Attempt Any One. **06**

a) Explain LOOCV and K-fold cross validation methods.
b) Explain the discovering the Incredible perceptron.

Q.7 Attempt the following. **06**

What are the ‘training Set’ and ‘test Set’ in a Machine Learning Model? How Much Data Will You Allocate for Your Training, Validation, and Test Sets?

SLR-BD-471

Seat No.		Set	P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Cyber Forensic (BTN03614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) Which of the following is an example of cybercrime?
a) Writing a blog post
b) Unauthorized access to someone's email account
c) Purchasing an item from an online store
d) Programming a video game

2) Which of the following is a classification of cybercrime?
a) Organized crime and white-collar crime
b) Financial crime, hacking, and identity theft
c) Domestic theft and shoplifting
d) Political lobbying

3) What is the primary function of a proxy server?
a) Encrypting user data for secure transmission
b) Acting as an intermediary between a user and a server to provide anonymity
c) Cracking passwords for legitimate purposes
d) Detecting and removing viruses

4) Password cracking involves which of the following techniques?
a) Dictionary attacks and brute force attacks
b) SQL injection
c) Setting up firewalls
d) Encrypting passwords for security

5) Which of the following is NOT a component of cyber law?
a) Intellectual property rights b) Cyberstalking laws
c) International monetary policy d) Data protection regulations

6) What is a key reason for the need for cyber laws in India?
a) Growth in e-commerce and digital banking
b) Decline in internet usage
c) Shortage of cybersecurity professionals
d) Increasing demand for physical locks

7) Which section of the Indian IT Act covers digital signatures?
a) Section 43A b) Section 3
c) Section 72 d) Section 66F

8) Computer forensics is most commonly used in which field?
a) Medical diagnostics b) Criminal investigations
c) Agricultural technology d) Manufacturing industries

9) Which was one of the earliest computer networks that laid the foundation for the internet?
a) ARPANET b) TOR Network
c) Wi-Fi Alliance d) Ethernet

10) What does an IP address identify?
a) The physical location of a device
b) A unique address assigned to a device in a network
c) A user's browsing history
d) The model of the router used

11) What is the chain of custody critical for in network forensics?
a) Ensuring the evidence is admissible in court
b) Speeding up data recovery
c) Encrypting evidence for storage
d) Reconstructing lost network configurations

12) Which component in a mobile phone manages cellular communication?
a) Central Processing Unit (CPU) b) SIM card
c) Baseband processor d) Graphics card

13) What is the main function of forensic toolkits for handheld devices?
a) Designing mobile applications
b) Extracting and analyzing data from handheld devices
c) Enhancing mobile performance
d) Monitoring real-time network traffic

14) A major challenge in using handheld device evidence in court is _____.
a) Slow processing speed of devices
b) Ensuring evidence authenticity and integrity
c) The high cost of forensic tools
d) Limited storage capacity of devices

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Cyber Forensic (BTN03614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain the classification of cybercrimes with suitable examples.
b) What are proxy servers and anonymizers? How are they misused in cybercrimes?
c) What are the key provisions of the Indian IT Act concerning cybercrime?
d) Explain the technique of SQL injection and its consequences in cyberattacks.
e) What is the relationship between cybercrime and information security? Provide examples.

Q.3 Attempt Any Two. **12**

a) Explain the concept of cyberstalking. Discuss its forms, consequences, and measures to combat it.
b) What are phishing attacks? Discuss their techniques, impact on victims, and preventive measures.
c) What is the role of digital signatures in the Indian IT Act? Discuss their legal significance and application.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain the digital forensics life cycle. What are its key stages?
b) What are the major challenges faced in computer forensics? Provide examples.
c) Discuss the role of Internet Protocols (IP) in network forensics.
d) Explain the working characteristics of cell phones relevant to forensic investigations.
e) What types of digital evidence can be extracted from handheld devices, and how is it used in investigations?

Q.5 Attempt Any Two. **12**

a) Explain the process of filtering and data reduction in network forensics. Why is it crucial in digital investigations?

b) What are the key steps involved in analyzing digital evidence from hand-held devices?

c) Analyze the role of cyber forensics in securing and authenticating digital evidence for legal proceedings.

Seat No.		Set	Q

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Cyber Forensic (BTN03614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) Computer forensics is most commonly used in which field?
a) Medical diagnostics b) Criminal investigations
c) Agricultural technology d) Manufacturing industries

2) Which was one of the earliest computer networks that laid the foundation for the internet?
a) ARPANET b) TOR Network
c) Wi-Fi Alliance d) Ethernet

3) What does an IP address identify?
a) The physical location of a device
b) A unique address assigned to a device in a network
c) A user's browsing history
d) The model of the router used

4) What is the chain of custody critical for in network forensics?
a) Ensuring the evidence is admissible in court
b) Speeding up data recovery
c) Encrypting evidence for storage
d) Reconstructing lost network configurations

5) Which component in a mobile phone manages cellular communication?
a) Central Processing Unit (CPU) b) SIM card
c) Baseband processor d) Graphics card

6) What is the main function of forensic toolkits for handheld devices?
a) Designing mobile applications
b) Extracting and analyzing data from handheld devices
c) Enhancing mobile performance
d) Monitoring real-time network traffic

7) A major challenge in using handheld device evidence in court is _____.
a) Slow processing speed of devices
b) Ensuring evidence authenticity and integrity
c) The high cost of forensic tools
d) Limited storage capacity of devices

8) Which of the following is an example of cybercrime?
a) Writing a blog post
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c) Purchasing an item from an online store
d) Programming a video game

9) Which of the following is a classification of cybercrime?
a) Organized crime and white-collar crime
b) Financial crime, hacking, and identity theft
c) Domestic theft and shoplifting
d) Political lobbying

10) What is the primary function of a proxy server?
a) Encrypting user data for secure transmission
b) Acting as an intermediary between a user and a server to provide anonymity
c) Cracking passwords for legitimate purposes
d) Detecting and removing viruses

11) Password cracking involves which of the following techniques?
a) Dictionary attacks and brute force attacks
b) SQL injection
c) Setting up firewalls
d) Encrypting passwords for security

12) Which of the following is NOT a component of cyber law?
a) Intellectual property rights
b) Cyberstalking laws
c) International monetary policy
d) Data protection regulations

13) What is a key reason for the need for cyber laws in India?
a) Growth in e-commerce and digital banking
b) Decline in internet usage
c) Shortage of cybersecurity professionals
d) Increasing demand for physical locks

14) Which section of the Indian IT Act covers digital signatures?
a) Section 43A
b) Section 3
c) Section 72
d) Section 66F

SLR-BD-471

Seat No.	

Set Q

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Cyber Forensic (BTN03614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain the classification of cybercrimes with suitable examples.
b) What are proxy servers and anonymizers? How are they misused in cybercrimes?
c) What are the key provisions of the Indian IT Act concerning cybercrime?
d) Explain the technique of SQL injection and its consequences in cyberattacks.
e) What is the relationship between cybercrime and information security? Provide examples.

Q.3 Attempt Any Two. **12**

a) Explain the concept of cyberstalking. Discuss its forms, consequences, and measures to combat it.
b) What are phishing attacks? Discuss their techniques, impact on victims, and preventive measures.
c) What is the role of digital signatures in the Indian IT Act? Discuss their legal significance and application.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain the digital forensics life cycle. What are its key stages?
b) What are the major challenges faced in computer forensics? Provide examples.
c) Discuss the role of Internet Protocols (IP) in network forensics.
d) Explain the working characteristics of cell phones relevant to forensic investigations.
e) What types of digital evidence can be extracted from handheld devices, and how is it used in investigations?

Q.5 Attempt Any Two. **12**

a) Explain the process of filtering and data reduction in network forensics. Why is it crucial in digital investigations?

b) What are the key steps involved in analyzing digital evidence from hand-held devices?

c) Analyze the role of cyber forensics in securing and authenticating digital evidence for legal proceedings.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Cyber Forensic (BTN03614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) What is the chain of custody critical for in network forensics?
a) Ensuring the evidence is admissible in court
b) Speeding up data recovery
c) Encrypting evidence for storage
d) Reconstructing lost network configurations

2) Which component in a mobile phone manages cellular communication?
a) Central Processing Unit (CPU) b) SIM card
c) Baseband processor d) Graphics card

3) What is the main function of forensic toolkits for handheld devices?
a) Designing mobile applications
b) Extracting and analyzing data from handheld devices
c) Enhancing mobile performance
d) Monitoring real-time network traffic

4) A major challenge in using handheld device evidence in court is _____.
a) Slow processing speed of devices
b) Ensuring evidence authenticity and integrity
c) The high cost of forensic tools
d) Limited storage capacity of devices

5) Which of the following is an example of cybercrime?
a) Writing a blog post
b) Unauthorized access to someone's email account
c) Purchasing an item from an online store
d) Programming a video game

6) Which of the following is a classification of cybercrime?
a) Organized crime and white-collar crime
b) Financial crime, hacking, and identity theft
c) Domestic theft and shoplifting
d) Political lobbying

7) What is the primary function of a proxy server?
a) Encrypting user data for secure transmission
b) Acting as an intermediary between a user and a server to provide anonymity
c) Cracking passwords for legitimate purposes
d) Detecting and removing viruses

8) Password cracking involves which of the following techniques?
a) Dictionary attacks and brute force attacks
b) SQL injection
c) Setting up firewalls
d) Encrypting passwords for security

9) Which of the following is NOT a component of cyber law?
a) Intellectual property rights
b) Cyberstalking laws
c) International monetary policy
d) Data protection regulations

10) What is a key reason for the need for cyber laws in India?
a) Growth in e-commerce and digital banking
b) Decline in internet usage
c) Shortage of cybersecurity professionals
d) Increasing demand for physical locks

11) Which section of the Indian IT Act covers digital signatures?
a) Section 43A
b) Section 3
c) Section 72
d) Section 66F

12) Computer forensics is most commonly used in which field?
a) Medical diagnostics
b) Criminal investigations
c) Agricultural technology
d) Manufacturing industries

13) Which was one of the earliest computer networks that laid the foundation for the internet?
a) ARPANET
b) TOR Network
c) Wi-Fi Alliance
d) Ethernet

14) What does an IP address identify?
a) The physical location of a device
b) A unique address assigned to a device in a network
c) A user's browsing history
d) The model of the router used

SLR-BD-471

Seat No.		Set	R

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Cyber Forensic (BTN03614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain the classification of cybercrimes with suitable examples.
b) What are proxy servers and anonymizers? How are they misused in cybercrimes?
c) What are the key provisions of the Indian IT Act concerning cybercrime?
d) Explain the technique of SQL injection and its consequences in cyberattacks.
e) What is the relationship between cybercrime and information security? Provide examples.

Q.3 Attempt Any Two. **12**

a) Explain the concept of cyberstalking. Discuss its forms, consequences, and measures to combat it.
b) What are phishing attacks? Discuss their techniques, impact on victims, and preventive measures.
c) What is the role of digital signatures in the Indian IT Act? Discuss their legal significance and application.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain the digital forensics life cycle. What are its key stages?
b) What are the major challenges faced in computer forensics? Provide examples.
c) Discuss the role of Internet Protocols (IP) in network forensics.
d) Explain the working characteristics of cell phones relevant to forensic investigations.
e) What types of digital evidence can be extracted from handheld devices, and how is it used in investigations?

Q.5 Attempt Any Two. **12**

a) Explain the process of filtering and data reduction in network forensics. Why is it crucial in digital investigations?

b) What are the key steps involved in analyzing digital evidence from hand-held devices?

c) Analyze the role of cyber forensics in securing and authenticating digital evidence for legal proceedings.

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Cyber Forensic (BTN03614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) What is a key reason for the need for cyber laws in India?
a) Growth in e-commerce and digital banking
b) Decline in internet usage
c) Shortage of cybersecurity professionals
d) Increasing demand for physical locks

2) Which section of the Indian IT Act covers digital signatures?
a) Section 43A b) Section 3
c) Section 72 d) Section 66F

3) Computer forensics is most commonly used in which field?
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d) The model of the router used

6) What is the chain of custody critical for in network forensics?
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c) Enhancing mobile performance
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9) A major challenge in using handheld device evidence in court is _____.
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b) Acting as an intermediary between a user and a server to provide anonymity
c) Cracking passwords for legitimate purposes
d) Detecting and removing viruses

13) Password cracking involves which of the following techniques?
a) Dictionary attacks and brute force attacks
b) SQL injection
c) Setting up firewalls
d) Encrypting passwords for security

14) Which of the following is NOT a component of cyber law?
a) Intellectual property rights b) Cyberstalking laws
c) International monetary policy d) Data protection regulations

Seat No.	

Set | S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Cyber Forensic (BTN03614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain the classification of cybercrimes with suitable examples.
b) What are proxy servers and anonymizers? How are they misused in cybercrimes?
c) What are the key provisions of the Indian IT Act concerning cybercrime?
d) Explain the technique of SQL injection and its consequences in cyberattacks.
e) What is the relationship between cybercrime and information security? Provide examples.

Q.3 Attempt Any Two. **12**

a) Explain the concept of cyberstalking. Discuss its forms, consequences, and measures to combat it.
b) What are phishing attacks? Discuss their techniques, impact on victims, and preventive measures.
c) What is the role of digital signatures in the Indian IT Act? Discuss their legal significance and application.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain the digital forensics life cycle. What are its key stages?
b) What are the major challenges faced in computer forensics? Provide examples.
c) Discuss the role of Internet Protocols (IP) in network forensics.
d) Explain the working characteristics of cell phones relevant to forensic investigations.
e) What types of digital evidence can be extracted from handheld devices, and how is it used in investigations?

Q.5 Attempt Any Two. **12**

a) Explain the process of filtering and data reduction in network forensics. Why is it crucial in digital investigations?

b) What are the key steps involved in analyzing digital evidence from hand-held devices?

c) Analyze the role of cyber forensics in securing and authenticating digital evidence for legal proceedings.

SLR-BD-472

Seat No.	

Set P

Fourth.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (BTN03701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) The problem associated with testing occurs due to _____
a) Failing to define testing objectives
b) Testing at the wrong phase in the life cycle.
c) Using ineffective testing techniques
d) All of the above

2) Defects are less costly if detected in which of the following phases.
a) Coding b) Design
c) Requirements Gathering d) Implementation

3) In _____ testing, the software tester has access to programs code and can examine if for clues to help him with his testing.
a) Beta b) Gamma
c) Black Box d) White Box

4) The simplest form of path testing is called.
a) Line Coverage Testing b) Branch Coverage Testing
c) Equivalence Partitioning d) None

5) You are performing a test to see that it complies with user requirement that a certain field be populated by using a drop-down box containing a list of values. What kind of testing at you doing?
a) White box testing b) Black Box Testing
c) Load Testing d) Regression testing

6) _____ is performed without any formal test plan, test strategies, test scenario, test data or test cases.
a) Sanity Testing b) Execution Testing
c) Adhoc Testing d) All

7) This testing involves testing of high-level design as well as low-level design.
a) Big Bang b) Requirement Testing
c) Design Testing d) Code Testing

8) Test planning is a job that should involve _____ from across the entire product team.
a) Key players only b) Testers
c) Developers d) All

9) The approach/document used to make sure all the requirements are covered when writing test cases
a) Traceability Matrix b) Test bed
c) Checklist d) Test Matrix

10) Degree to which design specifications are followed in manufacturing the product is called
a) Quality Assurance
b) Quality Control
c) Quality of Conformance
d) None

11) The probability of failure free operation of a computer program in a specified environment for a specified time is termed as _____
a) Software Availability b) Software Reliability
c) Software Safety d) All

12) Who identifies, documents and verifies that corrections have been made to the software?
a) Project team b) SQA group
c) Project manager d) All of the mentioned

13) Which of the following is not a tool used in automation testing?
a) Rational Rose b) J unit
c) IBM Rational Functional Tester d) Selenium

14) _____ doesn't know anything about the software being tested. It just clicks or types randomly.
a) dumb monkey b) smart monkey
c) semi smart monkey d) all

Seat No.	

Set | P

Fourth.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (BTN03701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data is necessary.

Section – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the different skills required by tester?
b) What are the misconceptions about testing?
c) Write short note on code coverage.
d) Explain Black box testing and White box testing.
e) Explain Big Bang and Sandwich Testing.
f) Explain GUI testing with different advantages and disadvantages.

Q.3 Answer the following questions. (Any Two) **12**

a) What are the types of approaches in software testing team? Explain approach in details.
b) Explain differences between verification and validation in software testing.
c) Write short notes on Performance testing, Volume testing and Stress testing.

Section – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the reasons for test case planning?
b) Explain Bug life cycle.
c) What are goals and metrics of software quality?
d) Explain five views of quality.
e) What is reality of using Automation tool?
f) Explain Viewers and Monitors test tool in detail.

Q.5 Answer the following questions. (Any Two) **12**

a) Explain Test Design, Test cases and Test Procedure.
b) Write short notes on:
1) Elements of SQA
2) Software Reliability
c) What is automation test? Explain the benefits of automation test.

Seat No.	

Set **Q**

Fourth.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (BTN03701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page No. 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data is necessary.
5) Figures must be drawn wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Test planning is a job that should involve _____ from across the entire product team.
a) Key players only b) Testers
c) Developers d) All

2) The approach/document used to make sure all the requirements are covered when writing test cases
a) Traceability Matrix b) Test bed
c) Checklist d) Test Matrix

3) Degree to which design specifications are followed in manufacturing the product is called
a) Quality Assurance
b) Quality Control
c) Quality of Conformance
d) None

4) The probability of failure free operation of a computer program in a specified environment for a specified time is termed as _____
a) Software Availability b) Software Reliability
c) Software Safety d) All

5) Who identifies, documents and verifies that corrections have been made to the software?
a) Project team b) SQA group
c) Project manager d) All of the mentioned

6) Which of the following is not a tool used in automation testing?
a) Rational Rose b) J unit
c) IBM Rational Functional Tester d) Selenium

7) _____ doesn't know anything about the software being tested. It just clicks or types randomly.
a) dumb monkey b) smart monkey
c) semi smart monkey d) all

8) The problem associated with testing occurs due to _____
a) Failing to define testing objectives
b) Testing at the wrong phase in the life cycle.
c) Using ineffective testing techniques
d) All of the above

9) Defects are less costly if detected in which of the following phases.
a) Coding b) Design
c) Requirements Gathering d) Implementation

10) In _____ testing, the software tester has access to programs code and can examine if for clues to help him with his testing.
a) Beta b) Gamma
c) Black Box d) White Box

11) The simplest form of path testing is called.
a) Line Coverage Testing b) Branch Coverage Testing
c) Equivalence Partitioning d) None

12) You are performing a test to see that it complies with user requirement that a certain field be populated by using a drop-down box containing a list of values. What kind of testing at you doing?
a) White box testing b) Black Box Testing
c) Load Testing d) Regression testing

13) _____ is performed without any formal test plan, test strategies, test scenario, test data or test cases.
a) Sanity Testing b) Execution Testing
c) Adhoc Testing d) All

14) This testing involves testing of high-level design as well as low-level design.
a) Big Bang b) Requirement Testing
c) Design Testing d) Code Testing

Seat No.	

Set **Q**

Fourth.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (BTN03701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data is necessary.

Section – I

Q.2 Answer the following questions. (Any Four) **16**
- **a)** What are the different skills required by tester?
- **b)** What are the misconceptions about testing?
- **c)** Write short note on code coverage.
- **d)** Explain Black box testing and White box testing.
- **e)** Explain Big Bang and Sandwich Testing.
- **f)** Explain GUI testing with different advantages and disadvantages.

Q.3 Answer the following questions. (Any Two) **12**
- **a)** What are the types of approaches in software testing team? Explain approach in details.
- **b)** Explain differences between verification and validation in software testing.
- **c)** Write short notes on Performance testing, Volume testing and Stress testing.

Section – II

Q.4 Answer the following questions. (Any Four) **16**
- **a)** What are the reasons for test case planning?
- **b)** Explain Bug life cycle.
- **c)** What are goals and metrics of software quality?
- **d)** Explain five views of quality.
- **e)** What is reality of using Automation tool?
- **f)** Explain Viewers and Monitors test tool in detail.

Q.5 Answer the following questions. (Any Two) **12**
- **a)** Explain Test Design, Test cases and Test Procedure.
- **b)** Write short notes on:
  1) Elements of SQA
  2) Software Reliability
- **c)** What is automation test? Explain the benefits of automation test.

Seat No.	

Set R

Fourth.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (BTN03701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page No. 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data is necessary.
5) Figures must be drawn wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. 14

1) The probability of failure free operation of a computer program in a specified environment for a specified time is termed as _____
a) Software Availability b) Software Reliability
c) Software Safety d) All

2) Who identifies, documents and verifies that corrections have been made to the software?
a) Project team b) SQA group
c) Project manager d) All of the mentioned

3) Which of the following is not a tool used in automation testing?
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c) IBM Rational Functional Tester d) Selenium

4) _____ doesn't know anything about the software being tested. It just clicks or types randomly.
a) dumb monkey b) smart monkey
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5) The problem associated with testing occurs due to _____
a) Failing to define testing objectives
b) Testing at the wrong phase in the life cycle.
c) Using ineffective testing techniques
d) All of the above

6) Defects are less costly if detected in which of the following phases.
a) Coding b) Design
c) Requirements Gathering d) Implementation

7) In _____ testing, the software tester has access to programs code and can examine if for clues to help him with his testing.
a) Beta b) Gamma
c) Black Box d) White Box

8) The simplest form of path testing is called.
a) Line Coverage Testing b) Branch Coverage Testing
c) Equivalence Partitioning d) None

9) You are performing a test to see that it complies with user requirement that a certain field be populated by using a drop-down box containing a list of values. What kind of testing at you doing?
a) White box testing b) Black Box Testing
c) Load Testing d) Regression testing

10) _____ is performed without any formal test plan, test strategies, test scenario, test data or test cases.
a) Sanity Testing b) Execution Testing
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11) This testing involves testing of high-level design as well as low-level design.
a) Big Bang b) Requirement Testing
c) Design Testing d) Code Testing

12) Test planning is a job that should involve _____ from across the entire product team.
a) Key players only b) Testers
c) Developers d) All

13) The approach/document used to make sure all the requirements are covered when writing test cases
a) Traceability Matrix b) Test bed
c) Checklist d) Test Matrix

14) Degree to which design specifications are followed in manufacturing the product is called
a) Quality Assurance
b) Quality Control
c) Quality of Conformance
d) None

Seat No.	

Set **R**

Fourth.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (BTN03701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data is necessary.

Section – I

Q.2 Answer the following questions. (Any Four) **16**
- **a)** What are the different skills required by tester?
- **b)** What are the misconceptions about testing?
- **c)** Write short note on code coverage.
- **d)** Explain Black box testing and White box testing.
- **e)** Explain Big Bang and Sandwich Testing.
- **f)** Explain GUI testing with different advantages and disadvantages.

Q.3 Answer the following questions. (Any Two) **12**
- **a)** What are the types of approaches in software testing team? Explain approach in details.
- **b)** Explain differences between verification and validation in software testing.
- **c)** Write short notes on Performance testing, Volume testing and Stress testing.

Section – II

Q.4 Answer the following questions. (Any Four) **16**
- **a)** What are the reasons for test case planning?
- **b)** Explain Bug life cycle.
- **c)** What are goals and metrics of software quality?
- **d)** Explain five views of quality.
- **e)** What is reality of using Automation tool?
- **f)** Explain Viewers and Monitors test tool in detail.

Q.5 Answer the following questions. (Any Two) **12**
- **a)** Explain Test Design, Test cases and Test Procedure.
- **b)** Write short notes on:
  1) Elements of SQA
  2) Software Reliability
- **c)** What is automation test? Explain the benefits of automation test.

Seat No.		Set	S

Fourth.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (BTN03701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page No. 03 (Starting page of the Answer Book). Each question carries one mark.
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5) Figures must be drawn wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) _____ is performed without any formal test plan, test strategies, test scenario, test data or test cases.
a) Sanity Testing b) Execution Testing
c) Adhoc Testing d) All

2) This testing involves testing of high-level design as well as low-level design.
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c) Design Testing d) Code Testing

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c) Developers d) All

4) The approach/document used to make sure all the requirements are covered when writing test cases
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c) Checklist d) Test Matrix

5) Degree to which design specifications are followed in manufacturing the product is called
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c) Quality of Conformance
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6) The probability of failure free operation of a computer program in a specified environment for a specified time is termed as _____
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c) Software Safety d) All

7) Who identifies, documents and verifies that corrections have been made to the software?
a) Project team b) SQA group
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8) Which of the following is not a tool used in automation testing?
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c) IBM Rational Functional Tester d) Selenium

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a) dumb monkey b) smart monkey
c) semi smart monkey d) all

10) The problem associated with testing occurs due to _____
a) Failing to define testing objectives
b) Testing at the wrong phase in the life cycle.
c) Using ineffective testing techniques
d) All of the above

11) Defects are less costly if detected in which of the following phases.
a) Coding b) Design
c) Requirements Gathering d) Implementation

12) In _____ testing, the software tester has access to programs code and can examine if for clues to help him with his testing.
a) Beta b) Gamma
c) Black Box d) White Box

13) The simplest form of path testing is called.
a) Line Coverage Testing b) Branch Coverage Testing
c) Equivalence Partitioning d) None

14) You are performing a test to see that it complies with user requirement that a certain field be populated by using a drop-down box containing a list of values. What kind of testing at you doing?
a) White box testing b) Black Box Testing
c) Load Testing d) Regression testing

Seat No.	

Set **S**

Fourth.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April - 2025
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (BTN03701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data is necessary.

Section – I

Q.2 Answer the following questions. (Any Four) **16**
- **a)** What are the different skills required by tester?
- **b)** What are the misconceptions about testing?
- **c)** Write short note on code coverage.
- **d)** Explain Black box testing and White box testing.
- **e)** Explain Big Bang and Sandwich Testing.
- **f)** Explain GUI testing with different advantages and disadvantages.

Q.3 Answer the following questions. (Any Two) **12**
- **a)** What are the types of approaches in software testing team? Explain approach in details.
- **b)** Explain differences between verification and validation in software testing.
- **c)** Write short notes on Performance testing, Volume testing and Stress testing.

Section – II

Q.4 Answer the following questions. (Any Four) **16**
- **a)** What are the reasons for test case planning?
- **b)** Explain Bug life cycle.
- **c)** What are goals and metrics of software quality?
- **d)** Explain five views of quality.
- **e)** What is reality of using Automation tool?
- **f)** Explain Viewers and Monitors test tool in detail.

Q.5 Answer the following questions. (Any Two) **12**
- **a)** Explain Test Design, Test cases and Test Procedure.
- **b)** Write short notes on:
  1) Elements of SQA
  2) Software Reliability
- **c)** What is automation test? Explain the benefits of automation test.

Seat No.	

Set | P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (BTN03702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which of the following error can a compiler check?
a) Syntax Error
b) Logical Error
c) Both Logical and Syntax Error
d) Compiler cannot check errors

2) Compiler generates efficient target code in _____ phase.
a) Syntax analysis b) Semantic analysis
c) Code optimization d) None of these

3) Syntax Directed Definition (SDD) contains _____
a) Grammar productions b) Attributes
c) Semantic rules d) All of these

4) Which of the following is/are phases of analysis?
a) Code generation b) Lexical analysis
c) Code optimization d) None of the above

5) Syntax checking of statement is the task of _____
a) Lexical analyzer b) Parser
c) Semantic analyzer d) None of these

6) Which of the following is used for grouping characters into tokens?
a) The lexical analyzer b) Syntax analyzer
c) The code optimizer d) The code generator

7) Which of the following are the bottom-up parsers?
a) LL (1) parser b) Operator precedence parser
c) LR (1) parser d) Both b) and c)

8) A pictorial representation of the value computed by each statement in the basic block is _____

a) Tree
b) DAG
c) Graph
d) None of these

9) An SDD that involves only synthesized attributes is called _____

a) L-Attributed
b) S-Attributed
c) Both a) and b)
d) None of the above

10) Which of the following parsers is more powerful?

a) Simple LR
b) Canonical LR
c) Look ahead LR
d) None of these

11) If 'x' is terminal then FIRST (x) is _____

a) $
b) x
c) Both a and b
d) Can't find

12) A parse tree showing the value of attributes at each node _____

a) Syntax tree
b) Semantic tree
c) Annotated parse tree
d) All of the above

13) In which storage allocation strategy size is required at complier time?

a) Static allocation
b) Dynamic allocation
c) Stack allocation
d) All

14) Peephole optimization is an effective technique for _____ improving the target code.

a) Locally
b) Globally
c) Both a and b
d) None of the above

Seat No.	

Set **P**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (BTN03702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt Any Three. **12**

a) Explain the language processing system with diagram.
b) Explain input Buffering in Lexical analysis with sentinels.
c) Explain with example S-Attributed definition.
d) What is Syntax Directed Definition (SDD)? Explain it with an arithmetic expression example.

Q.3 Attempt Any Two **16**

a) Explain specification and recognition of tokens.
b) Explain annotated parse tree and dependency graph with example.
c) Explain in detail the SLR parser with suitable example.

Section – II

Q.4 Attempt Any Three. **12**

a) Explain Activation record with its contents.
b) Explain Triples, Quadruples and Indirect triples with any example.
c) Explain issue in design of code generator.
d) What is peephole optimization? Explain its any two characteristics for program transformations.

Q.5 Attempt Any Two. **16**

a) Explain Directed Acyclic Graph (DAG) for expressions and the value number method for constructing DAG's.
b) What is back patching? Explain back patching for Boolean expression.
c) What is basic block? Explain the algorithm for partitioning three-address statements into basic block with example.

Seat No.	

Set | Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (BTN03702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) A pictorial representation of the value computed by each statement in the basic block is _____
a) Tree b) DAG
c) Graph d) None of these

2) An SDD that involves only synthesized attributes is called _____
a) L-Attributed b) S-Attributed
c) Both a) and b) d) None of the above

3) Which of the following parsers is more powerful?
a) Simple LR b) Canonical LR
c) Look ahead LR d) None of these

4) If 'x' is terminal then FIRST (x) is _____
a) $ b) x
c) Both a and b d) Can't find

5) A parse tree showing the value of attributes at each node _____
a) Syntax tree b) Semantic tree
c) Annotated parse tree d) All of the above

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c) Stack allocation d) All

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8) Which of the following error can a compiler check?
a) Syntax Error
b) Logical Error
c) Both Logical and Syntax Error
d) Compiler cannot check errors

9) Compiler generates efficient target code in _____ phase.
a) Syntax analysis
b) Semantic analysis
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10) Syntax Directed Definition (SDD) contains _____
a) Grammar productions
b) Attributes
c) Semantic rules
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11) Which of the following is/are phases of analysis?
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13) Which of the following is used for grouping characters into tokens?
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b) Syntax analyzer
c) The code optimizer
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a) LL (1) parser
b) Operator precedence parser
c) LR (1) parser
d) Both b) and c)

SLR-BD-473

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (BTN03702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt Any Three. **12**

a) Explain the language processing system with diagram.
b) Explain input Buffering in Lexical analysis with sentinels.
c) Explain with example S-Attributed definition.
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Q.3 Attempt Any Two **16**

a) Explain specification and recognition of tokens.
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c) Explain in detail the SLR parser with suitable example.

Section – II

Q.4 Attempt Any Three. **12**

a) Explain Activation record with its contents.
b) Explain Triples, Quadruples and Indirect triples with any example.
c) Explain issue in design of code generator.
d) What is peephole optimization? Explain its any two characteristics for program transformations.

Q.5 Attempt Any Two. **16**

a) Explain Directed Acyclic Graph (DAG) for expressions and the value number method for constructing DAG's.
b) What is back patching? Explain back patching for Boolean expression.
c) What is basic block? Explain the algorithm for partitioning three-address statements into basic block with example.

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (BTN03702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) If 'x' is terminal then FIRST (x) is _____
a) $ b) x
c) Both a and b d) Can't find

2) A parse tree showing the value of attributes at each node _____
a) Syntax tree b) Semantic tree
c) Annotated parse tree d) All of the above

3) In which storage allocation strategy size is required at complier time?
a) Static allocation b) Dynamic allocation
c) Stack allocation d) All

4) Peephole optimization is an effective technique for _____ improving the target code.
a) Locally b) Globally
c) Both a and b d) None of the above

5) Which of the following error can a compiler check?
a) Syntax Error
b) Logical Error
c) Both Logical and Syntax Error
d) Compiler cannot check errors

6) Compiler generates efficient target code in _____ phase.
a) Syntax analysis b) Semantic analysis
c) Code optimization d) None of these

7) Syntax Directed Definition (SDD) contains _____
a) Grammar productions b) Attributes
c) Semantic rules d) All of these

8) Which of the following is/are phases of analysis?
a) Code generation
b) Lexical analysis
c) Code optimization
d) None of the above

9) Syntax checking of statement is the task of _____
a) Lexical analyzer
b) Parser
c) Semantic analyzer
d) None of these

10) Which of the following is used for grouping characters into tokens?
a) The lexical analyzer
b) Syntax analyzer
c) The code optimizer
d) The code generator

11) Which of the following are the bottom-up parsers?
a) LL (1) parser
b) Operator precedence parser
c) LR (1) parser
d) Both b) and c)

12) A pictorial representation of the value computed by each statement in the basic block is _____
a) Tree
b) DAG
c) Graph
d) None of these

13) An SDD that involves only synthesized attributes is called _____
a) L-Attributed
b) S-Attributed
c) Both a) and b)
d) None of the above

14) Which of the following parsers is more powerful?
a) Simple LR
b) Canonical LR
c) Look ahead LR
d) None of these

SLR-BD-473

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (BTN03702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt Any Three. **12**

a) Explain the language processing system with diagram.
b) Explain input Buffering in Lexical analysis with sentinels.
c) Explain with example S-Attributed definition.
d) What is Syntax Directed Definition (SDD)? Explain it with an arithmetic expression example.

Q.3 Attempt Any Two **16**

a) Explain specification and recognition of tokens.
b) Explain annotated parse tree and dependency graph with example.
c) Explain in detail the SLR parser with suitable example.

Section – II

Q.4 Attempt Any Three. **12**

a) Explain Activation record with its contents.
b) Explain Triples, Quadruples and Indirect triples with any example.
c) Explain issue in design of code generator.
d) What is peephole optimization? Explain its any two characteristics for program transformations.

Q.5 Attempt Any Two. **16**

a) Explain Directed Acyclic Graph (DAG) for expressions and the value number method for constructing DAG's.
b) What is back patching? Explain back patching for Boolean expression.
c) What is basic block? Explain the algorithm for partitioning three-address statements into basic block with example.

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (BTN03702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which of the following is used for grouping characters into tokens?
a) The lexical analyzer b) Syntax analyzer
c) The code optimizer d) The code generator

2) Which of the following are the bottom-up parsers?
a) LL (1) parser b) Operator precedence parser
c) LR (1) parser d) Both b) and c)

3) A pictorial representation of the value computed by each statement in the basic block is _____
a) Tree b) DAG
c) Graph d) None of these

4) An SDD that involves only synthesized attributes is called _____
a) L-Attributed b) S-Attributed
c) Both a) and b) d) None of the above

5) Which of the following parsers is more powerful?
a) Simple LR b) Canonical LR
c) Look ahead LR d) None of these

6) If 'x' is terminal then FIRST (x) is _____
a) $ b) x
c) Both a and b d) Can't find

7) A parse tree showing the value of attributes at each node _____
a) Syntax tree b) Semantic tree
c) Annotated parse tree d) All of the above

8) In which storage allocation strategy size is required at complier time?
a) Static allocation b) Dynamic allocation
c) Stack allocation d) All

9) Peephole optimization is an effective technique for _____ improving the target code.
a) Locally b) Globally
c) Both a and b d) None of the above

10) Which of the following error can a compiler check?
a) Syntax Error
b) Logical Error
c) Both Logical and Syntax Error
d) Compiler cannot check errors

11) Compiler generates efficient target code in _____ phase.
a) Syntax analysis b) Semantic analysis
c) Code optimization d) None of these

12) Syntax Directed Definition (SDD) contains _____
a) Grammar productions b) Attributes
c) Semantic rules d) All of these

13) Which of the following is/are phases of analysis?
a) Code generation b) Lexical analysis
c) Code optimization d) None of the above

14) Syntax checking of statement is the task of _____
a) Lexical analyzer b) Parser
c) Semantic analyzer d) None of these

SLR-BD-473

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (BTN03702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt Any Three. **12**

a) Explain the language processing system with diagram.
b) Explain input Buffering in Lexical analysis with sentinels.
c) Explain with example S-Attributed definition.
d) What is Syntax Directed Definition (SDD)? Explain it with an arithmetic expression example.

Q.3 Attempt Any Two **16**

a) Explain specification and recognition of tokens.
b) Explain annotated parse tree and dependency graph with example.
c) Explain in detail the SLR parser with suitable example.

Section – II

Q.4 Attempt Any Three. **12**

a) Explain Activation record with its contents.
b) Explain Triples, Quadruples and Indirect triples with any example.
c) Explain issue in design of code generator.
d) What is peephole optimization? Explain its any two characteristics for program transformations.

Q.5 Attempt Any Two. **16**

a) Explain Directed Acyclic Graph (DAG) for expressions and the value number method for constructing DAG's.
b) What is back patching? Explain back patching for Boolean expression.
c) What is basic block? Explain the algorithm for partitioning three-address statements into basic block with example.

SLR-BD-475

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April -2025
COMPUTER SCIENCE AND ENGINEERING
Data Mining (BTN03707)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) Data mining can be applied to which of the following types of data?
a) Relational databases
b) Text and multimedia data
c) Web data and spatial data
d) All of the above

2) What is a major challenge in data mining?
a) Handling noisy and incomplete data
b) Data integration from multiple sources
c) Ensuring privacy and security
d) All of the above

3) What is a unique characteristic of pattern mining in multilevel and multidimensional space?
a) It is restricted to single-level datasets
b) It considers hierarchies and multiple dimensions of data simultaneously
c) It does not allow for constraints
d) It is limited to textual data

4) In regression analysis, the target variable is: _____
a) Categorical b) Numerical
c) Ordinal d) Nominal

5) Data warehouse contains _____
a) Database Table b) Online data
c) Flat File d) All of the above

6) The K-Nearest Neighbors (KNN) algorithm primarily relies on: _____
   a) Distance metrics to classify data points
   b) Decision trees to split data
   c) Statistical probabilities of data points
   d) Neural network layers

7) Which of the following can be considered as the classification or mapping of a set or class with some predefined group or classes?
   a) Data set
   b) Data Characterization
   c) Data Sub Structure
   d) Data Discrimination

8) Which one of the following can be defined as the data object which does not comply with the general behavior (or the model of available data)?
   a) Evaluation Analysis
   b) Outliner Analysis
   c) Classification
   d) Prediction

9) What is a key limitation of KNN classifiers?
   a) It cannot handle numerical data
   b) It is computationally expensive for large datasets
   c) It always produces poor results
   d) It ignores distance metrics

10) Euclidean distance measure is can also defined as _____
   a) The process of finding a solution for a problem simply by enumerating all possible solutions according to some predefined order and then testing them
   b) The distance between two points as calculated using the Pythagoras theorem
   c) A stage of the KDD process in which new data is added to the existing selection
   d) All of the above

11) What is classification in data mining?
   a) Setting up a target data
   b) Data mining procedure to sort data
   c) A method to find data
   d) Generalizing structures

12) What is the primary purpose of web mining?
   a) To create new websites
   b) To extract useful information and patterns from web data
   c) To design web pages
   d) To improve internet speed

13) What is Web usage mining?

a) Find suitable data and information about the user's information
b) Find suitable data and information for the web page design
c) Find suitable data and information for the web page architecture
d) none of the above

14) What is the primary function of a web crawler?

a) To visualize website data
b) To navigate the web and collect information from web pages
c) To store user search queries
d) To rank websites in search engines

Seat No.	

Set | P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April -2025
COMPUTER SCIENCE AND ENGINEERING
Data Mining (BTN03707)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any four **16**

a) Explain the significance of data mining in today's data-driven world.
b) Differentiate between classification and clustering in data mining.
c) Discuss needs to preprocess the data.
d) Discuss the advantages and limitations of Bayesian classifiers.
e) Compare Data mining and Knowledge Discovery in Databases.

Q.3 Attempt any Two **12**

a) Explain K-Nearest Neighbors (KNN) algorithm?
b) Explain pattern mining in multilevel and multidimensional space.
c) Explain KDD process.

Section – II

Q.4 Attempt any four **16**

a) Discuss the challenges involved in mining association rules from large datasets.
b) Explain the web crawlers.
c) Explain the Outliers and Outlier Analysis.
d) Explain Large Item sets.
e) Explain Sampling Algorithm.

Q.5 Attempt any two. **12**

a) Explain the working of the Apriori algorithm for discovering frequent itemsets.
b) Discuss the impact of outliers on statistical models and machine learning algorithms.
c) Explain k-Means, k-Medoids partitioning methods.

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April -2025
COMPUTER SCIENCE AND ENGINEERING
Data Mining (BTN03707)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) Which one of the following can be defined as the data object which does not comply with the general behavior (or the model of available data)?
a) Evaluation Analysis b) Outliner Analysis
c) Classification d) Prediction

2) What is a key limitation of KNN classifiers?
a) It cannot handle numerical data
b) It is computationally expensive for large datasets
c) It always produces poor results
d) It ignores distance metrics

3) Euclidean distance measure is can also defined as _____
a) The process of finding a solution for a problem simply by enumerating all possible solutions according to some predefined order and then testing them
b) The distance between two points as calculated using the Pythagoras theorem
c) A stage of the KDD process in which new data is added to the existing selection
d) All of the above

4) What is classification in data mining?
a) Setting up a target data
b) Data mining procedure to sort data
c) A method to find data
d) Generalizing structures

5) What is the primary purpose of web mining?
   a) To create new websites
   b) To extract useful information and patterns from web data
   c) To design web pages
   d) To improve internet speed

6) What is Web usage mining?
   a) Find suitable data and information about the user's information
   b) Find suitable data and information for the web page design
   c) Find suitable data and information for the web page architecture
   d) none of the above

7) What is the primary function of a web crawler?
   a) To visualize website data
   b) To navigate the web and collect information from web pages
   c) To store user search queries
   d) To rank websites in search engines

8) Data mining can be applied to which of the following types of data?
   a) Relational databases
   b) Text and multimedia data
   c) Web data and spatial data
   d) All of the above

9) What is a major challenge in data mining?
   a) Handling noisy and incomplete data
   b) Data integration from multiple sources
   c) Ensuring privacy and security
   d) All of the above

10) What is a unique characteristic of pattern mining in multilevel and multidimensional space?
   a) It is restricted to single-level datasets
   b) It considers hierarchies and multiple dimensions of data simultaneously
   c) It does not allow for constraints
   d) It is limited to textual data

11) In regression analysis, the target variable is: _____
   a) Categorical
   b) Numerical
   c) Ordinal
   d) Nominal

12) Data warehouse contains _____
   a) Database Table
   b) Online data
   c) Flat File
   d) All of the above

13) The K-Nearest Neighbors (KNN) algorithm primarily relies on: _____
   a) Distance metrics to classify data points
   b) Decision trees to split data
   c) Statistical probabilities of data points
   d) Neural network layers

14) Which of the following can be considered as the classification or mapping of a set or class with some predefined group or classes?
   a) Data set
   b) Data Characterization
   c) Data Sub Structure
   d) Data Discrimination

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April -2025
COMPUTER SCIENCE AND ENGINEERING
Data Mining (BTN03707)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any four **16**

a) Explain the significance of data mining in today's data-driven world.
b) Differentiate between classification and clustering in data mining.
c) Discuss needs to preprocess the data.
d) Discuss the advantages and limitations of Bayesian classifiers.
e) Compare Data mining and Knowledge Discovery in Databases.

Q.3 Attempt any Two **12**

a) Explain K-Nearest Neighbors (KNN) algorithm?
b) Explain pattern mining in multilevel and multidimensional space.
c) Explain KDD process.

Section – II

Q.4 Attempt any four **16**

a) Discuss the challenges involved in mining association rules from large datasets.
b) Explain the web crawlers.
c) Explain the Outliers and Outlier Analysis.
d) Explain Large Item sets.
e) Explain Sampling Algorithm.

Q.5 Attempt any two. **12**

a) Explain the working of the Apriori algorithm for discovering frequent itemsets.
b) Discuss the impact of outliers on statistical models and machine learning algorithms.
c) Explain k-Means, k-Medoids partitioning methods.

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April -2025
COMPUTER SCIENCE AND ENGINEERING
Data Mining (BTN03707)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) What is classification in data mining?
a) Setting up a target data
b) Data mining procedure to sort data
c) A method to find data
d) Generalizing structures

2) What is the primary purpose of web mining?
a) To create new websites
b) To extract useful information and patterns from web data
c) To design web pages
d) To improve internet speed

3) What is Web usage mining?
a) Find suitable data and information about the user's information
b) Find suitable data and information for the web page design
c) Find suitable data and information for the web page architecture
d) none of the above

4) What is the primary function of a web crawler?
a) To visualize website data
b) To navigate the web and collect information from web pages
c) To store user search queries
d) To rank websites in search engines

5) Data mining can be applied to which of the following types of data?
a) Relational databases
b) Text and multimedia data
c) Web data and spatial data
d) All of the above

6) What is a major challenge in data mining?
   a) Handling noisy and incomplete data
   b) Data integration from multiple sources
   c) Ensuring privacy and security
   d) All of the above

7) What is a unique characteristic of pattern mining in multilevel and multidimensional space?
   a) It is restricted to single-level datasets
   b) It considers hierarchies and multiple dimensions of data simultaneously
   c) It does not allow for constraints
   d) It is limited to textual data

8) In regression analysis, the target variable is: _____
   a) Categorical
   b) Numerical
   c) Ordinal
   d) Nominal

9) Data warehouse contains _____
   a) Database Table
   b) Online data
   c) Flat File
   d) All of the above

10) The K-Nearest Neighbors (KNN) algorithm primarily relies on: _____
   a) Distance metrics to classify data points
   b) Decision trees to split data
   c) Statistical probabilities of data points
   d) Neural network layers

11) Which of the following can be considered as the classification or mapping of a set or class with some predefined group or classes?
   a) Data set
   b) Data Characterization
   c) Data Sub Structure
   d) Data Discrimination

12) Which one of the following can be defined as the data object which does not comply with the general behavior (or the model of available data)?
   a) Evaluation Analysis
   b) Outliner Analysis
   c) Classification
   d) Prediction

13) What is a key limitation of KNN classifiers?
   a) It cannot handle numerical data
   b) It is computationally expensive for large datasets
   c) It always produces poor results
   d) It ignores distance metrics

14) Euclidean distance measure is can also defined as _____

a) The process of finding a solution for a problem simply by enumerating all possible solutions according to some predefined order and then testing them
b) The distance between two points as calculated using the Pythagoras theorem
c) A stage of the KDD process in which new data is added to the existing selection
d) All of the above

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April -2025
COMPUTER SCIENCE AND ENGINEERING
Data Mining (BTN03707)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any four **16**

a) Explain the significance of data mining in today's data-driven world.
b) Differentiate between classification and clustering in data mining.
c) Discuss needs to preprocess the data.
d) Discuss the advantages and limitations of Bayesian classifiers.
e) Compare Data mining and Knowledge Discovery in Databases.

Q.3 Attempt any Two **12**

a) Explain K-Nearest Neighbors (KNN) algorithm?
b) Explain pattern mining in multilevel and multidimensional space.
c) Explain KDD process.

Section – II

Q.4 Attempt any four **16**

a) Discuss the challenges involved in mining association rules from large datasets.
b) Explain the web crawlers.
c) Explain the Outliers and Outlier Analysis.
d) Explain Large Item sets.
e) Explain Sampling Algorithm.

Q.5 Attempt any two. **12**

a) Explain the working of the Apriori algorithm for discovering frequent itemsets.
b) Discuss the impact of outliers on statistical models and machine learning algorithms.
c) Explain k-Means, k-Medoids partitioning methods.

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April -2025
COMPUTER SCIENCE AND ENGINEERING
Data Mining (BTN03707)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) The K-Nearest Neighbors (KNN) algorithm primarily relies on: _____
a) Distance metrics to classify data points
b) Decision trees to split data
c) Statistical probabilities of data points
d) Neural network layers

2) Which of the following can be considered as the classification or mapping of a set or class with some predefined group or classes?
a) Data set b) Data Characterization
c) Data Sub Structure d) Data Discrimination

3) Which one of the following can be defined as the data object which does not comply with the general behavior (or the model of available data)?
a) Evaluation Analysis b) Outliner Analysis
c) Classification d) Prediction

4) What is a key limitation of KNN classifiers?
a) It cannot handle numerical data
b) It is computationally expensive for large datasets
c) It always produces poor results
d) It ignores distance metrics

5) Euclidean distance measure is can also defined as _____
   a) The process of finding a solution for a problem simply by enumerating all possible solutions according to some predefined order and then testing them
   b) The distance between two points as calculated using the Pythagoras theorem
   c) A stage of the KDD process in which new data is added to the existing selection
   d) All of the above

6) What is classification in data mining?
   a) Setting up a target data
   b) Data mining procedure to sort data
   c) A method to find data
   d) Generalizing structures

7) What is the primary purpose of web mining?
   a) To create new websites
   b) To extract useful information and patterns from web data
   c) To design web pages
   d) To improve internet speed

8) What is Web usage mining?
   a) Find suitable data and information about the user's information
   b) Find suitable data and information for the web page design
   c) Find suitable data and information for the web page architecture
   d) none of the above

9) What is the primary function of a web crawler?
   a) To visualize website data
   b) To navigate the web and collect information from web pages
   c) To store user search queries
   d) To rank websites in search engines

10) Data mining can be applied to which of the following types of data?
   a) Relational databases
   b) Text and multimedia data
   c) Web data and spatial data
   d) All of the above

11) What is a major challenge in data mining?
   a) Handling noisy and incomplete data
   b) Data integration from multiple sources
   c) Ensuring privacy and security
   d) All of the above

11) What is a unique characteristic of pattern mining in multilevel and multidimensional space?

a) It is restricted to single-level datasets
b) It considers hierarchies and multiple dimensions of data simultaneously
c) It does not allow for constraints
d) It is limited to textual data

13) In regression analysis, the target variable is: _____

a) Categorical
b) Numerical
c) Ordinal
d) Nominal

14) Data warehouse contains _____

a) Database Table
b) Online data
c) Flat File
d) All of the above

SLR-BD-475

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April -2025
COMPUTER SCIENCE AND ENGINEERING
Data Mining (BTN03707)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any four **16**

a) Explain the significance of data mining in today's data-driven world.
b) Differentiate between classification and clustering in data mining.
c) Discuss needs to preprocess the data.
d) Discuss the advantages and limitations of Bayesian classifiers.
e) Compare Data mining and Knowledge Discovery in Databases.

Q.3 Attempt any Two **12**

a) Explain K-Nearest Neighbors (KNN) algorithm?
b) Explain pattern mining in multilevel and multidimensional space.
c) Explain KDD process.

Section – II

Q.4 Attempt any four **16**

a) Discuss the challenges involved in mining association rules from large datasets.
b) Explain the web crawlers.
c) Explain the Outliers and Outlier Analysis.
d) Explain Large Item sets.
e) Explain Sampling Algorithm.

Q.5 Attempt any two. **12**

a) Explain the working of the Apriori algorithm for discovering frequent itemsets.
b) Discuss the impact of outliers on statistical models and machine learning algorithms.
c) Explain k-Means, k-Medoids partitioning methods.

SLR-BD-476

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Distributed Systems (BTN03708)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Logical extension of computation migration is _____.
a) process migration b) system migration
c) thread migration d) data migration

2) Processes on the remote systems are identified by _____
a) host ID b) host name and identifier
c) Identifier d) process ID

3) In distributed systems, link and site failure is detected by _____
a) polling b) handshaking
c) token passing d) none of the mentioned

4) What are the characteristics of processor in distributed system?
a) They vary in size and function
b) They are same in size and function
c) They are manufactured with single purpose
d) They are real-time devices

5) Message passing system allows processes to _____
a) communicate with each other without sharing the same address space
b) communicate with one another by resorting to shared data
c) share data
d) name the recipient or sender of the message

6) In the non-blocking send _____
a) the sending process keeps sending until the message is received
b) the sending process sends the message and resumes operation
c) the sending process keeps sending until it receives a message
d) none of the mentioned

7) RPC provides a(an) ____ on the client-side, a separate one for each remote procedure.
a) stub
b) identifier
c) name
d) process identifier

8) To resolve the problem of data representation on different systems RPCs define _____
a) machine dependent representation of data
b) machine representation of data
c) machine-independent representation of data
d) none of the mentioned

9) The segment of code in which the process may change common variables, update tables, write into files is known as _____
a) program
b) critical section
c) non - critical section
d) synchronizing

10) A minimum of _____ variable(s) is/are required to be shared between processes to solve the critical section problem.
a) one
b) two
c) three
d) four

11) A system is in the safe state if _____
a) the system can allocate resources to each process in some order and still avoid a deadlock
b) there exist a safe sequence
c) all of the mentioned
d) none of the mentioned

12) Deadlocks can be prevented using ____
a) Preemption and transaction rollbacks
b) Wait and die scheme
c) Wound-wait scheme
d) All of the mentioned

13) What are characteristic of a DFS?
a) Fault tolerance
b) Scalability
c) Heterogeneity of the system
d) Upgradation

14) What is the advantage of caching in remote file access?
a) Reduced network traffic by retaining recently accessed disk blocks
b) Faster network access
c) Copies of data creates backup automatically
d) None of the mentioned

SLR-BD-476

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Distributed Systems (BTN03708)

Day & Date: Wednesday 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. (4*3) **12**

a) Explain workstation - server model along with their advantages and disadvantages.
b) Differentiate network operating system and Distributed operating system.
c) What are the desirable features of good process migration?
d) Explain the model of organizing thread.

Q.3 Attempt any two. (8*2) **16**

a) Explain the working of RPC mechanism. What are stubs? How stubs are Generated?
b) Discuss with an example, how to Keep Track of lost and Out-of-Sequence. Packets in Multidatagram messages.
c) Discuss the various issues in designing distributed system.

Section – II

Q.4 Attempt any three. (4*3) **12**

a) What is freezing time? Explain the handling of co-processes in process migration mechanism.
b) Explain Global averaging distributed algorithm for clock synchronization.
c) Describe the four data transfer models that may be used in a distributed file system that uses the data caching model for file accessing.
d) Explain the architecture of distributed shared memory (DSM).

Q.5 Attempt any two. (8*2) **16**

a) Explain different method of address space transfer mechanism in process migration.
b) With example illustrate Richart Agarwala's distributed algorithm for mutual exclusion and also list its disadvantages.
c) Explain the architecture and the services of Distributed File System. (DFS)

SLR-BD-476

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Distributed Systems (BTN03708)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) To resolve the problem of data representation on different systems RPCs define _____
a) machine dependent representation of data
b) machine representation of data
c) machine-independent representation of data
d) none of the mentioned

2) The segment of code in which the process may change common variables, update tables, write into files is known as _____
a) program b) critical section
c) non - critical section d) synchronizing

3) A minimum of _____ variable(s) is/are required to be shared between processes to solve the critical section problem.
a) one b) two
c) three d) four

4) A system is in the safe state if _____
a) the system can allocate resources to each process in some order and still avoid a deadlock
b) there exist a safe sequence
c) all of the mentioned
d) none of the mentioned

5) Deadlocks can be prevented using ____
a) Preemption and transaction rollbacks
b) Wait and die scheme
c) Wound-wait scheme
d) All of the mentioned

6) What are characteristic of a DFS?
   a) Fault tolerance
   b) Scalability
   c) Heterogeneity of the system
   d) Upgradation

7) What is the advantage of caching in remote file access?
   a) Reduced network traffic by retaining recently accessed disk blocks
   b) Faster network access
   c) Copies of data creates backup automatically
   d) None of the mentioned

8) Logical extension of computation migration is _____.
   a) process migration
   b) system migration
   c) thread migration
   d) data migration

9) Processes on the remote systems are identified by _____
   a) host ID
   b) host name and identifier
   c) Identifier
   d) process ID

10) In distributed systems, link and site failure is detected by _____
   a) polling
   b) handshaking
   c) token passing
   d) none of the mentioned

11) What are the characteristics of processor in distributed system?
   a) They vary in size and function
   b) They are same in size and function
   c) They are manufactured with single purpose
   d) They are real-time devices

12) Message passing system allows processes to _____
   a) communicate with each other without sharing the same address space
   b) communicate with one another by resorting to shared data
   c) share data
   d) name the recipient or sender of the message

13) In the non-blocking send _____
   a) the sending process keeps sending until the message is received
   b) the sending process sends the message and resumes operation
   c) the sending process keeps sending until it receives a message
   d) none of the mentioned

14) RPC provides a(an)____ on the client-side, a separate one for each remote procedure.
   a) stub
   b) identifier
   c) name
   d) process identifier

SLR-BD-476

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Distributed Systems (BTN03708)

Day & Date: Wednesday 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. (4*3) **12**

a) Explain workstation - server model along with their advantages and disadvantages.
b) Differentiate network operating system and Distributed operating system.
c) What are the desirable features of good process migration?
d) Explain the model of organizing thread.

Q.3 Attempt any two. (8*2) **16**

a) Explain the working of RPC mechanism. What are stubs? How stubs are Generated?
b) Discuss with an example, how to Keep Track of lost and Out-of-Sequence. Packets in Multidatagram messages.
c) Discuss the various issues in designing distributed system.

Section – II

Q.4 Attempt any three. (4*3) **12**

a) What is freezing time? Explain the handling of co-processes in process migration mechanism.
b) Explain Global averaging distributed algorithm for clock synchronization.
c) Describe the four data transfer models that may be used in a distributed file system that uses the data caching model for file accessing.
d) Explain the architecture of distributed shared memory (DSM).

Q.5 Attempt any two. (8*2) **16**

a) Explain different method of address space transfer mechanism in process migration.
b) With example illustrate Richart Agarwala's distributed algorithm for mutual exclusion and also list its disadvantages.
c) Explain the architecture and the services of Distributed File System. (DFS)

SLR-BD-476

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Distributed Systems (BTN03708)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) A system is in the safe state if _____
a) the system can allocate resources to each process in some order and still avoid a deadlock
b) there exist a safe sequence
c) all of the mentioned
d) none of the mentioned

2) Deadlocks can be prevented using ____
a) Preemption and transaction rollbacks
b) Wait and die scheme
c) Wound-wait scheme
d) All of the mentioned

3) What are characteristic of a DFS?
a) Fault tolerance b) Scalability
c) Heterogeneity of the system d) Upgradation

4) What is the advantage of caching in remote file access?
a) Reduced network traffic by retaining recently accessed disk blocks
b) Faster network access
c) Copies of data creates backup automatically
d) None of the mentioned

5) Logical extension of computation migration is _____.
a) process migration b) system migration
c) thread migration d) data migration

6) Processes on the remote systems are identified by _____
a) host ID b) host name and identifier
c) Identifier d) process ID

7) In distributed systems, link and site failure is detected by _____
a) polling
b) handshaking
c) token passing
d) none of the mentioned

8) What are the characteristics of processor in distributed system?
a) They vary in size and function
b) They are same in size and function
c) They are manufactured with single purpose
d) They are real-time devices

9) Message passing system allows processes to _____
a) communicate with each other without sharing the same address space
b) communicate with one another by resorting to shared data
c) share data
d) name the recipient or sender of the message

10) In the non-blocking send _____
a) the sending process keeps sending until the message is received
b) the sending process sends the message and resumes operation
c) the sending process keeps sending until it receives a message
d) none of the mentioned

11) RPC provides a(an)____ on the client-side, a separate one for each remote procedure.
a) stub
b) identifier
c) name
d) process identifier

12) To resolve the problem of data representation on different systems RPCs define _____
a) machine dependent representation of data
b) machine representation of data
c) machine-independent representation of data
d) none of the mentioned

13) The segment of code in which the process may change common variables, update tables, write into files is known as _____
a) program
b) critical section
c) non - critical section
d) synchronizing

14) A minimum of _____ variable(s) is/are required to be shared between processes to solve the critical section problem.
a) one
b) two
c) three
d) four

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Distributed Systems (BTN03708)

Day & Date: Wednesday 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. (4*3) **12**

a) Explain workstation - server model along with their advantages and disadvantages.
b) Differentiate network operating system and Distributed operating system.
c) What are the desirable features of good process migration?
d) Explain the model of organizing thread.

Q.3 Attempt any two. (8*2) **16**

a) Explain the working of RPC mechanism. What are stubs? How stubs are Generated?
b) Discuss with an example, how to Keep Track of lost and Out-of-Sequence. Packets in Multidatagram messages.
c) Discuss the various issues in designing distributed system.

Section – II

Q.4 Attempt any three. (4*3) **12**

a) What is freezing time? Explain the handling of co-processes in process migration mechanism.
b) Explain Global averaging distributed algorithm for clock synchronization.
c) Describe the four data transfer models that may be used in a distributed file system that uses the data caching model for file accessing.
d) Explain the architecture of distributed shared memory (DSM).

Q.5 Attempt any two. (8*2) **16**

a) Explain different method of address space transfer mechanism in process migration.
b) With example illustrate Richart Agarwala's distributed algorithm for mutual exclusion and also list its disadvantages.
c) Explain the architecture and the services of Distributed File System. (DFS)

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Distributed Systems (BTN03708)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) In the non-blocking send _____
a) the sending process keeps sending until the message is received
b) the sending process sends the message and resumes operation
c) the sending process keeps sending until it receives a message
d) none of the mentioned

2) RPC provides a(an)____ on the client-side, a separate one for each remote procedure.
a) stub b) identifier
c) name d) process identifier

3) To resolve the problem of data representation on different systems RPCs define _____
a) machine dependent representation of data
b) machine representation of data
c) machine-independent representation of data
d) none of the mentioned

4) The segment of code in which the process may change common variables, update tables, write into files is known as _____
a) program b) critical section
c) non - critical section d) synchronizing

5) A minimum of _____ variable(s) is/are required to be shared between processes to solve the critical section problem.
a) one b) two
c) three d) four

6) A system is in the safe state if _____
   a) the system can allocate resources to each process in some order and still avoid a deadlock
   b) there exist a safe sequence
   c) all of the mentioned
   d) none of the mentioned

7) Deadlocks can be prevented using ____
   a) Preemption and transaction rollbacks
   b) Wait and die scheme
   c) Wound-wait scheme
   d) All of the mentioned

8) What are characteristic of a DFS?
   a) Fault tolerance
   b) Scalability
   c) Heterogeneity of the system
   d) Upgradation

9) What is the advantage of caching in remote file access?
   a) Reduced network traffic by retaining recently accessed disk blocks
   b) Faster network access
   c) Copies of data creates backup automatically
   d) None of the mentioned

10) Logical extension of computation migration is _____.
   a) process migration
   b) system migration
   c) thread migration
   d) data migration

11) Processes on the remote systems are identified by _____
   a) host ID
   b) host name and identifier
   c) Identifier
   d) process ID

12) In distributed systems, link and site failure is detected by _____
   a) polling
   b) handshaking
   c) token passing
   d) none of the mentioned

13) What are the characteristics of processor in distributed system?
   a) They vary in size and function
   b) They are same in size and function
   c) They are manufactured with single purpose
   d) They are real-time devices

14) Message passing system allows processes to _____
   a) communicate with each other without sharing the same address space
   b) communicate with one another by resorting to shared data
   c) share data
   d) name the recipient or sender of the message

SLR-BD-476

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Distributed Systems (BTN03708)

Day & Date: Wednesday 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. (4*3) **12**

a) Explain workstation - server model along with their advantages and disadvantages.
b) Differentiate network operating system and Distributed operating system.
c) What are the desirable features of good process migration?
d) Explain the model of organizing thread.

Q.3 Attempt any two. (8*2) **16**

a) Explain the working of RPC mechanism. What are stubs? How stubs are Generated?
b) Discuss with an example, how to Keep Track of lost and Out-of-Sequence. Packets in Multidatagram messages.
c) Discuss the various issues in designing distributed system.

Section – II

Q.4 Attempt any three. (4*3) **12**

a) What is freezing time? Explain the handling of co-processes in process migration mechanism.
b) Explain Global averaging distributed algorithm for clock synchronization.
c) Describe the four data transfer models that may be used in a distributed file system that uses the data caching model for file accessing.
d) Explain the architecture of distributed shared memory (DSM).

Q.5 Attempt any two. (8*2) **16**

a) Explain different method of address space transfer mechanism in process migration.
b) With example illustrate Richart Agarwala's distributed algorithm for mutual exclusion and also list its disadvantages.
c) Explain the architecture and the services of Distributed File System. (DFS)

SLR-BD-477

Seat No.		Set	P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Management Information System (BTN03709)

Day & Date: Wednesday 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer (1*14=14 Marks) **14**

1) A digital firm is one where organization's operations are _____
a) completely mobilised b) digitally enabled
c) digitally marketed d) highly outsourced

2) _____ refers to the manner in which work is organized, coordinated & focused to produce product.
a) Business Process b) Information System
c) Functional Process d) None of the above

3) IT infrastructure consists of only those physical computing devices & software required to operate the enterprise.
a) True b) False

4) EBay is an example of _____
a) click-and-mortar business
b) C2C electronic commerce
c) B2C electronic commerce
d) an online exchange

5) An enterprise is a group of people with _____
a) common goal
b) separate goal for each department
c) multiple goals
d) two or more goal

6) A Decision Support System (DSS) is an application for information systems that helps in _____
a) System Design b) System Analysis
c) Decision making d) All of the mentioned above

7) If a university sets up a web-based information system that faculty could access to record student grades and to advise students, that would be an example of a/an _____

a) CRM
b) Intranet
c) ERP
d) Extranet

8) DBMS have a data definition language to do all of the following except:

a) Define the characteristics of the fields in each table
b) Add, change, delete, and retrieve data in the database
c) Specify the structure of the content of the database
d) Specify the creation of the database tables

9) Permission given with the knowledge of all the facts needed to make a rational decision is called _____

a) Informed consent
b) Liability
c) Responsibility
d) Due process

10) The principles and standards that guide our behaviour toward other people are collectively called _____

a) Intellectual property
b) Copyright
c) Ethics
d) Fair Use Doctrine

11) Intellectual property is subject to protection under _____

a) Trade secret law
b) Patent law
c) Copyright law
d) All of the above

12) The statement “If an action is not right for everyone to take, it is not right for anyone to take” is an expression of _____

a) The rule of change
b) The Utilitarian Principle.
c) The Categorical Imperative
d) The Risk Aversion Principle

13) The traditional business system is called as _____

a) modern method
b) advanced method
c) effective method
d) legacy method

14) As transaction costs decrease _____

a) The number of employees should shrink
b) A firm’s size should grow
c) The number of employees in the firm should grow
d) The firm should not consider outsourcing

Seat No.	

Set **P**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Management Information System (BTN03709)

Day & Date: Wednesday 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all questions from section I & II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four. **16**

a) What is Management Information System? What is the role of Information System in business?
b) Explain Tools and technologies for collaboration and social business.
c) Which principles are used for ethical decisions?
d) Explain the structure of an organization.
e) What are the Ethical, Social, political issues raised by information systems?

Q.3 Attempt any two. **12**

a) Explain competitive strategy using information system.
b) Explain the challenges to protection of individual's privacy and intellectual property.
c) What are different features of an organization? And explain each feature in detail.

Section – II

Q.4 Attempt any four. **16**

a) What is Contemporary software Platform Trends?
b) Explain concept of e-commerce & state its features.
c) What are the issues related to building e-commerce?
d) Explain Management Issues related to Information system.
e) How to improve business performance & decision making?

Q.5 Attempt ant two. **12**

a) Explain Infrastructure Components.
b) Explain the Role of M-commerce in business & its applications.
c) What are the major capabilities of Database Management Systems? Explain in detail.

Seat No.		Set	Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Management Information System (BTN03709)

Day & Date: Wednesday 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer (1*14=14 Marks) **14**

1) DBMS have a data definition language to do all of the following except:
a) Define the characteristics of the fields in each table
b) Add, change, delete, and retrieve data in the database
c) Specify the structure of the content of the database
d) Specify the creation of the database tables

2) Permission given with the knowledge of all the facts needed to make a rational decision is called _____
a) Informed consent b) Liability
c) Responsibility d) Due process

3) The principles and standards that guide our behaviour toward other people are collectively called _____
a) Intellectual property b) Copyright
c) Ethics d) Fair Use Doctrine

4) Intellectual property is subject to protection under _____
a) Trade secret law b) Patent law
c) Copyright law d) All of the above

5) The statement "If an action is not right for everyone to take, it is not right for anyone to take" is an expression of _____
a) The rule of change
b) The Utilitarian Principle.
c) The Categorical Imperative
d) The Risk Aversion Principle

6) The traditional business system is called as _____
a) modern method b) advanced method
c) effective method d) legacy method

7) As transaction costs decrease _____
   a) The number of employees should shrink
   b) A firm's size should grow
   c) The number of employees in the firm should grow
   d) The firm should not consider outsourcing

8) A digital firm is one where organization's operations are _____
   a) completely mobilised
   b) digitally enabled
   c) digitally marketed
   d) highly outsourced

9) _____ refers to the manner in which work is organized, coordinated & focused to produce product.
   a) Business Process
   b) Information System
   c) Functional Process
   d) None of the above

10) IT infrastructure consists of only those physical computing devices & software required to operate the enterprise.
   a) True
   b) False

11) EBay is an example of _____
   a) click-and-mortar business
   b) C2C electronic commerce
   c) B2C electronic commerce
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12) An enterprise is a group of people with _____
   a) common goal
   b) separate goal for each department
   c) multiple goals
   d) two or more goal

13) A Decision Support System (DSS) is an application for information systems that helps in _____
   a) System Design
   b) System Analysis
   c) Decision making
   d) All of the mentioned above

14) If a university sets up a web-based information system that faculty could access to record student grades and to advise students, that would be an example of a/an _____
   a) CRM
   b) Intranet
   c) ERP
   d) Extranet

SLR-BD-477

Seat No.	

Set Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Management Information System (BTN03709)

Day & Date: Wednesday 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all questions from section I & II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four. **16**

a) What is Management Information System? What is the role of Information System in business?
b) Explain Tools and technologies for collaboration and social business.
c) Which principles are used for ethical decisions?
d) Explain the structure of an organization.
e) What are the Ethical, Social, political issues raised by information systems?

Q.3 Attempt any two. **12**

a) Explain competitive strategy using information system.
b) Explain the challenges to protection of individual's privacy and intellectual property.
c) What are different features of an organization? And explain each feature in detail.

Section – II

Q.4 Attempt any four. **16**

a) What is Contemporary software Platform Trends?
b) Explain concept of e-commerce & state its features.
c) What are the issues related to building e-commerce?
d) Explain Management Issues related to Information system.
e) How to improve business performance & decision making?

Q.5 Attempt ant two. **12**

a) Explain Infrastructure Components.
b) Explain the Role of M-commerce in business & its applications.
c) What are the major capabilities of Database Management Systems? Explain in detail.

Seat No.		Set	R

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Management Information System (BTN03709)

Day & Date: Wednesday 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer (1*14=14 Marks) **14**

1) Intellectual property is subject to protection under _____
a) Trade secret law b) Patent law
c) Copyright law d) All of the above

2) The statement "If an action is not right for everyone to take, it is not right for anyone to take" is an expression of _____
a) The rule of change
b) The Utilitarian Principle.
c) The Categorical Imperative
d) The Risk Aversion Principle

3) The traditional business system is called as _____
a) modern method b) advanced method
c) effective method d) legacy method

4) As transaction costs decrease _____
a) The number of employees should shrink
b) A firm's size should grow
c) The number of employees in the firm should grow
d) The firm should not consider outsourcing

5) A digital firm is one where organization's operations are _____
a) completely mobilised b) digitally enabled
c) digitally marketed d) highly outsourced

6) _____ refers to the manner in which work is organized, coordinated & focused to produce product.
a) Business Process b) Information System
c) Functional Process d) None of the above

7) IT infrastructure consists of only those physical computing devices & software required to operate the enterprise.
a) True b) False

8) EBay is an example of _____
a) click-and-mortar business
b) C2C electronic commerce
c) B2C electronic commerce
d) an online exchange

9) An enterprise is a group of people with _____
a) common goal
b) separate goal for each department
c) multiple goals
d) two or more goal

10) A Decision Support System (DSS) is an application for information systems that helps in _____
a) System Design b) System Analysis
c) Decision making d) All of the mentioned above

11) If a university sets up a web-based information system that faculty could access to record student grades and to advise students, that would be an example of a/an _____
a) CRM b) Intranet
c) ERP d) Extranet

12) DBMS have a data definition language to do all of the following except:
a) Define the characteristics of the fields in each table
b) Add, change, delete, and retrieve data in the database
c) Specify the structure of the content of the database
d) Specify the creation of the database tables

13) Permission given with the knowledge of all the facts needed to make a rational decision is called _____
a) Informed consent b) Liability
c) Responsibility d) Due process

14) The principles and standards that guide our behaviour toward other people are collectively called _____
a) Intellectual property b) Copyright
c) Ethics d) Fair Use Doctrine

Seat No.	

Set **R**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Management Information System (BTN03709)

Day & Date: Wednesday 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all questions from section I & II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four. **16**

a) What is Management Information System? What is the role of Information System in business?
b) Explain Tools and technologies for collaboration and social business.
c) Which principles are used for ethical decisions?
d) Explain the structure of an organization.
e) What are the Ethical, Social, political issues raised by information systems?

Q.3 Attempt any two. **12**

a) Explain competitive strategy using information system.
b) Explain the challenges to protection of individual's privacy and intellectual property.
c) What are different features of an organization? And explain each feature in detail.

Section – II

Q.4 Attempt any four. **16**

a) What is Contemporary software Platform Trends?
b) Explain concept of e-commerce & state its features.
c) What are the issues related to building e-commerce?
d) Explain Management Issues related to Information system.
e) How to improve business performance & decision making?

Q.5 Attempt ant two. **12**

a) Explain Infrastructure Components.
b) Explain the Role of M-commerce in business & its applications.
c) What are the major capabilities of Database Management Systems? Explain in detail.

Seat No.		Set	S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Management Information System (BTN03709)

Day & Date: Wednesday 04-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer (1*14=14 Marks) **14**

1) A Decision Support System (DSS) is an application for information systems that helps in _____
a) System Design b) System Analysis
c) Decision making d) All of the mentioned above

2) If a university sets up a web-based information system that faculty could access to record student grades and to advise students, that would be an example of a/an _____
a) CRM b) Intranet
c) ERP d) Extranet

3) DBMS have a data definition language to do all of the following except:
a) Define the characteristics of the fields in each table
b) Add, change, delete, and retrieve data in the database
c) Specify the structure of the content of the database
d) Specify the creation of the database tables

4) Permission given with the knowledge of all the facts needed to make a rational decision is called _____
a) Informed consent b) Liability
c) Responsibility d) Due process

5) The principles and standards that guide our behaviour toward other people are collectively called _____
a) Intellectual property b) Copyright
c) Ethics d) Fair Use Doctrine

6) Intellectual property is subject to protection under _____
a) Trade secret law b) Patent law
c) Copyright law d) All of the above

7) The statement "If an action is not right for everyone to take, it is not right for anyone to take" is an expression of _____
   a) The rule of change
   b) The Utilitarian Principle.
   c) The Categorical Imperative
   d) The Risk Aversion Principle

8) The traditional business system is called as _____
   a) modern method
   b) advanced method
   c) effective method
   d) legacy method

9) As transaction costs decrease _____
   a) The number of employees should shrink
   b) A firm's size should grow
   c) The number of employees in the firm should grow
   d) The firm should not consider outsourcing

10) A digital firm is one where organization's operations are _____
   a) completely mobilised
   b) digitally enabled
   c) digitally marketed
   d) highly outsourced

11) _____ refers to the manner in which work is organized, coordinated & focused to produce product.
   a) Business Process
   b) Information System
   c) Functional Process
   d) None of the above

12) IT infrastructure consists of only those physical computing devices & software required to operate the enterprise.
   a) True
   b) False

13) EBay is an example of _____
   a) click-and-mortar business
   b) C2C electronic commerce
   c) B2C electronic commerce
   d) an online exchange

14) An enterprise is a group of people with _____
   a) common goal
   b) separate goal for each department
   c) multiple goals
   d) two or more goal

SLR-BD-477

Seat No.		Set	S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Management Information System (BTN03709)

Day & Date: Wednesday 04-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all questions from section I & II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four. **16**

a) What is Management Information System? What is the role of Information System in business?
b) Explain Tools and technologies for collaboration and social business.
c) Which principles are used for ethical decisions?
d) Explain the structure of an organization.
e) What are the Ethical, Social, political issues raised by information systems?

Q.3 Attempt any two. **12**

a) Explain competitive strategy using information system.
b) Explain the challenges to protection of individual's privacy and intellectual property.
c) What are different features of an organization? And explain each feature in detail.

Section – II

Q.4 Attempt any four. **16**

a) What is Contemporary software Platform Trends?
b) Explain concept of e-commerce & state its features.
c) What are the issues related to building e-commerce?
d) Explain Management Issues related to Information system.
e) How to improve business performance & decision making?

Q.5 Attempt ant two. **12**

a) Explain Infrastructure Components.
b) Explain the Role of M-commerce in business & its applications.
c) What are the major capabilities of Database Management Systems? Explain in detail.

SLR-BD-479

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Big Data Analytics (BTN03711)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Data in _____ bytes size is called Big Data.
a) Tera b) Giga
c) Peta d) Meta

2) The feature of big data that refers to the quality of the stored data is _.
a) Variety b) Volume
c) Variability d) Veracity

3) Transaction data of the bank is?
a) structured data b) unstructured data
c) Both a and b d) None of the above

4) Which of the following are Benefits of Big Data Processing?
a) Businesses can utilize outside intelligence while taking decisions
b) Improved customer service
c) Better operational efficiency
d) All of the above

5) The overall percentage of the world's total data has been created just within the past two years is?
a) 80% b) 85%
c) 90% d) 95%

6) What are the main components of Big Data?
a) MapReduce b) HDFS
c) YARN d) All of the above

7) All of the following accurately describe Hadoop, EXCEPT____
a) Open-source
b) Real-time
c) Java-based
d) Distributed computing approach

8) The examination of large amounts of data to see what patterns or other useful information can be found is known as
a) Data examination
b) Information analysis
c) Big data analytics
d) Data analysis

9) ____ takes a set of data and converts it into another set of data, where individual elements are broken down into tuples (key/value pairs).
a) Map
b) Reduce
c) Both a and b
d) Node

10) Which of the following is used to schedules jobs and tracks the assign jobs to Task tracker?
a) SlaveNode
b) MasterNode
c) JobTracker
d) Task Tracker

11) YARN is the one who helps to manage the resources across the
a) Clusters
b) Negotiator
c) Jobs
d) Hadoop System

12) Which of the following is/are a feature of Pig?
a) Rich set of operators
b) Ease of programming
c) Extensibility
d) All of the above

13) Which of the following function is used to read data in PIG?
a) Write
b) Read
c) Perform
d) Load

14) Which of the following data type is supported by Hive?
a) Map
b) Record
c) String
d) Enum

SLR-BD-479

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Big Data Analytics (BTN03711)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all questions from section I & II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Attempt any four. **16**

a) Compare BDA and RDBMS.
b) Explain different characteristic of big data.
c) Give different HDFS commands.
d) Give the difference between Hadoop 1.0 and Hadoop 2.0
e) Explain Semi structured data.

Q.3 Attempt any two. **12**

a) Explain different V's of big data.
b) Write difference between SQL, NOSQL and NewSQL.
c) Explain high level architecture of Hadoop with its components.

SECTION – II

Q.4 Attempt any four. **16**

a) Write difference between MongoDB and SQL.
b) Explain features of Cassandra in details.
c) Draw the architecture of hive and explain its components.
d) What is pig? Explain its features.
e) What is static and dynamic partitioning in HIVE? Illustrate with example.

Q.5 Attempt ant two. **12**

a) Write word count example using PIG.
b) With help of example explain set collection, list collection and map collection in Cassendra. When collection should not be used?
c) Explain different CRUD operations in MongoDB.

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Big Data Analytics (BTN03711)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) The examination of large amounts of data to see what patterns or other useful information can be found is known as
a) Data examination b) Information analysis
c) Big data analytics d) Data analysis

2) ____ takes a set of data and converts it into another set of data, where individual elements are broken down into tuples (key/value pairs).
a) Map b) Reduce
c) Both a and b d) Node

3) Which of the following is used to schedules jobs and tracks the assign jobs to Task tracker?
a) SlaveNode b) MasterNode
c) JobTracker d) Task Tracker

4) YARN is the one who helps to manage the resources across the
a) Clusters b) Negotiator
c) Jobs d) Hadoop System

5) Which of the following is/are a feature of Pig?
a) Rich set of operators
b) Ease of programming
c) Extensibility
d) All of the above

6) Which of the following function is used to read data in PIG?
a) Write b) Read
c) Perform d) Load

7) Which of the following data type is supported by Hive?
a) Map b) Record
c) String d) Enum

8) Data in _____ bytes size is called Big Data.
a) Tera b) Giga
c) Peta d) Meta

9) The feature of big data that refers to the quality of the stored data is _.
a) Variety b) Volume
c) Variability d) Veracity

10) Transaction data of the bank is?
a) structured data b) unstructured data
c) Both a and b d) None of the above

11) Which of the following are Benefits of Big Data Processing?
a) Businesses can utilize outside intelligence while taking decisions
b) Improved customer service
c) Better operational efficiency
d) All of the above

12) The overall percentage of the world's total data has been created just within the past two years is?
a) 80% b) 85%
c) 90% d) 95%

13) What are the main components of Big Data?
a) MapReduce b) HDFS
c) YARN d) All of the above

14) All of the following accurately describe Hadoop, EXCEPT____
a) Open-source
b) Real-time
c) Java-based
d) Distributed computing approach

SLR-BD-479

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Big Data Analytics (BTN03711)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all questions from section I & II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Attempt any four. **16**

a) Compare BDA and RDBMS.
b) Explain different characteristic of big data.
c) Give different HDFS commands.
d) Give the difference between Hadoop 1.0 and Hadoop 2.0
e) Explain Semi structured data.

Q.3 Attempt any two. **12**

a) Explain different V's of big data.
b) Write difference between SQL, NOSQL and NewSQL.
c) Explain high level architecture of Hadoop with its components.

SECTION – II

Q.4 Attempt any four. **16**

a) Write difference between MongoDB and SQL.
b) Explain features of Cassandra in details.
c) Draw the architecture of hive and explain its components.
d) What is pig? Explain its features.
e) What is static and dynamic partitioning in HIVE? Illustrate with example.

Q.5 Attempt ant two. **12**

a) Write word count example using PIG.
b) With help of example explain set collection, list collection and map collection in Cassendra. When collection should not be used?
c) Explain different CRUD operations in MongoDB.

SLR-BD-479

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Big Data Analytics (BTN03711)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) YARN is the one who helps to manage the resources across the
a) Clusters b) Negotiator
c) Jobs d) Hadoop System

2) Which of the following is/are a feature of Pig?
a) Rich set of operators
b) Ease of programming
c) Extensibility
d) All of the above

3) Which of the following function is used to read data in PIG?
a) Write b) Read
c) Perform d) Load

4) Which of the following data type is supported by Hive?
a) Map b) Record
c) String d) Enum

5) Data in _____ bytes size is called Big Data.
a) Tera b) Giga
c) Peta d) Meta

6) The feature of big data that refers to the quality of the stored data is _.
a) Variety b) Volume
c) Variability d) Veracity

7) Transaction data of the bank is?
a) structured data b) unstructured data
c) Both a and b d) None of the above

8) Which of the following are Benefits of Big Data Processing?
a) Businesses can utilize outside intelligence while taking decisions
b) Improved customer service
c) Better operational efficiency
d) All of the above

9) The overall percentage of the world's total data has been created just within the past two years is?
a) 80% b) 85%
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10) What are the main components of Big Data?
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c) YARN d) All of the above

11) All of the following accurately describe Hadoop, EXCEPT____
a) Open-source
b) Real-time
c) Java-based
d) Distributed computing approach

12) The examination of large amounts of data to see what patterns or other useful information can be found is known as
a) Data examination b) Information analysis
c) Big data analytics d) Data analysis

13) ____ takes a set of data and converts it into another set of data, where individual elements are broken down into tuples (key/value pairs).
a) Map b) Reduce
c) Both a and b d) Node

14) Which of the following is used to schedules jobs and tracks the assign jobs to Task tracker?
a) SlaveNode b) MasterNode
c) JobTracker d) Task Tracker

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Big Data Analytics (BTN03711)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all questions from section I & II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Attempt any four. **16**

a) Compare BDA and RDBMS.
b) Explain different characteristic of big data.
c) Give different HDFS commands.
d) Give the difference between Hadoop 1.0 and Hadoop 2.0
e) Explain Semi structured data.

Q.3 Attempt any two. **12**

a) Explain different V's of big data.
b) Write difference between SQL, NOSQL and NewSQL.
c) Explain high level architecture of Hadoop with its components.

SECTION – II

Q.4 Attempt any four. **16**

a) Write difference between MongoDB and SQL.
b) Explain features of Cassandra in details.
c) Draw the architecture of hive and explain its components.
d) What is pig? Explain its features.
e) What is static and dynamic partitioning in HIVE? Illustrate with example.

Q.5 Attempt ant two. **12**

a) Write word count example using PIG.
b) With help of example explain set collection, list collection and map collection in Cassendra. When collection should not be used?
c) Explain different CRUD operations in MongoDB.

SLR-BD-479

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Big Data Analytics (BTN03711)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) What are the main components of Big Data?
a) MapReduce b) HDFS
c) YARN d) All of the above

2) All of the following accurately describe Hadoop, EXCEPT____
a) Open-source
b) Real-time
c) Java-based
d) Distributed computing approach

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4) ____ takes a set of data and converts it into another set of data, where individual elements are broken down into tuples (key/value pairs).
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5) Which of the following is used to schedules jobs and tracks the assign jobs to Task tracker?
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6) YARN is the one who helps to manage the resources across the
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7) Which of the following is/are a feature of Pig?
a) Rich set of operators
b) Ease of programming
c) Extensibility
d) All of the above

8) Which of the following function is used to read data in PIG?
a) Write
b) Read
c) Perform
d) Load

9) Which of the following data type is supported by Hive?
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b) Record
c) String
d) Enum

10) Data in _____ bytes size is called Big Data.
a) Tera
b) Giga
c) Peta
d) Meta

11) The feature of big data that refers to the quality of the stored data is _.
a) Variety
b) Volume
c) Variability
d) Veracity

12) Transaction data of the bank is?
a) structured data
b) unstructured data
c) Both a and b
d) None of the above

13) Which of the following are Benefits of Big Data Processing?
a) Businesses can utilize outside intelligence while taking decisions
b) Improved customer service
c) Better operational efficiency
d) All of the above

14) The overall percentage of the world's total data has been created just within the past two years is?
a) 80%
b) 85%
c) 90%
d) 95%

SLR-BD-479

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Big Data Analytics (BTN03711)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all questions from section I & II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Attempt any four. **16**

a) Compare BDA and RDBMS.
b) Explain different characteristic of big data.
c) Give different HDFS commands.
d) Give the difference between Hadoop 1.0 and Hadoop 2.0
e) Explain Semi structured data.

Q.3 Attempt any two. **12**

a) Explain different V's of big data.
b) Write difference between SQL, NOSQL and NewSQL.
c) Explain high level architecture of Hadoop with its components.

SECTION – II

Q.4 Attempt any four. **16**

a) Write difference between MongoDB and SQL.
b) Explain features of Cassandra in details.
c) Draw the architecture of hive and explain its components.
d) What is pig? Explain its features.
e) What is static and dynamic partitioning in HIVE? Illustrate with example.

Q.5 Attempt ant two. **12**

a) Write word count example using PIG.
b) With help of example explain set collection, list collection and map collection in Cassendra. When collection should not be used?
c) Explain different CRUD operations in MongoDB.

SLR-BD-481

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Deep Learning (BTN03713)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer **14**

1) The number of nodes in the input layer is 12 and the hidden layer is 5. The maximum number of connections from the input layer to the hidden layer are_____

a) 60 b) Less than 60
c) More than 60 d) It is an arbitrary value

2) Which of the following functions can be used as an activation function in the output layer if we wish to predict the probabilities of n classes (p1, p2,...pk) such that sum of p over all n equals to 1?

a) SoftMax b) ReLU
c) Sigmoid d) Tanh

3) _____ is a Neural Nets way of classifying inputs.

a) Forward Propagation b) Activation
c) Classification d) None of this

4) ____ works best for Image Data.

a) Autoencoders
b) Single Layer Perceptron
c) Convolution Networks
d) Random Forest

5) De-noising and Contractive are examples of _____

a) Auto encoders b) Convolution Neural Networks
c) Recurrent Neural Networks d) None

6) What is the best Neural Network Model for Temporal Data?

a) Recurrent Neural Network b) Convolution Neural Networks
c) Temporal Neural Networks d) Multi Layer Perceptron

7) _____ is a pooling operation that selects the maximum element from the region of the feature map covered by the filter.

a) Max Pooling b) Average Pooling
c) Global pooling d) None of these

8) The measure of difference between two probability distributions is know as _____

a) Probability Difference b) Cost
c) KL Divergence d) Error

9) _____ is a Neural Nets way of classifying inputs.

a) Forward Propagation b) Activation
c) Classification d) Backward Propagation

10) Which of the following statement is true regarding dropout?

1. Dropout gives a way to approximate by combining many different architectures
2. Dropout demands high learning rates
3. Dropout can help preventing over fitting

a) Both 1 and 2 b) Both 1 and 3
c) Both 2 and 3 d) All 1, 2 and 3

11) Autoencoders are trained using _____

a) Feed Forward b) Reconstruction
c) Back Propagation d) They do not require Training

12) _____ computes the output volume by computing dot product between all filters and image patch.

a) Input Layer b) Convolution Layer
c) Activation Function Layer d) Pool Layer

13) What will happen to our machine learning model if the number of features is more than the number of data elements in our dataset?

a) It will be in under-fitting b) It will not work
c) It will be in over fitting d) It will not be affected

14) The rate at which cost changes with respect to weight or bias is called

a) Derivative b) Gradient
c) Rate of Change d) Loss

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Deep Learning (BTN03713)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt Any Four: **16**
- **a)** Explain Gradient decent Algorithm.
- **b)** Explain the term early stopping and Dropout.
- **c)** Assume a simple deep learning model with 3 neurons and inputs = 1, 2, 3 The weights to the input neurons are 6, 7 and 8 respectively, calculate the output?
- **d)** Explain Adam and RMSP Optimizer.
- **e)** Explain advantages and limitation of TensorFlow.

Q.3 Attempt Any One: **06**
- **a)** Explain back propagation Algorithm.
- **b)** Define regularization. Why the regularization is required?

Q.4 Attempt the following: **06**
What are Kernal_initializers in Keras and what is their significance?

Section – II

Q.5 Attempt Any Four: **16**
- **a)** What is drawback of RNN? How t is overcome by LSTM? Explain it in details.
- **b)** Explain different convolutional Neural network operations.
- **c)** Explain denoising auto encoder.
- **d)** Write a short note on ImageNet.
- **e)** Explain the application of RNN.

Q.6 Attempt Any One: **06**
- **a)** Explain encoder and decoder model.
- **b)** Explain Gated Recurrent Units (GRUs).

Q.7 Attempt the following: **06**
Explain the use of auto encoder in dimensionality reduction & classification.

SLR-BD-481

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Deep Learning (BTN03713)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer **14**

1) The measure of difference between two probability distributions is know as _____
a) Probability Difference b) Cost
c) KL Divergence d) Error

2) _____ is a Neural Nets way of classifying inputs.
a) Forward Propagation b) Activation
c) Classification d) Backward Propagation

3) Which of the following statement is true regarding dropout?
1. Dropout gives a way to approximate by combining many different architectures
2. Dropout demands high learning rates
3. Dropout can help preventing over fitting
a) Both 1 and 2 b) Both 1 and 3
c) Both 2 and 3 d) All 1, 2 and 3

4) Autoencoders are trained using _____
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c) Back Propagation d) They do not require Training

5) _____ computes the output volume by computing dot product between all filters and image patch.
a) Input Layer b) Convolution Layer
c) Activation Function Layer d) Pool Layer

6) What will happen to our machine learning model if the number of features is more than the number of data elements in our dataset?
a) It will be in under-fitting b) It will not work
c) It will be in over fitting d) It will not be affected

7) The rate at which cost changes with respect to weight or bias is called
a) Derivative b) Gradient
c) Rate of Change d) Loss

8) The number of nodes in the input layer is 12 and the hidden layer is 5. The maximum number of connections from the input layer to the hidden layer are_____
a) 60 b) Less than 60
c) More than 60 d) It is an arbitrary value

9) Which of the following functions can be used as an activation function in the output layer if we wish to predict the probabilities of n classes (p1, p2,...pk) such that sum of p over all n equals to 1?
a) SoftMax b) ReLU
c) Sigmoid d) Tanh

10) _____ is a Neural Nets way of classifying inputs.
a) Forward Propagation b) Activation
c) Classification d) None of this

11) ____ works best for Image Data.
a) Autoencoders
b) Single Layer Perceptron
c) Convolution Networks
d) Random Forest

12) De-noising and Contractive are examples of _____
a) Auto encoders b) Convolution Neural Networks
c) Recurrent Neural Networks d) None

13) What is the best Neural Network Model for Temporal Data?
a) Recurrent Neural Network b) Convolution Neural Networks
c) Temporal Neural Networks d) Multi Layer Perceptron

14) _____ is a pooling operation that selects the maximum element from the region of the feature map covered by the filter.
a) Max Pooling b) Average Pooling
c) Global pooling d) None of these

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Deep Learning (BTN03713)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt Any Four: **16**
- **a)** Explain Gradient decent Algorithm.
- **b)** Explain the term early stopping and Dropout.
- **c)** Assume a simple deep learning model with 3 neurons and inputs = 1, 2, 3 The weights to the input neurons are 6, 7 and 8 respectively, calculate the output?
- **d)** Explain Adam and RMSP Optimizer.
- **e)** Explain advantages and limitation of TensorFlow.

Q.3 Attempt Any One: **06**
- **a)** Explain back propagation Algorithm.
- **b)** Define regularization. Why the regularization is required?

Q.4 Attempt the following: **06**
What are Kernal_initializers in Keras and what is their significance?

Section – II

Q.5 Attempt Any Four: **16**
- **a)** What is drawback of RNN? How t is overcome by LSTM? Explain it in details.
- **b)** Explain different convolutional Neural network operations.
- **c)** Explain denoising auto encoder.
- **d)** Write a short note on ImageNet.
- **e)** Explain the application of RNN.

Q.6 Attempt Any One: **06**
- **a)** Explain encoder and decoder model.
- **b)** Explain Gated Recurrent Units (GRUs).

Q.7 Attempt the following: **06**
Explain the use of auto encoder in dimensionality reduction & classification.

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Deep Learning (BTN03713)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer **14**

1) Autoencoders are trained using _____
a) Feed Forward b) Reconstruction
c) Back Propagation d) They do not require Training

2) _____ computes the output volume by computing dot product between all filters and image patch.
a) Input Layer b) Convolution Layer
c) Activation Function Layer d) Pool Layer

3) What will happen to our machine learning model if the number of features is more than the number of data elements in our dataset?
a) It will be in under-fitting b) It will not work
c) It will be in over fitting d) It will not be affected

4) The rate at which cost changes with respect to weight or bias is called
a) Derivative b) Gradient
c) Rate of Change d) Loss

5) The number of nodes in the input layer is 12 and the hidden layer is 5. The maximum number of connections from the input layer to the hidden layer are_____
a) 60 b) Less than 60
c) More than 60 d) It is an arbitrary value

6) Which of the following functions can be used as an activation function in the output layer if we wish to predict the probabilities of n classes (p1, p2,...pk) such that sum of p over all n equals to 1?
a) SoftMax b) ReLU
c) Sigmoid d) Tanh

7) _____ is a Neural Nets way of classifying inputs.
a) Forward Propagation b) Activation
c) Classification d) None of this

8) ____ works best for Image Data.
a) Autoencoders
b) Single Layer Perceptron
c) Convolution Networks
d) Random Forest

9) De-noising and Contractive are examples of _____
a) Auto encoders b) Convolution Neural Networks
c) Recurrent Neural Networks d) None

10) What is the best Neural Network Model for Temporal Data?
a) Recurrent Neural Network b) Convolution Neural Networks
c) Temporal Neural Networks d) Multi Layer Perceptron

11) _____ is a pooling operation that selects the maximum element from the region of the feature map covered by the filter.
a) Max Pooling b) Average Pooling
c) Global pooling d) None of these

12) The measure of difference between two probability distributions is know as _____
a) Probability Difference b) Cost
c) KL Divergence d) Error

13) _____ is a Neural Nets way of classifying inputs.
a) Forward Propagation b) Activation
c) Classification d) Backward Propagation

14) Which of the following statement is true regarding dropout?
1. Dropout gives a way to approximate by combining many different architectures
2. Dropout demands high learning rates
3. Dropout can help preventing over fitting
a) Both 1 and 2 b) Both 1 and 3
c) Both 2 and 3 d) All 1, 2 and 3

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Deep Learning (BTN03713)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt Any Four: **16**

a) Explain Gradient decent Algorithm.
b) Explain the term early stopping and Dropout.
c) Assume a simple deep learning model with 3 neurons and inputs = 1, 2, 3 The weights to the input neurons are 6, 7 and 8 respectively, calculate the output?
d) Explain Adam and RMSP Optimizer.
e) Explain advantages and limitation of TensorFlow.

Q.3 Attempt Any One: **06**

a) Explain back propagation Algorithm.
b) Define regularization. Why the regularization is required?

Q.4 Attempt the following: **06**

What are Kernal_initializers in Keras and what is their significance?

Section – II

Q.5 Attempt Any Four: **16**

a) What is drawback of RNN? How t is overcome by LSTM? Explain it in details.
b) Explain different convolutional Neural network operations.
c) Explain denoising auto encoder.
d) Write a short note on ImageNet.
e) Explain the application of RNN.

Q.6 Attempt Any One: **06**

a) Explain encoder and decoder model.
b) Explain Gated Recurrent Units (GRUs).

Q.7 Attempt the following: **06**

Explain the use of auto encoder in dimensionality reduction & classification.

SLR-BD-481

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Deep Learning (BTN03713)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer **14**

1) What is the best Neural Network Model for Temporal Data?
a) Recurrent Neural Network b) Convolution Neural Networks
c) Temporal Neural Networks d) Multi Layer Perceptron

2) _____ is a pooling operation that selects the maximum element from the region of the feature map covered by the filter.
a) Max Pooling b) Average Pooling
c) Global pooling d) None of these

3) The measure of difference between two probability distributions is know as _____
a) Probability Difference b) Cost
c) KL Divergence d) Error

4) _____ is a Neural Nets way of classifying inputs.
a) Forward Propagation b) Activation
c) Classification d) Backward Propagation

5) Which of the following statement is true regarding dropout?
1. Dropout gives a way to approximate by combining many different architectures
2. Dropout demands high learning rates
3. Dropout can help preventing over fitting
a) Both 1 and 2 b) Both 1 and 3
c) Both 2 and 3 d) All 1, 2 and 3

6) Autoencoders are trained using _____
a) Feed Forward b) Reconstruction
c) Back Propagation d) They do not require Training

7) _____ computes the output volume by computing dot product between all filters and image patch.
a) Input Layer b) Convolution Layer
c) Activation Function Layer d) Pool Layer

8) What will happen to our machine learning model if the number of features is more than the number of data elements in our dataset?
a) It will be in under-fitting b) It will not work
c) It will be in over fitting d) It will not be affected

9) The rate at which cost changes with respect to weight or bias is called
a) Derivative b) Gradient
c) Rate of Change d) Loss

10) The number of nodes in the input layer is 12 and the hidden layer is 5. The maximum number of connections from the input layer to the hidden layer are_____
a) 60 b) Less than 60
c) More than 60 d) It is an arbitrary value

11) Which of the following functions can be used as an activation function in the output layer if we wish to predict the probabilities of n classes (p1, p2,...pk) such that sum of p over all n equals to 1?
a) SoftMax b) ReLU
c) Sigmoid d) Tanh

12) _____ is a Neural Nets way of classifying inputs.
a) Forward Propagation b) Activation
c) Classification d) None of this

13) ____ works best for Image Data.
a) Autoencoders
b) Single Layer Perceptron
c) Convolution Networks
d) Random Forest

14) De-noising and Contractive are examples of _____
a) Auto encoders b) Convolution Neural Networks
c) Recurrent Neural Networks d) None

SLR-BD-481

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Deep Learning (BTN03713)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt Any Four: **16**
- **a)** Explain Gradient decent Algorithm.
- **b)** Explain the term early stopping and Dropout.
- **c)** Assume a simple deep learning model with 3 neurons and inputs = 1, 2, 3 The weights to the input neurons are 6, 7 and 8 respectively, calculate the output?
- **d)** Explain Adam and RMSP Optimizer.
- **e)** Explain advantages and limitation of TensorFlow.

Q.3 Attempt Any One: **06**
- **a)** Explain back propagation Algorithm.
- **b)** Define regularization. Why the regularization is required?

Q.4 Attempt the following: **06**
What are Kernal_initializers in Keras and what is their significance?

Section – II

Q.5 Attempt Any Four: **16**
- **a)** What is drawback of RNN? How t is overcome by LSTM? Explain it in details.
- **b)** Explain different convolutional Neural network operations.
- **c)** Explain denoising auto encoder.
- **d)** Write a short note on ImageNet.
- **e)** Explain the application of RNN.

Q.6 Attempt Any One: **06**
- **a)** Explain encoder and decoder model.
- **b)** Explain Gated Recurrent Units (GRUs).

Q.7 Attempt the following: **06**
Explain the use of auto encoder in dimensionality reduction & classification.

SLR-BD-482

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Predictive Analytics (BTN03715)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice questions. **14**

1) What is the primary purpose of predictive analytics in a business context?
a) Data storage b) Forecasting future trends
c) Data retrieval d) Data cleaning

2) Which metric is crucial for evaluating the effectiveness of an online marketing campaign?
a) Page views b) Click-through rate (CTR)
c) Bounce rate d) Time on site

3) What is another name for categorical data?
a) Continuous data b) Discrete data
c) Nominal data d) Interval data

4) What is a common challenge when searching through large datasets?
a) Data redundancy b) Data accuracy
c) Data indexing d) Data consistency

5) An optimization model falls under which category of modeling?
a) Descriptive b) Predictive
c) Prescriptive d) Diagnostic

6) In clustering, what does the term "centroid" refer to?
a) A point that minimizes distances to all cluster points
b) The center of a cluster
c) The most frequent item in a cluster
d) A measure of cluster density

7) What is the first step in a predictive analytics project?
a) Model selection
b) Data preprocessing
c) Problem definition
d) Model evaluation

8) In online retail, what is the purpose of an A/B test?
a) To compare two different products
b) To measure the effect of different marketing strategies
c) To assess customer satisfaction
d) To analyze website traffic

9) Which clustering algorithm requires the number of clusters to be specified beforehand?
a) DBSCAN
b) K-means
c) Agglomerative hierarchical clustering
d) Mean-shift clustering

10) Which metric is commonly used to evaluate the accuracy of a predictive model?
a) Mean Absolute Error (MAE)
b) Page views
c) Click-through rate (CTR)
d) Bounce rate

11) Which tool is widely used for full-text search in big data environments?
a) SQL
b) Hadoop
c) Elastic search
d) R

12) What did Twitter-based predictors of the stock market primarily analyze?
a) Historical stock prices
b) News headlines
c) Social media sentiment
d) Financial reports

13) What is term selection in the context of creating matrices of terms in documents?
a) Choosing the most relevant terms for analysis
b) Removing duplicate terms from documents
c) Sorting terms alphabetically
d) Counting occurrences of terms in documents

14) Which stakeholders should be involved in the initial stages of a predictive analytics project?
a) Only data scientists
b) Only IT department
c) Cross-functional team including business leaders
d) External vendors

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Predictive Analytics (BTN03715)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Solve: (Any Four) **16**

a) Write a short note on: Adding Business values in Predictive Analytics.
b) Explain Target marketing with example.
c) Explain generating predictive analytics.
d) Differentiating Business Intelligence from Big-Data Analytics.
e) What is Predictive Analytics? Explain advantages and strategies of Predictive Analytics.

Q.3 Solve: (Any Two) **12**

a) How to start predictive analytics project? Explain with example.
b) Explain recommender system.
c) Explain Big Data.

Section – II

Q.4 Solve: (Any Four) **16**

a) Explain Modeling data: Models and simulations.
b) Explaining data clustering.
c) Explain introducing data classification to Business.
d) Explain naive bayes classification algorithms with example.
e) Explain Processing the data.

Q.5 Solve: (Any Two) **12**

a) Explain structuring the data: extracting, transforming and loading the data.
b) Explain algorithm for generating decision trees.
c) Explain KNN Algorithm with example.

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Predictive Analytics (BTN03715)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice questions. **14**

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d) Counting occurrences of terms in documents

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d) External vendors

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d) Data cleaning

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14) What is the first step in a predictive analytics project?
a) Model selection
b) Data preprocessing
c) Problem definition
d) Model evaluation

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Predictive Analytics (BTN03715)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve: (Any Four) **16**

a) Write a short note on: Adding Business values in Predictive Analytics.
b) Explain Target marketing with example.
c) Explain generating predictive analytics.
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e) What is Predictive Analytics? Explain advantages and strategies of Predictive Analytics.

Q.3 Solve: (Any Two) **12**

a) How to start predictive analytics project? Explain with example.
b) Explain recommender system.
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Section – II

Q.4 Solve: (Any Four) **16**

a) Explain Modeling data: Models and simulations.
b) Explaining data clustering.
c) Explain introducing data classification to Business.
d) Explain naive bayes classification algorithms with example.
e) Explain Processing the data.

Q.5 Solve: (Any Two) **12**

a) Explain structuring the data: extracting, transforming and loading the data.
b) Explain algorithm for generating decision trees.
c) Explain KNN Algorithm with example.

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Predictive Analytics (BTN03715)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice questions. **14**

1) Which tool is widely used for full-text search in big data environments?
a) SQL b) Hadoop
c) Elastic search d) R

2) What did Twitter-based predictors of the stock market primarily analyze?
a) Historical stock prices b) News headlines
c) Social media sentiment d) Financial reports

3) What is term selection in the context of creating matrices of terms in documents?
a) Choosing the most relevant terms for analysis
b) Removing duplicate terms from documents
c) Sorting terms alphabetically
d) Counting occurrences of terms in documents

4) Which stakeholders should be involved in the initial stages of a predictive analytics project?
a) Only data scientists
b) Only IT department
c) Cross-functional team including business leaders
d) External vendors

5) What is the primary purpose of predictive analytics in a business context?
a) Data storage b) Forecasting future trends
c) Data retrieval d) Data cleaning

6) Which metric is crucial for evaluating the effectiveness of an online marketing campaign?
a) Page views b) Click-through rate (CTR)
c) Bounce rate d) Time on site

7) What is another name for categorical data?
a) Continuous data b) Discrete data
c) Nominal data d) Interval data

8) What is a common challenge when searching through large datasets?
a) Data redundancy b) Data accuracy
c) Data indexing d) Data consistency

9) An optimization model falls under which category of modeling?
a) Descriptive b) Predictive
c) Prescriptive d) Diagnostic

10) In clustering, what does the term "centroid" refer to?
a) A point that minimizes distances to all cluster points
b) The center of a cluster
c) The most frequent item in a cluster
d) A measure of cluster density

11) What is the first step in a predictive analytics project?
a) Model selection b) Data preprocessing
c) Problem definition d) Model evaluation

12) In online retail, what is the purpose of an A/B test?
a) To compare two different products
b) To measure the effect of different marketing strategies
c) To assess customer satisfaction
d) To analyze website traffic

13) Which clustering algorithm requires the number of clusters to be specified beforehand?
a) DBSCAN
b) K-means
c) Agglomerative hierarchical clustering
d) Mean-shift clustering

14) Which metric is commonly used to evaluate the accuracy of a predictive model?
a) Mean Absolute Error (MAE) b) Page views
c) Click-through rate (CTR) d) Bounce rate

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Predictive Analytics (BTN03715)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Solve: (Any Four) **16**

a) Write a short note on: Adding Business values in Predictive Analytics.
b) Explain Target marketing with example.
c) Explain generating predictive analytics.
d) Differentiating Business Intelligence from Big-Data Analytics.
e) What is Predictive Analytics? Explain advantages and strategies of Predictive Analytics.

Q.3 Solve: (Any Two) **12**

a) How to start predictive analytics project? Explain with example.
b) Explain recommender system.
c) Explain Big Data.

Section – II

Q.4 Solve: (Any Four) **16**

a) Explain Modeling data: Models and simulations.
b) Explaining data clustering.
c) Explain introducing data classification to Business.
d) Explain naive bayes classification algorithms with example.
e) Explain Processing the data.

Q.5 Solve: (Any Two) **12**

a) Explain structuring the data: extracting, transforming and loading the data.
b) Explain algorithm for generating decision trees.
c) Explain KNN Algorithm with example.

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Predictive Analytics (BTN03715)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice questions. **14**

1) In clustering, what does the term "centroid" refer to?
a) A point that minimizes distances to all cluster points
b) The center of a cluster
c) The most frequent item in a cluster
d) A measure of cluster density

2) What is the first step in a predictive analytics project?
a) Model selection b) Data preprocessing
c) Problem definition d) Model evaluation

3) In online retail, what is the purpose of an A/B test?
a) To compare two different products
b) To measure the effect of different marketing strategies
c) To assess customer satisfaction
d) To analyze website traffic

4) Which clustering algorithm requires the number of clusters to be specified beforehand?
a) DBSCAN
b) K-means
c) Agglomerative hierarchical clustering
d) Mean-shift clustering

5) Which metric is commonly used to evaluate the accuracy of a predictive model?
a) Mean Absolute Error (MAE) b) Page views
c) Click-through rate (CTR) d) Bounce rate

6) Which tool is widely used for full-text search in big data environments?
a) SQL b) Hadoop
c) Elastic search d) R

7) What did Twitter-based predictors of the stock market primarily analyze?
a) Historical stock prices b) News headlines
c) Social media sentiment d) Financial reports

8) What is term selection in the context of creating matrices of terms in documents?
a) Choosing the most relevant terms for analysis
b) Removing duplicate terms from documents
c) Sorting terms alphabetically
d) Counting occurrences of terms in documents

9) Which stakeholders should be involved in the initial stages of a predictive analytics project?
a) Only data scientists
b) Only IT department
c) Cross-functional team including business leaders
d) External vendors

10) What is the primary purpose of predictive analytics in a business context?
a) Data storage b) Forecasting future trends
c) Data retrieval d) Data cleaning

11) Which metric is crucial for evaluating the effectiveness of an online marketing campaign?
a) Page views b) Click-through rate (CTR)
c) Bounce rate d) Time on site

12) What is another name for categorical data?
a) Continuous data b) Discrete data
c) Nominal data d) Interval data

13) What is a common challenge when searching through large datasets?
a) Data redundancy b) Data accuracy
c) Data indexing d) Data consistency

14) An optimization model falls under which category of modeling?
a) Descriptive b) Predictive
c) Prescriptive d) Diagnostic

SLR-BD-482

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Predictive Analytics (BTN03715)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Solve: (Any Four) **16**

a) Write a short note on: Adding Business values in Predictive Analytics.
b) Explain Target marketing with example.
c) Explain generating predictive analytics.
d) Differentiating Business Intelligence from Big-Data Analytics.
e) What is Predictive Analytics? Explain advantages and strategies of Predictive Analytics.

Q.3 Solve: (Any Two) **12**

a) How to start predictive analytics project? Explain with example.
b) Explain recommender system.
c) Explain Big Data.

Section – II

Q.4 Solve: (Any Four) **16**

a) Explain Modeling data: Models and simulations.
b) Explaining data clustering.
c) Explain introducing data classification to Business.
d) Explain naive bayes classification algorithms with example.
e) Explain Processing the data.

Q.5 Solve: (Any Two) **12**

a) Explain structuring the data: extracting, transforming and loading the data.
b) Explain algorithm for generating decision trees.
c) Explain KNN Algorithm with example.

SLR-BD-483

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Information Auditing and monitoring (BTN03717)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) What is the primary purpose of maintaining accountability in information security?
a) To ensure that individuals are held responsible for their actions
b) To improve system performance
c) To encrypt sensitive data
d) To monitor network traffic

2) How often should reporting timelines for audit activities be established?
a) Every month
b) According to the regulatory requirements and organizational needs
c) Once every year
d) Only when issues arise

3) What does trend analysis in cybersecurity primarily focus on?
a) Understanding user behavior patterns and predicting future security needs
b) Identifying hardware failures in network devices
c) Monitoring financial transactions across the network
d) Measuring the effectiveness of advertising campaigns

4) Trend analysis is often used in network security to: _____
a) Create more complex passwords for users
b) Set up firewalls and VPN configurations
c) Track physical assets in the organization
d) Predict future network performance and identify long-term vulnerabilities

5) Which of the following is NOT a function of monitoring tools in an organization's network?
   a) Detecting malware and security breaches
   b) Analyzing system logs for suspicious activities
   c) Managing employee passwords
   d) Ensuring compliance with security policies

6) In the context of infrastructure and networks, which component is most responsible for ensuring secure communication between different systems?
   a) Antivirus software
   b) Firewalls and encryption protocols
   c) Load balancers
   d) Network cables

7) Which of the following is typically included in the Rules of Engagement for a penetration test?
   a) A detailed list of all vulnerabilities found during testing
   b) Personal details of the penetration testing team
   c) The cost of the testing service
   d) The specific systems, networks, or applications to be tested

8) Which phase of penetration testing involves actively identifying security weaknesses and potential entry points?
   a) Post-testing analysis
   b) Information gathering
   c) Vulnerability analysis
   d) Reporting and documentation

9) Which of the following describes a VoIP (Voice over IP) security concern during penetration testing?
   a) Lack of encryption for voice communications
   b) Overloading the network with malicious traffic
   c) Insufficient physical protection of VoIP phones
   d) Monitoring internet bandwidth usage

10) What is the role of log management in a penetration test?
   a) To ensure the system operates efficiently by cleaning up unnecessary logs
   b) To monitor user activity logs for signs of unauthorized access or suspicious behavior
   c) To increase system uptime during the test
   d) To improve the speed of network communications

11) Which of the following is the most common method used to secure email communications?
a) Password-protecting email attachments
b) Using two-factor authentication (2FA) for email accounts
c) Encrypting email content using SSL/TLS protocols
d) Using complex subject lines for emails

12) Which of the following actions can lead to data leakage?
a) Encrypting sensitive data before transmission
b) Granting access to sensitive data based on need-to-know
c) Sending sensitive information through unencrypted email
d) Implementing multi-factor authentication for all employees

13) What is a critical item on a pre-penetration testing checklist?
a) Securing client approval and agreements
b) Installing new software
c) Informing all employees of the test
d) Deleting old logs

14) Which of the following standards is commonly used to guide organizations in managing information security?
a) ISO/IEC 27001
b) GDPR
c) HIPAA
d) PCI-DSS

SLR-BD-483

Set P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Information Auditing and monitoring (BTN03717)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever necessary and mention it clearly.

Section – I

Q.2 Attempt Any Three. **12**

a) What is Accountability? Explain in detail.
b) Give a detailed explanation of Trend analysis.
c) What are Servers and Storage devices? Explain with examples.
d) Explain the variances in performance metrics.

Q.3 Attempt Any Two. **16**

a) What is Record Retention? What are the key aspects of Record Retention?
b) Write a note on:
i) Reporting timeline
ii) Traffic analysis
iii) Trend analysis
iv) Record Retention
c) What are Compliance? Explain with its key aspects and its purpose.

Section – II

Q.4 Attempt Any Three. **12**

a) What are the Rules of Engagement (RoE) in a penetration test, and why are they necessary?
b) What should be included in a pre-penetration testing checklist?
c) What is Denial of Service (DoS) testing, and why is it important in penetration testing?
d) What are security patches, and why is it important for organizations to apply them regularly?

Q.5 Attempt Any Two. **16**

a) Describe the steps involved in vulnerability analysis during a penetration test. How do these steps help in identifying and mitigating risks?
b) Describe common types of social engineering attacks used in penetration testing and explain their impact on organizational security.
c) Describe the key components of a penetration testing report. How should it be structured to ensure that stakeholders can understand and act on the findings?

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Information Auditing and monitoring (BTN03717)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Which phase of penetration testing involves actively identifying security weaknesses and potential entry points?
a) Post-testing analysis
b) Information gathering
c) Vulnerability analysis
d) Reporting and documentation

2) Which of the following describes a VoIP (Voice over IP) security concern during penetration testing?
a) Lack of encryption for voice communications
b) Overloading the network with malicious traffic
c) Insufficient physical protection of VoIP phones
d) Monitoring internet bandwidth usage

3) What is the role of log management in a penetration test?
a) To ensure the system operates efficiently by cleaning up unnecessary logs
b) To monitor user activity logs for signs of unauthorized access or suspicious behavior
c) To increase system uptime during the test
d) To improve the speed of network communications

4) Which of the following is the most common method used to secure email communications?
a) Password-protecting email attachments
b) Using two-factor authentication (2FA) for email accounts
c) Encrypting email content using SSL/TLS protocols
d) Using complex subject lines for emails

5) Which of the following actions can lead to data leakage?
a) Encrypting sensitive data before transmission
b) Granting access to sensitive data based on need-to-know
c) Sending sensitive information through unencrypted email
d) Implementing multi-factor authentication for all employees

6) What is a critical item on a pre-penetration testing checklist?
a) Securing client approval and agreements
b) Installing new software
c) Informing all employees of the test
d) Deleting old logs

7) Which of the following standards is commonly used to guide organizations in managing information security?
a) ISO/IEC 27001
b) GDPR
c) HIPAA
d) PCI-DSS

8) What is the primary purpose of maintaining accountability in information security?
a) To ensure that individuals are held responsible for their actions
b) To improve system performance
c) To encrypt sensitive data
d) To monitor network traffic

9) How often should reporting timelines for audit activities be established?
a) Every month
b) According to the regulatory requirements and organizational needs
c) Once every year
d) Only when issues arise

10) What does trend analysis in cybersecurity primarily focus on?
a) Understanding user behavior patterns and predicting future security needs
b) Identifying hardware failures in network devices
c) Monitoring financial transactions across the network
d) Measuring the effectiveness of advertising campaigns

11) Trend analysis is often used in network security to: _____
a) Create more complex passwords for users
b) Set up firewalls and VPN configurations
c) Track physical assets in the organization
d) Predict future network performance and identify long-term vulnerabilities

12) Which of the following is NOT a function of monitoring tools in an organization's network?
a) Detecting malware and security breaches
b) Analyzing system logs for suspicious activities
c) Managing employee passwords
d) Ensuring compliance with security policies

13) In the context of infrastructure and networks, which component is most responsible for ensuring secure communication between different systems?
a) Antivirus software
b) Firewalls and encryption protocols
c) Load balancers
d) Network cables

14) Which of the following is typically included in the Rules of Engagement for a penetration test?
a) A detailed list of all vulnerabilities found during testing
b) Personal details of the penetration testing team
c) The cost of the testing service
d) The specific systems, networks, or applications to be tested

SLR-BD-483

Set Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Information Auditing and monitoring (BTN03717)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever necessary and mention it clearly.

Section – I

Q.2 Attempt Any Three. **12**

a) What is Accountability? Explain in detail.
b) Give a detailed explanation of Trend analysis.
c) What are Servers and Storage devices? Explain with examples.
d) Explain the variances in performance metrics.

Q.3 Attempt Any Two. **16**

a) What is Record Retention? What are the key aspects of Record Retention?
b) Write a note on:
i) Reporting timeline
ii) Traffic analysis
iii) Trend analysis
iv) Record Retention
c) What are Compliance? Explain with its key aspects and its purpose.

Section – II

Q.4 Attempt Any Three. **12**

a) What are the Rules of Engagement (RoE) in a penetration test, and why are they necessary?
b) What should be included in a pre-penetration testing checklist?
c) What is Denial of Service (DoS) testing, and why is it important in penetration testing?
d) What are security patches, and why is it important for organizations to apply them regularly?

Q.5 Attempt Any Two. **16**

a) Describe the steps involved in vulnerability analysis during a penetration test. How do these steps help in identifying and mitigating risks?
b) Describe common types of social engineering attacks used in penetration testing and explain their impact on organizational security.
c) Describe the key components of a penetration testing report. How should it be structured to ensure that stakeholders can understand and act on the findings?

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Information Auditing and monitoring (BTN03717)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Which of the following is the most common method used to secure email communications?
a) Password-protecting email attachments
b) Using two-factor authentication (2FA) for email accounts
c) Encrypting email content using SSL/TLS protocols
d) Using complex subject lines for emails

2) Which of the following actions can lead to data leakage?
a) Encrypting sensitive data before transmission
b) Granting access to sensitive data based on need-to-know
c) Sending sensitive information through unencrypted email
d) Implementing multi-factor authentication for all employees

3) What is a critical item on a pre-penetration testing checklist?
a) Securing client approval and agreements
b) Installing new software
c) Informing all employees of the test
d) Deleting old logs

4) Which of the following standards is commonly used to guide organizations in managing information security?
a) ISO/IEC 27001 b) GDPR
c) HIPAA d) PCI-DSS

5) What is the primary purpose of maintaining accountability in information security?
   a) To ensure that individuals are held responsible for their actions
   b) To improve system performance
   c) To encrypt sensitive data
   d) To monitor network traffic

6) How often should reporting timelines for audit activities be established?
   a) Every month
   b) According to the regulatory requirements and organizational needs
   c) Once every year
   d) Only when issues arise

7) What does trend analysis in cybersecurity primarily focus on?
   a) Understanding user behavior patterns and predicting future security needs
   b) Identifying hardware failures in network devices
   c) Monitoring financial transactions across the network
   d) Measuring the effectiveness of advertising campaigns

8) Trend analysis is often used in network security to: _____
   a) Create more complex passwords for users
   b) Set up firewalls and VPN configurations
   c) Track physical assets in the organization
   d) Predict future network performance and identify long-term vulnerabilities

9) Which of the following is NOT a function of monitoring tools in an organization's network?
   a) Detecting malware and security breaches
   b) Analyzing system logs for suspicious activities
   c) Managing employee passwords
   d) Ensuring compliance with security policies

10) In the context of infrastructure and networks, which component is most responsible for ensuring secure communication between different systems?
   a) Antivirus software
   b) Firewalls and encryption protocols
   c) Load balancers
   d) Network cables

11) Which of the following is typically included in the Rules of Engagement for a penetration test?
   a) A detailed list of all vulnerabilities found during testing
   b) Personal details of the penetration testing team
   c) The cost of the testing service
   d) The specific systems, networks, or applications to be tested

12) Which phase of penetration testing involves actively identifying security weaknesses and potential entry points?
a) Post-testing analysis
b) Information gathering
c) Vulnerability analysis
d) Reporting and documentation

13) Which of the following describes a VoIP (Voice over IP) security concern during penetration testing?
a) Lack of encryption for voice communications
b) Overloading the network with malicious traffic
c) Insufficient physical protection of VoIP phones
d) Monitoring internet bandwidth usage

14) What is the role of log management in a penetration test?
a) To ensure the system operates efficiently by cleaning up unnecessary logs
b) To monitor user activity logs for signs of unauthorized access or suspicious behavior
c) To increase system uptime during the test
d) To improve the speed of network communications

SLR-BD-483

Set R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Information Auditing and monitoring (BTN03717)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever necessary and mention it clearly.

Section – I

Q.2 Attempt Any Three. **12**

a) What is Accountability? Explain in detail.
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c) What are Servers and Storage devices? Explain with examples.
d) Explain the variances in performance metrics.

Q.3 Attempt Any Two. **16**

a) What is Record Retention? What are the key aspects of Record Retention?
b) Write a note on:
i) Reporting timeline
ii) Traffic analysis
iii) Trend analysis
iv) Record Retention
c) What are Compliance? Explain with its key aspects and its purpose.

Section – II

Q.4 Attempt Any Three. **12**

a) What are the Rules of Engagement (RoE) in a penetration test, and why are they necessary?
b) What should be included in a pre-penetration testing checklist?
c) What is Denial of Service (DoS) testing, and why is it important in penetration testing?
d) What are security patches, and why is it important for organizations to apply them regularly?

Q.5 Attempt Any Two. **16**

a) Describe the steps involved in vulnerability analysis during a penetration test. How do these steps help in identifying and mitigating risks?
b) Describe common types of social engineering attacks used in penetration testing and explain their impact on organizational security.
c) Describe the key components of a penetration testing report. How should it be structured to ensure that stakeholders can understand and act on the findings?

Seat No.	

Set **S**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Information Auditing and monitoring (BTN03717)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) In the context of infrastructure and networks, which component is most responsible for ensuring secure communication between different systems?
a) Antivirus software
b) Firewalls and encryption protocols
c) Load balancers
d) Network cables

2) Which of the following is typically included in the Rules of Engagement for a penetration test?
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c) The cost of the testing service
d) The specific systems, networks, or applications to be tested

3) Which phase of penetration testing involves actively identifying security weaknesses and potential entry points?
a) Post-testing analysis
b) Information gathering
c) Vulnerability analysis
d) Reporting and documentation

4) Which of the following describes a VoIP (Voice over IP) security concern during penetration testing?
a) Lack of encryption for voice communications
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c) Insufficient physical protection of VoIP phones
d) Monitoring internet bandwidth usage

5) What is the role of log management in a penetration test?
   a) To ensure the system operates efficiently by cleaning up unnecessary logs
   b) To monitor user activity logs for signs of unauthorized access or suspicious behavior
   c) To increase system uptime during the test
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6) Which of the following is the most common method used to secure email communications?
   a) Password-protecting email attachments
   b) Using two-factor authentication (2FA) for email accounts
   c) Encrypting email content using SSL/TLS protocols
   d) Using complex subject lines for emails

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c) Monitoring financial transactions across the network
d) Measuring the effectiveness of advertising campaigns

13) Trend analysis is often used in network security to: _____
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b) Set up firewalls and VPN configurations
c) Track physical assets in the organization
d) Predict future network performance and identify long-term vulnerabilities

14) Which of the following is NOT a function of monitoring tools in an organization's network?
a) Detecting malware and security breaches
b) Analyzing system logs for suspicious activities
c) Managing employee passwords
d) Ensuring compliance with security policies

SLR-BD-483

Set S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Information Auditing and monitoring (BTN03717)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever necessary and mention it clearly.

Section – I

Q.2 Attempt Any Three. **12**

a) What is Accountability? Explain in detail.
b) Give a detailed explanation of Trend analysis.
c) What are Servers and Storage devices? Explain with examples.
d) Explain the variances in performance metrics.

Q.3 Attempt Any Two. **16**

a) What is Record Retention? What are the key aspects of Record Retention?
b) Write a note on:
i) Reporting timeline
ii) Traffic analysis
iii) Trend analysis
iv) Record Retention
c) What are Compliance? Explain with its key aspects and its purpose.

Section – II

Q.4 Attempt Any Three. **12**

a) What are the Rules of Engagement (RoE) in a penetration test, and why are they necessary?
b) What should be included in a pre-penetration testing checklist?
c) What is Denial of Service (DoS) testing, and why is it important in penetration testing?
d) What are security patches, and why is it important for organizations to apply them regularly?

Q.5 Attempt Any Two. **16**

a) Describe the steps involved in vulnerability analysis during a penetration test. How do these steps help in identifying and mitigating risks?
b) Describe common types of social engineering attacks used in penetration testing and explain their impact on organizational security.
c) Describe the key components of a penetration testing report. How should it be structured to ensure that stakeholders can understand and act on the findings?

SLR-BD-484

Seat No.		Set	P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
UI/UX Technology (BTN03719)

Day & Date: Monday 09-June-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct Answer **10**

1) Which of the following tags represents an independent piece of content of a document in HTML5?
a) section b) article
c) aside d) header

2) In JavaScript, what is a block of statement?
a) Conditional block
b) block that combines a number of statements into a single compound statement
c) both conditional block and a single statement
d) block that contains a single statement

3) Inline styles are written within the _____ attribute.
a) style b) css
c) stylesheet d) Both a and b

4) What is the declarative way to render a dynamic list of components based on values in an array?
a) Using the reduce array method b) Using the <Each />component
c) Using the Array.map()method d) With a for/while loop

5) Which of the following is the use of strlen() function in PHP?
a) The strlen() function returns the type of string
b) The strlen() function returns the length of string
c) The strlen() function returns the value of string
d) The strlen() function returns both value and type of string

6) In the JSON syntax, data is separated by _____
a) Semicolons b) Colons
c) Commas d) Hyper

7) Which of the following commands is used to install create-react-app?
a) npm install -g create-react-app
b) npm install create-react-app
c) npm install -f create-react-app
d) install -g create-react-app

8) What is a state in React?
a) A permanent storage
b) Internal storage of the component
c) External storage of the component
d) None of the above

9) Which of the following commands is used to start a REPL session?
a) $ node
b) $ node start
c) $ node repl
d) $ node console

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b) * (Asterisk)
c) . (dot)
d) append()

SLR-BD-484

Seat No.	

Set P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
UI/UX Technology (BTN03719)

Day & Date: Monday 09-June-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. 2 to Q.8.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Differences between GET and POST methods
b) What are the different types of PHP variables?

Q.3 What is React? What are the advantages of using React. **10**

Q.4 Explain RESTful Architectural Principles. **10**

Q.5 Explain Electron JS and How do you handle cross-platform compatibility issues when developing Electron applications. **10**

Q.6 List some features of JavaScript. How Do You Create an Array in JavaScript? **10**

Seat No.		Set	Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
UI/UX Technology (BTN03719)

Day & Date: Monday 09-June-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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SLR-BD-484

Seat No.	

Set Q

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
UI/UX Technology (BTN03719)

Day & Date: Monday 09-June-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. 2 to Q.8.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Differences between GET and POST methods
b) What are the different types of PHP variables?

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Q.4 Explain RESTful Architectural Principles. **10**

Q.5 Explain Electron JS and How do you handle cross-platform compatibility issues when developing Electron applications. **10**

Q.6 List some features of JavaScript. How Do You Create an Array in JavaScript? **10**

Seat No.		Set	R

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
UI/UX Technology (BTN03719)

Day & Date: Monday 09-June-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct Answer **10**

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a) $ node b) $ node start
c) $ node repl d) $ node console

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a) + (plus) b) * (Asterisk)
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SLR-BD-484

Seat No.	

Set R

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
UI/UX Technology (BTN03719)

Day & Date: Monday 09-June-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. 2 to Q.8.
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Q.2 Write short notes. **10**
a) Differences between GET and POST methods
b) What are the different types of PHP variables?

Q.3 What is React? What are the advantages of using React. **10**

Q.4 Explain RESTful Architectural Principles. **10**

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Q.6 List some features of JavaScript. How Do You Create an Array in JavaScript? **10**

Seat No.		Set	S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
UI/UX Technology (BTN03719)

Day & Date: Monday 09-June-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct Answer **10**

1) Inline styles are written within the _____ attribute.
a) style b) css
c) stylesheet d) Both a and b

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SLR-BD-484

Seat No.	

Set S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
UI/UX Technology (BTN03719)

Day & Date: Monday 09-June-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. 2 to Q.8.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Differences between GET and POST methods
b) What are the different types of PHP variables?

Q.3 What is React? What are the advantages of using React. **10**

Q.4 Explain RESTful Architectural Principles. **10**

Q.5 Explain Electron JS and How do you handle cross-platform compatibility issues when developing Electron applications. **10**

Q.6 List some features of JavaScript. How Do You Create an Array in JavaScript? **10**

SLR-BD-485

Seat No.	

Set P

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
COMPUTER SCIENCE AND ENGINEERING
Software Licences and Practices (BTN03720)

Day & Date: Monday 09-June-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary.

Q.1 Attempt the following question. (Any Five) **30**

a) Write a note on GNU General Public License.

b) Discuss Creative Commons Licenses.

c) State and explain basic principles of copyright law.

d) What is an open-source software license? Discuss its significance in software development.

e) Discuss the benefits and limitations of the Sun Community Source License.

f) What are the negative effects of Open Source and Free Software Licensing?

Q.2 Attempt the following question. (Any Two) **20**

a) Compare and contrast proprietary licenses with open-source licenses.

b) State the benefits of Open Source Software Licensing. Explain how Community Enforcement of Open Source and Free Software Licenses works with an example.

c) Write a detail note on Multiple and Cross Licensing.

Seat No.	

Set P

T.Y. B. Tech. (Electronics & Telecommunication Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025 Electromagnetic Field Theory (BTN06501)

Day & Date: Saturday, 17-May-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) Let $\bar{A} = 7\widehat{a_x} + 5\widehat{a_y} + 8\widehat{a_z}$ and $\bar{B} = 4\widehat{a_x} + 9\widehat{a_y} + 6\widehat{a_z}$ are two vectors then dot product $\bar{A} \cdot \bar{B}$ = _____.
a) 98 b) 121
c) 148 d) 48

2) Let $\bar{A} = 10\widehat{a_x} + 5\widehat{a_y} + 6\widehat{a_z}$ be a vector then the value of cylindrical component A_ρ at point $P(3, 90°, 4)$ is _____.
a) 10 b) 5
c) -5 d) 12.36

3) A particle of charge 3×10^{-9} C is acted upon a downward force 4.5×10^{-9} N in an electric field. The strength of electric field is _____.
a) 6N b) 1.5N/C
c) 1.5N d) $6\text{N} - \text{C}$

4) The electric field density of infinity line charge varies _____.
a) $\frac{1}{r}$ b) $\frac{1}{r^2}$
c) $\frac{1}{r^3}$ d) None

5) Field around a conductor carrying steady current is _____.
a) Static Magnetic field b) Static Electric field
c) Time varying field d) Time Harmonic field

6) Static magnetic field is _____.
a) Solenoidal b) flux lines are close loops
c) $\nabla \cdot \bar{B} = 0$ d) All the above

7) Given the magnetic field is 2.4 units. Then the flux density in air (in 10^{-6} order) is _____.

a) 2 b) 3
c) 4 d) 5

8) In the conversion of Line Integral to Surface Integral _____ theorem is preferred.

a) Divergence Theorem b) Stocks Theorem
c) Gauss Theorem d) It can not be converted

9) The charge builds up in the capacitor is due to _____ quantity.

a) Conduction current b) Displacement current
c) Convection current d) Direct current

10) At dc field, the displacement current density will be _____.

a) Zero
b) One
c) same as conduction current density
d) Infinite

11) For a dielectric, the condition to be satisfied is _____.

a) $\sigma/\omega\varepsilon > 1$ b) $\sigma/\omega\varepsilon < 1$
c) $\sigma = \omega\varepsilon$ d) $\omega\varepsilon = 1$

12) In perfect conductors, the phase shift between the electric field and magnetic field will be _____.

a) 0 b) 30
c) 45 d) 90

13) The condition for a distortion less is _____.

a) $\mathrm{R/L = G/C}$ b) $\mathrm{R/C = G/L}$
c) $\mathrm{R = G}$ d) $\mathrm{C = L}$

14) The value of transmission coefficient when a transmission line is matched to a load is _____.

a) 1 b) 0
c) infinite d) 0.5

Seat No.	

Set P

T.Y. B. Tech. (Electronics & Telecommunication Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025 Electromagnetic Field Theory (BTN06501)

Day & Date: Saturday, 17-May-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume the data whenever necessary.

Section – I

Q.2 Answer any three. **12**

a) An infinitely long uniform line charge of 20nc/m is located at y=2m and z=4m. Find Electrical Field Intensity at the point (3,3,1).

b) Potential is given by $\mathrm{V} = 2(\mathrm{x}+1)^2(\mathrm{y}+2)^2(\mathrm{z}+3)^2$ in free space. Calculate 1) Potential 2) Electrical field intensity at a point (1,2,3).

c) Find the magnetic field intensity at a point P(2.5,2,3) caused by a current filament of 12A in $\widehat{a_z}$ directions on the z axis extending from 0 to 6.

d) Explain in detail about Electrostatic boundary conditions for Dielectric-to-Dielectric material.

Q.3 Answer any two: **16**

a) Transform given vector $\bar{A} = 10\widehat{a_x} - 8\,\widehat{a_y} + 6\widehat{a_z}$ to Spherical coordinate systems at point $P(10,-8,6)$

b) If $\bar{D} = xy^2z^2\widehat{a_x} + x^2\,yz^2\widehat{a_y} + x^2y^2z\widehat{a_2}\ \mathrm{c/m^2}$

1) Determine the expression for volume charge density (ρ_v)
2) Calculate the total charge within the cube defined by $0 \le X \le 2, 0 \le Y \le 2, 0 \le Z \le 2$

c) From Biot Savarts Law, derive the expression for magnetic field intensity due to infinitely long straight filament carrying current.

Section – II

Q.4 Answer any three. **12**

a) Show that for time varying field $\nabla \times \bar{E} = -\frac{\partial \bar{B}}{\partial t}$

b) Define Characteristic Impedance. Derive the expression for characteristic impedance in terms of primary constants of transmission line.

c) Wet marshy soil is characterized by $\sigma = 10^{-2}\ \mathrm{s/m}, \epsilon_r = 1.5$ and $\mu_r = 1$. Hence calculate skin depth at frequency 60Hz. Also calculate propagation constant of good conductor.

d) Write a note on Smith Chart.

Q.5 Answer any two. **16**

a) Derive the expression for Reflection Coefficient in terms of Load impedance (Z_L) and Characteristic impedance (Z_0). Also discuss about Reflection coefficient for Matched Load, Short circuit and open circuit.

b) Verify the field given as below.
$\bar{E} = 2 \sin x \sin t\widehat{a_y}$ and $\bar{H} = \frac{2}{\mu_0} \cos x \cos t\widehat{a_z}$satisfies maxwell's equations.

c) For propagation of wave in good conductors, find the expression for
1) Attenuation constant
2) Phase Constant
3) Phase velocity

Seat No.	

Set Q

T.Y. B. Tech. (Electronics & Telecommunication Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025 Electromagnetic Field Theory (BTN06501)

Day & Date: Saturday, 17-May-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In the conversion of Line Integral to Surface Integral _____ theorem is preferred.
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2) The charge builds up in the capacitor is due to _____ quantity.
a) Conduction current b) Displacement current
c) Convection current d) Direct current

3) At dc field, the displacement current density will be _____.
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7) The value of transmission coefficient when a transmission line is matched to a load is _____.

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8) Let $\bar{A} = 7\widehat{a_x} + 5\widehat{a_y} + 8\widehat{a_z}$ and $\bar{B} = 4\widehat{a_x} + 9\widehat{a_y} + 6\widehat{a_z}$ are two vectors then dot product $\bar{A} \cdot \bar{B}$ = _____.

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14) Given the magnetic field is 2.4 units. Then the flux density in air (in 10^{-6} order) is _____.

a) 2 b) 3
c) 4 d) 5

Seat No.	

Set Q

T.Y. B. Tech. (Electronics & Telecommunication Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025 Electromagnetic Field Theory (BTN06501)

Day & Date: Saturday, 17-May-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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b) If $\bar{D} = xy^2z^2\widehat{a_x} + x^2\,yz^2\widehat{a_y} + x^2y^2z\widehat{a_2}\ \mathrm{c/m^2}$

1) Determine the expression for volume charge density (ρ_v)
2) Calculate the total charge within the cube defined by $0 \le X \le 2, 0 \le Y \le 2, 0 \le Z \le 2$

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Section – II

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d) Write a note on Smith Chart.

Q.5 Answer any two. **16**

a) Derive the expression for Reflection Coefficient in terms of Load impedance (Z_L) and Characteristic impedance (Z_0). Also discuss about Reflection coefficient for Matched Load, Short circuit and open circuit.

b) Verify the field given as below.
$\bar{E} = 2 \sin x \sin t\widehat{a_y}$ and $\bar{H} = \frac{2}{\mu_0} \cos x \cos t\widehat{a_z}$satisfies maxwell's equations.

c) For propagation of wave in good conductors, find the expression for
1) Attenuation constant
2) Phase Constant
3) Phase velocity

Seat No.	

Set R

T.Y. B. Tech. (Electronics & Telecommunication Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025 Electromagnetic Field Theory (BTN06501)

Day & Date: Saturday, 17-May-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) For a dielectric, the condition to be satisfied is _____.
a) $\sigma/\omega\varepsilon > 1$ b) $\sigma/\omega\varepsilon < 1$
c) $\sigma = \omega\varepsilon$ d) $\omega\varepsilon = 1$

2) In perfect conductors, the phase shift between the electric field and magnetic field will be _____.
a) 0 b) 30
c) 45 d) 90

3) The condition for a distortion less is _____.
a) $\mathrm{R/L = G/C}$ b) $\mathrm{R/C = G/L}$
c) $\mathrm{R = G}$ d) $\mathrm{C = L}$

4) The value of transmission coefficient when a transmission line is matched to a load is _____.
a) 1 b) 0
c) infinite d) 0.5

5) Let $\bar{A} = 7\widehat{a_x} + 5\widehat{a_y} + 8\widehat{a_z}$ and $\bar{B} = 4\widehat{a_x} + 9\widehat{a_y} + 6\widehat{a_z}$ are two vectors then dot product $\bar{A} \cdot \bar{B}$ = _____.
a) 98 b) 121
c) 148 d) 48

6) Let $\bar{A} = 10\widehat{a_x} + 5\widehat{a_y} + 6\widehat{a_z}$ be a vector then the value of cylindrical component A_ρ at point $P(3, 90°, 4)$ is _____.
a) 10 b) 5
c) -5 d) 12.36

7) A particle of charge 3×10^{-9} C is acted upon a downward force 4.5×10^{-9} N in an electric field. The strength of electric field is _____.

a) 6N b) 1.5N/C
c) 1.5N d) $6\text{N} - \text{C}$

8) The electric field density of infinity line charge varies _____.

a) $\frac{1}{r}$ b) $\frac{1}{r^2}$
c) $\frac{1}{r^3}$ d) None

9) Field around a conductor carrying steady current is _____.

a) Static Magnetic field b) Static Electric field
c) Time varying field d) Time Harmonic field

10) Static magnetic field is _____.

a) Solenoidal b) flux lines are close loops
c) $\nabla \cdot \bar{B} = 0$ d) All the above

11) Given the magnetic field is 2.4 units. Then the flux density in air (in 10^{-6} order) is _____.

a) 2 b) 3
c) 4 d) 5

12) In the conversion of Line Integral to Surface Integral _____ theorem is preferred.

a) Divergence Theorem b) Stocks Theorem
c) Gauss Theorem d) It can not be converted

13) The charge builds up in the capacitor is due to _____ quantity.

a) Conduction current b) Displacement current
c) Convection current d) Direct current

14) At dc field, the displacement current density will be _____.

a) Zero
b) One
c) same as conduction current density
d) Infinite

Seat No.	

Set R

T.Y. B. Tech. (Electronics & Telecommunication Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025 Electromagnetic Field Theory (BTN06501)

Day & Date: Saturday, 17-May-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume the data whenever necessary.

Section – I

Q.2 Answer any three. **12**

a) An infinitely long uniform line charge of 20nc/m is located at y=2m and z=4m. Find Electrical Field Intensity at the point (3,3,1).

b) Potential is given by $\mathrm{V} = 2(\mathrm{x}+1)^2(\mathrm{y}+2)^2(\mathrm{z}+3)^2$ in free space. Calculate 1) Potential 2) Electrical field intensity at a point (1,2,3).

c) Find the magnetic field intensity at a point P(2.5,2,3) caused by a current filament of 12A in $\widehat{a_z}$ directions on the z axis extending from 0 to 6.

d) Explain in detail about Electrostatic boundary conditions for Dielectric-to-Dielectric material.

Q.3 Answer any two: **16**

a) Transform given vector $\bar{A} = 10\widehat{a_x} - 8\,\widehat{a_y} + 6\widehat{a_z}$ to Spherical coordinate systems at point $P(10,-8,6)$

b) If $\bar{D} = xy^2z^2\widehat{a_x} + x^2\,yz^2\widehat{a_y} + x^2y^2z\widehat{a_2}\ \mathrm{c/m^2}$

1) Determine the expression for volume charge density (ρ_v)
2) Calculate the total charge within the cube defined by $0 \le X \le 2, 0 \le Y \le 2, 0 \le Z \le 2$

c) From Biot Savarts Law, derive the expression for magnetic field intensity due to infinitely long straight filament carrying current.

Section – II

Q.4 Answer any three. **12**

a) Show that for time varying field $\nabla \times \bar{E} = -\frac{\partial \bar{B}}{\partial t}$

b) Define Characteristic Impedance. Derive the expression for characteristic impedance in terms of primary constants of transmission line.

c) Wet marshy soil is characterized by $\sigma = 10^{-2}\ \mathrm{s/m}, \epsilon_r = 1.5$ and $\mu_r = 1$. Hence calculate skin depth at frequency 60Hz. Also calculate propagation constant of good conductor.

d) Write a note on Smith Chart.

Q.5 Answer any two. **16**

a) Derive the expression for Reflection Coefficient in terms of Load impedance (Z_L) and Characteristic impedance (Z_0). Also discuss about Reflection coefficient for Matched Load, Short circuit and open circuit.

b) Verify the field given as below.
$\bar{E} = 2 \sin x \sin t\widehat{a_y}$ and $\bar{H} = \frac{2}{\mu_0} \cos x \cos t\widehat{a_z}$satisfies maxwell's equations.

c) For propagation of wave in good conductors, find the expression for
1) Attenuation constant
2) Phase Constant
3) Phase velocity

Seat No.	

Set S

T.Y. B. Tech. (Electronics & Telecommunication Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025 Electromagnetic Field Theory (BTN06501)

Day & Date: Saturday, 17-May-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Static magnetic field is _____.
a) Solenoidal
b) flux lines are close loops
c) $\nabla \cdot \bar{B} = 0$
d) All the above

2) Given the magnetic field is 2.4 units. Then the flux density in air (in 10^{-6} order) is _____.
a) 2
b) 3
c) 4
d) 5

3) In the conversion of Line Integral to Surface Integral _____ theorem is preferred.
a) Divergence Theorem
b) Stocks Theorem
c) Gauss Theorem
d) It can not be converted

4) The charge builds up in the capacitor is due to _____ quantity.
a) Conduction current
b) Displacement current
c) Convection current
d) Direct current

5) At dc field, the displacement current density will be _____.
a) Zero
b) One
c) same as conduction current density
d) Infinite

6) For a dielectric, the condition to be satisfied is _____.
a) $\sigma/\omega\varepsilon > 1$
b) $\sigma/\omega\varepsilon < 1$
c) $\sigma = \omega\varepsilon$
d) $\omega\varepsilon = 1$

7) In perfect conductors, the phase shift between the electric field and magnetic field will be _____.

a) 0 b) 30
c) 45 d) 90

8) The condition for a distortion less is _____.

a) $\mathrm{R/L = G/C}$ b) $\mathrm{R/C = G/L}$
c) $\mathrm{R = G}$ d) $\mathrm{C = L}$

9) The value of transmission coefficient when a transmission line is matched to a load is _____.

a) 1 b) 0
c) infinite d) 0.5

10) Let $\bar{A} = 7\widehat{a_x} + 5\widehat{a_y} + 8\widehat{a_z}$ and $\bar{B} = 4\widehat{a_x} + 9\widehat{a_y} + 6\widehat{a_z}$ are two vectors then dot product $\bar{A} \cdot \bar{B}$ = _____.

a) 98 b) 121
c) 148 d) 48

11) Let $\bar{A} = 10\widehat{a_x} + 5\widehat{a_y} + 6\widehat{a_z}$ be a vector then the value of cylindrical component A_ρ at point $P(3, 90°, 4)$ is _____.

a) 10 b) 5
c) -5 d) 12.36

12) A particle of charge 3×10^{-9} C is acted upon a downward force 4.5×10^{-9} N in an electric field. The strength of electric field is _____.

a) $6\mathrm{N}$ b) $1.5\mathrm{N/C}$
c) $1.5\mathrm{N}$ d) $6\mathrm{N - C}$

13) The electric field density of infinity line charge varies _____.

a) $\frac{1}{r}$ b) $\frac{1}{r^2}$
c) $\frac{1}{r^3}$ d) None

14) Field around a conductor carrying steady current is _____.

a) Static Magnetic field b) Static Electric field
c) Time varying field d) Time Harmonic field

Seat No.		Set	S

T.Y. B. Tech. (Electronics & Telecommunication Engineering) (Semester - I) (New) (CBCS) Examination: March/April - 2025
Electromagnetic Field Theory (BTN06501)

Day & Date: Saturday, 17-May-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume the data whenever necessary.

Section – I

Q.2 Answer any three. **12**

a) An infinitely long uniform line charge of 20nc/m is located at y=2m and z=4m. Find Electrical Field Intensity at the point (3,3,1).

b) Potential is given by $\mathrm{V} = 2(\mathrm{x}+1)^2(\mathrm{y}+2)^2(\mathrm{z}+3)^2$ in free space. Calculate 1) Potential 2) Electrical field intensity at a point (1,2,3).

c) Find the magnetic field intensity at a point P(2.5,2,3) caused by a current filament of 12A in $\widehat{a_z}$ directions on the z axis extending from 0 to 6.

d) Explain in detail about Electrostatic boundary conditions for Dielectric-to-Dielectric material.

Q.3 Answer any two: **16**

a) Transform given vector $\bar{A} = 10\widehat{a_x} - 8\,\widehat{a_y} + 6\widehat{a_z}$ to Spherical coordinate systems at point $P(10,-8,6)$

b) If $\bar{D} = xy^2z^2\widehat{a_x} + x^2\,yz^2\widehat{a_y} + x^2y^2z\widehat{a_2}\ \mathrm{c/m^2}$

1) Determine the expression for volume charge density (ρ_v)
2) Calculate the total charge within the cube defined by $0 \le X \le 2, 0 \le Y \le 2, 0 \le Z \le 2$

c) From Biot Savarts Law, derive the expression for magnetic field intensity due to infinitely long straight filament carrying current.

Section – II

Q.4 Answer any three. **12**

a) Show that for time varying field $\nabla \times \bar{E} = -\frac{\partial \bar{B}}{\partial t}$

b) Define Characteristic Impedance. Derive the expression for characteristic impedance in terms of primary constants of transmission line.

c) Wet marshy soil is characterized by $\sigma = 10^{-2}\ \mathrm{s/m}, \epsilon_r = 1.5$ and $\mu_r = 1$. Hence calculate skin depth at frequency 60Hz. Also calculate propagation constant of good conductor.

d) Write a note on Smith Chart.

Q.5 Answer any two. **16**

a) Derive the expression for Reflection Coefficient in terms of Load impedance (Z_L) and Characteristic impedance (Z_0). Also discuss about Reflection coefficient for Matched Load, Short circuit and open circuit.

b) Verify the field given as below.
$\bar{E} = 2 \sin x \sin t\widehat{a_y}$ and $\bar{H} = \frac{2}{\mu_0} \cos x \cos t\widehat{a_z}$satisfies maxwell's equations.

c) For propagation of wave in good conductors, find the expression for
1) Attenuation constant
2) Phase Constant
3) Phase velocity

SLR-BD-487

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microcontrollers and Applications (BTN06502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) If we say microcontroller is 8-bit then here 8-bit denotes size of:
a) Data Bus b) ALU
c) Control Bus d) Address Bus

2) In _____ architecture the instructions are executed by Hardware.
a) CISC b) RISC
c) AMBA d) None of these

3) Out of the following registers, which register is not bit addressable register in 8051?
a) PSW b) TCON
c) SBUF d) IE

4) MOVX instruction will fetch the data from _____ memory.
a) External program b) Internal program
c) Internal Data d) External Data

5) Which register in an 8051 microcontroller contains the SMOD bit?
a) SBUF b) TMOD
c) PCON d) TCON

6) In Timer counter register of 8051, Mode 1 uses
a) 8 - Bit Timer b) 16 - Bit Timer
c) 32 - Bit Timer d) 13 - Bit Timer

7) Which of the following interface is used for waveform generation using the 8051 Microcontrollers?
a) ADC b) DAC
c) ACD d) CAD

8) The memory specifications of PIC16f877a for Flash Program Memory, Data Memory (RAM) and EEPROM Data Memory respectively are _____
a) 256 x 8 bytes, 8K x 14 words, 368 x 8 bytes
b) 128Bytes, 4KBytes, 64K bytes
c) 8K x 14 words, 368 x 8 bytes, 256 x 8 bytes
d) 256 x 8 bytes, 368 x 8 bytes, 8K x 14 words

9) PIC16F877A has fixed length ____ wide op code.
a) 14 bits b) 13bits
c) 16bits d) 9bits

10) The stack memory for PIC16F877is the part of _____
a) Program memory
b) Data memory
c) Either program or data memory
d) Neither program nor data memory

11) The Reset vector is at _____ and the interrupt vector is at _____ for PIC16F877a.
a) 0000h,0008h b) 0004h,0007h
c) 0000h,0007h d) 0000h,0004h

12) The timer2 in PIC 16F877a can't be used as _____
a) Prescalar b) Counter
c) Postscalar d) None of these

13) The Pre scaler is mutually exclusively shared between the Watchdog Timer and _____ in PIC 16F877a.
a) Timer 0 b) Timer 1
c) Timer 2 d) Timer 3

14) Which operating mode of CCP Module can be used for speed control of DC Motor?
a) Capture b) ADC
c) PWM d) Compare

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microcontrollers and Applications (BTN06502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Draw neat diagrams wherever necessary.

Section – I

Q.2 Attempt any Four questions. **16**

a) Compare between Harvard and von-Neumann architectures.
b) Draw and explain the bit format of Program Status Word register of 8051.
c) Explain the following instructions in detail.
a) DIV AB b) MOVX @DPTR, A
d) Describe with suitable examples the Addressing modes of 8051.
e) Describe the Special function registers associated with Serial Data Input/output in 8051.

Q.3 Attempt any Two questions. **12**

a) Analyze bit format of TMOD and TCON register in 8051. and show the significance of loading 20H in TMOD and 25H in TCON registers.
b) Write 8051 assembly or C language program to transfer message “SOLAPUR” serially at baud rate of 9600 Assume crystal frequency 11.059 MHz. Do this continuously?
c) Explain the Program & Data memory organization of 8051 with suitable diagram.

Section – II

Q.4 Attempt any Four questions. **16**

a) Explore Architectural core features & peripheral features of PIC 16F877.
b) Explain the operation of instructions MOVF, BTFSC, DECFSZ, RETLW of PIC 16F877.
c) Draw & Explore importance of OPTION register bit format of PIC16f877.
d) Explain with suitable diagram the Capture mode of operation of CCP1 module.
e) Draw & Explore bit significance of Status register of PIC16f877 & what is effect of loading 34H in status register.

Q.5 Attempt any Two questions. **12**

a) Draw & Describe internal Program memory & Data memory organization of PIC16F877 controller.

b) Write assembly or 'C' Program for Internal ADC of PIC & converted binary value displayed on LED's interfaced to port D of PIC 16F877. Draw the interfacing diagram.

c) Describe the operation of Transmitter section of USART module in PIC 16F877.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microcontrollers and Applications (BTN06502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The memory specifications of PIC16f877a for Flash Program Memory, Data Memory (RAM) and EEPROM Data Memory respectively are _____
a) 256 x 8 bytes, 8K x 14 words, 368 x 8 bytes
b) 128Bytes, 4KBytes, 64K bytes
c) 8K x 14 words, 368 x 8 bytes, 256 x 8 bytes
d) 256 x 8 bytes, 368 x 8 bytes, 8K x 14 words

2) PIC16F877A has fixed length ____ wide op code.
a) 14 bits b) 13bits
c) 16bits d) 9bits

3) The stack memory for PIC16F877is the part of _____
a) Program memory
b) Data memory
c) Either program or data memory
d) Neither program nor data memory

4) The Reset vector is at _____ and the interrupt vector is at _____ for PIC16F877a.
a) 0000h,0008h b) 0004h,0007h
c) 0000h,0007h d) 0000h,0004h

5) The timer2 in PIC 16F877a can't be used as _____
a) Prescalar b) Counter
c) Postscalar d) None of these

6) The Pre scaler is mutually exclusively shared between the Watchdog Timer and _____ in PIC 16F877a.
a) Timer 0 b) Timer 1
c) Timer 2 d) Timer 3

7) Which operating mode of CCP Module can be used for speed control of DC Motor?

a) Capture b) ADC
c) PWM d) Compare

8) If we say microcontroller is 8-bit then here 8-bit denotes size of:

a) Data Bus b) ALU
c) Control Bus d) Address Bus

9) In _____ architecture the instructions are executed by Hardware.

a) CISC b) RISC
c) AMBA d) None of these

10) Out of the following registers, which register is not bit addressable register in 8051?

a) PSW b) TCON
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11) MOVX instruction will fetch the data from _____ memory.

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c) PCON d) TCON

13) In Timer counter register of 8051, Mode 1 uses

a) 8 - Bit Timer b) 16 - Bit Timer
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14) Which of the following interface is used for waveform generation using the 8051 Microcontrollers?

a) ADC b) DAC
c) ACD d) CAD

SLR-BD-487

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microcontrollers and Applications (BTN06502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Draw neat diagrams wherever necessary.

Section – I

Q.2 Attempt any Four questions. **16**

a) Compare between Harvard and von-Neumann architectures.
b) Draw and explain the bit format of Program Status Word register of 8051.
c) Explain the following instructions in detail.
a) DIV AB b) MOVX @DPTR, A
d) Describe with suitable examples the Addressing modes of 8051.
e) Describe the Special function registers associated with Serial Data Input/output in 8051.

Q.3 Attempt any Two questions. **12**

a) Analyze bit format of TMOD and TCON register in 8051. and show the significance of loading 20H in TMOD and 25H in TCON registers.
b) Write 8051 assembly or C language program to transfer message “SOLAPUR” serially at baud rate of 9600 Assume crystal frequency 11.059 MHz. Do this continuously?
c) Explain the Program & Data memory organization of 8051 with suitable diagram.

Section – II

Q.4 Attempt any Four questions. **16**

a) Explore Architectural core features & peripheral features of PIC 16F877.
b) Explain the operation of instructions MOVF, BTFSC, DECFSZ, RETLW of PIC 16F877.
c) Draw & Explore importance of OPTION register bit format of PIC16f877.
d) Explain with suitable diagram the Capture mode of operation of CCP1 module.
e) Draw & Explore bit significance of Status register of PIC16f877 & what is effect of loading 34H in status register.

Q.5 Attempt any Two questions. **12**

a) Draw & Describe internal Program memory & Data memory organization of PIC16F877 controller.

b) Write assembly or 'C' Program for Internal ADC of PIC & converted binary value displayed on LED's interfaced to port D of PIC 16F877. Draw the interfacing diagram.

c) Describe the operation of Transmitter section of USART module in PIC 16F877.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microcontrollers and Applications (BTN06502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

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

1) The Reset vector is at _____ and the interrupt vector is at _____ for PIC16F877a.
a) 0000h,0008h b) 0004h,0007h
c) 0000h,0007h d) 0000h,0004h

2) The timer2 in PIC 16F877a can't be used as _____
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c) Postscalar d) None of these

3) The Pre scaler is mutually exclusively shared between the Watchdog Timer and _____ in PIC 16F877a.
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4) Which operating mode of CCP Module can be used for speed control of DC Motor?
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13) PIC16F877A has fixed length ____ wide op code.
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14) The stack memory for PIC16F877is the part of _____
a) Program memory
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c) Either program or data memory
d) Neither program nor data memory

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microcontrollers and Applications (BTN06502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Draw neat diagrams wherever necessary.

Section – I

Q.2 Attempt any Four questions. **16**

a) Compare between Harvard and von-Neumann architectures.
b) Draw and explain the bit format of Program Status Word register of 8051.
c) Explain the following instructions in detail.
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Q.3 Attempt any Two questions. **12**

a) Analyze bit format of TMOD and TCON register in 8051. and show the significance of loading 20H in TMOD and 25H in TCON registers.
b) Write 8051 assembly or C language program to transfer message “SOLAPUR” serially at baud rate of 9600 Assume crystal frequency 11.059 MHz. Do this continuously?
c) Explain the Program & Data memory organization of 8051 with suitable diagram.

Section – II

Q.4 Attempt any Four questions. **16**

a) Explore Architectural core features & peripheral features of PIC 16F877.
b) Explain the operation of instructions MOVF, BTFSC, DECFSZ, RETLW of PIC 16F877.
c) Draw & Explore importance of OPTION register bit format of PIC16f877.
d) Explain with suitable diagram the Capture mode of operation of CCP1 module.
e) Draw & Explore bit significance of Status register of PIC16f877 & what is effect of loading 34H in status register.

Q.5 Attempt any Two questions. **12**

a) Draw & Describe internal Program memory & Data memory organization of PIC16F877 controller.

b) Write assembly or 'C' Program for Internal ADC of PIC & converted binary value displayed on LED's interfaced to port D of PIC 16F877. Draw the interfacing diagram.

c) Describe the operation of Transmitter section of USART module in PIC 16F877.

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microcontrollers and Applications (BTN06502)

Day & Date: Monday 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) In Timer counter register of 8051, Mode 1 uses
a) 8 - Bit Timer b) 16 - Bit Timer
c) 32 - Bit Timer d) 13 - Bit Timer

2) Which of the following interface is used for waveform generation using the 8051 Microcontrollers?
a) ADC b) DAC
c) ACD d) CAD

3) The memory specifications of PIC16f877a for Flash Program Memory, Data Memory (RAM) and EEPROM Data Memory respectively are _____
a) 256 x 8 bytes, 8K x 14 words, 368 x 8 bytes
b) 128Bytes, 4KBytes, 64K bytes
c) 8K x 14 words, 368 x 8 bytes, 256 x 8 bytes
d) 256 x 8 bytes, 368 x 8 bytes, 8K x 14 words

4) PIC16F877A has fixed length ____ wide op code.
a) 14 bits b) 13bits
c) 16bits d) 9bits

5) The stack memory for PIC16F877is the part of _____
a) Program memory
b) Data memory
c) Either program or data memory
d) Neither program nor data memory

6) The Reset vector is at _____ and the interrupt vector is at _____ for PIC16F877a.
a) 0000h,0008h b) 0004h,0007h
c) 0000h,0007h d) 0000h,0004h

7) The timer2 in PIC 16F877a can't be used as _____
a) Prescalar b) Counter
c) Postscalar d) None of these

8) The Pre scaler is mutually exclusively shared between the Watchdog Timer and _____ in PIC 16F877a.
a) Timer 0 b) Timer 1
c) Timer 2 d) Timer 3

9) Which operating mode of CCP Module can be used for speed control of DC Motor?
a) Capture b) ADC
c) PWM d) Compare

10) If we say microcontroller is 8-bit then here 8-bit denotes size of:
a) Data Bus b) ALU
c) Control Bus d) Address Bus

11) In _____ architecture the instructions are executed by Hardware.
a) CISC b) RISC
c) AMBA d) None of these

12) Out of the following registers, which register is not bit addressable register in 8051?
a) PSW b) TCON
c) SBUF d) IE

13) MOVX instruction will fetch the data from _____ memory.
a) External program b) Internal program
c) Internal Data d) External Data

14) Which register in an 8051 microcontroller contains the SMOD bit?
a) SBUF b) TMOD
c) PCON d) TCON

SLR-BD-487

Seat No.	

Set S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microcontrollers and Applications (BTN06502)

Day & Date: Monday 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Draw neat diagrams wherever necessary.

Section – I

Q.2 Attempt any Four questions. **16**

a) Compare between Harvard and von-Neumann architectures.
b) Draw and explain the bit format of Program Status Word register of 8051.
c) Explain the following instructions in detail.
a) DIV AB b) MOVX @DPTR, A
d) Describe with suitable examples the Addressing modes of 8051.
e) Describe the Special function registers associated with Serial Data Input/output in 8051.

Q.3 Attempt any Two questions. **12**

a) Analyze bit format of TMOD and TCON register in 8051. and show the significance of loading 20H in TMOD and 25H in TCON registers.
b) Write 8051 assembly or C language program to transfer message “SOLAPUR” serially at baud rate of 9600 Assume crystal frequency 11.059 MHz. Do this continuously?
c) Explain the Program & Data memory organization of 8051 with suitable diagram.

Section – II

Q.4 Attempt any Four questions. **16**

a) Explore Architectural core features & peripheral features of PIC 16F877.
b) Explain the operation of instructions MOVF, BTFSC, DECFSZ, RETLW of PIC 16F877.
c) Draw & Explore importance of OPTION register bit format of PIC16f877.
d) Explain with suitable diagram the Capture mode of operation of CCP1 module.
e) Draw & Explore bit significance of Status register of PIC16f877 & what is effect of loading 34H in status register.

Q.5 Attempt any Two questions. **12**

a) Draw & Describe internal Program memory & Data memory organization of PIC16F877 controller.

b) Write assembly or 'C' Program for Internal ADC of PIC & converted binary value displayed on LED's interfaced to port D of PIC 16F877. Draw the interfacing diagram.

c) Describe the operation of Transmitter section of USART module in PIC 16F877.

SLR-BD-488

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Digital Signal Processing (BTN06503)

Day & Date: Tuesday, 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) A signal has _____.
a) Single value for single time instant
b) Single value for multiple time instant
c) can has any number of values for any number of time instants
d) None of above

2) Sampling theorem _____
a) $fm < fs$ b) $fs > fm$
c) $fs >= 2fm$ d) $fs = 2fm$

3) Goertzel algorithm evaluates the _____.
a) DTFT coefficients b) DFT coefficients
c) Z transforms d) None of these

4) DFT stands for _____
a) Descrite Fourier transform b) Digital function Transform
c) Digital frequency transform d) None

5) The size of input data blocks in overlap add method is _____
a) L b) $L + M$
c) $L + M - 1$ d) $L + M + 1$

6) Transform domain is used as it _____.
a) Enhance the signal b) Compress the signal
c) Reduces data points d) Increases data points

7) In overlap save method, convolution of various sections are performed by _____

a) Zero padding
b) Linear convolution
c) Circular convolution
d) Both b) and c)

8) The circular convolution of $x(n) = \{0,1,2\}$ and $h(n) = \{1,1,0\}$ is _____

a) $\{0,2,3\}$
b) $\{1,2,3\}$
c) $\{1,1,1\}$
d) $\{2,1,3\}$

9) When the system has poles inside the unit circle in Z domain _____

a) The system is stable and its impulse response is a decaying function
b) The time domain behavior will be exponentially raising signal
c) The system is unstable
d) The impulse response is marginally constant

10) The ideal Filter has impulse response of _____

a) Finite duration
b) Infinite duration between 0 and ∞
c) Infinite duration between ∞ and $+\infty$
d) None of above

11) When aliasing occurs?

a) low frequency becomes high frequency
b) high frequency becomes a mid-frequency
c) high frequency above signal bandwidth becomes low frequencies below bandwidth
d) None of above

12) Gibbs phenomenon occurred due to _____.

a) Linear phase
b) Truncation of infinite Fourier series
c) Window Method
d) Non linear phase

13) If the impulse response of the system is over a finite duration, then it is _____.

a) a moving average system
b) An auto regression system
c) An ARMA system
d) An IIR system

14) The binary signed number 0.111011001 when rounded to eight bits will result in number given by _____

a) 0.11101111
b) 0.10101010
c) 0.11101101
d) 0.11111111

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Digital Signal Processing (BTN06503)

Day & Date: Tuesday, 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three of the following question. **12**

a) Obtain Autocorrelation of a sequence $h(n) = \{1,2,2,1\}$

b) Find circular convolution of $X_1(n) = \{1, 3, 5, 7\}$, $X_2(n) = \{2, 4, 6, 8\}$ using concentric circle method.

c) What is DFT? What are the properties of DFT?

d) Determine the 8 point DFT of the sequence $x(n) = \{1,1,1,1,1,1,0,0\}$

Q.3 Attempt any two of the following question. **16**

a) Write and explain the properties of autocorrelation and cross correlation.

b) Determine the output of linear FIR filter whose impulse response $h(n) = \{1, -3,5\}$
$x(n) = \{-1,4,7,3, -2,9,10,12, -5,8\}$ using overlap add method

c) Determine the DFT of sequence $x(n) = \{2, 1, 4, 6, 5, 8, 3, 9\}$ by decimation in frequency FFT.

Section – II

Q.4 Attempt any two of the following question. **12**

a) Explain the steps for designing IIR filter using impulse invariance method.

b) Explain the difference between FIR Filter and IIR filter.

c) For analog transfer function
$H(s) = 1/(s + 1)\ (s + 2)$
Determine $H(z)$ using impulse invariant technique (Assume T=1 Sec)

d) Obtain direct form realization of system function
$H(z) = 1 + 2Z^{-1} - 3Z^{-2} - 4Z^{-3} + 5Z^{-4}$

Q.5 Solve any two of the following. **16**

a) Obtain direct form I realization for the IIR system describes the difference equation

$y(n) = 0.5\, y(n-1) - 0.25\, y(n-2) + x\,(n) + 0.4x(n-1)$

b) Explain the Applications of DSP in video processing.

e) Design an ideal high pass filter whose desired frequency response

$H_d(e^{j\omega}) = 1\ \pi \geq |\omega| \geq \pi/3$

0 otherwise

Using Hamming window, Determine

i) The impulse response for $N = 9$

ii) $H(z)$

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Digital Signal Processing (BTN06503)

Day & Date: Tuesday, 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The circular convolution of $x(n) = \{0,1,2\}$ and $h(n) = \{1,1,0\}$ is _____
a) $\{0,2,3\}$ b) $\{1,2,3\}$
c) $\{1,1,1\}$ d) $\{2,1,3\}$

2) When the system has poles inside the unit circle in Z domain _____
a) The system is stable and its impulse response is a decaying function
b) The time domain behavior will be exponentially raising signal
c) The system is unstable
d) The impulse response is marginally constant

3) The ideal Filter has impulse response of _____
a) Finite duration
b) Infinite duration between 0 and ∞
c) Infinite duration between ∞ and $+\infty$
d) None of above

4) When aliasing occurs?
a) low frequency becomes high frequency
b) high frequency becomes a mid-frequency
c) high frequency above signal bandwidth becomes low frequencies below bandwidth
d) None of above

5) Gibbs phenomenon occurred due to _____.
a) Linear phase
b) Truncation of infinite Fourier series
c) Window Method
d) Non linear phase

6) If the impulse response of the system is over a finite duration, then it is _____.
a) a moving average system b) An auto regression system
c) An ARMA system d) An IIR system

7) The binary signed number 0.111011001 when rounded to eight bits will result in number given by _____
a) 0.11101111 b) 0.10101010
c) 0.11101101 d) 0.11111111

8) A signal has _____.
a) Single value for single time instant
b) Single value for multiple time instant
c) can has any number of values for any number of time instants
d) None of above

9) Sampling theorem _____
a) $\mathrm{fm} < \mathrm{fs}$ b) $\mathrm{fs} > \mathrm{fm}$
c) $\mathrm{fs} >= 2\mathrm{fm}$ d) $\mathrm{fs} = 2\mathrm{fm}$

10) Goertzel algorithm evaluates the _____.
a) DTFT coefficients b) DFT coefficients
c) Z transforms d) None of these

11) DFT stands for _____
a) Descrite Fourier transform b) Digital function Transform
c) Digital frequency transform d) None

12) The size of input data blocks in overlap add method is _____
a) L b) $\mathrm{L} + \mathrm{M}$
c) $\mathrm{L} + \mathrm{M} - 1$ d) $\mathrm{L} + \mathrm{M} + 1$

13) Transform domain is used as it _____.
a) Enhance the signal b) Compress the signal
c) Reduces data points d) Increases data points

14) In overlap save method, convolution of various sections are performed by _____
a) Zero padding b) Linear convolution
c) Circular convolution d) Both b) and c)

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Digital Signal Processing (BTN06503)

Day & Date: Tuesday, 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three of the following question. **12**

a) Obtain Autocorrelation of a sequence $h(n) = \{1,2,2,1\}$

b) Find circular convolution of $X_1(n) = \{1, 3, 5, 7\}$, $X_2(n) = \{2, 4, 6, 8\}$ using concentric circle method.

c) What is DFT? What are the properties of DFT?

d) Determine the 8 point DFT of the sequence $x(n) = \{1,1,1,1,1,1,0,0\}$

Q.3 Attempt any two of the following question. **16**

a) Write and explain the properties of autocorrelation and cross correlation.

b) Determine the output of linear FIR filter whose impulse response $h(n) = \{1, -3,5\}$
$x(n) = \{-1,4,7,3, -2,9,10,12, -5,8\}$ using overlap add method

c) Determine the DFT of sequence $x(n) = \{2, 1, 4, 6, 5, 8, 3, 9\}$ by decimation in frequency FFT.

Section – II

Q.4 Attempt any two of the following question. **12**

a) Explain the steps for designing IIR filter using impulse invariance method.

b) Explain the difference between FIR Filter and IIR filter.

c) For analog transfer function
$H(s) = 1/(s + 1)\ (s + 2)$
Determine $H(z)$ using impulse invariant technique (Assume T=1 Sec)

d) Obtain direct form realization of system function
$H(z) = 1 + 2Z^{-1} - 3Z^{-2} - 4Z^{-3} + 5Z^{-4}$

Q.5 Solve any two of the following. **16**

a) Obtain direct form I realization for the IIR system describes the difference equation

$y(n) = 0.5\, y(n-1) - 0.25\, y(n-2) + x\,(n) + 0.4x(n-1)$

b) Explain the Applications of DSP in video processing.

e) Design an ideal high pass filter whose desired frequency response

$H_d(e^{j\omega}) = 1\ \pi \geq |\omega| \geq \pi/3$

0 otherwise

Using Hamming window, Determine

i) The impulse response for $N = 9$

ii) $H(z)$

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Digital Signal Processing (BTN06503)

Day & Date: Tuesday, 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) When aliasing occurs?
a) low frequency becomes high frequency
b) high frequency becomes a mid-frequency
c) high frequency above signal bandwidth becomes low frequencies below bandwidth
d) None of above

2) Gibbs phenomenon occurred due to _____.
a) Linear phase
b) Truncation of infinite Fourier series
c) Window Method
d) Non linear phase

3) If the impulse response of the system is over a finite duration, then it is _____.
a) a moving average system b) An auto regression system
c) An ARMA system d) An IIR system

4) The binary signed number 0.111011001 when rounded to eight bits will result in number given by _____
a) 0.11101111 b) 0.10101010
c) 0.11101101 d) 0.11111111

5) A signal has _____.
a) Single value for single time instant
b) Single value for multiple time instant
c) can has any number of values for any number of time instants
d) None of above

6) Sampling theorem _____

a) $\mathrm{fm} < \mathrm{fs}$ b) $\mathrm{fs} > \mathrm{fm}$

c) $\mathrm{fs} >= 2\mathrm{fm}$ d) $\mathrm{fs} = 2\mathrm{fm}$

7) Goertzel algorithm evaluates the _____.

a) DTFT coefficients b) DFT coefficients

c) Z transforms d) None of these

8) DFT stands for _____

a) Descrite Fourier transform b) Digital function Transform

c) Digital frequency transform d) None

9) The size of input data blocks in overlap add method is _____

a) L b) $\mathrm{L} + \mathrm{M}$

c) $\mathrm{L} + \mathrm{M} - 1$ d) $\mathrm{L} + \mathrm{M} + 1$

10) Transform domain is used as it _____.

a) Enhance the signal b) Compress the signal

c) Reduces data points d) Increases data points

11) In overlap save method, convolution of various sections are performed by _____

a) Zero padding b) Linear convolution

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12) The circular convolution of $x(n) = \{0,1,2\}$ and $h(n) = \{1,1,0\}$ is ____

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c) The system is unstable

d) The impulse response is marginally constant

14) The ideal Filter has impulse response of _____

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b) Infinite duration between 0 and ∞

c) Infinite duration between ∞ and $+\infty$

d) None of above

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Digital Signal Processing (BTN06503)

Day & Date: Tuesday, 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three of the following question. **12**

a) Obtain Autocorrelation of a sequence $h(n) = \{1,2,2,1\}$

b) Find circular convolution of $X_1(n) = \{1, 3, 5, 7\}$, $X_2(n) = \{2, 4, 6, 8\}$ using concentric circle method.

c) What is DFT? What are the properties of DFT?

d) Determine the 8 point DFT of the sequence $x(n) = \{1,1,1,1,1,1,0,0\}$

Q.3 Attempt any two of the following question. **16**

a) Write and explain the properties of autocorrelation and cross correlation.

b) Determine the output of linear FIR filter whose impulse response $h(n) = \{1, -3,5\}$
$x(n) = \{-1,4,7,3, -2,9,10,12, -5,8\}$ using overlap add method

c) Determine the DFT of sequence $x(n) = \{2, 1, 4, 6, 5, 8, 3, 9\}$ by decimation in frequency FFT.

Section – II

Q.4 Attempt any two of the following question. **12**

a) Explain the steps for designing IIR filter using impulse invariance method.

b) Explain the difference between FIR Filter and IIR filter.

c) For analog transfer function
$H(s) = 1/(s + 1)\ (s + 2)$
Determine $H(z)$ using impulse invariant technique (Assume T=1 Sec)

d) Obtain direct form realization of system function
$H(z) = 1 + 2Z^{-1} - 3Z^{-2} - 4Z^{-3} + 5Z^{-4}$

Q.5 Solve any two of the following. **16**

a) Obtain direct form I realization for the IIR system describes the difference equation

$y(n) = 0.5\, y(n-1) - 0.25\, y(n-2) + x\,(n) + 0.4x(n-1)$

b) Explain the Applications of DSP in video processing.

e) Design an ideal high pass filter whose desired frequency response

$H_d(e^{j\omega}) = 1\ \pi \geq |\omega| \geq \pi/3$

0 otherwise

Using Hamming window, Determine

i) The impulse response for $N = 9$

ii) $H(z)$

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Digital Signal Processing (BTN06503)

Day & Date: Tuesday, 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starring page of the Answer Book Each question carries one mark.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Transform domain is used as it _____.
a) Enhance the signal b) Compress the signal
c) Reduces data points d) Increases data points

2) In overlap save method, convolution of various sections are performed by _____
a) Zero padding b) Linear convolution
c) Circular convolution d) Both b) and c)

3) The circular convolution of $x(n) = \{0,1,2\}$ and $h(n) = \{1,1,0\}$ is _____
a) $\{0,2,3\}$ b) $\{1,2,3\}$
c) $\{1,1,1\}$ d) $\{2,1,3\}$

4) When the system has poles inside the unit circle in Z domain _____
a) The system is stable and its impulse response is a decaying function
b) The time domain behavior will be exponentially raising signal
c) The system is unstable
d) The impulse response is marginally constant

5) The ideal Filter has impulse response of _____
a) Finite duration
b) Infinite duration between 0 and ∞
c) Infinite duration between ∞ and $+\infty$
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6) When aliasing occurs?
a) low frequency becomes high frequency
b) high frequency becomes a mid-frequency
c) high frequency above signal bandwidth becomes low frequencies below bandwidth
d) None of above

7) Gibbs phenomenon occurred due to _____.
a) Linear phase
b) Truncation of infinite Fourier series
c) Window Method
d) Non linear phase

8) If the impulse response of the system is over a finite duration, then it is _____.
a) a moving average system
b) An auto regression system
c) An ARMA system
d) An IIR system

9) The binary signed number 0.111011001 when rounded to eight bits will result in number given by _____
a) 0.11101111
b) 0.10101010
c) 0.11101101
d) 0.11111111

10) A signal has _____.
a) Single value for single time instant
b) Single value for multiple time instant
c) can has any number of values for any number of time instants
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a) $\mathrm{fm} < \mathrm{fs}$
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a) DTFT coefficients
b) DFT coefficients
c) Z transforms
d) None of these

13) DFT stands for _____
a) Descrite Fourier transform
b) Digital function Transform
c) Digital frequency transform
d) None

14) The size of input data blocks in overlap add method is _____
a) L
b) $\mathrm{L} + \mathrm{M}$
c) $\mathrm{L} + \mathrm{M} - 1$
d) $\mathrm{L} + \mathrm{M} + 1$

SLR-BD-488

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Digital Signal Processing (BTN06503)

Day & Date: Tuesday, 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three of the following question. **12**

a) Obtain Autocorrelation of a sequence $h(n) = \{1,2,2,1\}$

b) Find circular convolution of $X_1(n) = \{1, 3, 5, 7\}$, $X_2(n) = \{2, 4, 6, 8\}$ using concentric circle method.

c) What is DFT? What are the properties of DFT?

d) Determine the 8 point DFT of the sequence $x(n) = \{1,1,1,1,1,1,0,0\}$

Q.3 Attempt any two of the following question. **16**

a) Write and explain the properties of autocorrelation and cross correlation.

b) Determine the output of linear FIR filter whose impulse response $h(n) = \{1, -3,5\}$
$x(n) = \{-1,4,7,3, -2,9,10,12, -5,8\}$ using overlap add method

c) Determine the DFT of sequence $x(n) = \{2, 1, 4, 6, 5, 8, 3, 9\}$ by decimation in frequency FFT.

Section – II

Q.4 Attempt any two of the following question. **12**

a) Explain the steps for designing IIR filter using impulse invariance method.

b) Explain the difference between FIR Filter and IIR filter.

c) For analog transfer function
$H(s) = 1/(s + 1)\ (s + 2)$
Determine $H(z)$ using impulse invariant technique (Assume T=1 Sec)

d) Obtain direct form realization of system function
$H(z) = 1 + 2Z^{-1} - 3Z^{-2} - 4Z^{-3} + 5Z^{-4}$

Q.5 Solve any two of the following. **16**

a) Obtain direct form I realization for the IIR system describes the difference equation

$y(n) = 0.5\, y(n-1) - 0.25\, y(n-2) + x\,(n) + 0.4x(n-1)$

b) Explain the Applications of DSP in video processing.

e) Design an ideal high pass filter whose desired frequency response

$H_d(e^{j\omega}) = 1\ \pi \geq |\omega| \geq \pi/3$

0 otherwise

Using Hamming window, Determine

i) The impulse response for $N = 9$

ii) $H(z)$

SLR-BD-489

Seat No.	

Set P

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Managerial Economics (BTN06511)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The first stage in the decision process is _____.
a) define the problem
b) select the best possible solution
c) determine the objective
d) identify possible solutions

2) The term Managerial economics also refers to _____.
a) Principles of Management b) Management Accounting
c) Applied economics d) Consumer Behavior

3) Macroeconomics deals with: _____.
a) The behavior of firms
b) Economic aggregates
c) The activities of individual units
d) The behavior of the electronics industry

4) What will happen in the rice market if buyers are expecting higher prices in the near future?
a) The demand for rice will increase.
b) The demand for rice will decrease.
c) The demand for rice will be unaffected.
d) The supply of rice will increase

5) A surplus occurs when the price is _____.
a) equal to the equilibrium price
b) greater than the equilibrium price
c) less than the equilibrium price
d) None of the above

6) If the price elasticity of demand for a good is 0.75 i.e. (less than one), the demand for the good can be described as: _____.

a) normal b) elastic
c) inferior d) inelastic

7) The elasticity of supply measures the responsiveness of _____.

a) quantity supplied to changes in price
b) quantity demanded to changes in supply
c) quantity supplied to changes in income
d) quantity supplied to changes in demand

8) Barometric methods are used to forecast _____.

a) seasonal variation b) secular trend
c) cyclical variation d) irregular variation

9) Mathematical model of Linear Programming is important because _____.

a) It helps in converting the verbal description and numerical data into mathematical expression.
b) decision makers prefer to work with formal models.
c) it captures the relevant relationship among decision factors.
d) it enables the use of algebraic techniques

10) Trend projection is an example of which kind of forecasting?

a) Qualitative b) Time-series
c) Barometric d) Econometric

11) The relation between physical output of a production process to physical inputs is known as _____.

a) Consumption function b) Utilization function
c) Production function d) Sales function

12) Variable costs are _____.

a) sunk costs
b) multiplied by fixed costs
c) costs that change with the level of production
d) defined as the change in total cost resulting from the production of an additional unit of output

13) Under which of the following forms of market structure does a firm has no control over the price of its product?

a) Monopoly b) Oligopoly
c) Monopolistic competition d) Perfect competition

14) Which of the following is the least competitive market structure?

a) Perfect competition b) Monopolistic competition
c) Oligopoly d) Monopoly

Seat No.	

Set P

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Managerial Economics (BTN06511)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) Describe importance of managerial economics for business decision.
b) State the difference between Microeconomics and Macroeconomics.
c) State and explain the determinants of demand.
d) Explain the following terms
1) Demand
2) Market demand
3) Supply
4) Market equilibrium
e) Explain price elasticity of demand.
f) Explain the concept income elasticity of demand.

Q.3 Solve any two. **12**

a) Explain the concept economics and managerial economics.
b) Explain the changes of demand and supply on market equilibrium.
c) Explain elasticity of supply. Also state the factors affecting the elasticity of supply.

Section – II

Q.4 Solve any four. **16**

a) Explain trend projection method for demand forecasting.
b) Explain Linear Programming (LP). Also state the advantages and limitations of LP Techniques
c) Describe production and explain the concept of production function.
d) What is breakeven analysis. Also state the limitations of breakeven analysis.
e) Compare four types of market structures in brief.
f) Explain any two survey methods for demand forecasting.

Q.5 Solve any two. **12**

a) Explain linear Regression method for demand forecasting.
b) Explain various costs of Production in detail.
c) What is pricing? Explain various factors affecting Pricing Decisions.

Seat No.	

Set Q

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Managerial Economics (BTN06511)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Barometric methods are used to forecast _____.
a) seasonal variation b) secular trend
c) cyclical variation d) irregular variation

2) Mathematical model of Linear Programming is important because _____.
a) It helps in converting the verbal description and numerical data into mathematical expression.
b) decision makers prefer to work with formal models.
c) it captures the relevant relationship among decision factors.
d) it enables the use of algebraic techniques

3) Trend projection is an example of which kind of forecasting?
a) Qualitative b) Time-series
c) Barometric d) Econometric

4) The relation between physical output of a production process to physical inputs is known as _____.
a) Consumption function b) Utilization function
c) Production function d) Sales function

5) Variable costs are _____.
a) sunk costs
b) multiplied by fixed costs
c) costs that change with the level of production
d) defined as the change in total cost resulting from the production of an additional unit of output

6) Under which of the following forms of market structure does a firm has no control over the price of its product?
a) Monopoly b) Oligopoly
c) Monopolistic competition d) Perfect competition

7) Which of the following is the least competitive market structure?
a) Perfect competition b) Monopolistic competition
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8) The first stage in the decision process is _____.
a) define the problem
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c) determine the objective
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9) The term Managerial economics also refers to _____.
a) Principles of Management b) Management Accounting
c) Applied economics d) Consumer Behavior

10) Macroeconomics deals with: _____.
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c) The activities of individual units
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11) What will happen in the rice market if buyers are expecting higher prices in the near future?
a) The demand for rice will increase.
b) The demand for rice will decrease.
c) The demand for rice will be unaffected.
d) The supply of rice will increase

12) A surplus occurs when the price is _____.
a) equal to the equilibrium price
b) greater than the equilibrium price
c) less than the equilibrium price
d) None of the above

13) If the price elasticity of demand for a good is 0.75 i.e. (less than one), the demand for the good can be described as: _____.
a) normal b) elastic
c) inferior d) inelastic

14) The elasticity of supply measures the responsiveness of _____.
a) quantity supplied to changes in price
b) quantity demanded to changes in supply
c) quantity supplied to changes in income
d) quantity supplied to changes in demand

SLR-BD-489

Seat No.	

Set Q

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Managerial Economics (BTN06511)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) Describe importance of managerial economics for business decision.
b) State the difference between Microeconomics and Macroeconomics.
c) State and explain the determinants of demand.
d) Explain the following terms
1) Demand
2) Market demand
3) Supply
4) Market equilibrium
e) Explain price elasticity of demand.
f) Explain the concept income elasticity of demand.

Q.3 Solve any two. **12**

a) Explain the concept economics and managerial economics.
b) Explain the changes of demand and supply on market equilibrium.
c) Explain elasticity of supply. Also state the factors affecting the elasticity of supply.

Section – II

Q.4 Solve any four. **16**

a) Explain trend projection method for demand forecasting.
b) Explain Linear Programming (LP). Also state the advantages and limitations of LP Techniques
c) Describe production and explain the concept of production function.
d) What is breakeven analysis. Also state the limitations of breakeven analysis.
e) Compare four types of market structures in brief.
f) Explain any two survey methods for demand forecasting.

Q.5 Solve any two. **12**

a) Explain linear Regression method for demand forecasting.
b) Explain various costs of Production in detail.
c) What is pricing? Explain various factors affecting Pricing Decisions.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Managerial Economics (BTN06511)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The relation between physical output of a production process to physical inputs is known as _____.
a) Consumption function b) Utilization function
c) Production function d) Sales function

2) Variable costs are _____.
a) sunk costs
b) multiplied by fixed costs
c) costs that change with the level of production
d) defined as the change in total cost resulting from the production of an additional unit of output

3) Under which of the following forms of market structure does a firm has no control over the price of its product?
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4) Which of the following is the least competitive market structure?
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c) Oligopoly d) Monopoly

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a) define the problem
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6) The term Managerial economics also refers to _____.
a) Principles of Management b) Management Accounting
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7) Macroeconomics deals with: _____.
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c) The activities of individual units
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8) What will happen in the rice market if buyers are expecting higher prices in the near future?
a) The demand for rice will increase.
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c) The demand for rice will be unaffected.
d) The supply of rice will increase

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c) less than the equilibrium price
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d) quantity supplied to changes in demand

12) Barometric methods are used to forecast _____.
a) seasonal variation b) secular trend
c) cyclical variation d) irregular variation

13) Mathematical model of Linear Programming is important because _____.
a) It helps in converting the verbal description and numerical data into mathematical expression.
b) decision makers prefer to work with formal models.
c) it captures the relevant relationship among decision factors.
d) it enables the use of algebraic techniques

14) Trend projection is an example of which kind of forecasting?
a) Qualitative b) Time-series
c) Barometric d) Econometric

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Managerial Economics (BTN06511)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) Describe importance of managerial economics for business decision.
b) State the difference between Microeconomics and Macroeconomics.
c) State and explain the determinants of demand.
d) Explain the following terms
1) Demand
2) Market demand
3) Supply
4) Market equilibrium
e) Explain price elasticity of demand.
f) Explain the concept income elasticity of demand.

Q.3 Solve any two. **12**

a) Explain the concept economics and managerial economics.
b) Explain the changes of demand and supply on market equilibrium.
c) Explain elasticity of supply. Also state the factors affecting the elasticity of supply.

Section – II

Q.4 Solve any four. **16**

a) Explain trend projection method for demand forecasting.
b) Explain Linear Programming (LP). Also state the advantages and limitations of LP Techniques
c) Describe production and explain the concept of production function.
d) What is breakeven analysis. Also state the limitations of breakeven analysis.
e) Compare four types of market structures in brief.
f) Explain any two survey methods for demand forecasting.

Q.5 Solve any two. **12**

a) Explain linear Regression method for demand forecasting.
b) Explain various costs of Production in detail.
c) What is pricing? Explain various factors affecting Pricing Decisions.

Seat No.		Set	S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Managerial Economics (BTN06511)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) If the price elasticity of demand for a good is 0.75 i.e. (less than one), the demand for the good can be described as: _____.
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b) quantity demanded to changes in supply
c) quantity supplied to changes in income
d) quantity supplied to changes in demand

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c) it captures the relevant relationship among decision factors.
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5) Trend projection is an example of which kind of forecasting?
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b) multiplied by fixed costs
c) costs that change with the level of production
d) defined as the change in total cost resulting from the production of an additional unit of output

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c) Monopolistic competition d) Perfect competition

9) Which of the following is the least competitive market structure?
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10) The first stage in the decision process is _____.
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d) identify possible solutions

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c) Applied economics d) Consumer Behavior

12) Macroeconomics deals with: _____.
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b) Economic aggregates
c) The activities of individual units
d) The behavior of the electronics industry

13) What will happen in the rice market if buyers are expecting higher prices in the near future?
a) The demand for rice will increase.
b) The demand for rice will decrease.
c) The demand for rice will be unaffected.
d) The supply of rice will increase

14) A surplus occurs when the price is _____.
a) equal to the equilibrium price
b) greater than the equilibrium price
c) less than the equilibrium price
d) None of the above

SLR-BD-489

Seat No.		Set	S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Managerial Economics (BTN06511)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) Describe importance of managerial economics for business decision.
b) State the difference between Microeconomics and Macroeconomics.
c) State and explain the determinants of demand.
d) Explain the following terms
1) Demand
2) Market demand
3) Supply
4) Market equilibrium
e) Explain price elasticity of demand.
f) Explain the concept income elasticity of demand.

Q.3 Solve any two. **12**

a) Explain the concept economics and managerial economics.
b) Explain the changes of demand and supply on market equilibrium.
c) Explain elasticity of supply. Also state the factors affecting the elasticity of supply.

Section – II

Q.4 Solve any four. **16**

a) Explain trend projection method for demand forecasting.
b) Explain Linear Programming (LP). Also state the advantages and limitations of LP Techniques
c) Describe production and explain the concept of production function.
d) What is breakeven analysis. Also state the limitations of breakeven analysis.
e) Compare four types of market structures in brief.
f) Explain any two survey methods for demand forecasting.

Q.5 Solve any two. **12**

a) Explain linear Regression method for demand forecasting.
b) Explain various costs of Production in detail.
c) What is pricing? Explain various factors affecting Pricing Decisions.

SLR-BD-490

Seat No.		Set	P

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Project Management and Operation Research (BTN06512)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The PERT in project management means program evaluation and _____ technique.
a) Resource b) Reconciliation
c) Reconsideration d) Review

2) Dividing the work into small steps is known as _____.
a) Work breakdown structure b) Concurrent Engineering
c) Linear Responsibility chart d) None of above

3) Concurrent Engineering means _____.
a) Doing all activities simultaneously
b) Doing activities in coordination with each other
c) Doing teamwork
d) All of above

4) Which of below is risk identification approach?
a) Check list b) Brainstorming
c) Both a & b d) None of above

5) Which of below is true for risk?
a) Relates to future
b) Involve cause and effect
c) Not a self-contained topic within program manager
d) All of above

6) Project failure causes because of _____.
a) Improper planning b) Inadequate skills
c) Leadership problem d) All of above

7) Risk exposure for each risk can be estimated,
Risk exposure =_____* probability of occurrence.
a) Potential damage b) Cost of risk reduction
c) Risk reduction leverage d) Risk avoidance

8) Operations research practitioners do not _____.
a) take responsibility for solution implementation
b) collect essential data
c) predict future actions/operations
d) build more than one model

9) A physical model is example of _____.
a) an iconic model b) an analogue model
c) a verbal model d) a mathematical model

10) The mathematical model of an LP problem is important because _____.
a) it helps in converting the verbal description and numerical data into mathematical expression
b) decision-makers prefer to work with formal models
c) it captures the relevant relationship among decision factors
d) it enables the use of algebraic technique

11) The group replacement policy is suitable for identical low cost items which are likely to _____.
a) fail over a period of time b) fail suddenly
c) fail completely and suddenly d) none of the above

12) The method used for solving an assignment problem is called _____.
a) reduced matrix method b) MODI method
c) Hungarian method d) none of the above

13) The assignment problem _____.
a) requires that only one activity be assigned to each resource
b) is a special case of transportation problem(a)
c) can be used to maximize resources
d) all of the above

14) Which of the following explains the need for facility location selection?
a) When the existing business unit has outgrown its original facilities and expansion is not possible.
b) When a business is newly started.
c) When the lease expires and the landlord does not renew the lease.
d) All of these

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Project Management and Operation Research (BTN06512)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Illustrate with an example Concurrent Engineering in project management.
b) What are the steps involved in project planning for constructing a house?
c) Explain Qualitative and Quantitative Risk assessment.
d) Explain Project cost estimation & Budgeting with an example.
e) Explain the stages of the project life cycle.

Q.3 Solve any two of the following. **12**

a) Explain Concept & need of project management
b) What is Risk? What are its categories?
c) Explain Top down & Bottom up Budgeting with examples.

Section – II

Q.4 Solve any four of the following. **16**

a) Describe briefly the applications of OR in managerial decision making.
b) Discuss the advantages and limitations of operations research.
c) Explain how the theory of replacement is used in the following problems.
1) Replacement of items whose maintenance cost varies with time
2) Replacement of items that completely fail
d) A company sells two different products A and B, making a profit of Rs 40 and Rs 30 per unit, respectively. They are both produced with the help of a common production process and are sold in two different markets. The production process has a total capacity of 30,000 man-hours. It takes three hours to produce a unit of A and one hour to produce a unit of B. The market has been surveyed and company officials feel that the maximum number of units of A that can be sold is 8,000 units and that of B is 12,000 units. Subject to these limitations, products can be sold in any combination. Formulate this problem as an LP model to maximize profit.

e) Discuss the factors that affect the location decision for a production facility.

Q.5 Solve any two of the following. **12**

a) What is a model? Illustrate with examples various classification schemes of models in operation research.

b) Anita Electric Company produces two products P1 and P2. Products are produced and sold on a weekly basis. The weekly production cannot exceed 25 for product P1 and 35 for product P2 because of limited available facilities. The company employs total of 60 workers. Product P1 requires 2 man-weeks of labour, while P2 requires one man-week of labour. Profit margin on P1 is Rs. 60 and on P2 is Rs. 40. Formulate this problem as an LP problem and solve that using graphical method.

c) Five men are available to do five different jobs. From past records, the time (in hours) that each man takes to do each job is known and is given in the following table:

		Jobs				
		I	II	III	IV	V
Men	A	2	9	2	7	1
	B	6	8	7	6	1
	C	4	6	5	3	1
	D	4	2	7	3	1
	E	5	3	9	5	1

Find out how men should be assigned the jobs in a way that will minimize the total time taken.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Project Management and Operation Research (BTN06512)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Operations research practitioners do not _____.
a) take responsibility for solution implementation
b) collect essential data
c) predict future actions/operations
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2) A physical model is example of _____.
a) an iconic model b) an analogue model
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d) All of these

8) The PERT in project management means program evaluation and _____ technique.

a) Resource b) Reconciliation
c) Reconsideration d) Review

9) Dividing the work into small steps is known as _____.

a) Work breakdown structure b) Concurrent Engineering
c) Linear Responsibility chart d) None of above

10) Concurrent Engineering means _____.

a) Doing all activities simultaneously
b) Doing activities in coordination with each other
c) Doing teamwork
d) All of above

11) Which of below is risk identification approach?

a) Check list b) Brainstorming
c) Both a & b d) None of above

12) Which of below is true for risk?

a) Relates to future
b) Involve cause and effect
c) Not a self-contained topic within program manager
d) All of above

13) Project failure causes because of _____.

a) Improper planning b) lnadequate skills
c) Leadership problem d) All of above

14) Risk exposure for each risk can be estimated,
Risk exposure =_____* probability of occurrence.

a) Potential damage b) Cost of risk reduction
c) Risk reduction leverage d) Risk avoidance

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Project Management and Operation Research (BTN06512)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Illustrate with an example Concurrent Engineering in project management.
b) What are the steps involved in project planning for constructing a house?
c) Explain Qualitative and Quantitative Risk assessment.
d) Explain Project cost estimation & Budgeting with an example.
e) Explain the stages of the project life cycle.

Q.3 Solve any two of the following. **12**

a) Explain Concept & need of project management
b) What is Risk? What are its categories?
c) Explain Top down & Bottom up Budgeting with examples.

Section – II

Q.4 Solve any four of the following. **16**

a) Describe briefly the applications of OR in managerial decision making.
b) Discuss the advantages and limitations of operations research.
c) Explain how the theory of replacement is used in the following problems.
1) Replacement of items whose maintenance cost varies with time
2) Replacement of items that completely fail
d) A company sells two different products A and B, making a profit of Rs 40 and Rs 30 per unit, respectively. They are both produced with the help of a common production process and are sold in two different markets. The production process has a total capacity of 30,000 man-hours. It takes three hours to produce a unit of A and one hour to produce a unit of B. The market has been surveyed and company officials feel that the maximum number of units of A that can be sold is 8,000 units and that of B is 12,000 units. Subject to these limitations, products can be sold in any combination. Formulate this problem as an LP model to maximize profit.

e) Discuss the factors that affect the location decision for a production facility.

Q.5 Solve any two of the following. **12**

a) What is a model? Illustrate with examples various classification schemes of models in operation research.

b) Anita Electric Company produces two products P1 and P2. Products are produced and sold on a weekly basis. The weekly production cannot exceed 25 for product P1 and 35 for product P2 because of limited available facilities. The company employs total of 60 workers. Product P1 requires 2 man-weeks of labour, while P2 requires one man-week of labour. Profit margin on P1 is Rs. 60 and on P2 is Rs. 40. Formulate this problem as an LP problem and solve that using graphical method.

c) Five men are available to do five different jobs. From past records, the time (in hours) that each man takes to do each job is known and is given in the following table:

		Jobs				
		I	II	III	IV	V
Men	A	2	9	2	7	1
	B	6	8	7	6	1
	C	4	6	5	3	1
	D	4	2	7	3	1
	E	5	3	9	5	1

Find out how men should be assigned the jobs in a way that will minimize the total time taken.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Project Management and Operation Research (BTN06512)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The group replacement policy is suitable for identical low cost items which are likely to _____.
a) fail over a period of time b) fail suddenly
c) fail completely and suddenly d) none of the above

2) The method used for solving an assignment problem is called _____.
a) reduced matrix method b) MODI method
c) Hungarian method d) none of the above

3) The assignment problem _____.
a) requires that only one activity be assigned to each resource
b) is a special case of transportation problem(a)
c) can be used to maximize resources
d) all of the above

4) Which of the following explains the need for facility location selection?
a) When the existing business unit has outgrown its original facilities and expansion is not possible.
b) When a business is newly started.
c) When the lease expires and the landlord does not renew the lease.
d) All of these

5) The PERT in project management means program evaluation and _____ technique.
a) Resource b) Reconciliation
c) Reconsideration d) Review

6) Dividing the work into small steps is known as _____.
a) Work breakdown structure b) Concurrent Engineering

c) Linear Responsibility chart d) None of above

7) Concurrent Engineering means _____.
a) Doing all activities simultaneously
b) Doing activities in coordination with each other
c) Doing teamwork
d) All of above

8) Which of below is risk identification approach?
a) Check list b) Brainstorming
c) Both a & b d) None of above

9) Which of below is true for risk?
a) Relates to future
b) Involve cause and effect
c) Not a self-contained topic within program manager
d) All of above

10) Project failure causes because of _____.
a) Improper planning b) Inadequate skills
c) Leadership problem d) All of above

11) Risk exposure for each risk can be estimated,
Risk exposure =_____* probability of occurrence.
a) Potential damage b) Cost of risk reduction
c) Risk reduction leverage d) Risk avoidance

12) Operations research practitioners do not _____.
a) take responsibility for solution implementation
b) collect essential data
c) predict future actions/operations
d) build more than one model

13) A physical model is example of _____.
a) an iconic model b) an analogue model
c) a verbal model d) a mathematical model

14) The mathematical model of an LP problem is important because _____.
a) it helps in converting the verbal description and numerical data into mathematical expression
b) decision-makers prefer to work with formal models
c) it captures the relevant relationship among decision factors
d) it enables the use of algebraic technique

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Project Management and Operation Research (BTN06512)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Illustrate with an example Concurrent Engineering in project management.
b) What are the steps involved in project planning for constructing a house?
c) Explain Qualitative and Quantitative Risk assessment.
d) Explain Project cost estimation & Budgeting with an example.
e) Explain the stages of the project life cycle.

Q.3 Solve any two of the following. **12**

a) Explain Concept & need of project management
b) What is Risk? What are its categories?
c) Explain Top down & Bottom up Budgeting with examples.

Section – II

Q.4 Solve any four of the following. **16**

a) Describe briefly the applications of OR in managerial decision making.
b) Discuss the advantages and limitations of operations research.
c) Explain how the theory of replacement is used in the following problems.
1) Replacement of items whose maintenance cost varies with time
2) Replacement of items that completely fail
d) A company sells two different products A and B, making a profit of Rs 40 and Rs 30 per unit, respectively. They are both produced with the help of a common production process and are sold in two different markets. The production process has a total capacity of 30,000 man-hours. It takes three hours to produce a unit of A and one hour to produce a unit of B. The market has been surveyed and company officials feel that the maximum number of units of A that can be sold is 8,000 units and that of B is 12,000 units. Subject to these limitations, products can be sold in any combination. Formulate this problem as an LP model to maximize profit.

e) Discuss the factors that affect the location decision for a production facility.

Q.5 Solve any two of the following. **12**

a) What is a model? Illustrate with examples various classification schemes of models in operation research.

b) Anita Electric Company produces two products P1 and P2. Products are produced and sold on a weekly basis. The weekly production cannot exceed 25 for product P1 and 35 for product P2 because of limited available facilities. The company employs total of 60 workers. Product P1 requires 2 man-weeks of labour, while P2 requires one man-week of labour. Profit margin on P1 is Rs. 60 and on P2 is Rs. 40. Formulate this problem as an LP problem and solve that using graphical method.

c) Five men are available to do five different jobs. From past records, the time (in hours) that each man takes to do each job is known and is given in the following table:

		Jobs				
		I	II	III	IV	V
Men	A	2	9	*2*	7	1
	B	6	8	7	6	1
	C	4	6	5	3	1
	D	4	2	7	3	1
	E	5	3	9	5	1

Find out how men should be assigned the jobs in a way that will minimize the total time taken.

Seat No.		Set	S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Project Management and Operation Research (BTN06512)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Project failure causes because of _____.
a) Improper planning b) Inadequate skills
c) Leadership problem d) All of above

2) Risk exposure for each risk can be estimated,
Risk exposure =_____* probability of occurrence.
a) Potential damage b) Cost of risk reduction
c) Risk reduction leverage d) Risk avoidance

3) Operations research practitioners do not _____.
a) take responsibility for solution implementation
b) collect essential data
c) predict future actions/operations
d) build more than one model

4) A physical model is example of _____.
a) an iconic model b) an analogue model
c) a verbal model d) a mathematical model

5) The mathematical model of an LP problem is important because _____.
a) it helps in converting the verbal description and numerical data into mathematical expression
b) decision-makers prefer to work with formal models
c) it captures the relevant relationship among decision factors
d) it enables the use of algebraic technique

6) The group replacement policy is suitable for identical low cost items which are likely to _____.
a) fail over a period of time b) fail suddenly
c) fail completely and suddenly d) none of the above

7) The method used for solving an assignment problem is called _____.
a) reduced matrix method b) MODI method
c) Hungarian method d) none of the above

8) The assignment problem _____.
a) requires that only one activity be assigned to each resource
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9) Which of the following explains the need for facility location selection?
a) When the existing business unit has outgrown its original facilities and expansion is not possible.
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c) When the lease expires and the landlord does not renew the lease.
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10) The PERT in project management means program evaluation and _____ technique.
a) Resource b) Reconciliation
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11) Dividing the work into small steps is known as _____.
a) Work breakdown structure b) Concurrent Engineering
c) Linear Responsibility chart d) None of above

12) Concurrent Engineering means _____.
a) Doing all activities simultaneously
b) Doing activities in coordination with each other
c) Doing teamwork
d) All of above

13) Which of below is risk identification approach?
a) Check list b) Brainstorming
c) Both a & b d) None of above

14) Which of below is true for risk?
a) Relates to future
b) Involve cause and effect
c) Not a self-contained topic within program manager
d) All of above

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Project Management and Operation Research (BTN06512)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Illustrate with an example Concurrent Engineering in project management.
b) What are the steps involved in project planning for constructing a house?
c) Explain Qualitative and Quantitative Risk assessment.
d) Explain Project cost estimation & Budgeting with an example.
e) Explain the stages of the project life cycle.

Q.3 Solve any two of the following. **12**

a) Explain Concept & need of project management
b) What is Risk? What are its categories?
c) Explain Top down & Bottom up Budgeting with examples.

Section – II

Q.4 Solve any four of the following. **16**

a) Describe briefly the applications of OR in managerial decision making.
b) Discuss the advantages and limitations of operations research.
c) Explain how the theory of replacement is used in the following problems.
1) Replacement of items whose maintenance cost varies with time
2) Replacement of items that completely fail
d) A company sells two different products A and B, making a profit of Rs 40 and Rs 30 per unit, respectively. They are both produced with the help of a common production process and are sold in two different markets. The production process has a total capacity of 30,000 man-hours. It takes three hours to produce a unit of A and one hour to produce a unit of B. The market has been surveyed and company officials feel that the maximum number of units of A that can be sold is 8,000 units and that of B is 12,000 units. Subject to these limitations, products can be sold in any combination. Formulate this problem as an LP model to maximize profit.

e) Discuss the factors that affect the location decision for a production facility.

Q.5 Solve any two of the following. **12**

a) What is a model? Illustrate with examples various classification schemes of models in operation research.

b) Anita Electric Company produces two products P1 and P2. Products are produced and sold on a weekly basis. The weekly production cannot exceed 25 for product P1 and 35 for product P2 because of limited available facilities. The company employs total of 60 workers. Product P1 requires 2 man-weeks of labour, while P2 requires one man-week of labour. Profit margin on P1 is Rs. 60 and on P2 is Rs. 40. Formulate this problem as an LP problem and solve that using graphical method.

c) Five men are available to do five different jobs. From past records, the time (in hours) that each man takes to do each job is known and is given in the following table:

		Jobs				
		I	II	III	IV	V
Men	A	2	9	2	7	1
	B	6	8	7	6	1
	C	4	6	5	3	1
	D	4	2	7	3	1
	E	5	3	9	5	1

Find out how men should be assigned the jobs in a way that will minimize the total time taken.

SLR-BD-493

Seat No.		Set	P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Artificial Intelligence (BTN06515)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The primitives in probabilistic reasoning are random variables.
a) True b) False

2) What are the types of entities covered in Ontology?
a) Physical and abstract objects
b) Time and locations
c) Actions and events
d) All

3) Propositional Logic has _____ output.
a) Either True or False b) Both True and False
c) Quantitative Value d) None

4) Which statement is valid for the Heuristic function?
a) The heuristic function is used to solve mathematical problems.
b) The heuristic function takes parameters of type string and returns an integer value.
c) The heuristic function does not have any return type.
d) The heuristic function calculates the cost of an optimal path between the pair of states

5) Which of the following cannot be handled by an intelligent agent?
a) Learning b) Decision Making
c) Uncertainties d) None of these

6) "All bird fly" which of the following is referred as predicate in given ____.
a) bird b) fly
c) All d) none of these

7) The Bayesian Network gives _____.
a) A complete description of the problem
b) Partial Description of the domain
c) A complete description of the domain
d) None of the above

8) Decision making involves utility theory?
a) Yes b) No
c) Not always d) None of above

9) Which of these is the best learning model suitable for an observable environment?
a) Supervised b) Unsupervised
c) Both a & b d) None

10) The search algorithm which is similar to the minimax search, but removes the branches that don't affect the final output is known as ____.
a) DFS b) BFS
c) Alpha-beta pruning d) None of these

11) Which of following has task fully observable environment?
a) Chess Game b) Taxi Driver
c) Medical Diagnosis d) Cricket

12) In regards with uninformed search which statement is TRUE?
a) It has domain knowledge
b) It will increase the time complexity
c) It uses heuristic function
d) Best First Search Algorithm is type of uninformed search

13) Which is an actuator in Al CAR agent application?
a) object detection sensor b) Temperature sensor
c) Wheel Drive motor d) Battery

14) An Al agent perceives and acts upon the environment using _____.
a) Sensors b) Actuators
c) Transducers d) All of these

Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Artificial Intelligence (BTN06515)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

Section – I

Q.2 Attempt any Four. **16**

a) Explain any two applications of Al in detail
b) Explain any two types Al agents with diagram.
c) Explain MIN-MAX search algorithm with an example.
d) Explain what is Ontology with reference to Al.
e) What is constraint Satisfaction Problems? Explain with map colouring example.

Q.3 Attempt any two. **12**

a) Explain the AO* algorithm with example.
b) Differentiate between BFS & DFS Algorithm?
c) Write short note on knowledge representation and reasoning.

Section – II

Q.4 Attempt any Four. **16**

a) Explain Bays rule in Probability.
b) Explain with two examples probabilistic inference.
c) Explain utility theory.
d) How decision making is done by a robot.
e) What are the scalability issues concerned with learning and knowledge acquisition?

Q.5 Attempt any two. **12**

a) Explain the concept of sequential decision problems.
b) Explain about description logics.
c) Write a short note on Learning and knowledge acquisition.

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Artificial Intelligence (BTN06515)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Decision making involves utility theory?
a) Yes b) No
c) Not always d) None of above

2) Which of these is the best learning model suitable for an observable environment?
a) Supervised b) Unsupervised
c) Both a & b d) None

3) The search algorithm which is similar to the minimax search, but removes the branches that don't affect the final output is known as ____.
a) DFS b) BFS
c) Alpha-beta pruning d) None of these

4) Which of following has task fully observable environment?
a) Chess Game b) Taxi Driver
c) Medical Diagnosis d) Cricket

5) In regards with uninformed search which statement is TRUE?
a) It has domain knowledge
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6) Which is an actuator in Al CAR agent application?
a) object detection sensor b) Temperature sensor
c) Wheel Drive motor d) Battery

7) An Al agent perceives and acts upon the environment using _____.
a) Sensors b) Actuators
c) Transducers d) All of these

8) The primitives in probabilistic reasoning are random variables.
a) True b) False

9) What are the types of entities covered in Ontology?
a) Physical and abstract objects
b) Time and locations
c) Actions and events
d) All

10) Propositional Logic has _____ output.
a) Either True or False b) Both True and False
c) Quantitative Value d) None

11) Which statement is valid for the Heuristic function?
a) The heuristic function is used to solve mathematical problems.
b) The heuristic function takes parameters of type string and returns an integer value.
c) The heuristic function does not have any return type.
d) The heuristic function calculates the cost of an optimal path between the pair of states

12) Which of the following cannot be handled by an intelligent agent?
a) Learning b) Decision Making
c) Uncertainties d) None of these

13) “All bird fly” which of the following is referred as predicate in given ____.
a) bird b) fly
c) All d) none of these

14) The Bayesian Network gives _____.
a) A complete description of the problem
b) Partial Description of the domain
c) A complete description of the domain
d) None of the above

SLR-BD-493

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Artificial Intelligence (BTN06515)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

Section – I

Q.2 Attempt any Four. **16**

a) Explain any two applications of Al in detail
b) Explain any two types Al agents with diagram.
c) Explain MIN-MAX search algorithm with an example.
d) Explain what is Ontology with reference to Al.
e) What is constraint Satisfaction Problems? Explain with map colouring example.

Q.3 Attempt any two. **12**

a) Explain the AO* algorithm with example.
b) Differentiate between BFS & DFS Algorithm?
c) Write short note on knowledge representation and reasoning.

Section – II

Q.4 Attempt any Four. **16**

a) Explain Bays rule in Probability.
b) Explain with two examples probabilistic inference.
c) Explain utility theory.
d) How decision making is done by a robot.
e) What are the scalability issues concerned with learning and knowledge acquisition?

Q.5 Attempt any two. **12**

a) Explain the concept of sequential decision problems.
b) Explain about description logics.
c) Write a short note on Learning and knowledge acquisition.

Seat No.		Set	R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Artificial Intelligence (BTN06515)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of following has task fully observable environment?
a) Chess Game b) Taxi Driver
c) Medical Diagnosis d) Cricket

2) In regards with uninformed search which statement is TRUE?
a) It has domain knowledge
b) It will increase the time complexity
c) It uses heuristic function
d) Best First Search Algorithm is type of uninformed search

3) Which is an actuator in Al CAR agent application?
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5) The primitives in probabilistic reasoning are random variables.
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7) Propositional Logic has _____ output.
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a) Yes b) No
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13) Which of these is the best learning model suitable for an observable environment?
a) Supervised b) Unsupervised
c) Both a & b d) None

14) The search algorithm which is similar to the minimax search, but removes the branches that don't affect the final output is known as ____.
a) DFS b) BFS
c) Alpha-beta pruning d) None of these

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Artificial Intelligence (BTN06515)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

Section – I

Q.2 Attempt any Four. **16**

a) Explain any two applications of Al in detail
b) Explain any two types Al agents with diagram.
c) Explain MIN-MAX search algorithm with an example.
d) Explain what is Ontology with reference to Al.
e) What is constraint Satisfaction Problems? Explain with map colouring example.

Q.3 Attempt any two. **12**

a) Explain the AO* algorithm with example.
b) Differentiate between BFS & DFS Algorithm?
c) Write short note on knowledge representation and reasoning.

Section – II

Q.4 Attempt any Four. **16**

a) Explain Bays rule in Probability.
b) Explain with two examples probabilistic inference.
c) Explain utility theory.
d) How decision making is done by a robot.
e) What are the scalability issues concerned with learning and knowledge acquisition?

Q.5 Attempt any two. **12**

a) Explain the concept of sequential decision problems.
b) Explain about description logics.
c) Write a short note on Learning and knowledge acquisition.

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Artificial Intelligence (BTN06515)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) "All bird fly" which of the following is referred as predicate in given ____.
a) bird b) fly
c) All d) none of these

2) The Bayesian Network gives _____.
a) A complete description of the problem
b) Partial Description of the domain
c) A complete description of the domain
d) None of the above

3) Decision making involves utility theory?
a) Yes b) No
c) Not always d) None of above

4) Which of these is the best learning model suitable for an observable environment?
a) Supervised b) Unsupervised
c) Both a & b d) None

5) The search algorithm which is similar to the minimax search, but removes the branches that don't affect the final output is known as ____.
a) DFS b) BFS
c) Alpha-beta pruning d) None of these

6) Which of following has task fully observable environment?
a) Chess Game b) Taxi Driver
c) Medical Diagnosis d) Cricket

7) In regards with uninformed search which statement is TRUE?
a) It has domain knowledge
b) It will increase the time complexity
c) It uses heuristic function
d) Best First Search Algorithm is type of uninformed search

8) Which is an actuator in Al CAR agent application?
a) object detection sensor b) Temperature sensor
c) Wheel Drive motor d) Battery

9) An Al agent perceives and acts upon the environment using _____.
a) Sensors b) Actuators
c) Transducers d) All of these

10) The primitives in probabilistic reasoning are random variables.
a) True b) False

11) What are the types of entities covered in Ontology?
a) Physical and abstract objects
b) Time and locations
c) Actions and events
d) All

12) Propositional Logic has _____ output.
a) Either True or False b) Both True and False
c) Quantitative Value d) None

13) Which statement is valid for the Heuristic function?
a) The heuristic function is used to solve mathematical problems.
b) The heuristic function takes parameters of type string and returns an integer value.
c) The heuristic function does not have any return type.
d) The heuristic function calculates the cost of an optimal path between the pair of states

14) Which of the following cannot be handled by an intelligent agent?
a) Learning b) Decision Making
c) Uncertainties d) None of these

SLR-BD-493

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Artificial Intelligence (BTN06515)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

Section – I

Q.2 Attempt any Four. **16**

a) Explain any two applications of Al in detail
b) Explain any two types Al agents with diagram.
c) Explain MIN-MAX search algorithm with an example.
d) Explain what is Ontology with reference to Al.
e) What is constraint Satisfaction Problems? Explain with map colouring example.

Q.3 Attempt any two. **12**

a) Explain the AO* algorithm with example.
b) Differentiate between BFS & DFS Algorithm?
c) Write short note on knowledge representation and reasoning.

Section – II

Q.4 Attempt any Four. **16**

a) Explain Bays rule in Probability.
b) Explain with two examples probabilistic inference.
c) Explain utility theory.
d) How decision making is done by a robot.
e) What are the scalability issues concerned with learning and knowledge acquisition?

Q.5 Attempt any two. **12**

a) Explain the concept of sequential decision problems.
b) Explain about description logics.
c) Write a short note on Learning and knowledge acquisition.

SLR-BD-494

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Processing & Feature Engineering (BTN06516)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What does data quality refer to?
a) The quantity of data collected
b) The accuracy, completeness, and consistency of data
c) The speed at which data is processed
d) The type of data stored

2) Which of the following is not a common data scale type?
a) Nominal b) Ordinal
c) Quantitative d) Hierarchical

3) What is the process of transforming features to create new ones called?
a) Feature scaling b) Feature engineering
c) Feature selection d) Feature extraction

4) What is the purpose of feature selection in machine learning?
a) To create new features from existing ones
b) To handle missing data entries
c) To reduce the number of features in the dataset
d) To normalize data to a common scale

5) What is the main objective of PCA?
a) Dimensionality reduction b) Feature extraction
c) Clustering d) Classification

6) What is the purpose of data normalization?
a) To transform data into a different scale type
b) To handle missing data entries
c) To ensure all features have the same scale
d) To remove outliers from the dataset

7) In following type of feature selection method, we start with empty feature set _____.
a) Forward feature selection b) Backward feature selection
c) Both a and b d) None of these

8) Which technique transforms features to a specific range, typically between 0 and 1?
a) Binarization b) Standardization
c) Min-Max Scaling d) Log transformation

9) What is the generalization of the log transform called?
a) Power transforms b) Binning
c) Standardization d) Min-Max Scaling

10) What is the concept of model stacking in machine learning?
a) Combining multiple models to improve predictive performance
b) Creating new features from existing ones
c) Transforming data into a standard scale
d) Reducing the number of features in the dataset

11) In k-means clustering, what does "k" represent?
a) The number of features in the dataset
b) The number of clusters to be formed
c) The dimensionality of the data
d) The type of distance metric used

12) Which of the following is a technique for manual feature extraction in images?
a) Fully Connected Layers
b) Convolutional Layers
c) SIFT (Scale-Invariant Feature Transform)
d) Rectified Linear Unit (ReLU)

13) Which of the following is required by K-means clustering?
a) defined distance metric
b) number of clusters
c) initial guess as to cluster centroids
d) all of the mentioned

14) What do pooling layers do in convolutional neural networks (CNNs)?
a) Reduce feature map size
b) Increase feature complexity
c) Perform feature transformation
d) Calculate gradient orientations

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Processing & Feature Engineering (BTN06516)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any Four. **16**

a) What are the different types of data scale types, and how do they affect data analysis?
b) How can data be transformed from an ordinal scale to relative or absolute scale?
c) Describe the process of Singular Value Decomposition (SVD).
d) How does feature discretization contribute to feature engineering, and what are some common discretization methods?
e) What is subset selection in the context of machine learning, and why is it important? Elaborate with its types.

Q.3 Attempt any two. **12**

a) What are the sequential steps in conducting Principal Component Analysis (PCA), and how does this method contribute to reducing dimensionality in datasets?
b) What is feature normalization in the context of data preprocessing, and what are the commonly employed techniques for normalization?
c) Discuss the goals and principles of Linear Discriminant Analysis (LDA) in feature transformation and classification tasks.

Section – II

Q.4 Attempt any Four. **16**

a) Discuss the concepts of scalars, vectors, and spaces as they relate to feature engineering and machine learning algorithms.
b) How do min-max scaling and standardization (variance scaling) differ in their approaches to feature scaling?
c) What are the components of Scale-Invariant Feature Transform (SIFT) architecture? Elaborate it in detail.
d) What are Image Gradients? Elaborate Gradient Orientation Histograms.
e) Explain the concept of power transforms as a generalization of the log transform and their role in feature engineering.

Q.5 Attempt any two. **12**

a) Explain the concept of fully connected layers and convolutional layers in deep neural networks for image processing tasks.

b) What is meant by Binarization? Describe the different methods of quantization or binning methods.

c) Describe the process of k-means featurization for classification tasks.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Processing & Feature Engineering (BTN06516)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which technique transforms features to a specific range, typically between 0 and 1?
a) Binarization b) Standardization
c) Min-Max Scaling d) Log transformation

2) What is the generalization of the log transform called?
a) Power transforms b) Binning
c) Standardization d) Min-Max Scaling

3) What is the concept of model stacking in machine learning?
a) Combining multiple models to improve predictive performance
b) Creating new features from existing ones
c) Transforming data into a standard scale
d) Reducing the number of features in the dataset

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a) The number of features in the dataset
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b) Convolutional Layers
c) SIFT (Scale-Invariant Feature Transform)
d) Rectified Linear Unit (ReLU)

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a) defined distance metric
b) number of clusters
c) initial guess as to cluster centroids
d) all of the mentioned

7) What do pooling layers do in convolutional neural networks (CNNs)?
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b) Increase feature complexity
c) Perform feature transformation
d) Calculate gradient orientations

8) What does data quality refer to?
a) The quantity of data collected
b) The accuracy, completeness, and consistency of data
c) The speed at which data is processed
d) The type of data stored

9) Which of the following is not a common data scale type?
a) Nominal b) Ordinal
c) Quantitative d) Hierarchical

10) What is the process of transforming features to create new ones called?
a) Feature scaling b) Feature engineering
c) Feature selection d) Feature extraction

11) What is the purpose of feature selection in machine learning?
a) To create new features from existing ones
b) To handle missing data entries
c) To reduce the number of features in the dataset
d) To normalize data to a common scale

12) What is the main objective of PCA?
a) Dimensionality reduction b) Feature extraction
c) Clustering d) Classification

13) What is the purpose of data normalization?
a) To transform data into a different scale type
b) To handle missing data entries
c) To ensure all features have the same scale
d) To remove outliers from the dataset

14) In following type of feature selection method, we start with empty feature set _____.
a) Forward feature selection b) Backward feature selection
c) Both a and b d) None of these

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Processing & Feature Engineering (BTN06516)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any Four. **16**

a) What are the different types of data scale types, and how do they affect data analysis?
b) How can data be transformed from an ordinal scale to relative or absolute scale?
c) Describe the process of Singular Value Decomposition (SVD).
d) How does feature discretization contribute to feature engineering, and what are some common discretization methods?
e) What is subset selection in the context of machine learning, and why is it important? Elaborate with its types.

Q.3 Attempt any two. **12**

a) What are the sequential steps in conducting Principal Component Analysis (PCA), and how does this method contribute to reducing dimensionality in datasets?
b) What is feature normalization in the context of data preprocessing, and what are the commonly employed techniques for normalization?
c) Discuss the goals and principles of Linear Discriminant Analysis (LDA) in feature transformation and classification tasks.

Section – II

Q.4 Attempt any Four. **16**

a) Discuss the concepts of scalars, vectors, and spaces as they relate to feature engineering and machine learning algorithms.
b) How do min-max scaling and standardization (variance scaling) differ in their approaches to feature scaling?
c) What are the components of Scale-Invariant Feature Transform (SIFT) architecture? Elaborate it in detail.
d) What are Image Gradients? Elaborate Gradient Orientation Histograms.
e) Explain the concept of power transforms as a generalization of the log transform and their role in feature engineering.

Q.5 Attempt any two. **12**

a) Explain the concept of fully connected layers and convolutional layers in deep neural networks for image processing tasks.

b) What is meant by Binarization? Describe the different methods of quantization or binning methods.

c) Describe the process of k-means featurization for classification tasks.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Processing & Feature Engineering (BTN06516)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In k-means clustering, what does "k" represent?
a) The number of features in the dataset
b) The number of clusters to be formed
c) The dimensionality of the data
d) The type of distance metric used

2) Which of the following is a technique for manual feature extraction in images?
a) Fully Connected Layers
b) Convolutional Layers
c) SIFT (Scale-Invariant Feature Transform)
d) Rectified Linear Unit (ReLU)

3) Which of the following is required by K-means clustering?
a) defined distance metric
b) number of clusters
c) initial guess as to cluster centroids
d) all of the mentioned

4) What do pooling layers do in convolutional neural networks (CNNs)?
a) Reduce feature map size
b) Increase feature complexity
c) Perform feature transformation
d) Calculate gradient orientations

5) What does data quality refer to?
a) The quantity of data collected
b) The accuracy, completeness, and consistency of data
c) The speed at which data is processed
d) The type of data stored

6) Which of the following is not a common data scale type?
a) Nominal b) Ordinal
c) Quantitative d) Hierarchical

7) What is the process of transforming features to create new ones called?
a) Feature scaling b) Feature engineering
c) Feature selection d) Feature extraction

8) What is the purpose of feature selection in machine learning?
a) To create new features from existing ones
b) To handle missing data entries
c) To reduce the number of features in the dataset
d) To normalize data to a common scale

9) What is the main objective of PCA?
a) Dimensionality reduction b) Feature extraction
c) Clustering d) Classification

10) What is the purpose of data normalization?
a) To transform data into a different scale type
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11) In following type of feature selection method, we start with empty feature set _____.
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12) Which technique transforms features to a specific range, typically between 0 and 1?
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c) Min-Max Scaling d) Log transformation

13) What is the generalization of the log transform called?
a) Power transforms b) Binning
c) Standardization d) Min-Max Scaling

14) What is the concept of model stacking in machine learning?
a) Combining multiple models to improve predictive performance
b) Creating new features from existing ones
c) Transforming data into a standard scale
d) Reducing the number of features in the dataset

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Processing & Feature Engineering (BTN06516)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any Four. **16**

a) What are the different types of data scale types, and how do they affect data analysis?
b) How can data be transformed from an ordinal scale to relative or absolute scale?
c) Describe the process of Singular Value Decomposition (SVD).
d) How does feature discretization contribute to feature engineering, and what are some common discretization methods?
e) What is subset selection in the context of machine learning, and why is it important? Elaborate with its types.

Q.3 Attempt any two. **12**

a) What are the sequential steps in conducting Principal Component Analysis (PCA), and how does this method contribute to reducing dimensionality in datasets?
b) What is feature normalization in the context of data preprocessing, and what are the commonly employed techniques for normalization?
c) Discuss the goals and principles of Linear Discriminant Analysis (LDA) in feature transformation and classification tasks.

Section – II

Q.4 Attempt any Four. **16**

a) Discuss the concepts of scalars, vectors, and spaces as they relate to feature engineering and machine learning algorithms.
b) How do min-max scaling and standardization (variance scaling) differ in their approaches to feature scaling?
c) What are the components of Scale-Invariant Feature Transform (SIFT) architecture? Elaborate it in detail.
d) What are Image Gradients? Elaborate Gradient Orientation Histograms.
e) Explain the concept of power transforms as a generalization of the log transform and their role in feature engineering.

Q.5 Attempt any two. **12**

a) Explain the concept of fully connected layers and convolutional layers in deep neural networks for image processing tasks.

b) What is meant by Binarization? Describe the different methods of quantization or binning methods.

c) Describe the process of k-means featurization for classification tasks.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Processing & Feature Engineering (BTN06516)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the purpose of data normalization?
a) To transform data into a different scale type
b) To handle missing data entries
c) To ensure all features have the same scale
d) To remove outliers from the dataset

2) In following type of feature selection method, we start with empty feature set _____.
a) Forward feature selection b) Backward feature selection
c) Both a and b d) None of these

3) Which technique transforms features to a specific range, typically between 0 and 1?
a) Binarization b) Standardization
c) Min-Max Scaling d) Log transformation

4) What is the generalization of the log transform called?
a) Power transforms b) Binning
c) Standardization d) Min-Max Scaling

5) What is the concept of model stacking in machine learning?
a) Combining multiple models to improve predictive performance
b) Creating new features from existing ones
c) Transforming data into a standard scale
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6) In k-means clustering, what does "k" represent?
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13) What is the purpose of feature selection in machine learning?
a) To create new features from existing ones
b) To handle missing data entries
c) To reduce the number of features in the dataset
d) To normalize data to a common scale

14) What is the main objective of PCA?
a) Dimensionality reduction b) Feature extraction
c) Clustering d) Classification

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Processing & Feature Engineering (BTN06516)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any Four. **16**

a) What are the different types of data scale types, and how do they affect data analysis?
b) How can data be transformed from an ordinal scale to relative or absolute scale?
c) Describe the process of Singular Value Decomposition (SVD).
d) How does feature discretization contribute to feature engineering, and what are some common discretization methods?
e) What is subset selection in the context of machine learning, and why is it important? Elaborate with its types.

Q.3 Attempt any two. **12**

a) What are the sequential steps in conducting Principal Component Analysis (PCA), and how does this method contribute to reducing dimensionality in datasets?
b) What is feature normalization in the context of data preprocessing, and what are the commonly employed techniques for normalization?
c) Discuss the goals and principles of Linear Discriminant Analysis (LDA) in feature transformation and classification tasks.

Section – II

Q.4 Attempt any Four. **16**

a) Discuss the concepts of scalars, vectors, and spaces as they relate to feature engineering and machine learning algorithms.
b) How do min-max scaling and standardization (variance scaling) differ in their approaches to feature scaling?
c) What are the components of Scale-Invariant Feature Transform (SIFT) architecture? Elaborate it in detail.
d) What are Image Gradients? Elaborate Gradient Orientation Histograms.
e) Explain the concept of power transforms as a generalization of the log transform and their role in feature engineering.

Q.5 Attempt any two. **12**

a) Explain the concept of fully connected layers and convolutional layers in deep neural networks for image processing tasks.

b) What is meant by Binarization? Describe the different methods of quantization or binning methods.

c) Describe the process of k-means featurization for classification tasks.

SLR-BD-496

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication and Signaling in Railway (BTN06518)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the main purpose of twisting the wires in a twisted pair cable?
a) To increase bandwidth
b) To reduce electromagnetic interference
c) To enhance speed
d) To improve durability

2) The core of a coaxial cable is made up of _____.
a) Plastic b) Glass
c) Copper or aluminum wire d) Optical fibre

3) What is the primary purpose of an IP address?
a) To identify the physical location of a device
b) To uniquely identify a device on a network
c) To encrypt internet communication
d) To determine the device's operating system

4) Which command is commonly used in FTP to upload a file to a server?
a) GET b) PUT
c) OPEN d) LIST

5) What is the unit of measurement for battery capacity?
a) Amperes b) Ampere-hours (Ah)
c) Volts d) Watts

6) The common IC regulator series is _____.
a) 78xx series b) 55xx series
c) 12xx series d) 74xx series

7) Which of the following is NOT a type of fuse?
a) Cartridge fuse b) Blade fuse
c) Semiconductor fuse d) Hydraulic fuse

8) Which of the following is an example of a classification of signals based on their function?
a) Stop signal b) Distant signal
c) Home signal d) All of the above

9) Points in railway systems refer to _____.
a) Signal posts along the tracks
b) Junctions where trains can be directed to different tracks
c) The start of a railway station platform
d) Speed markers on the tracks

10) The main function of a relay in railway signaling is to _____.
a) Act as a mechanical switch
b) Amplify the current in the circuit
c) Control signals based on electrical inputs
d) Generate power for the signaling system

11) A device used to connect multiple networks and direct data packets between them is called a _____.
a) Hub b) Switch
c) Router d) Modem

12) What is the primary role of a DHCP server?
a) Resolve domain names to IP addresses
b) Assign dynamic IP addresses to devices
c) Transfer files between systems
d) Provide secure remote access

13) Which of the following is a common threat to network security?
a) Malware b) Firewall
c) Encryption d) VPN

14) Railnet servers are commonly used for _____.
a) Passenger entertainment
b) Hosting intranet-based applications
c) Running signaling operations
d) Managing station lighting systems

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication and Signaling in Railway (BTN06518)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**

a) What are the types of networking cables? Explain.
b) Give the advantages & disadvantages of Optical Fiber Cables.
c) Write a note on WWW (World Wide Web).
d) What are the advantages and limitations of using email as a communication tool?
e) Describe the process of de-soldering and the tools used for it.

Q.3 Attempt any two. **12**

a) What is IP addressing? What do you mean by Physical & Logical address? Explain the components of the Internet.
b) Write a note on Real-Time Communication.
c) Explain necessity of Fuses & classification of Fuses.

Section – II

Q.4 Attempt any Four. **16**

a) What are the objects of signals in Railway?
b) What is meant by "points" in the context of railway signaling systems?
c) Explain the client-server model in computer networks. How does communication between a client and server occur?
d) Explain the difference between a LAN (Local Area Network) and a WAN (Wide Area Network). Provide examples of their applications.
e) How does the connectivity diagram help in identifying potential failures in the network?

Q.5 Attempt any Two. **12**

a) Give & explain classification of Railway signals according to location.
b) What is DNS (Domain Name System)? Explain its role in translating domain names to IP addresses.
c) Write note on Railnet.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication and Signaling in Railway (BTN06518)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following is an example of a classification of signals based on their function?
a) Stop signal b) Distant signal
c) Home signal d) All of the above

2) Points in railway systems refer to _____.
a) Signal posts along the tracks
b) Junctions where trains can be directed to different tracks
c) The start of a railway station platform
d) Speed markers on the tracks

3) The main function of a relay in railway signaling is to _____.
a) Act as a mechanical switch
b) Amplify the current in the circuit
c) Control signals based on electrical inputs
d) Generate power for the signaling system

4) A device used to connect multiple networks and direct data packets between them is called a _____.
a) Hub b) Switch
c) Router d) Modem

5) What is the primary role of a DHCP server?
a) Resolve domain names to IP addresses
b) Assign dynamic IP addresses to devices
c) Transfer files between systems
d) Provide secure remote access

6) Which of the following is a common threat to network security?
a) Malware b) Firewall
c) Encryption d) VPN

7) Railnet servers are commonly used for _____.
a) Passenger entertainment
b) Hosting intranet-based applications
c) Running signaling operations
d) Managing station lighting systems

8) What is the main purpose of twisting the wires in a twisted pair cable?
a) To increase bandwidth
b) To reduce electromagnetic interference
c) To enhance speed
d) To improve durability

9) The core of a coaxial cable is made up of _____.
a) Plastic b) Glass
c) Copper or aluminum wire d) Optical fibre

10) What is the primary purpose of an IP address?
a) To identify the physical location of a device
b) To uniquely identify a device on a network
c) To encrypt internet communication
d) To determine the device's operating system

11) Which command is commonly used in FTP to upload a file to a server?
a) GET b) PUT
c) OPEN d) LIST

12) What is the unit of measurement for battery capacity?
a) Amperes b) Ampere-hours (Ah)
c) Volts d) Watts

13) The common IC regulator series is _____.
a) 78xx series b) 55xx series
c) 12xx series d) 74xx series

14) Which of the following is NOT a type of fuse?
a) Cartridge fuse b) Blade fuse
c) Semiconductor fuse d) Hydraulic fuse

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication and Signaling in Railway (BTN06518)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any Four. **16**

a) What are the types of networking cables? Explain.
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d) What are the advantages and limitations of using email as a communication tool?
e) Describe the process of de-soldering and the tools used for it.

Q.3 Attempt any two. **12**

a) What is IP addressing? What do you mean by Physical & Logical address? Explain the components of the Internet.
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Section – II

Q.4 Attempt any Four. **16**

a) What are the objects of signals in Railway?
b) What is meant by "points" in the context of railway signaling systems?
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d) Explain the difference between a LAN (Local Area Network) and a WAN (Wide Area Network). Provide examples of their applications.
e) How does the connectivity diagram help in identifying potential failures in the network?

Q.5 Attempt any Two. **12**

a) Give & explain classification of Railway signals according to location.
b) What is DNS (Domain Name System)? Explain its role in translating domain names to IP addresses.
c) Write note on Railnet.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication and Signaling in Railway (BTN06518)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A device used to connect multiple networks and direct data packets between them is called a _____.
a) Hub b) Switch
c) Router d) Modem

2) What is the primary role of a DHCP server?
a) Resolve domain names to IP addresses
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c) Control signals based on electrical inputs
d) Generate power for the signaling system

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication and Signaling in Railway (BTN06518)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**

a) What are the types of networking cables? Explain.
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e) Describe the process of de-soldering and the tools used for it.

Q.3 Attempt any two. **12**

a) What is IP addressing? What do you mean by Physical & Logical address? Explain the components of the Internet.
b) Write a note on Real-Time Communication.
c) Explain necessity of Fuses & classification of Fuses.

Section – II

Q.4 Attempt any Four. **16**

a) What are the objects of signals in Railway?
b) What is meant by "points" in the context of railway signaling systems?
c) Explain the client-server model in computer networks. How does communication between a client and server occur?
d) Explain the difference between a LAN (Local Area Network) and a WAN (Wide Area Network). Provide examples of their applications.
e) How does the connectivity diagram help in identifying potential failures in the network?

Q.5 Attempt any Two. **12**

a) Give & explain classification of Railway signals according to location.
b) What is DNS (Domain Name System)? Explain its role in translating domain names to IP addresses.
c) Write note on Railnet.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication and Signaling in Railway (BTN06518)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The common IC regulator series is _____.
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2) Which of the following is NOT a type of fuse?
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c) Encryption d) VPN

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c) Running signaling operations
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b) To uniquely identify a device on a network
c) To encrypt internet communication
d) To determine the device's operating system

13) Which command is commonly used in FTP to upload a file to a server?
a) GET b) PUT
c) OPEN d) LIST

14) What is the unit of measurement for battery capacity?
a) Amperes b) Ampere-hours (Ah)
c) Volts d) Watts

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication and Signaling in Railway (BTN06518)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**

a) What are the types of networking cables? Explain.
b) Give the advantages & disadvantages of Optical Fiber Cables.
c) Write a note on WWW (World Wide Web).
d) What are the advantages and limitations of using email as a communication tool?
e) Describe the process of de-soldering and the tools used for it.

Q.3 Attempt any two. **12**

a) What is IP addressing? What do you mean by Physical & Logical address? Explain the components of the Internet.
b) Write a note on Real-Time Communication.
c) Explain necessity of Fuses & classification of Fuses.

Section – II

Q.4 Attempt any Four. **16**

a) What are the objects of signals in Railway?
b) What is meant by "points" in the context of railway signaling systems?
c) Explain the client-server model in computer networks. How does communication between a client and server occur?
d) Explain the difference between a LAN (Local Area Network) and a WAN (Wide Area Network). Provide examples of their applications.
e) How does the connectivity diagram help in identifying potential failures in the network?

Q.5 Attempt any Two. **12**

a) Give & explain classification of Railway signals according to location.
b) What is DNS (Domain Name System)? Explain its role in translating domain names to IP addresses.
c) Write note on Railnet.

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Network Security and Secure Coding (BTN06519)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which mechanism is primarily used to enforce access control?
a) Firewalls b) Authentication tokens
c) Encryption d) All of the above

2) Buffer overflow occurs when: _____.
a) A program writes more data to a buffer than it can hold.
b) A buffer is not initialized before use.
c) A program runs out of memory.
d) A buffer is accessed without permission.

3) What is the purpose of Dynamic ARP Inspection (DAI)?
a) Resolve IP conflicts b) Authenticate ARP replies
c) Encrypt ARP messages d) Log ARP packets for auditing

4) Which cipher block mode of operation provides both encryption and authentication?
a) ECB b) CBC
c) GCM d) OFB

5) Collision resistance in a hash function means: _____.
a) It is hard to find two inputs with the same hash output.
b) The hash function is easy to compute.
c) The hash value is encrypted with a key.
d) The hash is reversible.

6) Digital signatures are created using: _____.
a) Hash functions only
b) Public key encryption only
c) Hash functions and public key encryption
d) Symmetric key encryption

7) In the X.509 standard, the entity responsible for binding public keys to user identities is: _____.
a) Key Distribution Center (KDC)
b) Certificate Authority (CA)
c) Resource Server
d) Authentication Server (AS)

8) S/MIME ensures email security through: _____.
a) Symmetric encryption and hashing
b) Digital certificates and encryption
c) Asymmetric cryptography only
d) Hashing algorithms only

9) The two main components of IPsec are: _____.
a) Authentication and confidentiality
b) Authentication Header (AH) and Encapsulating Security Payload (ESP)
c) Key generation and certificate verification
d) Tunnelling and transport mechanisms

10) The key components of SNMP include: _____.
a) Manager, Agent, and MIB
b) Router, Switch, and Firewall
c) Host, Protocol, and Application
d) Key, Token, and Certificate

11) Which of the following best describes a script kiddie?
a) A skilled attacker developing new malware
b) An unskilled individual using pre-written scripts to launch attacks
c) A professional cybersecurity expert
d) A hacker focused on network traffic

12) Which type of IDS analyses known attack signatures?
a) Host-based IDS
b) Signature-based IDS
c) Anomaly-based IDS
d) Network-based IDS

13) What is a key limitation of symbolic execution?
a) It is effective only at runtime.
b) It cannot handle loops and complex program paths effectively.
c) It is only applicable to compiled code.
d) It requires user input during analysis.

14) Which of the following is a proactive approach to secure software development?
a) Penetration testing after deployment
b) Implementing security measures during the design phase
c) Relying on firewalls for network security
d) Avoiding code review

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Network Security and Secure Coding (BTN06519)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**

a) Differentiate between authentication and access control with suitable examples.
b) Outline the techniques used to mitigate buffer overflow vulnerabilities in modern operating systems.
c) Discuss how a hash function is used for message authentication in combination with a secret key.
d) How does the choice of a hash function (e.g., MD5, SHA-256) affect the security of an HMAC?
e) Explain the structure of an X.509 certificate. What are its key fields, and what do they represent?

Q.3 Attempt any two. **12**

a) Describe the process of UDP hijacking and its limitations compared to TCP hijacking.
b) Discuss the pros and cons of performing encryption at the following locations:
1) End-hosts (e.g., application layer)
2) Gateways (e.g., transport/network layers)
3) Link layer (e.g., hardware-based encryption)
c) Describe the working of the RSA algorithm. How is it used for both encryption and digital signatures.

Section – II

Q.4 Attempt any Four. **16**

a) How does IPSec integrate with IPv4 and IPv6 networks?
b) Explain the process of adding an AH to an IP packet. What changes occur in the IP header?
c) Explain the lifecycle of a computer virus. How do viruses differ from worms and Trojans?
d) Explain the differences between signature-based detection and anomaly-based detection in IDS.
e) Explain the difference between black-box, gray-box, and white-box fuzzing.

Q.5 Attempt any two. **12**

a) Explain the architecture of IP Sec and the role of its key components.

b) Describe the components of SNMP architecture. How do they interact to manage a network?

c) What is static analysis, and how does it differ from dynamic analysis in vulnerability detection?

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Network Security and Secure Coding (BTN06519)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-BD-497

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Network Security and Secure Coding (BTN06519)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

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Section – II

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b) Explain the process of adding an AH to an IP packet. What changes occur in the IP header?
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Q.5 Attempt any two. **12**

a) Explain the architecture of IP Sec and the role of its key components.

b) Describe the components of SNMP architecture. How do they interact to manage a network?

c) What is static analysis, and how does it differ from dynamic analysis in vulnerability detection?

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Network Security and Secure Coding (BTN06519)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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d) A buffer is accessed without permission.

7) What is the purpose of Dynamic ARP Inspection (DAI)?
a) Resolve IP conflicts b) Authenticate ARP replies
c) Encrypt ARP messages d) Log ARP packets for auditing

8) Which cipher block mode of operation provides both encryption and authentication?
a) ECB b) CBC
c) GCM d) OFB

9) Collision resistance in a hash function means: _____.
a) It is hard to find two inputs with the same hash output.
b) The hash function is easy to compute.
c) The hash value is encrypted with a key.
d) The hash is reversible.

10) Digital signatures are created using: _____.
a) Hash functions only
b) Public key encryption only
c) Hash functions and public key encryption
d) Symmetric key encryption

11) In the X.509 standard, the entity responsible for binding public keys to user identities is: _____.
a) Key Distribution Center (KDC)
b) Certificate Authority (CA)
c) Resource Server
d) Authentication Server (AS)

12) S/MIME ensures email security through: _____.
a) Symmetric encryption and hashing
b) Digital certificates and encryption
c) Asymmetric cryptography only
d) Hashing algorithms only

13) The two main components of IPsec are: _____.
a) Authentication and confidentiality
b) Authentication Header (AH) and Encapsulating Security Payload (ESP)
c) Key generation and certificate verification
d) Tunnelling and transport mechanisms

14) The key components of SNMP include: _____.
a) Manager, Agent, and MIB
b) Router, Switch, and Firewall
c) Host, Protocol, and Application
d) Key, Token, and Certificate

SLR-BD-497

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Network Security and Secure Coding (BTN06519)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**

a) Differentiate between authentication and access control with suitable examples.
b) Outline the techniques used to mitigate buffer overflow vulnerabilities in modern operating systems.
c) Discuss how a hash function is used for message authentication in combination with a secret key.
d) How does the choice of a hash function (e.g., MD5, SHA-256) affect the security of an HMAC?
e) Explain the structure of an X.509 certificate. What are its key fields, and what do they represent?

Q.3 Attempt any two. **12**

a) Describe the process of UDP hijacking and its limitations compared to TCP hijacking.
b) Discuss the pros and cons of performing encryption at the following locations:
1) End-hosts (e.g., application layer)
2) Gateways (e.g., transport/network layers)
3) Link layer (e.g., hardware-based encryption)
c) Describe the working of the RSA algorithm. How is it used for both encryption and digital signatures.

Section – II

Q.4 Attempt any Four. **16**

a) How does IPSec integrate with IPv4 and IPv6 networks?
b) Explain the process of adding an AH to an IP packet. What changes occur in the IP header?
c) Explain the lifecycle of a computer virus. How do viruses differ from worms and Trojans?
d) Explain the differences between signature-based detection and anomaly-based detection in IDS.
e) Explain the difference between black-box, gray-box, and white-box fuzzing.

Q.5 Attempt any two. **12**

a) Explain the architecture of IP Sec and the role of its key components.

b) Describe the components of SNMP architecture. How do they interact to manage a network?

c) What is static analysis, and how does it differ from dynamic analysis in vulnerability detection?

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Network Security and Secure Coding (BTN06519)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Digital signatures are created using: _____.
a) Hash functions only
b) Public key encryption only
c) Hash functions and public key encryption
d) Symmetric key encryption

2) In the X.509 standard, the entity responsible for binding public keys to user identities is: _____.
a) Key Distribution Center (KDC)
b) Certificate Authority (CA)
c) Resource Server
d) Authentication Server (AS)

3) S/MIME ensures email security through: _____.
a) Symmetric encryption and hashing
b) Digital certificates and encryption
c) Asymmetric cryptography only
d) Hashing algorithms only

4) The two main components of IPsec are: _____.
a) Authentication and confidentiality
b) Authentication Header (AH) and Encapsulating Security Payload (ESP)
c) Key generation and certificate verification
d) Tunnelling and transport mechanisms

5) The key components of SNMP include: _____.
a) Manager, Agent, and MIB
b) Router, Switch, and Firewall
c) Host, Protocol, and Application
d) Key, Token, and Certificate

6) Which of the following best describes a script kiddie?
a) A skilled attacker developing new malware
b) An unskilled individual using pre-written scripts to launch attacks
c) A professional cybersecurity expert
d) A hacker focused on network traffic

7) Which type of IDS analyses known attack signatures?
a) Host-based IDS b) Signature-based IDS
c) Anomaly-based IDS d) Network-based IDS

8) What is a key limitation of symbolic execution?
a) It is effective only at runtime.
b) It cannot handle loops and complex program paths effectively.
c) It is only applicable to compiled code.
d) It requires user input during analysis.

9) Which of the following is a proactive approach to secure software development?
a) Penetration testing after deployment
b) Implementing security measures during the design phase
c) Relying on firewalls for network security
d) Avoiding code review

10) Which mechanism is primarily used to enforce access control?
a) Firewalls b) Authentication tokens
c) Encryption d) All of the above

11) Buffer overflow occurs when: _____.
a) A program writes more data to a buffer than it can hold.
b) A buffer is not initialized before use.
c) A program runs out of memory.
d) A buffer is accessed without permission.

12) What is the purpose of Dynamic ARP Inspection (DAI)?
a) Resolve IP conflicts b) Authenticate ARP replies
c) Encrypt ARP messages d) Log ARP packets for auditing

13) Which cipher block mode of operation provides both encryption and authentication?
a) ECB b) CBC
c) GCM d) OFB

14) Collision resistance in a hash function means: _____.
a) It is hard to find two inputs with the same hash output.
b) The hash function is easy to compute.
c) The hash value is encrypted with a key.
d) The hash is reversible.

SLR-BD-497

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Network Security and Secure Coding (BTN06519)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**

a) Differentiate between authentication and access control with suitable examples.
b) Outline the techniques used to mitigate buffer overflow vulnerabilities in modern operating systems.
c) Discuss how a hash function is used for message authentication in combination with a secret key.
d) How does the choice of a hash function (e.g., MD5, SHA-256) affect the security of an HMAC?
e) Explain the structure of an X.509 certificate. What are its key fields, and what do they represent?

Q.3 Attempt any two. **12**

a) Describe the process of UDP hijacking and its limitations compared to TCP hijacking.
b) Discuss the pros and cons of performing encryption at the following locations:
1) End-hosts (e.g., application layer)
2) Gateways (e.g., transport/network layers)
3) Link layer (e.g., hardware-based encryption)
c) Describe the working of the RSA algorithm. How is it used for both encryption and digital signatures.

Section – II

Q.4 Attempt any Four. **16**

a) How does IPSec integrate with IPv4 and IPv6 networks?
b) Explain the process of adding an AH to an IP packet. What changes occur in the IP header?
c) Explain the lifecycle of a computer virus. How do viruses differ from worms and Trojans?
d) Explain the differences between signature-based detection and anomaly-based detection in IDS.
e) Explain the difference between black-box, gray-box, and white-box fuzzing.

Q.5 Attempt any two. **12**

a) Explain the architecture of IP Sec and the role of its key components.

b) Describe the components of SNMP architecture. How do they interact to manage a network?

c) What is static analysis, and how does it differ from dynamic analysis in vulnerability detection?

SLR-BD-498

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Economics (BTN06505)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive b) Monopoly
c) Oligopoly d) Monopolistic

2) Average revenue is _____
a) Total revenue divided by the number of units sold
b) Revenue earned by all the units of the output
c) Revenue earned by the average sized firm in the industry
d) Net addition made to the total revenue by selling one more unit of a commodity

3) Which of these is an economic activity?
a) Father teaching his son at home instead of spending on coaching
b) A housewife making food for the family on her own
c) A hair dresser doing hair cut designing on payment
d) A singer giving a show on his son's wedding anniversary

4) Which of the following is NOT an account in the Balance of Payments?
a) Current Account b) Capital Account
c) Financial Account d) Future Account

5) Which of the following is not a regulatory institution in Indian financial system?
a) RBI b) CIBIL
c) SEBI d) IRDA

6) In a mixed economy which sector (s) is 1 are found _____

a) Private only
b) Public only
c) None
d) Both (a) Private and (b)Public

7) Who is known as father of economics?

a) Adam Smith
b) Prof. A. Samulson
c) Alfred Marshall
d) J. R. Hicks

8) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False
b) True
c) Partly true
d) Partly False

9) Which one of the following is not the function of money?

a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

10) Which one of the following cost can never become zero?

a) Average cost
b) Fixed cost
c) Marginal cost
d) Variable cost

SLR-BD-498

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Economics (BTN06505)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Economics (BTN06505)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) In a mixed economy which sector (s) is 1 are found _____
a) Private only b) Public only
c) None d) Both (a) Private and (b)Public

1) Who is known as father of economics?
a) Adam Smith b) Prof. A. Samulson
c) Alfred Marshall d) J. R. Hicks

3) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

4) Which one of the following is not the function of money?
a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

5) Which one of the following cost can never become zero?
a) Average cost b) Fixed cost
c) Marginal cost d) Variable cost

6) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive b) Monopoly
c) Oligopoly d) Monopolistic

7) Average revenue is _____
   a) Total revenue divided by the number of units sold
   b) Revenue earned by all the units of the output
   c) Revenue earned by the average sized firm in the industry
   d) Net addition made to the total revenue by selling one more unit of a commodity

8) Which of these is an economic activity?
   a) Father teaching his son at home instead of spending on coaching
   b) A housewife making food for the family on her own
   c) A hair dresser doing hair cut designing on payment
   d) A singer giving a show on his son's wedding anniversary

9) Which of the following is NOT an account in the Balance of Payments?
   a) Current Account
   b) Capital Account
   c) Financial Account
   d) Future Account

10) Which of the following is not a regulatory institution in Indian financial system?
   a) RBI
   b) CIBIL
   c) SEBI
   d) IRDA

SLR-BD-498

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Economics (BTN06505)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Economics (BTN06505)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which one of the following is not the function of money?
a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

2) Which one of the following cost can never become zero?
a) Average cost b) Fixed cost
c) Marginal cost d) Variable cost

3) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive b) Monopoly
c) Oligopoly d) Monopolistic

4) Average revenue is _____
a) Total revenue divided by the number of units sold
b) Revenue earned by all the units of the output
c) Revenue earned by the average sized firm in the industry
d) Net addition made to the total revenue by selling one more unit of a commodity

5) Which of these is an economic activity?
a) Father teaching his son at home instead of spending on coaching
b) A housewife making food for the family on her own
c) A hair dresser doing hair cut designing on payment
d) A singer giving a show on his son's wedding anniversary

6) Which of the following is NOT an account in the Balance of Payments?

a) Current Account b) Capital Account
c) Financial Account d) Future Account

7) Which of the following is not a regulatory institution in Indian financial system?

a) RBI b) CIBIL
c) SEBI d) IRDA

8) In a mixed economy which sector (s) is 1 are found _____

a) Private only b) Public only
c) None d) Both (a) Private and (b)Public

9) Who is known as father of economics?

a) Adam Smith b) Prof. A. Samulson
c) Alfred Marshall d) J. R. Hicks

10) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False b) True
c) Partly true d) Partly False

SLR-BD-498

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Economics (BTN06505)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Economics (BTN06505)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which of these is an economic activity?
a) Father teaching his son at home instead of spending on coaching
b) A housewife making food for the family on her own
c) A hair dresser doing hair cut designing on payment
d) A singer giving a show on his son's wedding anniversary

2) Which of the following is NOT an account in the Balance of Payments?
a) Current Account b) Capital Account
c) Financial Account d) Future Account

3) Which of the following is not a regulatory institution in Indian financial system?
a) RBI b) CIBIL
c) SEBI d) IRDA

4) In a mixed economy which sector (s) is 1 are found _____
a) Private only b) Public only
c) None d) Both (a) Private and (b)Public

5) Who is known as father of economics?
a) Adam Smith b) Prof. A. Samulson
c) Alfred Marshall d) J. R. Hicks

6) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

7) Which one of the following is not the function of money?
a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

8) Which one of the following cost can never become zero?
a) Average cost
b) Fixed cost
c) Marginal cost
d) Variable cost

9) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive
b) Monopoly
c) Oligopoly
d) Monopolistic

10) Average revenue is _____
a) Total revenue divided by the number of units sold
b) Revenue earned by all the units of the output
c) Revenue earned by the average sized firm in the industry
d) Net addition made to the total revenue by selling one more unit of a commodity

SLR-BD-498

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Economics (BTN06505)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

SLR-BD-499

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN06506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) What protects the intellectual property created by artists?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

2) If a company develops a new technology that improves its main product, what type of intellectual property can they use to stop others from copying their invention?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

3) All of the following are examples of intellectual property protections except _____.
a) Copyrights b) Patents
c) Contracts d) Trademarks

4) The first Patent Law was enacted in India in the year _____
a) 1856 b) 1880
c) 1905 d) 1850

5) How long does intellectual property last? (after the death of the author)
a) 10 yrs b) 30 yrs
c) 60 yrs d) 70 yrs

6) Which of the following can you copyright?
a) Literary work b) Ideas
c) Choreographic work d) Fashion

7) Which of the following identifies as a trademark?

a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

8) What is the subject matter of a patent?

a) Art b) Invention
c) Goods d) Ideas

9) What is copyright meant for?

a) Film work b) Books
c) Essay d) All of these

10) In which article is intellectual property rights outlined?

a) Article 15 b) Article 27
c) Article 13 d) Article 20

SLR-BD-499

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN06506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?

b) Explain Outlines concepts of confidentiality and information security.

c) Explain the Comparison of the Indian IPR system with international IPR frameworks.

Q.3 Solve any Four: **20**

a) Explain the role of Engineers and Managers in technology development in project commercialization.

b) Write a short note on the shifting paradigms of R&D and their linkage to IPR.

c) Explain Copyright issues in creative works.

d) Discuss the importance of Law on Industrial designs.

e) Explain commercial exploitation and infringement.

f) Write a short note on IPR and Electronic Commerce.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN06506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Which of the following can you copyright?
a) Literary work b) Ideas
c) Choreographic work d) Fashion

2) Which of the following identifies as a trademark?
a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

3) What is the subject matter of a patent?
a) Art b) Invention
c) Goods d) Ideas

4) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

5) In which article is intellectual property rights outlined?
a) Article 15 b) Article 27
c) Article 13 d) Article 20

6) What protects the intellectual property created by artists?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

7) If a company develops a new technology that improves its main product, what type of intellectual property can they use to stop others from copying their invention?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

8) All of the following are examples of intellectual property protections except _____.

a) Copyrights b) Patents
c) Contracts d) Trademarks

9) The first Patent Law was enacted in India in the year _____

a) 1856 b) 1880
c) 1905 d) 1850

10) How long does intellectual property last? (after the death of the author)

a) 10 yrs b) 30 yrs
c) 60 yrs d) 70 yrs

SLR-BD-499

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN06506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?

b) Explain Outlines concepts of confidentiality and information security.

c) Explain the Comparison of the Indian IPR system with international IPR frameworks.

Q.3 Solve any Four: **20**

a) Explain the role of Engineers and Managers in technology development in project commercialization.

b) Write a short note on the shifting paradigms of R&D and their linkage to IPR.

c) Explain Copyright issues in creative works.

d) Discuss the importance of Law on Industrial designs.

e) Explain commercial exploitation and infringement.

f) Write a short note on IPR and Electronic Commerce.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN06506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

2) In which article is intellectual property rights outlined?
a) Article 15 b) Article 27
c) Article 13 d) Article 20

3) What protects the intellectual property created by artists?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

4) If a company develops a new technology that improves its main product, what type of intellectual property can they use to stop others from copying their invention?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

5) All of the following are examples of intellectual property protections except _____.
a) Copyrights b) Patents
c) Contracts d) Trademarks

6) The first Patent Law was enacted in India in the year _____
a) 1856 b) 1880
c) 1905 d) 1850

7) How long does intellectual property last? (after the death of the author)

a) 10 yrs b) 30 yrs
c) 60 yrs d) 70 yrs

8) Which of the following can you copyright?

a) Literary work b) Ideas
c) Choreographic work d) Fashion

9) Which of the following identifies as a trademark?

a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

10) What is the subject matter of a patent?

a) Art b) Invention
c) Goods d) Ideas

SLR-BD-499

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN06506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

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c) Explain the Comparison of the Indian IPR system with international IPR frameworks.

Q.3 Solve any Four: **20**

a) Explain the role of Engineers and Managers in technology development in project commercialization.
b) Write a short note on the shifting paradigms of R&D and their linkage to IPR.
c) Explain Copyright issues in creative works.
d) Discuss the importance of Law on Industrial designs.
e) Explain commercial exploitation and infringement.
f) Write a short note on IPR and Electronic Commerce.

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN06506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) All of the following are examples of intellectual property protections except _____.
a) Copyrights b) Patents
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2) The first Patent Law was enacted in India in the year _____
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a) Name, symbol b) Symbol, logo
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SLR-BD-499

Seat No.	

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SLR-BD-500

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Introduction to Sociology (BTN06507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) Name of state having highest percentage of literacy level.
a) West Bengal b) Punjab
c) Kerala d) Maharashtra

2) Functions of Social Institutes is ____.
a) To meet fundamental needs of society
b) To improve the Society
c) To meet the needs of Family
d) None of above

3) Social change is change in ____.
a) Society b) Community
c) Individual d) Education

4) Which is recognized as one of the first environmental movements in country?
a) Chipko Movement
b) Kisan Movement
c) Lok satta Movement
d) Naramada Bachao Andolan

5) Science that deals with the relationship between living organism with their physical environment and each other is called ____.
a) Ecosystem b) Biodiversity
c) Environment d) Ecology

6) In which year the term sociology was coined?

a) 1798 b) 1815
c) 1839 d) 1857

7) The word sociology is made up of two words. These are ____.

a) Societies and logy b) Societia and logistia
c) Socious and logos d) Socia and logos

8) Who is the father of Sociology?

a) Karl Max b) Herbert Spencer
c) Auguste Comte d) Charles Darwin

9) The major component of demography are:

a) Mortality b) Fertility
c) Migration d) All of these

10) India occupies _____ rank among the population of the different countries of world.

a) Third b) First
c) Forth d) Second

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Introduction to Sociology (BTN06507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a)	What is Sociology? And explain with concept like social structure, role, norms, values etc.	**10**
b)	Explain with detail trends of Urbanization in developing countries and world.	**10**
c)	Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development.	**10**
d)	Explain with detail social movements like protest, reformist, radical in India.	**10**
e)	Explain in detail demographic change in India & world along with Human Ecology.	**10**
f)	Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization.	**10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Introduction to Sociology (BTN06507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
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Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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b) To improve the Society
c) To meet the needs of Family
d) None of above

8) Social change is change in ____.

a) Society b) Community
c) Individual d) Education

9) Which is recognized as one of the first environmental movements in country?

a) Chipko Movement
b) Kisan Movement
c) Lok satta Movement
d) Naramada Bachao Andolan

10) Science that deals with the relationship between living organism with their physical environment and each other is called ____.

a) Ecosystem b) Biodiversity
c) Environment d) Ecology

SLR-BD-500

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Introduction to Sociology (BTN06507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a)	What is Sociology? And explain with concept like social structure, role, norms, values etc.	**10**
b)	Explain with detail trends of Urbanization in developing countries and world.	**10**
c)	Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development.	**10**
d)	Explain with detail social movements like protest, reformist, radical in India.	**10**
e)	Explain in detail demographic change in India & world along with Human Ecology.	**10**
f)	Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization.	**10**

SLR-BD-500

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Introduction to Sociology (BTN06507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

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Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Introduction to Sociology (BTN06507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
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Q.2 Solve the following: (Any Four)

a) What is Sociology? And explain with concept like social structure, role, norms, values etc. **10**

b) Explain with detail trends of Urbanization in developing countries and world. **10**

c) Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development. **10**

d) Explain with detail social movements like protest, reformist, radical in India. **10**

e) Explain in detail demographic change in India & world along with Human Ecology. **10**

f) Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization. **10**

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Introduction to Sociology (BTN06507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Social change is change in ____.
a) Society b) Community
c) Individual d) Education

2) Which is recognized as one of the first environmental movements in country?
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a) West Bengal
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10) Functions of Social Institutes is ____.

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c) To meet the needs of Family
d) None of above

SLR-BD-500

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Introduction to Sociology (BTN06507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

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a)	What is Sociology? And explain with concept like social structure, role, norms, values etc.	**10**
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e)	Explain in detail demographic change in India & world along with Human Ecology.	**10**
f)	Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization.	**10**

SLR-BD-501

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Stress and Coping (BTN06508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) What is stress?
a) A state of physical tiredness
b) The body's response to a demand or challenge
c) A type of exercise
d) A form of relaxation

2) Which of the following is a healthy way to cope with stress?
a) Concentrating the stressor
b) Engaging in regular physical activity
c) Investing time on social media
d) Consuming excessive amounts of caffeine

3) Which of the following is a relaxation technique often used for stress management?
a) Procrastination b) Meditation
c) Caffeine consumption d) Multitasking

4) What is the purpose of time management in stress reduction?
a) To increase stress by overloading schedules
b) To create a sense of urgency
c) To prioritize tasks and reduce overwhelm
d) To eliminate breaks and relaxation time

5) Which of the following is a potential source of social support?
a) Isolation from friends and family
b) Engaging in negative self-talk
c) Seeking help from friends, family, or support groups
d) Avoiding all forms of communication

6) When a task appears overwhelming, it is best to _____
a) Put it aside till later
b) Drink alcohol to relax
c) Break it down into smaller task
d) Avoid the task

7) Anxiety can cause the following moods _____
a) Irritable b) Nervous
c) Anxious d) All of the above

8) The following are the characteristics of Positive Stress.
a) It improves performance
b) It feels exciting
c) It motivates
d) All of the above

9) A good way to prevent stress is _____
a) Drinking beverages high in caffeine
b) Sitting ideal doing nothing
c) Overeating
d) Taking time out for relaxation

10) Absenteeism, turnover and less productivity are _____ symptoms of stress.
a) Medical b) Psychological
c) Behavioral d) None of these

SLR-BD-501

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Stress and Coping (BTN06508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Stress and Coping (BTN06508)

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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

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c) Seeking help from friends, family, or support groups
d) Avoiding all forms of communication

SLR-BD-501

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Stress and Coping (BTN06508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
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Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Stress and Coping (BTN06508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

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a) A state of physical tiredness
b) The body's response to a demand or challenge
c) A type of exercise
d) A form of relaxation

4) Which of the following is a healthy way to cope with stress?
a) Concentrating the stressor
b) Engaging in regular physical activity
c) Investing time on social media
d) Consuming excessive amounts of caffeine

5) Which of the following is a relaxation technique often used for stress management?
a) Procrastination b) Meditation
c) Caffeine consumption d) Multitasking

6) What is the purpose of time management in stress reduction?
a) To increase stress by overloading schedules
b) To create a sense of urgency
c) To prioritize tasks and reduce overwhelm
d) To eliminate breaks and relaxation time

7) Which of the following is a potential source of social support?
a) Isolation from friends and family
b) Engaging in negative self-talk
c) Seeking help from friends, family, or support groups
d) Avoiding all forms of communication

8) When a task appears overwhelming, it is best to _____
a) Put it aside till later
b) Drink alcohol to relax
c) Break it down into smaller task
d) Avoid the task

9) Anxiety can cause the following moods _____
a) Irritable b) Nervous
c) Anxious d) All of the above

10) The following are the characteristics of Positive Stress.
a) It improves performance
b) It feels exciting
c) It motivates
d) All of the above

SLR-BD-501

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Stress and Coping (BTN06508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

Seat No.	

Set | S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Stress and Coping (BTN06508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) Which of the following is a relaxation technique often used for stress management?
a) Procrastination b) Meditation
c) Caffeine consumption d) Multitasking

2) What is the purpose of time management in stress reduction?
a) To increase stress by overloading schedules
b) To create a sense of urgency
c) To prioritize tasks and reduce overwhelm
d) To eliminate breaks and relaxation time

3) Which of the following is a potential source of social support?
a) Isolation from friends and family
b) Engaging in negative self-talk
c) Seeking help from friends, family, or support groups
d) Avoiding all forms of communication

4) When a task appears overwhelming, it is best to _____
a) Put it aside till later
b) Drink alcohol to relax
c) Break it down into smaller task
d) Avoid the task

5) Anxiety can cause the following moods _____
a) Irritable b) Nervous
c) Anxious d) All of the above

6) The following are the characteristics of Positive Stress.
a) It improves performance
b) It feels exciting
c) It motivates
d) All of the above

7) A good way to prevent stress is _____
a) Drinking beverages high in caffeine
b) Sitting ideal doing nothing
c) Overeating
d) Taking time out for relaxation

8) Absenteeism, turnover and less productivity are _____ symptoms of stress.
a) Medical
b) Psychological
c) Behavioral
d) None of these

9) What is stress?
a) A state of physical tiredness
b) The body's response to a demand or challenge
c) A type of exercise
d) A form of relaxation

10) Which of the following is a healthy way to cope with stress?
a) Concentrating the stressor
b) Engaging in regular physical activity
c) Investing time on social media
d) Consuming excessive amounts of caffeine

SLR-BD-501

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Stress and Coping (BTN06508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

SLR-BD-502

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Professional Ethics and Human Value (BTN06509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values, and beliefs
c) Only Values d) Psychology

2) Word ethichs is definded as a _____
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

3) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) Authority

4) The study on ethics helps to know the people's _____.
a) Learn good or bad things
b) Copyright
c) Morality
d) Beliefs, values, and morals

5) The objectives of professional ethics in engineering are _____.
a) To understand the moral values that ought to guide the Engineering profession
b) To resolve the moral issues in the profession, and
c) To justify the moral judgment concerning the profession
d) All the above

6) The main core human values are _____.

a) Right conduct b) Peace
c) Both a & b d) None of these

7) Preconditioning is ____.

a) Assuming without knowing b) Knowing without assuming
c) Only assuming d) Only knowing

8) Value education deals with ____.

a) What is universally valuable to all of us
b) What is conductive to our individual and collective of us
c) Enables to be in harmony with ourselves, other and rest of nature
d) All of the above

9) Courage is the tendency to accept and face ____.

a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

10) Human life is lived at four levels individuals, family, society and ____.

a) Nature b) Nurture
c) World d) Universe

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Professional Ethics and Human Value (BTN06509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

SLR-BD-502

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Professional Ethics and Human Value (BTN06509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) The main core human values are _____.
a) Right conduct b) Peace
c) Both a & b d) None of these

2) Preconditioning is ____.
a) Assuming without knowing b) Knowing without assuming
c) Only assuming d) Only knowing

3) Value education deals with ____.
a) What is universally valuable to all of us
b) What is conductive to our individual and collective of us
c) Enables to be in harmony with ourselves, other and rest of nature
d) All of the above

4) Courage is the tendency to accept and face ____.
a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

5) Human life is lived at four levels individuals, family, society and ____.
a) Nature b) Nurture
c) World d) Universe

6) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values, and beliefs
c) Only Values d) Psychology

7) Word ethichs is definded as a _____
   a) Motivation
   b) Set of attitudes concerned with the value of work
   c) Attitude
   d) Values

8) _____ is defined as the duty, obligation or even authority.
   a) Work
   b) Responsibility
   c) Democracy
   d) Authority

9) The study on ethics helps to know the people's _____.
   a) Learn good or bad things
   b) Copyright
   c) Morality
   d) Beliefs, values, and morals

10) The objectives of professional ethics in engineering are _____.
   a) To understand the moral values that ought to guide the Engineering profession
   b) To resolve the moral issues in the profession, and
   c) To justify the moral judgment concerning the profession
   d) All the above

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Professional Ethics and Human Value (BTN06509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

SLR-BD-502

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Professional Ethics and Human Value (BTN06509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) Courage is the tendency to accept and face ____.
a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

2) Human life is lived at four levels individuals, family, society and ____.
a) Nature b) Nurture
c) World d) Universe

3) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values, and beliefs
c) Only Values d) Psychology

4) Word ethichs is definded as a _____
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

5) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) Authority

6) The study on ethics helps to know the people's _____.
a) Learn good or bad things
b) Copyright
c) Morality
d) Beliefs, values, and morals

7) The objectives of professional ethics in engineering are _____.

a) To understand the moral values that ought to guide the Engineering profession
b) To resolve the moral issues in the profession, and
c) To justify the moral judgment concerning the profession
d) All the above

8) The main core human values are _____.

a) Right conduct b) Peace
c) Both a & b d) None of these

9) Preconditioning is ____.

a) Assuming without knowing b) Knowing without assuming
c) Only assuming d) Only knowing

10) Value education deals with ____.

a) What is universally valuable to all of us
b) What is conductive to our individual and collective of us
c) Enables to be in harmony with ourselves, other and rest of nature
d) All of the above

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Professional Ethics and Human Value (BTN06509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Professional Ethics and Human Value (BTN06509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) Authority

2) The study on ethics helps to know the people's _____.
a) Learn good or bad things
b) Copyright
c) Morality
d) Beliefs, values, and morals

3) The objectives of professional ethics in engineering are _____.
a) To understand the moral values that ought to guide the Engineering profession
b) To resolve the moral issues in the profession, and
c) To justify the moral judgment concerning the profession
d) All the above

4) The main core human values are _____.
a) Right conduct b) Peace
c) Both a & b d) None of these

5) Preconditioning is ____.
a) Assuming without knowing b) Knowing without assuming
c) Only assuming d) Only knowing

6) Value education deals with ____.
   a) What is universally valuable to all of us
   b) What is conductive to our individual and collective of us
   c) Enables to be in harmony with ourselves, other and rest of nature
   d) All of the above

7) Courage is the tendency to accept and face ____.
   a) Self-confidence
   b) Risks and difficult tasks in rational ways
   c) Physical courage
   d) Social courage

8) Human life is lived at four levels individuals, family, society and ____.
   a) Nature b) Nurture
   c) World d) Universe

9) Ethics is the word that refers to _____.
   a) Human tendency b) Morals, values, and beliefs
   c) Only Values d) Psychology

10) Word ethichs is definded as a _____
   a) Motivation
   b) Set of attitudes concerned with the value of work
   c) Attitude
   d) Values

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Professional Ethics and Human Value (BTN06509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

SLR-BD-503

Seat No.	

Set P

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (BTN06601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) Which of the following is true about the difference between an antenna and a transmission line?
a) Antennas convert electromagnetic waves to electric currents; transmission lines convert electric signals to optical signals.
b) Antennas are used for radiation or reception of signals; transmission lines guide signals without radiation.
c) Antennas and transmission lines both radiate energies equally.
d) Transmission lines are omnidirectional, while antennas are bidirectional.

2) The radiation principle of an antenna is based on _____.
a) Faraday's Law b) Coulomb's Law
c) Maxwell's Equations s) Ohm's Law

3) If the distance between two isotropic point sources is increased, the radiation pattern _____.
a) Becomes narrower with more lobes
b) Remains the same
c) Becomes broader with fewer lobes
d) Changes to an omnidirectional pattern

4) The directivity of an array increases when _____.
a) The number of elements decreases
b) The spacing between elements increases
c) The beam width becomes broader
d) The radiation resistance decreases

5) Radiation resistance of a small dipole is typically _____.
a) Higher than a half-wave dipole
b) Lower than a half-wave dipole
c) Equal to the input impedance of the dipole
d) Infinite at resonance

6) Wideband characteristics of helical antennas are due to _____.
a) Their circular polarization
b) The flexibility in the number of turns and spacing
c) High gain and narrow beamwidth
d) Use of low-frequency operation

7) A slot antenna is typically fed at _____.
a) The centre of the slot
b) The edges of the slot
c) A point that maximizes impedance
d) A null point of the radiation pattern.

8) Horn antennas are commonly used for _____.
a) Low-frequency applications
b) Wideband applications and as feeds for reflectors
c) Ground wave communication
d) Underwater communication

9) A common feed method for a paraboloidal reflector is _____.
a) Dipole feed
b) Horn feed at the focal point
c) Slot antenna feed
d) Circular waveguide feed

10) A key principle behind frequency-independent antennas is _____.
a) Babinet's principle
b) Constant impedance
c) Self-similarity or scaling of geometry
d) Reflection and transmission theory

11) A key feature of smart antennas is _____.
a) Fixed radiation patterns
b) Directional beam steering based on signal processing
c) No dependence on operating frequency
d) Narrowband operation only

12) The ionosphere is divided into layers based on _____.
a) Altitude and temperature
b) Atmospheric density
c) Electron density and refractive properties
d) Magnetic field intensity

13) Duct propagation is most commonly observed in _____.
   a) High altitudes
   b) Marine environments and temperature inversion layers
   c) Dry desert regions
   d) Dense urban environments.

14) Fading in sky wave propagation occurs due to _____.
   a) Absorption in the troposphere
   b) Interference between multiple reflected signals
   c) Excessive diffraction
   d) Impedance mismatch at the antenna

SLR-BD-503

Seat No.	

Set P

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (BTN06601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt any FOUR questions. **16**

a) What is Antenna aperture. Explain different types of antenna aperture.
b) Discuss principle of pattern multiplication. What is the advantage of pattern multiplication?
c) What is necessity of array. State properties of broadside and end fire array.
d) Write difference between antenna and complementary slot(dipole) antenna.
e) Define pitch angle of helical antenna; explain the effect of pitch angle on helical antenna.

Q.3 Attempt any TWO questions. **12**

a) Explain different antenna field zones & their boundaries with neat sketches.
b) Find out Electric field of two isotropic point sources of same amplitude and same phase.
c) Explain different modes of operation of helical antenna.

Section – II

Q.4 Attempt any FOUR questions. **16**

a) Draw different shapes of microstrip antenna, state advantages disadvantages and applications of it.
b) What is reflector antenna? With necessary diagrams, explain parabolic reflector antenna.
c) Write a short note on the frequency-independent antenna.
d) Write a short note on ground wave propagation.
e) Describe the structure of the atmosphere and specify the factors affecting the radio wave propagation.

Q.5 Attempt any TWO questions. **12**

a) Obtain the design equation of horn antenna, discuss on different types of feed used with neat diagram.

b) With a suitable diagram explain the construction and working of log periodic antenna state advantages of it.

c) Define & explain- Virtual Height, Critical Frequency, Maximum Usable Frequency, Skip Distance.

SLR-BD-503

Seat No.	

Set Q

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (BTN06601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) Horn antennas are commonly used for _____.
a) Low-frequency applications
b) Wideband applications and as feeds for reflectors
c) Ground wave communication
d) Underwater communication

2) A common feed method for a paraboloidal reflector is _____.
a) Dipole feed
b) Horn feed at the focal point
c) Slot antenna feed
d) Circular waveguide feed

3) A key principle behind frequency-independent antennas is _____.
a) Babinet's principle
b) Constant impedance
c) Self-similarity or scaling of geometry
d) Reflection and transmission theory

4) A key feature of smart antennas is _____.
a) Fixed radiation patterns
b) Directional beam steering based on signal processing
c) No dependence on operating frequency
d) Narrowband operation only

5) The ionosphere is divided into layers based on _____.
a) Altitude and temperature
b) Atmospheric density
c) Electron density and refractive properties
d) Magnetic field intensity

6) Duct propagation is most commonly observed in _____.
   a) High altitudes
   b) Marine environments and temperature inversion layers
   c) Dry desert regions
   d) Dense urban environments.

7) Fading in sky wave propagation occurs due to _____.
   a) Absorption in the troposphere
   b) Interference between multiple reflected signals
   c) Excessive diffraction
   d) Impedance mismatch at the antenna

8) Which of the following is true about the difference between an antenna and a transmission line?
   a) Antennas convert electromagnetic waves to electric currents; transmission lines convert electric signals to optical signals.
   b) Antennas are used for radiation or reception of signals; transmission lines guide signals without radiation.
   c) Antennas and transmission lines both radiate energies equally.
   d) Transmission lines are omnidirectional, while antennas are bidirectional.

9) The radiation principle of an antenna is based on _____.
   a) Faraday's Law b) Coulomb's Law
   c) Maxwell's Equations s) Ohm's Law

10) If the distance between two isotropic point sources is increased, the radiation pattern _____.
   a) Becomes narrower with more lobes
   b) Remains the same
   c) Becomes broader with fewer lobes
   d) Changes to an omnidirectional pattern

11) The directivity of an array increases when _____.
   a) The number of elements decreases
   b) The spacing between elements increases
   c) The beam width becomes broader
   d) The radiation resistance decreases

12) Radiation resistance of a small dipole is typically _____.
   a) Higher than a half-wave dipole
   b) Lower than a half-wave dipole
   c) Equal to the input impedance of the dipole
   d) Infinite at resonance

13) Wideband characteristics of helical antennas are due to _____.

a) Their circular polarization
b) The flexibility in the number of turns and spacing
c) High gain and narrow beamwidth
d) Use of low-frequency operation

14) A slot antenna is typically fed at _____.

a) The centre of the slot
b) The edges of the slot
c) A point that maximizes impedance
d) A null point of the radiation pattern.

SLR-BD-503

Seat No.	

Set Q

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (BTN06601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt any FOUR questions. **16**

a) What is Antenna aperture. Explain different types of antenna aperture.
b) Discuss principle of pattern multiplication. What is the advantage of pattern multiplication?
c) What is necessity of array. State properties of broadside and end fire array.
d) Write difference between antenna and complementary slot(dipole) antenna.
e) Define pitch angle of helical antenna; explain the effect of pitch angle on helical antenna.

Q.3 Attempt any TWO questions. **12**

a) Explain different antenna field zones & their boundaries with neat sketches.
b) Find out Electric field of two isotropic point sources of same amplitude and same phase.
c) Explain different modes of operation of helical antenna.

Section – II

Q.4 Attempt any FOUR questions. **16**

a) Draw different shapes of microstrip antenna, state advantages disadvantages and applications of it.
b) What is reflector antenna? With necessary diagrams, explain parabolic reflector antenna.
c) Write a short note on the frequency-independent antenna.
d) Write a short note on ground wave propagation.
e) Describe the structure of the atmosphere and specify the factors affecting the radio wave propagation.

Q.5 Attempt any TWO questions. **12**

a) Obtain the design equation of horn antenna, discuss on different types of feed used with neat diagram.

b) With a suitable diagram explain the construction and working of log periodic antenna state advantages of it.

c) Define & explain- Virtual Height, Critical Frequency, Maximum Usable Frequency, Skip Distance.

SLR-BD-503

Seat No.	

Set R

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (BTN06601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) A key feature of smart antennas is _____.
a) Fixed radiation patterns
b) Directional beam steering based on signal processing
c) No dependence on operating frequency
d) Narrowband operation only

2) The ionosphere is divided into layers based on _____.
a) Altitude and temperature
b) Atmospheric density
c) Electron density and refractive properties
d) Magnetic field intensity

3) Duct propagation is most commonly observed in _____.
a) High altitudes
b) Marine environments and temperature inversion layers
c) Dry desert regions
d) Dense urban environments.

4) Fading in sky wave propagation occurs due to _____.
a) Absorption in the troposphere
b) Interference between multiple reflected signals
c) Excessive diffraction
d) Impedance mismatch at the antenna

5) Which of the following is true about the difference between an antenna and a transmission line?
   a) Antennas convert electromagnetic waves to electric currents; transmission lines convert electric signals to optical signals.
   b) Antennas are used for radiation or reception of signals; transmission lines guide signals without radiation.
   c) Antennas and transmission lines both radiate energies equally.
   d) Transmission lines are omnidirectional, while antennas are bidirectional.

6) The radiation principle of an antenna is based on _____.
   a) Faraday's Law b) Coulomb's Law
   c) Maxwell's Equations s) Ohm's Law

7) If the distance between two isotropic point sources is increased, the radiation pattern _____.
   a) Becomes narrower with more lobes
   b) Remains the same
   c) Becomes broader with fewer lobes
   d) Changes to an omnidirectional pattern

8) The directivity of an array increases when _____.
   a) The number of elements decreases
   b) The spacing between elements increases
   c) The beam width becomes broader
   d) The radiation resistance decreases

9) Radiation resistance of a small dipole is typically _____.
   a) Higher than a half-wave dipole
   b) Lower than a half-wave dipole
   c) Equal to the input impedance of the dipole
   d) Infinite at resonance

10) Wideband characteristics of helical antennas are due to _____.
   a) Their circular polarization
   b) The flexibility in the number of turns and spacing
   c) High gain and narrow beamwidth
   d) Use of low-frequency operation

11) A slot antenna is typically fed at _____.
   a) The centre of the slot
   b) The edges of the slot
   c) A point that maximizes impedance
   d) A null point of the radiation pattern.

12) Horn antennas are commonly used for _____.
a) Low-frequency applications
b) Wideband applications and as feeds for reflectors
c) Ground wave communication
d) Underwater communication

13) A common feed method for a paraboloidal reflector is _____.
a) Dipole feed
b) Horn feed at the focal point
c) Slot antenna feed
d) Circular waveguide feed

14) A key principle behind frequency-independent antennas is _____.
a) Babinet's principle
b) Constant impedance
c) Self-similarity or scaling of geometry
d) Reflection and transmission theory

SLR-BD-503

Seat No.	

Set R

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (BTN06601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt any FOUR questions. **16**

a) What is Antenna aperture. Explain different types of antenna aperture.
b) Discuss principle of pattern multiplication. What is the advantage of pattern multiplication?
c) What is necessity of array. State properties of broadside and end fire array.
d) Write difference between antenna and complementary slot(dipole) antenna.
e) Define pitch angle of helical antenna; explain the effect of pitch angle on helical antenna.

Q.3 Attempt any TWO questions. **12**

a) Explain different antenna field zones & their boundaries with neat sketches.
b) Find out Electric field of two isotropic point sources of same amplitude and same phase.
c) Explain different modes of operation of helical antenna.

Section – II

Q.4 Attempt any FOUR questions. **16**

a) Draw different shapes of microstrip antenna, state advantages disadvantages and applications of it.
b) What is reflector antenna? With necessary diagrams, explain parabolic reflector antenna.
c) Write a short note on the frequency-independent antenna.
d) Write a short note on ground wave propagation.
e) Describe the structure of the atmosphere and specify the factors affecting the radio wave propagation.

Q.5 Attempt any TWO questions. **12**

a) Obtain the design equation of horn antenna, discuss on different types of feed used with neat diagram.

b) With a suitable diagram explain the construction and working of log periodic antenna state advantages of it.

c) Define & explain- Virtual Height, Critical Frequency, Maximum Usable Frequency, Skip Distance.

SLR-BD-503

Seat No.		Set	S

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (BTN06601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. 14

1) Wideband characteristics of helical antennas are due to _____.
a) Their circular polarization
b) The flexibility in the number of turns and spacing
c) High gain and narrow beamwidth
d) Use of low-frequency operation

2) A slot antenna is typically fed at _____.
a) The centre of the slot
b) The edges of the slot
c) A point that maximizes impedance
d) A null point of the radiation pattern.

3) Horn antennas are commonly used for _____.
a) Low-frequency applications
b) Wideband applications and as feeds for reflectors
c) Ground wave communication
d) Underwater communication

4) A common feed method for a paraboloidal reflector is _____.
a) Dipole feed
b) Horn feed at the focal point
c) Slot antenna feed
d) Circular waveguide feed

5) A key principle behind frequency-independent antennas is _____.
a) Babinet's principle
b) Constant impedance
c) Self-similarity or scaling of geometry
d) Reflection and transmission theory

6) A key feature of smart antennas is _____.
   a) Fixed radiation patterns
   b) Directional beam steering based on signal processing
   c) No dependence on operating frequency
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7) The ionosphere is divided into layers based on _____.
   a) Altitude and temperature
   b) Atmospheric density
   c) Electron density and refractive properties
   d) Magnetic field intensity

8) Duct propagation is most commonly observed in _____.
   a) High altitudes
   b) Marine environments and temperature inversion layers
   c) Dry desert regions
   d) Dense urban environments.

9) Fading in sky wave propagation occurs due to _____.
   a) Absorption in the troposphere
   b) Interference between multiple reflected signals
   c) Excessive diffraction
   d) Impedance mismatch at the antenna

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   b) The spacing between elements increases
   c) The beam width becomes broader
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14) Radiation resistance of a small dipole is typically _____.
   a) Higher than a half-wave dipole
   b) Lower than a half-wave dipole
   c) Equal to the input impedance of the dipole
   d) Infinite at resonance

SLR-BD-503

Seat No.	

Set S

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (BTN06601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt any FOUR questions. **16**

a) What is Antenna aperture. Explain different types of antenna aperture.
b) Discuss principle of pattern multiplication. What is the advantage of pattern multiplication?
c) What is necessity of array. State properties of broadside and end fire array.
d) Write difference between antenna and complementary slot(dipole) antenna.
e) Define pitch angle of helical antenna; explain the effect of pitch angle on helical antenna.

Q.3 Attempt any TWO questions. **12**

a) Explain different antenna field zones & their boundaries with neat sketches.
b) Find out Electric field of two isotropic point sources of same amplitude and same phase.
c) Explain different modes of operation of helical antenna.

Section – II

Q.4 Attempt any FOUR questions. **16**

a) Draw different shapes of microstrip antenna, state advantages disadvantages and applications of it.
b) What is reflector antenna? With necessary diagrams, explain parabolic reflector antenna.
c) Write a short note on the frequency-independent antenna.
d) Write a short note on ground wave propagation.
e) Describe the structure of the atmosphere and specify the factors affecting the radio wave propagation.

Q.5 Attempt any TWO questions. **12**

a) Obtain the design equation of horn antenna, discuss on different types of feed used with neat diagram.

b) With a suitable diagram explain the construction and working of log periodic antenna state advantages of it.

c) Define & explain- Virtual Height, Critical Frequency, Maximum Usable Frequency, Skip Distance.

SLR-BD-504

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (BTN06602)

Day & Date: Thursday, 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) NRE cost can be defined by ____.
a) The one-time monetary cost of designing the system
b) Life time cost of system
c) Depends upon embedded system
d) None of above

2) Real-time operating systems (RTOS) in an embedded system?
a) used in large-scale systems
b) are not important for system performance
c) provide deterministic scheduling of tasks
d) provide non-deterministic scheduling of tasks

3) Pulse-width modulation (PWM) in an embedded system?
a) is used for digital-to-analog conversion
b) is used for analog-to-digital conversion
c) is used for controlling the duty cycle of a signal
d) is used for synchronizing signals

4) Semaphore in real-time operating systems?
a) Synchronize access to shared resources
b) Manage memory allocation and deallocation
c) Control task priority levels
d) Handle inter-process communication

5) In ARM assembly language, which register is often used as the program counter?
a) R0 b) R7
c) R15 d) R31

6) r0= 0x00000000, r1 =0x00000005
ADD r0, r1, r1, LSL #1
a) r0 = 0x00000014, r1= 0x00000005
b) r0 = 0x0000000F, r1= 0x00000005
c) r0 = 0x00000010, r1= 0x00000005
d) None of above

7) Which architecture is used by the LPC2148 microcontroller?
a) x86 b) ARM
c) AVR d) PIC

8) What is the size of the on-chip Flash memory in the LPC2148?
a) 32KB b) 64KB
c) 16KB d) 512KB

9) Abort mode generally enters when?
a) undefined instructions are to be handled
b) ARM processor is on rest
c) low priority interrupt is raised
d) an attempt access memory fails

10) Which of the following stores all the task information that the system requires?
a) task access block b) Register
c) accumulator d) task control block

11) The real-time clock (RTC) in an embedded system?
a) It is a type of hardware that controls the operation of the microcontroller
b) It is a type of software that is used for debugging and testing
c) It is a type of hardware that provides a mechanism for keeping track of the time and date
d) It is a type of software that provides a user interface

12) The purpose of the PLL (Phase-Locked Loop) in the LPC2148 is?
a) To provide additional memory
b) To synchronize multiple devices
c) To generate a stable clock frequency
d) To manage power consumption

13) If External frequency = 12 MHz, CCLK=60MHz and PCLK=15MHz then PLLCFG and VPBDIV values are ____.
a) 0x23 and 0x 01 b) 0x23 and 0x 00
c) 0x24 and 0x 02 d) 0x24 and 0x 00

14) Concurrent and independent threads of execution that can compete for CPU execution time is called ____.
a) Semaphore b) Task
c) Threading d) None of the above

Seat No.	

Set | P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (BTN06602)

Day & Date: Thursday, 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.2 Attempt the following: (Any Four) **16**

a) Define embedded system. Explain the components of embedded system Hardware.
b) Explain Time-to-Market design metrics in detail.
c) Explain important the features of LPC 2148.
d) Explain the pipelining concept of ARM 7TDMI in detail
e) Explain BUS architecture of ARM with suitable diagram.

Q.3 Attempt the following: (Any Two) **12**

a) With the suitable diagram explain ARM 7TDMI core architecture in detail.
b) Describe operation with examples of following ARM instructions.
1) MOV
2) RSB
3) STR
4) BLX
5) MRS
6) CMP
c) Explain the following on chip peripherals of ARM 2148 in detail. Interrupts, on-chip ADC, RTC

Q.4 Attempt the following: (Any Four) **16**

a) Define RTOS. Explain classification of RTOS.
b) Explain task states associated with RTOS.
c) What are the RTOS services in contrast with traditional OS?
d) Explain embedded system used in digital camera.
e) Explain with code Interfacing of ADC to LPC 2148 in detail.

Q.5 Attempt the following: (Any Two) **12**

a) Explain the following kernel objects in RTOS.
   1) Message Queue
   2) ISR
   3) Timers

b) Define task scheduling. Explain various task scheduling algorithms.

c) Interface switch and LED to any port pins of LPC2148.

d) Write an embedded c program to turn ON LED when switch is pressed.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (BTN06602)

Day & Date: Thursday, 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) What is the size of the on-chip Flash memory in the LPC2148?
a) 32KB b) 64KB
c) 16KB d) 512KB

2) Abort mode generally enters when?
a) undefined instructions are to be handled
b) ARM processor is on rest
c) low priority interrupt is raised
d) an attempt access memory fails

3) Which of the following stores all the task information that the system requires?
a) task access block b) Register
c) accumulator d) task control block

4) The real-time clock (RTC) in an embedded system?
a) It is a type of hardware that controls the operation of the microcontroller
b) It is a type of software that is used for debugging and testing
c) It is a type of hardware that provides a mechanism for keeping track of the time and date
d) It is a type of software that provides a user interface

5) The purpose of the PLL (Phase-Locked Loop) in the LPC2148 is?
a) To provide additional memory
b) To synchronize multiple devices
c) To generate a stable clock frequency
d) To manage power consumption

6) If External frequency = 12 MHz, CCLK=60MHz and PCLK=15MHz then PLLCFG and VPBDIV values are ____.

a) 0x23 and 0x 01 b) 0x23 and 0x 00

c) 0x24 and 0x 02 d) 0x24 and 0x 00

7) Concurrent and independent threads of execution that can compete for CPU execution time is called ____.

a) Semaphore b) Task

c) Threading d) None of the above

8) NRE cost can be defined by ____.

a) The one-time monetary cost of designing the system

b) Life time cost of system

c) Depends upon embedded system

d) None of above

9) Real-time operating systems (RTOS) in an embedded system?

a) used in large-scale systems

b) are not important for system performance

c) provide deterministic scheduling of tasks

d) provide non-deterministic scheduling of tasks

10) Pulse-width modulation (PWM) in an embedded system?

a) is used for digital-to-analog conversion

b) is used for analog-to-digital conversion

c) is used for controlling the duty cycle of a signal

d) is used for synchronizing signals

11) Semaphore in real-time operating systems?

a) Synchronize access to shared resources

b) Manage memory allocation and deallocation

c) Control task priority levels

d) Handle inter-process communication

12) In ARM assembly language, which register is often used as the program counter?

a) R0 b) R7

c) R15 d) R31

13) r0= 0x00000000, r1 =0x00000005

ADD r0, r1, r1, LSL #1

a) r0 = 0x00000014, r1= 0x00000005

b) r0 = 0x0000000F, r1= 0x00000005

c) r0 = 0x00000010, r1= 0x00000005

d) None of above

14) Which architecture is used by the LPC2148 microcontroller?

a) x86 b) ARM

c) AVR d) PIC

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (BTN06602)

Day & Date: Thursday, 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.2 Attempt the following: (Any Four) **16**

a) Define embedded system. Explain the components of embedded system Hardware.
b) Explain Time-to-Market design metrics in detail.
c) Explain important the features of LPC 2148.
d) Explain the pipelining concept of ARM 7TDMI in detail
e) Explain BUS architecture of ARM with suitable diagram.

Q.3 Attempt the following: (Any Two) **12**

a) With the suitable diagram explain ARM 7TDMI core architecture in detail.
b) Describe operation with examples of following ARM instructions.
1) MOV
2) RSB
3) STR
4) BLX
5) MRS
6) CMP
c) Explain the following on chip peripherals of ARM 2148 in detail. Interrupts, on-chip ADC, RTC

Q.4 Attempt the following: (Any Four) **16**

a) Define RTOS. Explain classification of RTOS.
b) Explain task states associated with RTOS.
c) What are the RTOS services in contrast with traditional OS?
d) Explain embedded system used in digital camera.
e) Explain with code Interfacing of ADC to LPC 2148 in detail.

Q.5 Attempt the following: (Any Two) **12**

a) Explain the following kernel objects in RTOS.
   1) Message Queue
   2) ISR
   3) Timers

b) Define task scheduling. Explain various task scheduling algorithms.

c) Interface switch and LED to any port pins of LPC2148.

d) Write an embedded c program to turn ON LED when switch is pressed.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (BTN06602)

Day & Date: Thursday, 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The real-time clock (RTC) in an embedded system?
a) It is a type of hardware that controls the operation of the microcontroller
b) It is a type of software that is used for debugging and testing
c) It is a type of hardware that provides a mechanism for keeping track of the time and date
d) It is a type of software that provides a user interface

2) The purpose of the PLL (Phase-Locked Loop) in the LPC2148 is?
a) To provide additional memory
b) To synchronize multiple devices
c) To generate a stable clock frequency
d) To manage power consumption

3) If External frequency = 12 MHz, CCLK=60MHz and PCLK=15MHz then PLLCFG and VPBDIV values are ____.
a) 0x23 and 0x 01 b) 0x23 and 0x 00
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4) Concurrent and independent threads of execution that can compete for CPU execution time is called ____.
a) Semaphore b) Task
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5) NRE cost can be defined by ____.
a) The one-time monetary cost of designing the system
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6) Real-time operating systems (RTOS) in an embedded system?
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11) Which architecture is used by the LPC2148 microcontroller?
- a) x86
- b) ARM
- c) AVR
- d) PIC

12) What is the size of the on-chip Flash memory in the LPC2148?
- a) 32KB
- b) 64KB
- c) 16KB
- d) 512KB

13) Abort mode generally enters when?
- a) undefined instructions are to be handled
- b) ARM processor is on rest
- c) low priority interrupt is raised
- d) an attempt access memory fails

14) Which of the following stores all the task information that the system requires?
- a) task access block
- b) Register
- c) accumulator
- d) task control block

SLR-BD-504

Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (BTN06602)

Day & Date: Thursday, 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.2 Attempt the following: (Any Four) **16**

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1) MOV
2) RSB
3) STR
4) BLX
5) MRS
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Q.5 Attempt the following: (Any Two) **12**

a) Explain the following kernel objects in RTOS.
   1) Message Queue
   2) ISR
   3) Timers

b) Define task scheduling. Explain various task scheduling algorithms.

c) Interface switch and LED to any port pins of LPC2148.

d) Write an embedded c program to turn ON LED when switch is pressed.

SLR-BD-504

Seat No.	

Set S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (BTN06602)

Day & Date: Thursday, 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) r0= 0x00000000, r1 =0x00000005
ADD r0, r1, r1, LSL #1
a) r0 = 0x00000014, r1= 0x00000005
b) r0 = 0x0000000F, r1= 0x00000005
c) r0 = 0x00000010, r1= 0x00000005
d) None of above

2) Which architecture is used by the LPC2148 microcontroller?
a) x86 b) ARM
c) AVR d) PIC

3) What is the size of the on-chip Flash memory in the LPC2148?
a) 32KB b) 64KB
c) 16KB d) 512KB

4) Abort mode generally enters when?
a) undefined instructions are to be handled
b) ARM processor is on rest
c) low priority interrupt is raised
d) an attempt access memory fails

5) Which of the following stores all the task information that the system requires?
a) task access block b) Register
c) accumulator d) task control block

6) The real-time clock (RTC) in an embedded system?
- a) It is a type of hardware that controls the operation of the microcontroller
- b) It is a type of software that is used for debugging and testing
- c) It is a type of hardware that provides a mechanism for keeping track of the time and date
- d) It is a type of software that provides a user interface

7) The purpose of the PLL (Phase-Locked Loop) in the LPC2148 is?
- a) To provide additional memory
- b) To synchronize multiple devices
- c) To generate a stable clock frequency
- d) To manage power consumption

8) If External frequency = 12 MHz, CCLK=60MHz and PCLK=15MHz then PLLCFG and VPBDIV values are ____.
- a) 0x23 and 0x 01
- b) 0x23 and 0x 00
- c) 0x24 and 0x 02
- d) 0x24 and 0x 00

9) Concurrent and independent threads of execution that can compete for CPU execution time is called ____.
- a) Semaphore
- b) Task
- c) Threading
- d) None of the above

10) NRE cost can be defined by ____.
- a) The one-time monetary cost of designing the system
- b) Life time cost of system
- c) Depends upon embedded system
- d) None of above

11) Real-time operating systems (RTOS) in an embedded system?
- a) used in large-scale systems
- b) are not important for system performance
- c) provide deterministic scheduling of tasks
- d) provide non-deterministic scheduling of tasks

12) Pulse-width modulation (PWM) in an embedded system?
- a) is used for digital-to-analog conversion
- b) is used for analog-to-digital conversion
- c) is used for controlling the duty cycle of a signal
- d) is used for synchronizing signals

13) Semaphore in real-time operating systems?
- a) Synchronize access to shared resources
- b) Manage memory allocation and deallocation
- c) Control task priority levels
- d) Handle inter-process communication

14) In ARM assembly language, which register is often used as the program counter?

a) R0 b) R7

c) R15 d) R31

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (BTN06602)

Day & Date: Thursday, 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.2 Attempt the following: (Any Four) **16**

a) Define embedded system. Explain the components of embedded system Hardware.
b) Explain Time-to-Market design metrics in detail.
c) Explain important the features of LPC 2148.
d) Explain the pipelining concept of ARM 7TDMI in detail
e) Explain BUS architecture of ARM with suitable diagram.

Q.3 Attempt the following: (Any Two) **12**

a) With the suitable diagram explain ARM 7TDMI core architecture in detail.
b) Describe operation with examples of following ARM instructions.
1) MOV
2) RSB
3) STR
4) BLX
5) MRS
6) CMP
c) Explain the following on chip peripherals of ARM 2148 in detail. Interrupts, on-chip ADC, RTC

Q.4 Attempt the following: (Any Four) **16**

a) Define RTOS. Explain classification of RTOS.
b) Explain task states associated with RTOS.
c) What are the RTOS services in contrast with traditional OS?
d) Explain embedded system used in digital camera.
e) Explain with code Interfacing of ADC to LPC 2148 in detail.

Q.5 Attempt the following: (Any Two) **12**

a) Explain the following kernel objects in RTOS.
   1) Message Queue
   2) ISR
   3) Timers

b) Define task scheduling. Explain various task scheduling algorithms.

c) Interface switch and LED to any port pins of LPC2148.

d) Write an embedded c program to turn ON LED when switch is pressed.

SLR-BD-505

Seat No.	

Set P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (BTN06603)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Attempt the following. **14**

1) What is the total anode current of SCR in the equivalent circuit from the two- transistor (T1 & T2) analogy of SCR?
a) The sum of both the base currents
b) The sum of both the collector current
c) The sum of base current of T2 & collector current of T1
d) The sum of base current of T1 & collector current of T2

2) A diac is _____.
i) a two electrode, bidirectional avalanche diode.
ii) a device which conducts below the breakover voltage.
iii) a unidirectional resistive device.
iv) designed to supply large gate current.
Choose the correct answer from the options given below:
a) i, ii and iii only b) i, iii and iv only
c) i and iv only d) i, ii only

3) The device whose symbol is seen to be Two SCR's Inverse parallel connected is _____.
a) Triac switch b) Silicon unilateral switch
c) Mid-point gate thyristor d) Silicon unidirectional diac

4) SCRs are widely used in AC power control because they can _____.
a) Handle high currents and voltages
b) Turn on and off quickly
c) Be controlled by a small gate current
d) All of the above

5) IC 1596 can be used as _____.
a) Amplitude Modulator
b) As a Double balanced Modulator
c) High Frequency Mixer
d) All of these

6) For PLL 565, R1=10K. What should be the value in order to have center frequency of VCO to be 1000Hz?
a) $0.3\ \mu f$ b) $0.0.3\ \mu f$
c) $3\ \mu f$ d) $10\ \mu f$

7) In case of converter, maximum DC voltage is obtained for firing angle _____.
a) $\alpha < 0^{\circ}$ b) $\alpha > 0^{\circ}$
c) $\alpha = 0^{\circ}$ d) None of these

8) The DC voltage obtained at the output of Bridge controlled rectifier for $\alpha = 0°$ is _____.
a) $2Vm/\pi$ b) Vm/π
c) $Vm/2\pi$ d) None of these

9) IC 74926 can be used in measurement of _____.
a) frequency b) time
c) event d) all of these

10) What is the maximum display count in 3 and half digit display?
a) 1000 b) 2000
c) 1999 d) 999

11) The sensitivity of LM 35 is _____.
a) $10\ mV/°C$ b) $50\ mV/°C$
c) $1\ m\ V/°C$ d) $100\ mV/°C$

12) V to V converter implements the equation _____.
a) $Y = mX + C$ b) $Y = mX$
c) $X = mY$ d) $X = mY + C$

13) Which of following characteristics are required for selection of instrumentation amplifier?
a) High input impedance b) High CMRR
c) Both a and b d) None

14) PLC uses which of following language for programming?
a) C language b) English
c) Relay-ladder logic d) None of these

Seat No.	

Set **P**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (BTN06603)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of calculator is allowed.

Section – I

Q.2 Attempt any FOUR. **16**

a) Explain complementary commutation method of turning OFF of SCR.
b) Explain construction and working of TRIAC.
c) Explain AC power control using DIAC and TRIAC.
d) Draw circuit diagram and waveforms of single half wave controlled rectifier.
e) Explain FSK demodulator using PLL565.

Q.3 Attempt any TWO. **12**

a) Explain with the help of circuit diagram and waveforms single phase full wave controlled rectifier (Mid-point converter) with resistive load. Derive the expression for:
i) Average DC output voltage
ii) Average DC load current
iii) RMS load voltage

b) Explain construction of TRIAC and draw VI characteristics of it. Define the following terms associated with SCR.
i) Latching Current
ii) Holding current
iii) Forward breakover voltage

c) Design a frequency synthesizer to generate a frequency of 1KHz to 999.9KHz using PLL 565. Use BCD thumbwheel switches to set the frequency output.

Section – II

Q.4 Attempt any FOUR. **16**

a) Design a timer to generate 175sec delay using XR2240.
b) Draw block diagram of Event counting and explain its working.
c) Design V to I converter to convert 0-5V into 4-20mA.
d) Explain J and K type thermocouple.
e) Compare PLC and Relay logic.

Q.5 Attempt any TWO. **12**

a) Design a DVM for measurement of 2V input voltage. Explain its working.
b) Differentiate between V to V, I to V and V to I converters.
c) Draw and Explain PLC architecture.

Seat No.	

Set **Q**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (BTN06603)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if required.
5) Use of calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Attempt the following. **14**

1) The DC voltage obtained at the output of Bridge controlled rectifier for $\alpha = 0°$ is _____.
a) $2\mathrm{Vm}/\pi$ b) Vm/π
c) $\mathrm{Vm}/2\pi$ d) None of these

2) IC 74926 can be used in measurement of _____.
a) frequency b) time
c) event d) all of these

3) What is the maximum display count in 3 and half digit display?
a) 1000 b) 2000
c) 1999 d) 999

4) The sensitivity of LM 35 is _____.
a) $10\ \mathrm{mV}/°\mathrm{C}$ b) $50\ \mathrm{mV}/°\mathrm{C}$
c) $1\ \mathrm{m\ V}/°\mathrm{C}$ d) $100\ \mathrm{mV}/°\mathrm{C}$

5) V to V converter implements the equation _____.
a) $\mathrm{Y} = \mathrm{mX} + \mathrm{C}$ b) $\mathrm{Y} = \mathrm{mX}$
c) $\mathrm{X} = \mathrm{mY}$ d) $\mathrm{X} = \mathrm{mY} + \mathrm{C}$

6) Which of following characteristics are required for selection of instrumentation amplifier?
a) High input impedance b) High CMRR
c) Both a and b d) None

7) PLC uses which of following language for programming?
a) C language b) English
c) Relay-ladder logic d) None of these

8) What is the total anode current of SCR in the equivalent circuit from the two- transistor (T1 & T2) analogy of SCR?
a) The sum of both the base currents
b) The sum of both the collector current
c) The sum of base current of T2 & collector current of T1
d) The sum of base current of T1 & collector current of T2

9) A diac is _____.
i) a two electrode, bidirectional avalanche diode.
ii) a device which conducts below the breakover voltage.
iii) a unidirectional resistive device.
iv) designed to supply large gate current.
Choose the correct answer from the options given below:
a) i, ii and iii only
b) i, iii and iv only
c) i and iv only
d) i, ii only

10) The device whose symbol is seen to be Two SCR's Inverse parallel connected is _____.
a) Triac switch
b) Silicon unilateral switch
c) Mid-point gate thyristor
d) Silicon unidirectional diac

11) SCRs are widely used in AC power control because they can _____.
a) Handle high currents and voltages
b) Turn on and off quickly
c) Be controlled by a small gate current
d) All of the above

12) IC 1596 can be used as _____.
a) Amplitude Modulator
b) As a Double balanced Modulator
c) High Frequency Mixer
d) All of these

13) For PLL 565, R1=10K. What should be the value in order to have center frequency of VCO to be 1000Hz?
a) $0.3\ \mu f$
b) $0.0.3\ \mu f$
c) $3\ \mu f$
d) $10\ \mu f$

14) In case of converter, maximum DC voltage is obtained for firing angle _____.
a) $\alpha < 0^{\circ}$
b) $\alpha > 0^{\circ}$
c) $\alpha = 0^{\circ}$
d) None of these

Seat No.	

Set **Q**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (BTN06603)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of calculator is allowed.

Section – I

Q.2 Attempt any FOUR. **16**

a) Explain complementary commutation method of turning OFF of SCR.
b) Explain construction and working of TRIAC.
c) Explain AC power control using DIAC and TRIAC.
d) Draw circuit diagram and waveforms of single half wave controlled rectifier.
e) Explain FSK demodulator using PLL565.

Q.3 Attempt any TWO. **12**

a) Explain with the help of circuit diagram and waveforms single phase full wave controlled rectifier (Mid-point converter) with resistive load. Derive the expression for:
i) Average DC output voltage
ii) Average DC load current
iii) RMS load voltage

b) Explain construction of TRIAC and draw VI characteristics of it. Define the following terms associated with SCR.
i) Latching Current
ii) Holding current
iii) Forward breakover voltage

c) Design a frequency synthesizer to generate a frequency of 1KHz to 999.9KHz using PLL 565. Use BCD thumbwheel switches to set the frequency output.

Section – II

Q.4 Attempt any FOUR. **16**

a) Design a timer to generate 175sec delay using XR2240.
b) Draw block diagram of Event counting and explain its working.
c) Design V to I converter to convert 0-5V into 4-20mA.
d) Explain J and K type thermocouple.
e) Compare PLC and Relay logic.

Q.5 Attempt any TWO. **12**

a) Design a DVM for measurement of 2V input voltage. Explain its working.
b) Differentiate between V to V, I to V and V to I converters.
c) Draw and Explain PLC architecture.

Seat No.	

Set R

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (BTN06603)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Attempt the following. **14**

1) The sensitivity of LM 35 is _____.
a) $10\ \mathrm{mV/°C}$ b) $50\ \mathrm{mV/°C}$
c) $1\ \mathrm{m\ V/°C}$ d) $100\ \mathrm{mV/°C}$

2) V to V converter implements the equation _____.
a) $\mathrm{Y = mX + C}$ b) $\mathrm{Y = mX}$
c) $\mathrm{X = mY}$ d) $\mathrm{X = mY + C}$

3) Which of following characteristics are required for selection of instrumentation amplifier?
a) High input impedance b) High CMRR
c) Both a and b d) None

4) PLC uses which of following language for programming?
a) C language b) English
c) Relay-ladder logic d) None of these

5) What is the total anode current of SCR in the equivalent circuit from the two- transistor (T1 & T2) analogy of SCR?
a) The sum of both the base currents
b) The sum of both the collector current
c) The sum of base current of T2 & collector current of T1
d) The sum of base current of T1 & collector current of T2

6) A diac is _____.

i) a two electrode, bidirectional avalanche diode.
ii) a device which conducts below the breakover voltage.
iii) a unidirectional resistive device.
iv) designed to supply large gate current.

Choose the correct answer from the options given below:

a) i, ii and iii only
b) i, iii and iv only
c) i and iv only
d) i, ii only

7) The device whose symbol is seen to be Two SCR's Inverse parallel connected is _____.

a) Triac switch
b) Silicon unilateral switch
c) Mid-point gate thyristor
d) Silicon unidirectional diac

8) SCRs are widely used in AC power control because they can _____.

a) Handle high currents and voltages
b) Turn on and off quickly
c) Be controlled by a small gate current
d) All of the above

9) IC 1596 can be used as _____.

a) Amplitude Modulator
b) As a Double balanced Modulator
c) High Frequency Mixer
d) All of these

10) For PLL 565, R1=10K. What should be the value in order to have center frequency of VCO to be 1000Hz?

a) $0.3\ \mu f$
b) $0.0.3\ \mu f$
c) $3\ \mu f$
d) $10\ \mu f$

11) In case of converter, maximum DC voltage is obtained for firing angle _____.

a) $\alpha < 0^{\circ}$
b) $\alpha > 0^{\circ}$
c) $\alpha = 0^{\circ}$
d) None of these

12) The DC voltage obtained at the output of Bridge controlled rectifier for $\alpha = 0°$ is _____.

a) $2Vm/\pi$
b) Vm/π
c) $Vm/2\pi$
d) None of these

13) IC 74926 can be used in measurement of _____.

a) frequency
b) time
c) event
d) all of these

14) What is the maximum display count in 3 and half digit display?

a) 1000
b) 2000
c) 1999
d) 999

Seat No.	

Set **R**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (BTN06603)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of calculator is allowed.

Section – I

Q.2 Attempt any FOUR. **16**

a) Explain complementary commutation method of turning OFF of SCR.
b) Explain construction and working of TRIAC.
c) Explain AC power control using DIAC and TRIAC.
d) Draw circuit diagram and waveforms of single half wave controlled rectifier.
e) Explain FSK demodulator using PLL565.

Q.3 Attempt any TWO. **12**

a) Explain with the help of circuit diagram and waveforms single phase full wave controlled rectifier (Mid-point converter) with resistive load. Derive the expression for:
i) Average DC output voltage
ii) Average DC load current
iii) RMS load voltage

b) Explain construction of TRIAC and draw VI characteristics of it. Define the following terms associated with SCR.
i) Latching Current
ii) Holding current
iii) Forward breakover voltage

c) Design a frequency synthesizer to generate a frequency of 1KHz to 999.9KHz using PLL 565. Use BCD thumbwheel switches to set the frequency output.

Section – II

Q.4 Attempt any FOUR. **16**

a) Design a timer to generate 175sec delay using XR2240.
b) Draw block diagram of Event counting and explain its working.
c) Design V to I converter to convert 0-5V into 4-20mA.
d) Explain J and K type thermocouple.
e) Compare PLC and Relay logic.

Q.5 Attempt any TWO. **12**

a) Design a DVM for measurement of 2V input voltage. Explain its working.
b) Differentiate between V to V, I to V and V to I converters.
c) Draw and Explain PLC architecture.

Seat No.	

Set **S**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (BTN06603)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if required.
5) Use of calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Attempt the following. **14**

1) For PLL 565, R1=10K. What should be the value in order to have center frequency of VCO to be 1000Hz?
a) $0.3\ \mu f$ b) $0.0.3\ \mu f$
c) $3\ \mu f$ d) $10\ \mu f$

2) In case of converter, maximum DC voltage is obtained for firing angle _____.
a) $\alpha < 0^{\circ}$ b) $\alpha > 0^{\circ}$
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3) The DC voltage obtained at the output of Bridge controlled rectifier for $\alpha = 0°$ is _____.
a) $2Vm/\pi$ b) Vm/π
c) $Vm/2\pi$ d) None of these

4) IC 74926 can be used in measurement of _____.
a) frequency b) time
c) event d) all of these

5) What is the maximum display count in 3 and half digit display?
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6) The sensitivity of LM 35 is _____.
a) $10\ mV/°C$ b) $50\ mV/°C$
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a) $Y = mX + C$ b) $Y = mX$
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8) Which of following characteristics are required for selection of instrumentation amplifier?
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c) Both a and b d) None

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10) What is the total anode current of SCR in the equivalent circuit from the two- transistor (T1 & T2) analogy of SCR?
a) The sum of both the base currents
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ii) a device which conducts below the breakover voltage.
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Choose the correct answer from the options given below:
a) i, ii and iii only b) i, iii and iv only
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12) The device whose symbol is seen to be Two SCR's Inverse parallel connected is _____.
a) Triac switch b) Silicon unilateral switch
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13) SCRs are widely used in AC power control because they can _____.
a) Handle high currents and voltages
b) Turn on and off quickly
c) Be controlled by a small gate current
d) All of the above

14) IC 1596 can be used as _____.
a) Amplitude Modulator
b) As a Double balanced Modulator
c) High Frequency Mixer
d) All of these

SLR-BD-505

Seat No.	

Set S

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (BTN06603)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of calculator is allowed.

Section – I

Q.2 Attempt any FOUR. **16**

a) Explain complementary commutation method of turning OFF of SCR.
b) Explain construction and working of TRIAC.
c) Explain AC power control using DIAC and TRIAC.
d) Draw circuit diagram and waveforms of single half wave controlled rectifier.
e) Explain FSK demodulator using PLL565.

Q.3 Attempt any TWO. **12**

a) Explain with the help of circuit diagram and waveforms single phase full wave controlled rectifier (Mid-point converter) with resistive load. Derive the expression for:
i) Average DC output voltage
ii) Average DC load current
iii) RMS load voltage

b) Explain construction of TRIAC and draw VI characteristics of it. Define the following terms associated with SCR.
i) Latching Current
ii) Holding current
iii) Forward breakover voltage

c) Design a frequency synthesizer to generate a frequency of 1KHz to 999.9KHz using PLL 565. Use BCD thumbwheel switches to set the frequency output.

Section – II

Q.4 Attempt any FOUR. **16**

a) Design a timer to generate 175sec delay using XR2240.
b) Draw block diagram of Event counting and explain its working.
c) Design V to I converter to convert 0-5V into 4-20mA.
d) Explain J and K type thermocouple.
e) Compare PLC and Relay logic.

Q.5 Attempt any TWO. **12**

a) Design a DVM for measurement of 2V input voltage. Explain its working.
b) Differentiate between V to V, I to V and V to I converters.
c) Draw and Explain PLC architecture.

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Optical Fiber Communication (BTN06609)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) The maximum angle to the axis at which light may enter the fiber in order to be propagated is referred to as _____
a) Acceptance angle b) Incident angle
c) Critical Angle d) Numerical aperture

2) When the angle of incidence is _____ the critical angle, the light beam bends along the interface.
a) More than b) Less than
c) Equal to d) None of the above

3) Absorption losses due to atomic defects mainly include _____
a) Radiation
b) Missing molecules, oxygen defects in glass
c) Impurities in fiber material
d) Interaction with other components of core

4) The scattering resulting from fiber imperfections like core-cladding RI differences, diameter fluctuations, strains, and bubbles is?
a) Rayleigh scattering b) Mie scattering
c) Stimulated Brillouin scattering d) Stimulated Raman scattering

5) Attenuation in Number of decibels (dB) _____
a) 10 log10 Pi * Po b) 10 log10 Po / Pi
c) 10 log10 Pi / Po d) none

6) A common technique involved in the introduction of the stripe geometry to the structure to provide optical confinement in _____ plane.

a) Horizontal b) Vertical
c) Both a & b d) All Directions

7) Which among the following characteristics of Laser light specifies the precise movement of all individual light waves together through time and space?

a) Monochromatic b) Directional
c) Coherent d) Brightness

8) Determine incident optical power on a photo diode if it has photo current of 2.1 μA and Responsivity of 0.55 A/W

a) 4.15 b) 1.75
c) 3.81 d) 8.47

9) _____ Server has a source & destination of information being transmitted or received Optical network.

a) Station b) Trunk
c) Node d) Topology

10) The basic performance criteria or a WDM Technique are _____

a) Insertion loss b) Channel width
c) both a & b d) None of these

11) In OTDM a _____ data stream is constructed directly by time multiplexing.

a) low bit rate b) high bit rate
c) Medium d) None

12) FDDI Network consists of _____ ring topology.

a) Single b) Dual
c) Three d) Four

13) What are the applications of Optical Amplifiers?

a) Inline Amplifier b) Preamplifier
c) Power amplifier d) All of the above

14) SONET/SDH uses which technology _____

a) Ring b) Mesh
c) BUS d) Star

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Optical Fiber Communication (BTN06609)

Day & Date: Wednesday 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain the block diagram of Optical fiber communication system. List its advantages & disadvantages.

b) Explain bend losses in OFC.

c) Explain fiber splices.

d) Explain the structure Surface emitting LED.

e) When the mean optical power launched into an 8 km length of fiber is 120 μW the mean optical power at the fiber output is 3 μW
Determine:
i) Overall signal attenuation or loss in decibel through the fiber assuming there are no connectors or splices
ii) The signal attenuation per kilometer for the fiber
iii) The overall signal attenuation for a 10 km optical link using the same fiber with splices at 1 km interval each giving an attenuation of 1 dB
iv) The numerical input/output power ratio in (c)

Q.3 Solve any two **12**

a) Derive relation between Numerical aperture & Refractive index difference

b) What is Dispersion? Compare the dispersion observed in different type of Optical fiber cables.

c) Explain the structure of the semiconductor injection LASER. Explain its characteristics.

Section – II

Q.4 Solve any four **16**

a) Explain following terms:
   i) Quantum efficiency
   ii) Responsivity

b) When 3×10^{11} photons each with a wavelength 0.85 μm. are incident on a photo diode, on average 1.2×10^{11} electrons are collected at the terminals of the device. Determine the quantum efficiency and the responsivity of the photo diode at 0.85 μm.

c) Explain SONET/ SDH Networks.

d) Explain Transmitter design in fiber optical communication system.

e) Explain Link design in fiber optical communication system.

Q.5 Solve any two **12**

a) Explain working of Avalanche photo diode with its benefits and drawbacks.

b) Write a note on FDDI.

c) Explain concept of optical time division multiplexing (OTDM).

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Optical Fiber Communication (BTN06609)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) Determine incident optical power on a photo diode if it has photo current of 2.1 μA and Responsivity of 0.55 A/W
a) 4.15 b) 1.75
c) 3.81 d) 8.47

2) _____ Server has a source & destination of information being transmitted or received Optical network.
a) Station b) Trunk
c) Node d) Topology

3) The basic performance criteria or a WDM Technique are _____
a) Insertion loss b) Channel width
c) both a & b d) None of these

4) In OTDM a _____ data stream is constructed directly by time multiplexing.
a) low bit rate b) high bit rate
c) Medium d) None

5) FDDI Network consists of _____ ring topology.
a) Single b) Dual
c) Three d) Four

6) What are the applications of Optical Amplifiers?
a) Inline Amplifier b) Preamplifier
c) Power amplifier d) All of the above

7) SONET/SDH uses which technology _____
a) Ring b) Mesh
c) BUS d) Star

8) The maximum angle to the axis at which light may enter the fiber in order to be propagated is referred to as _____

a) Acceptance angle b) Incident angle
c) Critical Angle d) Numerical aperture

9) When the angle of incidence is _____ the critical angle, the light beam bends along the interface.

a) More than b) Less than
c) Equal to d) None of the above

10) Absorption losses due to atomic defects mainly include _____

a) Radiation
b) Missing molecules, oxygen defects in glass
c) Impurities in fiber material
d) Interaction with other components of core

11) The scattering resulting from fiber imperfections like core-cladding RI differences, diameter fluctuations, strains, and bubbles is?

a) Rayleigh scattering b) Mie scattering
c) Stimulated Brillouin scattering d) Stimulated Raman scattering

12) Attenuation in Number of decibels (dB) _____

a) 10 log10 Pi * Po b) 10 log10 Po / Pi
c) 10 log10 Pi / Po d) none

13) A common technique involved in the introduction of the stripe geometry to the structure to provide optical confinement in _____ plane.

a) Horizontal b) Vertical
c) Both a & b d) All Directions

14) Which among the following characteristics of Laser light specifies the precise movement of all individual light waves together through time and space?

a) Monochromatic b) Directional
c) Coherent d) Brightness

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Optical Fiber Communication (BTN06609)

Day & Date: Wednesday 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain the block diagram of Optical fiber communication system. List its advantages & disadvantages.

b) Explain bend losses in OFC.

c) Explain fiber splices.

d) Explain the structure Surface emitting LED.

e) When the mean optical power launched into an 8 km length of fiber is 120 μW the mean optical power at the fiber output is 3 μW
Determine:
i) Overall signal attenuation or loss in decibel through the fiber assuming there are no connectors or splices
ii) The signal attenuation per kilometer for the fiber
iii) The overall signal attenuation for a 10 km optical link using the same fiber with splices at 1 km interval each giving an attenuation of 1 dB
iv) The numerical input/output power ratio in (c)

Q.3 Solve any two **12**

a) Derive relation between Numerical aperture & Refractive index difference

b) What is Dispersion? Compare the dispersion observed in different type of Optical fiber cables.

c) Explain the structure of the semiconductor injection LASER. Explain its characteristics.

Section – II

Q.4 Solve any four **16**

a) Explain following terms:
   i) Quantum efficiency
   ii) Responsivity

b) When 3×10^{11} photons each with a wavelength 0.85 μm. are incident on a photo diode, on average 1.2×10^{11} electrons are collected at the terminals of the device. Determine the quantum efficiency and the responsivity of the photo diode at 0.85 μm.

c) Explain SONET/ SDH Networks.

d) Explain Transmitter design in fiber optical communication system.

e) Explain Link design in fiber optical communication system.

Q.5 Solve any two **12**

a) Explain working of Avalanche photo diode with its benefits and drawbacks.

b) Write a note on FDDI.

c) Explain concept of optical time division multiplexing (OTDM).

SLR-BD-506

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Optical Fiber Communication (BTN06609)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) In OTDM a _____ data stream is constructed directly by time multiplexing.
a) low bit rate b) high bit rate
c) Medium d) None

2) FDDI Network consists of _____ ring topology.
a) Single b) Dual
c) Three d) Four

3) What are the applications of Optical Amplifiers?
a) Inline Amplifier b) Preamplifier
c) Power amplifier d) All of the above

4) SONET/SDH uses which technology _____
a) Ring b) Mesh
c) BUS d) Star

5) The maximum angle to the axis at which light may enter the fiber in order to be propagated is referred to as _____
a) Acceptance angle b) Incident angle
c) Critical Angle d) Numerical aperture

6) When the angle of incidence is _____ the critical angle, the light beam bends along the interface.
a) More than b) Less than
c) Equal to d) None of the above

7) Absorption losses due to atomic defects mainly include _____

a) Radiation
b) Missing molecules, oxygen defects in glass
c) Impurities in fiber material
d) Interaction with other components of core

8) The scattering resulting from fiber imperfections like core-cladding RI differences, diameter fluctuations, strains, and bubbles is?

a) Rayleigh scattering b) Mie scattering
c) Stimulated Brillouin scattering d) Stimulated Raman scattering

9) Attenuation in Number of decibels (dB) _____

a) 10 log10 Pi * Po b) 10 log10 Po / Pi
c) 10 log10 Pi / Po d) none

10) A common technique involved in the introduction of the stripe geometry to the structure to provide optical confinement in _____ plane.

a) Horizontal b) Vertical
c) Both a & b d) All Directions

11) Which among the following characteristics of Laser light specifies the precise movement of all individual light waves together through time and space?

a) Monochromatic b) Directional
c) Coherent d) Brightness

12) Determine incident optical power on a photo diode if it has photo current of 2.1 μA and Responsivity of 0.55 A/W

a) 4.15 b) 1.75
c) 3.81 d) 8.47

13) _____ Server has a source & destination of information being transmitted or received Optical network.

a) Station b) Trunk
c) Node d) Topology

14) The basic performance criteria or a WDM Technique are _____

a) Insertion loss b) Channel width
c) both a & b d) None of these

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Optical Fiber Communication (BTN06609)

Day & Date: Wednesday 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain the block diagram of Optical fiber communication system. List its advantages & disadvantages.

b) Explain bend losses in OFC.

c) Explain fiber splices.

d) Explain the structure Surface emitting LED.

e) When the mean optical power launched into an 8 km length of fiber is 120 μW the mean optical power at the fiber output is 3 μW
Determine:
i) Overall signal attenuation or loss in decibel through the fiber assuming there are no connectors or splices
ii) The signal attenuation per kilometer for the fiber
iii) The overall signal attenuation for a 10 km optical link using the same fiber with splices at 1 km interval each giving an attenuation of 1 dB
iv) The numerical input/output power ratio in (c)

Q.3 Solve any two **12**

a) Derive relation between Numerical aperture & Refractive index difference

b) What is Dispersion? Compare the dispersion observed in different type of Optical fiber cables.

c) Explain the structure of the semiconductor injection LASER. Explain its characteristics.

Section – II

Q.4 Solve any four **16**

a) Explain following terms:
   i) Quantum efficiency
   ii) Responsivity

b) When 3×10^{11} photons each with a wavelength 0.85 μm. are incident on a photo diode, on average 1.2×10^{11} electrons are collected at the terminals of the device. Determine the quantum efficiency and the responsivity of the photo diode at 0.85 μm.

c) Explain SONET/ SDH Networks.

d) Explain Transmitter design in fiber optical communication system.

e) Explain Link design in fiber optical communication system.

Q.5 Solve any two **12**

a) Explain working of Avalanche photo diode with its benefits and drawbacks.

b) Write a note on FDDI.

c) Explain concept of optical time division multiplexing (OTDM).

SLR-BD-506

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Optical Fiber Communication (BTN06609)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) A common technique involved in the introduction of the stripe geometry to the structure to provide optical confinement in _____ plane.
a) Horizontal b) Vertical
c) Both a & b d) All Directions

2) Which among the following characteristics of Laser light specifies the precise movement of all individual light waves together through time and space?
a) Monochromatic b) Directional
c) Coherent d) Brightness

3) Determine incident optical power on a photo diode if it has photo current of 2.1 μA and Responsivity of 0.55 A/W
a) 4.15 b) 1.75
c) 3.81 d) 8.47

4) _____ Server has a source & destination of information being transmitted or received Optical network.
a) Station b) Trunk
c) Node d) Topology

5) The basic performance criteria or a WDM Technique are _____
a) Insertion loss b) Channel width
c) both a & b d) None of these

6) In OTDM a _____ data stream is constructed directly by time multiplexing.
a) low bit rate b) high bit rate
c) Medium d) None

7) FDDI Network consists of _____ ring topology.
a) Single b) Dual
c) Three d) Four

8) What are the applications of Optical Amplifiers?
a) Inline Amplifier b) Preamplifier
c) Power amplifier d) All of the above

9) SONET/SDH uses which technology _____
a) Ring b) Mesh
c) BUS d) Star

10) The maximum angle to the axis at which light may enter the fiber in order to be propagated is referred to as _____
a) Acceptance angle b) Incident angle
c) Critical Angle d) Numerical aperture

11) When the angle of incidence is _____ the critical angle, the light beam bends along the interface.
a) More than b) Less than
c) Equal to d) None of the above

12) Absorption losses due to atomic defects mainly include _____
a) Radiation
b) Missing molecules, oxygen defects in glass
c) Impurities in fiber material
d) Interaction with other components of core

13) The scattering resulting from fiber imperfections like core-cladding RI differences, diameter fluctuations, strains, and bubbles is?
a) Rayleigh scattering b) Mie scattering
c) Stimulated Brillouin scattering d) Stimulated Raman scattering

14) Attenuation in Number of decibels (dB) _____
a) 10 log10 Pi * Po b) 10 log10 Po / Pi
c) 10 log10 Pi / Po d) none

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Optical Fiber Communication (BTN06609)

Day & Date: Wednesday 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain the block diagram of Optical fiber communication system. List its advantages & disadvantages.

b) Explain bend losses in OFC.

c) Explain fiber splices.

d) Explain the structure Surface emitting LED.

e) When the mean optical power launched into an 8 km length of fiber is 120 μW the mean optical power at the fiber output is 3 μW
Determine:
i) Overall signal attenuation or loss in decibel through the fiber assuming there are no connectors or splices
ii) The signal attenuation per kilometer for the fiber
iii) The overall signal attenuation for a 10 km optical link using the same fiber with splices at 1 km interval each giving an attenuation of 1 dB
iv) The numerical input/output power ratio in (c)

Q.3 Solve any two **12**

a) Derive relation between Numerical aperture & Refractive index difference

b) What is Dispersion? Compare the dispersion observed in different type of Optical fiber cables.

c) Explain the structure of the semiconductor injection LASER. Explain its characteristics.

Section – II

Q.4 Solve any four **16**

a) Explain following terms:
   i) Quantum efficiency
   ii) Responsivity

b) When 3×10^{11} photons each with a wavelength 0.85 μm. are incident on a photo diode, on average 1.2×10^{11} electrons are collected at the terminals of the device. Determine the quantum efficiency and the responsivity of the photo diode at 0.85 μm.

c) Explain SONET/ SDH Networks.

d) Explain Transmitter design in fiber optical communication system.

e) Explain Link design in fiber optical communication system.

Q.5 Solve any two **12**

a) Explain working of Avalanche photo diode with its benefits and drawbacks.

b) Write a note on FDDI.

c) Explain concept of optical time division multiplexing (OTDM).

SLR-BD-507

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image and Video Processing (BTN06610)

Day & Date: Wednesday, 04-June -2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) Power law transformation is useful in _____
a) purification b) industry
c) radar d) MRI

2) Intensity levels in 8bit image are _____
a) 128 b) 255
c) 256 d) 512

3) The principal factor to determine the spatial resolution of an image is ___
a) Quantization b) Sampling
c) Contrast d) Dynamic range

4) What is Histogram Equalisation also called as?
a) Histogram Matching b) Image Enhancement
c) Histogram linearization d) None of the Mentioned

5) In uniform PDF, the expansion of PDF is _____
a) Portable Document Format b) Post Derivation Function
c) Previously Derived Function d) Probability Density Function

6) Subdivision of the image depends upon the _____
a) problem b) objects
c) image d) partition

7) Image processing involves how many steps?
a) 7 b) 8
c) 13 d) 10

8) The approach to restoration is _____

a) inverse filtering b) spike filtering
c) black filtering d) ranking

9) In Wiener filtering it is assumed that noise and image are _____

a) different b) homogenous
c) correlated d) uncorrelated

10) Which is the first basic equipment in a TV?

a) Camera b) Bandwidth
c) Pixel d) Resolution

11) What are the types of motion model?

a) Spatial motion model b) Temporal motion model
c) Observable motion model d) All of above

12) Contra harmonic mean filter produces ____

a) degraded image b) original image
c) restored image d) plane

13) Which gray-level transformation increases the dynamic range of gray-level in the image?

a) Negative transformations b) Contrast stretching
c) Power-law transformations d) None of the mentioned

14) How many lines of resolution can be achieved under practical conditions in Vidicon camera tube?

a) 150 b) 750
c) 250 d) 350

SLR-BD-507

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image and Video Processing (BTN06610)

Day & Date: Wednesday, 04-June -2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.
3) Assume suitable data whenever needed and mention it clearly.

SECTION – I

Q.2 Attempt any four (Each carries 4 marks) **16**

a) Explain gray level slicing.
b) Define Dilation, erosion, opening, closing.
c) Explain in detail edge linking using Hough transform and graph theoretic approach.
d) Explain RGB and HSI model with neat diagram.
e) Difference Between Bar Graph and Histogram.

Q.3 attempt any two (Each carries 6 marks) **12**

a) Draw and explain in detail Gaussian and Butterworth filters for smoothening and sharpening.
b) Equalize the given histogram of an image

Gravy Levels	0	1	2	3	4	5	6	7
No. of Pixels	80	100	90	60	30	20	10	0

c) List types of Image acquisition processes and explain with example.

SECTION – II

Q.4 Attempt any four (Each carries 4 marks) **16**

a) What are I, P & B frames in digital video?
b) Explain Hierarchical blocks matching Algorithms.
c) Explain Image degradation Model.
d) What are implementation issues in Phase Correlation method?
e) Explain in detail optical flow equation.

Q.5 Attempt any two (Each carries 6 marks) **12**

a) Explain difference between 2-D motion Vs optical flow.
b) Explain in Detail restoration using Weiner filters and Inverse filters?
c) Explain progressive versus interlaced scans in detail.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image and Video Processing (BTN06610)

Day & Date: Wednesday, 04-June -2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data whenever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) The approach to restoration is _____
a) inverse filtering b) spike filtering
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a) different b) homogenous
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3) Which is the first basic equipment in a TV?
a) Camera b) Bandwidth
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4) What are the types of motion model?
a) Spatial motion model b) Temporal motion model
c) Observable motion model d) All of above

5) Contra harmonic mean filter produces ____
a) degraded image b) original image
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a) Negative transformations b) Contrast stretching
c) Power-law transformations d) None of the mentioned

7) How many lines of resolution can be achieved under practical conditions in Vidicon camera tube?
a) 150 b) 750
c) 250 d) 350

8) Power law transformation is useful in _____
a) purification b) industry
c) radar d) MRI

9) Intensity levels in 8bit image are _____
a) 128 b) 255
c) 256 d) 512

10) The principal factor to determine the spatial resolution of an image is ___
a) Quantization b) Sampling
c) Contrast d) Dynamic range

11) What is Histogram Equalisation also called as?
a) Histogram Matching b) Image Enhancement
c) Histogram linearization d) None of the Mentioned

12) In uniform PDF, the expansion of PDF is _____
a) Portable Document Format b) Post Derivation Function
c) Previously Derived Function d) Probability Density Function

13) Subdivision of the image depends upon the _____
a) problem b) objects
c) image d) partition

14) Image processing involves how many steps?
a) 7 b) 8
c) 13 d) 10

SLR-BD-507

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image and Video Processing (BTN06610)

Day & Date: Wednesday, 04-June -2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data whenever needed and mention it clearly.

SECTION – I

Q.2 Attempt any four (Each carries 4 marks) **16**

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b) Equalize the given histogram of an image

Gravy Levels	0	1	2	3	4	5	6	7
No. of Pixels	80	100	90	60	30	20	10	0

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SECTION – II

Q.4 Attempt any four (Each carries 4 marks) **16**

a) What are I, P & B frames in digital video?
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d) What are implementation issues in Phase Correlation method?
e) Explain in detail optical flow equation.

Q.5 Attempt any two (Each carries 6 marks) **12**

a) Explain difference between 2-D motion Vs optical flow.
b) Explain in Detail restoration using Weiner filters and Inverse filters?
c) Explain progressive versus interlaced scans in detail.

SLR-BD-507

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image and Video Processing (BTN06610)

Day & Date: Wednesday, 04-June -2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) What are the types of motion model?
a) Spatial motion model b) Temporal motion model
c) Observable motion model d) All of above

2) Contra harmonic mean filter produces ____
a) degraded image b) original image
c) restored image d) plane

3) Which gray-level transformation increases the dynamic range of gray-level in the image?
a) Negative transformations b) Contrast stretching
c) Power-law transformations d) None of the mentioned

4) How many lines of resolution can be achieved under practical conditions in Vidicon camera tube?
a) 150 b) 750
c) 250 d) 350

5) Power law transformation is useful in _____
a) purification b) industry
c) radar d) MRI

6) Intensity levels in 8bit image are _____
a) 128 b) 255
c) 256 d) 512

7) The principal factor to determine the spatial resolution of an image is ___
a) Quantization b) Sampling
c) Contrast d) Dynamic range

8) What is Histogram Equalisation also called as?

a) Histogram Matching b) Image Enhancement
c) Histogram linearization d) None of the Mentioned

9) In uniform PDF, the expansion of PDF is _____

a) Portable Document Format b) Post Derivation Function
c) Previously Derived Function d) Probability Density Function

10) Subdivision of the image depends upon the _____

a) problem b) objects
c) image d) partition

11) Image processing involves how many steps?

a) 7 b) 8
c) 13 d) 10

12) The approach to restoration is _____

a) inverse filtering b) spike filtering
c) black filtering d) ranking

13) In Wiener filtering it is assumed that noise and image are _____

a) different b) homogenous
c) correlated d) uncorrelated

14) Which is the first basic equipment in a TV?

a) Camera b) Bandwidth
c) Pixel d) Resolution

SLR-BD-507

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image and Video Processing (BTN06610)

Day & Date: Wednesday, 04-June -2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.
3) Assume suitable data whenever needed and mention it clearly.

SECTION – I

Q.2 Attempt any four (Each carries 4 marks) **16**

a) Explain gray level slicing.
b) Define Dilation, erosion, opening, closing.
c) Explain in detail edge linking using Hough transform and graph theoretic approach.
d) Explain RGB and HSI model with neat diagram.
e) Difference Between Bar Graph and Histogram.

Q.3 attempt any two (Each carries 6 marks) **12**

a) Draw and explain in detail Gaussian and Butterworth filters for smoothening and sharpening.
b) Equalize the given histogram of an image

Gravy Levels	0	1	2	3	4	5	6	7
No. of Pixels	80	100	90	60	30	20	10	0

c) List types of Image acquisition processes and explain with example.

SECTION – II

Q.4 Attempt any four (Each carries 4 marks) **16**

a) What are I, P & B frames in digital video?
b) Explain Hierarchical blocks matching Algorithms.
c) Explain Image degradation Model.
d) What are implementation issues in Phase Correlation method?
e) Explain in detail optical flow equation.

Q.5 Attempt any two (Each carries 6 marks) **12**

a) Explain difference between 2-D motion Vs optical flow.
b) Explain in Detail restoration using Weiner filters and Inverse filters?
c) Explain progressive versus interlaced scans in detail.

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image and Video Processing (BTN06610)

Day & Date: Wednesday, 04-June -2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) Subdivision of the image depends upon the _____
a) problem b) objects
c) image d) partition

2) Image processing involves how many steps?
a) 7 b) 8
c) 13 d) 10

3) The approach to restoration is _____
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c) black filtering d) ranking

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a) Camera b) Bandwidth
c) Pixel d) Resolution

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a) Spatial motion model b) Temporal motion model
c) Observable motion model d) All of above

7) Contra harmonic mean filter produces ____
a) degraded image b) original image
c) restored image d) plane

8) Which gray-level transformation increases the dynamic range of gray-level in the image?

a) Negative transformations b) Contrast stretching
c) Power-law transformations d) None of the mentioned

9) How many lines of resolution can be achieved under practical conditions in Vidicon camera tube?

a) 150 b) 750
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10) Power law transformation is useful in _____

a) purification b) industry
c) radar d) MRI

11) Intensity levels in 8bit image are _____

a) 128 b) 255
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12) The principal factor to determine the spatial resolution of an image is ___

a) Quantization b) Sampling
c) Contrast d) Dynamic range

13) What is Histogram Equalisation also called as?

a) Histogram Matching b) Image Enhancement
c) Histogram linearization d) None of the Mentioned

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a) Portable Document Format b) Post Derivation Function
c) Previously Derived Function d) Probability Density Function

SLR-BD-507

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image and Video Processing (BTN06610)

Day & Date: Wednesday, 04-June -2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.
3) Assume suitable data whenever needed and mention it clearly.

SECTION – I

Q.2 Attempt any four (Each carries 4 marks) **16**

a) Explain gray level slicing.
b) Define Dilation, erosion, opening, closing.
c) Explain in detail edge linking using Hough transform and graph theoretic approach.
d) Explain RGB and HSI model with neat diagram.
e) Difference Between Bar Graph and Histogram.

Q.3 attempt any two (Each carries 6 marks) **12**

a) Draw and explain in detail Gaussian and Butterworth filters for smoothening and sharpening.
b) Equalize the given histogram of an image

Gravy Levels	0	1	2	3	4	5	6	7
No. of Pixels	80	100	90	60	30	20	10	0

c) List types of Image acquisition processes and explain with example.

SECTION – II

Q.4 Attempt any four (Each carries 4 marks) **16**

a) What are I, P & B frames in digital video?
b) Explain Hierarchical blocks matching Algorithms.
c) Explain Image degradation Model.
d) What are implementation issues in Phase Correlation method?
e) Explain in detail optical flow equation.

Q.5 Attempt any two (Each carries 6 marks) **12**

a) Explain difference between 2-D motion Vs optical flow.
b) Explain in Detail restoration using Weiner filters and Inverse filters?
c) Explain progressive versus interlaced scans in detail.

SLR-BD-508

Seat No.	

Set P

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Multimedia Communication Technology (BTN06611)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following TV uses CCFL as back lighting?
a) LCD b) OLED
c) LED d) CRT

2) The value of Kell factor is _____
a) 0.3 b) 0.7
c) 0.5 d) 0.9

3) _____ is defined as the width to height ratio of a picture frame.
a) Aspect ratio b) Scanning
c) Flicker d) Skimming

4) Field frequency in India is _____
a) 60 Hz b) 50 Hz
c) 15625 Hz d) 625 Hz

5) In India, which monochrome TV system is used _____
a) 525-line system b) 625-line system
c) 819-line system d) None of these

6) The signals sent by the TV transmitter to ensure correct scanning in the receiver are called _____
a) sync b) Chroma
c) luminance d) video

7) Compact disc surface doesn't wear out because the sensor is _____
a) Electric b) Magnetic
c) Mechanical d) Optical

8) Which broadcast centre broadcast televised programs through satellite to different subscribers in the country in direct to home television?

a) Audio encoder
b) Digital TV
c) DBS
d) DTT

9) What does MP3 stand for?

a) MPEG audio layer 3
b) MKV video layer 3
c) MPEG video layer 3
d) JPEG audio layer 3

10) Which surface of a CD is covered with microscopic bumps called 'pits' and 'lands' in optical recording of disc?

a) Lower
b) Upper
c) Front
d) Back

11) Quantization is a _____ process.

a) Few to few mapping
b) Few to many mapping
c) Many to few mapping
d) Many to many mapping

12) Which of the following cannot be detected and therefore it is difficult to separate the original signal from distorted signal in audio signal?

a) Bandwidth
b) Distortion
c) Amplitude
d) Wavelength

13) Quantization is a process of mapping a _____ range of amplitude of a signal into a finite set of _____ amplitudes.

a) Continuous, discrete
b) Discrete, continuous
c) Discrete, discrete
d) Continuous, continuous

14) Which of the following is termed as reducing image data?

a) Luminance
b) Compression
c) Hue
d) Saturation

SLR-BD-508

Seat No.	

Set P

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Multimedia Communication Technology (BTN06611)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four **16**

a) Compare LCD Vs LED.
b) Explain MPEG2 in detail.
c) Explain the term Kell factor and aspect ratio.
d) What is the difference between PAL, NTSC.
e) What is frequency interleaving? Explain it is helpful for accommodating color information.

Q.3 Solve Any Two **12**

a) Draw & Explain DTH with neat block diagram.
b) Draw & explain block diagram of SECAM transmitter
c) What is digital video? Explain various digital video formats & resolutions.

Section – II

Q.4 Solve Any Four **16**

a) Compare CD and DVD
b) Explain Nyquist Theorem in detail.
c) Explain signal to quantization noise ratio.
d) Explain Run Length Coding.
e) What is sound digitization. Explain digitization principles.

Q.5 Solve Any Two **12**

a) What is quantization? Explain linear & non linear quantization.
b) Explain different audio compression standards.
c) Explain in detail lossy & lossless compression.

Seat No.		Set	Q

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Multimedia Communication Technology (BTN06611)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) Which broadcast centre broadcast televised programs through satellite to different subscribers in the country in direct to home television?
a) Audio encoder b) Digital TV
c) DBS d) DTT

2) What does MP3 stand for?
a) MPEG audio layer 3 b) MKV video layer 3
c) MPEG video layer 3 d) JPEG audio layer 3

3) Which surface of a CD is covered with microscopic bumps called 'pits' and 'lands' in optical recording of disc?
a) Lower b) Upper
c) Front d) Back

4) Quantization is a _____ process.
a) Few to few mapping b) Few to many mapping
c) Many to few mapping d) Many to many mapping

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a) Continuous, discrete b) Discrete, continuous
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7) Which of the following is termed as reducing image data?
a) Luminance b) Compression
c) Hue d) Saturation

8) Which of the following TV uses CCFL as back lighting?
a) LCD b) OLED
c) LED d) CRT

9) The value of Kell factor is _____
a) 0.3 b) 0.7
c) 0.5 d) 0.9

10) _____ is defined as the width to height ratio of a picture frame.
a) Aspect ratio b) Scanning
c) Flicker d) Skimming

11) Field frequency in India is _____
a) 60 Hz b) 50 Hz
c) 15625 Hz d) 625 Hz

12) In India, which monochrome TV system is used _____
a) 525-line system b) 625-line system
c) 819-line system d) None of these

13) The signals sent by the TV transmitter to ensure correct scanning in the receiver are called _____
a) sync b) Chroma
c) luminance d) video

14) Compact disc surface doesn't wear out because the sensor is _____
a) Electric b) Magnetic
c) Mechanical d) Optical

SLR-BD-508

Seat No.	

Set Q

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Multimedia Communication Technology (BTN06611)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Solve Any Four **16**

a) Compare LCD Vs LED.
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Section – II

Q.4 Solve Any Four **16**

a) Compare CD and DVD
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Seat No.		Set	R

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Multimedia Communication Technology (BTN06611)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Quantization is a _____ process.
a) Few to few mapping b) Few to many mapping
c) Many to few mapping d) Many to many mapping

2) Which of the following cannot be detected and therefore it is difficult to separate the original signal from distorted signal in audio signal?
a) Bandwidth b) Distortion
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SLR-BD-508

Seat No.	

Set R

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Multimedia Communication Technology (BTN06611)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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b) Explain MPEG2 in detail.
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b) Draw & explain block diagram of SECAM transmitter
c) What is digital video? Explain various digital video formats & resolutions.

Section – II

Q.4 Solve Any Four **16**

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b) Explain Nyquist Theorem in detail.
c) Explain signal to quantization noise ratio.
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Seat No.		Set	S

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Multimedia Communication Technology (BTN06611)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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13) Field frequency in India is _____

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14) In India, which monochrome TV system is used _____

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c) 819-line system
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SLR-BD-508

Seat No.		Set	S

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Multimedia Communication Technology (BTN06611)

Day & Date: Wednesday, 04-June-2025 Max. Marks: 56
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Instructions: 1) All questions are compulsory.
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c) Explain the term Kell factor and aspect ratio.
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e) What is frequency interleaving? Explain it is helpful for accommodating color information.

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Section – II

Q.4 Solve Any Four **16**

a) Compare CD and DVD
b) Explain Nyquist Theorem in detail.
c) Explain signal to quantization noise ratio.
d) Explain Run Length Coding.
e) What is sound digitization. Explain digitization principles.

Q.5 Solve Any Two **12**

a) What is quantization? Explain linear & non linear quantization.
b) Explain different audio compression standards.
c) Explain in detail lossy & lossless compression.

SLR-BD-509

Seat No.	

Set P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Sensors and Applications (BTN06605)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Change in output of sensor with change in input is _____.
a) Slew rate b) Sensitivity
c) Power d) Error

2) Smallest change which a sensor can detect is _____.
a) Resolution b) Accuracy
c) Precision d) None of these

3) _____ is the generation of electric charge by a crystalline material upon subjecting it to stress.
a) Hall Effect b) Rectification
c) Heat Transfer Law d) Piezoelectric Effect

4) Microphone is a example of _____.
a) Rectifier b) Regulator
c) Sensor d) None of these

5) The change in any linear dimension (length, width, or height) is called as _____.
a) Liner Expansion b) Non-Linear Expansion
c) Angular Expansion d) None of the mentioned

6) _____ is unit of Magnetic Flux Density.
a) Volts b) Ampere
c) Ohm d) Tesla

7) _____ Converts the physical quantity to be measured into a continuously changing voltage or current _____.
a) Digital Sensor b) Analog Sensor
c) Actuator d) None of these

8) Arduino uses _____ as a basic programming language.
a) C/C++ b) Python
c) Java d) None of these

9) Arduino Uno consists of _____ of flash program memory?
a) 16 Kbyte b) 32 Kbyte
c) 64 Kbyte d) 512 Kbyte

10) Arduino UNO uses _____ microcontroller.
a) 8051 b) PIC16F877
c) Atmega 328 d) Atmega 2560

11) Adruino Uno consists of _____ Analog Inputs.
a) 04 b) 06
c) 08 d) 10

12) Raspberry Pi-3 supports inbuild _____.
a) HDMI connector b) USB Connectors
c) Micro SD Slot d) All of the mentioned

13) Raspberry Pi consists of _____ inbuilt component.
a) Hard Disk b) OLED
c) Wi-Fi d) None of these

14) How many USB ports are present in Raspberry Pi 3?
a) 01 b) 02
c) 04 d) 08

Seat No.	

Set | P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Sensors and Applications (BTN06605)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Answer any four. **16**

a) Compare Sensors with Transducers.
b) Define following terms-i) Drift ii) Resolution iii) Error iv) Accuracy.
c) Explain temperature and thermal properties of a material with thermal expansion, temperature scales with conversion units and change in resistance.
d) Explain Hall effect with neat diagram. State applications of Hall effect.
e) Describe working of ADC with neat block diagram.

Q.3 Answer any two. **12**

a) Describe Current generators, Voltage references and Oscillators as excitation circuits.
b) State various characteristics of sensors. Explain Reputability and Resolution in detail.
c) Describe various dynamic models of Sensor Elements with differential equations.

Section – II

Q.4 Answer any four. **16**

a) Draw neat labeled pin diagram of Arduino Uno board. State and explain various features associated with Arduino UNO board.
b) Draw block diagram of Raspberry Pi board with peripherals. Explain each peripheral with specifications.
c) Write a code to interface Ultrasonic sensor with Arduino. Draw necessary connection diagram.
d) Write a code to control brightness of an LED using Raspberry Pi. Draw appropriate interfacing diagram with input output pins.
e) Design a circuit and write a program to detect a human being with buzzer indicator by using Arduino/Raspberry Pi.

Q.5 Answer any two. **12**

a) Write a program and draw connection diagram to interface Smoke & Gas detector sensor with Arduino/Raspberry Pi board. State various features of Raspberry Pi.

b) Design circuit and write a program to detect moisture in the soil. Interface soil moisture sensor with Arduino/Raspberry Pi. Compare Arduino w.r.t. Raspberry Pi.

c) Detect an obstacle present in front of a person using interfacing of ultrasonic sensor with Arduino Uno. Compare sensors w.r.t. actuators.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Sensors and Applications (BTN06605)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Arduino uses _____ as a basic programming language.
a) C/C++ b) Python
c) Java d) None of these

2) Arduino Uno consists of _____ of flash program memory?
a) 16 Kbyte b) 32 Kbyte
c) 64 Kbyte d) 512 Kbyte

3) Arduino UNO uses _____ microcontroller.
a) 8051 b) PIC16F877
c) Atmega 328 d) Atmega 2560

4) Adruino Uno consists of _____ Analog Inputs.
a) 04 b) 06
c) 08 d) 10

5) Raspberry Pi-3 supports inbuild _____.
a) HDMI connector b) USB Connectors
c) Micro SD Slot d) All of the mentioned

6) Raspberry Pi consists of _____ inbuilt component.
a) Hard Disk b) OLED
c) Wi-Fi d) None of these

7) How many USB ports are present in Raspberry Pi 3?
a) 01 b) 02
c) 04 d) 08

8) Change in output of sensor with change in input is _____.
a) Slew rate b) Sensitivity
c) Power d) Error

9) Smallest change which a sensor can detect is _____.

a) Resolution b) Accuracy
c) Precision d) None of these

10) _____ is the generation of electric charge by a crystalline material upon subjecting it to stress.

a) Hall Effect b) Rectification
c) Heat Transfer Law d) Piezoelectric Effect

11) Microphone is a example of _____.

a) Rectifier b) Regulator
c) Sensor d) None of these

12) The change in any linear dimension (length, width, or height) is called as _____.

a) Liner Expansion b) Non-Linear Expansion
c) Angular Expansion d) None of the mentioned

13) _____ is unit of Magnetic Flux Density.

a) Volts b) Ampere
c) Ohm d) Tesla

14) _____ Converts the physical quantity to be measured into a continuously changing voltage or current _____.

a) Digital Sensor b) Analog Sensor
c) Actuator d) None of these

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Sensors and Applications (BTN06605)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Answer any four. **16**

a) Compare Sensors with Transducers.
b) Define following terms-i) Drift ii) Resolution iii) Error iv) Accuracy.
c) Explain temperature and thermal properties of a material with thermal expansion, temperature scales with conversion units and change in resistance.
d) Explain Hall effect with neat diagram. State applications of Hall effect.
e) Describe working of ADC with neat block diagram.

Q.3 Answer any two. **12**

a) Describe Current generators, Voltage references and Oscillators as excitation circuits.
b) State various characteristics of sensors. Explain Reputability and Resolution in detail.
c) Describe various dynamic models of Sensor Elements with differential equations.

Section – II

Q.4 Answer any four. **16**

a) Draw neat labeled pin diagram of Arduino Uno board. State and explain various features associated with Arduino UNO board.
b) Draw block diagram of Raspberry Pi board with peripherals. Explain each peripheral with specifications.
c) Write a code to interface Ultrasonic sensor with Arduino. Draw necessary connection diagram.
d) Write a code to control brightness of an LED using Raspberry Pi. Draw appropriate interfacing diagram with input output pins.
e) Design a circuit and write a program to detect a human being with buzzer indicator by using Arduino/Raspberry Pi.

Q.5 Answer any two. **12**

a) Write a program and draw connection diagram to interface Smoke & Gas detector sensor with Arduino/Raspberry Pi board. State various features of Raspberry Pi.

b) Design circuit and write a program to detect moisture in the soil. Interface soil moisture sensor with Arduino/Raspberry Pi. Compare Arduino w.r.t. Raspberry Pi.

c) Detect an obstacle present in front of a person using interfacing of ultrasonic sensor with Arduino Uno. Compare sensors w.r.t. actuators.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Sensors and Applications (BTN06605)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Adruino Uno consists of _____ Analog Inputs.
a) 04 b) 06
c) 08 d) 10

2) Raspberry Pi-3 supports inbuild _____.
a) HDMI connector b) USB Connectors
c) Micro SD Slot d) All of the mentioned

3) Raspberry Pi consists of _____ inbuilt component.
a) Hard Disk b) OLED
c) Wi-Fi d) None of these

4) How many USB ports are present in Raspberry Pi 3?
a) 01 b) 02
c) 04 d) 08

5) Change in output of sensor with change in input is _____.
a) Slew rate b) Sensitivity
c) Power d) Error

6) Smallest change which a sensor can detect is _____.
a) Resolution b) Accuracy
c) Precision d) None of these

7) _____ is the generation of electric charge by a crystalline material upon subjecting it to stress.
a) Hall Effect b) Rectification
c) Heat Transfer Law d) Piezoelectric Effect

8) Microphone is a example of _____.
a) Rectifier b) Regulator
c) Sensor d) None of these

9) The change in any linear dimension (length, width, or height) is called as _____.

a) Liner Expansion
b) Non-Linear Expansion
c) Angular Expansion
d) None of the mentioned

10) _____ is unit of Magnetic Flux Density.

a) Volts
b) Ampere
c) Ohm
d) Tesla

11) _____ Converts the physical quantity to be measured into a continuously changing voltage or current _____.

a) Digital Sensor
b) Analog Sensor
c) Actuator
d) None of these

12) Arduino uses _____ as a basic programming language.

a) C/C++
b) Python
c) Java
d) None of these

13) Arduino Uno consists of _____ of flash program memory?

a) 16 Kbyte
b) 32 Kbyte
c) 64 Kbyte
d) 512 Kbyte

14) Arduino UNO uses _____ microcontroller.

a) 8051
b) PIC16F877
c) Atmega 328
d) Atmega 2560

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Sensors and Applications (BTN06605)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Answer any four. **16**

a) Compare Sensors with Transducers.
b) Define following terms-i) Drift ii) Resolution iii) Error iv) Accuracy.
c) Explain temperature and thermal properties of a material with thermal expansion, temperature scales with conversion units and change in resistance.
d) Explain Hall effect with neat diagram. State applications of Hall effect.
e) Describe working of ADC with neat block diagram.

Q.3 Answer any two. **12**

a) Describe Current generators, Voltage references and Oscillators as excitation circuits.
b) State various characteristics of sensors. Explain Reputability and Resolution in detail.
c) Describe various dynamic models of Sensor Elements with differential equations.

Section – II

Q.4 Answer any four. **16**

a) Draw neat labeled pin diagram of Arduino Uno board. State and explain various features associated with Arduino UNO board.
b) Draw block diagram of Raspberry Pi board with peripherals. Explain each peripheral with specifications.
c) Write a code to interface Ultrasonic sensor with Arduino. Draw necessary connection diagram.
d) Write a code to control brightness of an LED using Raspberry Pi. Draw appropriate interfacing diagram with input output pins.
e) Design a circuit and write a program to detect a human being with buzzer indicator by using Arduino/Raspberry Pi.

Q.5 Answer any two. **12**

a) Write a program and draw connection diagram to interface Smoke & Gas detector sensor with Arduino/Raspberry Pi board. State various features of Raspberry Pi.

b) Design circuit and write a program to detect moisture in the soil. Interface soil moisture sensor with Arduino/Raspberry Pi. Compare Arduino w.r.t. Raspberry Pi.

c) Detect an obstacle present in front of a person using interfacing of ultrasonic sensor with Arduino Uno. Compare sensors w.r.t. actuators.

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Sensors and Applications (BTN06605)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ is unit of Magnetic Flux Density.
a) Volts b) Ampere
c) Ohm d) Tesla

2) _____ Converts the physical quantity to be measured into a continuously changing voltage or current _____.
a) Digital Sensor b) Analog Sensor
c) Actuator d) None of these

3) Arduino uses _____ as a basic programming language.
a) C/C++ b) Python
c) Java d) None of these

4) Arduino Uno consists of _____ of flash program memory?
a) 16 Kbyte b) 32 Kbyte
c) 64 Kbyte d) 512 Kbyte

5) Arduino UNO uses _____ microcontroller.
a) 8051 b) PIC16F877
c) Atmega 328 d) Atmega 2560

6) Adruino Uno consists of _____ Analog Inputs.
a) 04 b) 06
c) 08 d) 10

7) Raspberry Pi-3 supports inbuild _____.
a) HDMI connector b) USB Connectors
c) Micro SD Slot d) All of the mentioned

8) Raspberry Pi consists of _____ inbuilt component.
a) Hard Disk b) OLED
c) Wi-Fi d) None of these

9) How many USB ports are present in Raspberry Pi 3?

a) 01 b) 02
c) 04 d) 08

10) Change in output of sensor with change in input is _____.

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c) Power d) Error

11) Smallest change which a sensor can detect is _____.

a) Resolution b) Accuracy
c) Precision d) None of these

12) _____ is the generation of electric charge by a crystalline material upon subjecting it to stress.

a) Hall Effect b) Rectification
c) Heat Transfer Law d) Piezoelectric Effect

13) Microphone is a example of _____.

a) Rectifier b) Regulator
c) Sensor d) None of these

14) The change in any linear dimension (length, width, or height) is called as _____.

a) Liner Expansion b) Non-Linear Expansion
c) Angular Expansion d) None of the mentioned

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Sensors and Applications (BTN06605)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Answer any four. **16**

a) Compare Sensors with Transducers.
b) Define following terms-i) Drift ii) Resolution iii) Error iv) Accuracy.
c) Explain temperature and thermal properties of a material with thermal expansion, temperature scales with conversion units and change in resistance.
d) Explain Hall effect with neat diagram. State applications of Hall effect.
e) Describe working of ADC with neat block diagram.

Q.3 Answer any two. **12**

a) Describe Current generators, Voltage references and Oscillators as excitation circuits.
b) State various characteristics of sensors. Explain Reputability and Resolution in detail.
c) Describe various dynamic models of Sensor Elements with differential equations.

Section – II

Q.4 Answer any four. **16**

a) Draw neat labeled pin diagram of Arduino Uno board. State and explain various features associated with Arduino UNO board.
b) Draw block diagram of Raspberry Pi board with peripherals. Explain each peripheral with specifications.
c) Write a code to interface Ultrasonic sensor with Arduino. Draw necessary connection diagram.
d) Write a code to control brightness of an LED using Raspberry Pi. Draw appropriate interfacing diagram with input output pins.
e) Design a circuit and write a program to detect a human being with buzzer indicator by using Arduino/Raspberry Pi.

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c) Detect an obstacle present in front of a person using interfacing of ultrasonic sensor with Arduino Uno. Compare sensors w.r.t. actuators.

SLR-BD-510

Seat No.		Set	P

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Open Source Technologies (BTN06606)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which open source software license is known for its permissive nature and allows for more flexibility in using and distributing the software?
a) BSD License
b) GNU Lesser General Public License (LGPL)
c) Eclipse Public License
d) Mozilla Public License

2) Which task is primarily associated with system administrators in managing jobs in an open source operating system?
a) Installing new software
b) Managing user accounts
c) Monitoring system performance
d) Scheduling and controlling the execution of processes

3) Which movement advocates for the use and distribution of free software?
a) Open Source Movement
b) Commercial Software Movement
c) Free Software Movement
d) Closed Source Movement

4) Which command-line tool is used for stream editing and manipulation of text in Linux?
a) grep b) awk
c) sed d) cut

5) Which open source tool is commonly used for managing certificates in an open source operating system?
a) OpenSSL b) Apache HTTP Server
c) GNU Privacy Guard (GPG) d) DNS server

6) Which of the following is a common method for installing multiple operating systems on a single computer?

a) Multitasking
b) Multithreading
c) Multiboot
d) Multiprocessing

7) In the context of an open source operating system, what is the purpose of user, group, and permission management?

a) To install new software packages
b) To manage system resources efficiently
c) To allocate network bandwidth
d) To control access and privileges for users and groups

8) Which component of an open source operating system is responsible for the boot process?

a) Bootloader
b) Kernel
c) File system
d) Shell

9) What is the main function of a DHCP server in a network environment?

a) Assigning IP addresses to network devices
b) Transferring files between clients and servers
c) Hosting websites and serving web pages
d) Managing email communication

10) How can a web page be downloaded as a formatted text file using a shell script?

a) Using the wget command
b) Using the curl command
c) Using the scp command
d) Using the ftp command

11) What is the main difference between distributed and non-distributed VCS?

a) Distributed VCS allows offline access to repositories
b) Non-distributed VCS supports larger file sizes
c) Distributed VCS is faster in handling large codebases
d) Non-distributed VCS provides stronger data encryption

12) What is the purpose of the staging area in Git?

a) To store backup copies of files
b) To manage user permissions and access control
c) To prepare changes for commit
d) To synchronize local and remote repositories

13) What does the stash command do in Git?

a) Saves changes temporarily without committing them
b) Deletes untracked files from the repository
c) Reverts the repository to a previous commit
d) Merges changes from one branch to another

14) What command is used to add files to the staging area in Git?

a) git init
b) git clone
c) git status
d) git add

Seat No.	

Set | P

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Open Source Technologies (BTN06606)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any four. **16**

a) Discuss the differences between open source, source available, and proprietary software.
b) Discuss the key features and usage of the Apache License, BSD license, GNU General Public License, GNU Lesser
c) What are some common commands for file manipulation in Linux, including piping and redirection, and how do they work?
d) What is software management in Linux? How can software packages be installed, updated, and removed in Linux?
e) What is Open SSL? How can Open SSL be used to manage certificates and cryptographic services in Linux?

Q.3 Answer any two: **12**

a) How can user, group, and permission settings be managed in Linux? Discuss key commands and tools for creating, modifying, and deleting user accounts, groups, and file permissions.
b) Explain the importance of community involvement and collaboration in the development and maintenance of open source software projects.
c) What is a DHCP server? How can DHCP servers be configured in Linux? Explain how DHCP can be used to automate IP address assignment and configuration for network devices.

Section – II

Q.4 Answer any four. **16**

a) What is sed? How can sed be used to manipulate text files in Bash shell scripts? Discuss key sed commands and their uses.

b) What are the steps involved in obtaining and installing Git on your system? Are there any specific requirements or considerations?

c) Explain the process of committing files in Git. What does the "git commit" command do, and why is it important in version control?

d) How can you list and view existing branches in a Git repository? What is the command used to accomplish this?

e) What are the different ways to remove files in Git? How does "git reset" remove staged files, and how does "git rm" remove committed files?

Q.5 Answer any two. **12**

a) How can variables be used in Bash shell scripts? Discuss different types of variables, including environment variables and command-line arguments.

b) How can functions be created and used in Bash shell scripts? Discuss different types of functions, including library functions and user-defined functions.

c) Can you explain what a branch is in Git and why it is important for version control? How does branching help in managing code development?

Seat No.	

Set **Q**

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Open Source Technologies (BTN06606)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which component of an open source operating system is responsible for the boot process?
a) Bootloader b) Kernel
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a) Assigning IP addresses to network devices
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d) Managing email communication

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4) What is the main difference between distributed and non-distributed VCS?
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a) To store backup copies of files
b) To manage user permissions and access control
c) To prepare changes for commit
d) To synchronize local and remote repositories

6) What does the stash command do in Git?
a) Saves changes temporarily without committing them
b) Deletes untracked files from the repository
c) Reverts the repository to a previous commit
d) Merges changes from one branch to another

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a) git init
b) git clone
c) git status
d) git add

8) Which open source software license is known for its permissive nature and allows for more flexibility in using and distributing the software?
a) BSD License
b) GNU Lesser General Public License (LGPL)
c) Eclipse Public License
d) Mozilla Public License

9) Which task is primarily associated with system administrators in managing jobs in an open source operating system?
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b) Managing user accounts
c) Monitoring system performance
d) Scheduling and controlling the execution of processes

10) Which movement advocates for the use and distribution of free software?
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b) Commercial Software Movement
c) Free Software Movement
d) Closed Source Movement

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a) grep
b) awk
c) sed
d) cut

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a) OpenSSL
b) Apache HTTP Server
c) GNU Privacy Guard (GPG)
d) DNS server

13) Which of the following is a common method for installing multiple operating systems on a single computer?
a) Multitasking
b) Multithreading
c) Multiboot
d) Multiprocessing

14) In the context of an open source operating system, what is the purpose of user, group, and permission management?

a) To install new software packages
b) To manage system resources efficiently
c) To allocate network bandwidth
d) To control access and privileges for users and groups

Seat No.	

Set **Q**

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Open Source Technologies (BTN06606)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any four. **16**

a) Discuss the differences between open source, source available, and proprietary software.
b) Discuss the key features and usage of the Apache License, BSD license, GNU General Public License, GNU Lesser
c) What are some common commands for file manipulation in Linux, including piping and redirection, and how do they work?
d) What is software management in Linux? How can software packages be installed, updated, and removed in Linux?
e) What is Open SSL? How can Open SSL be used to manage certificates and cryptographic services in Linux?

Q.3 Answer any two: **12**

a) How can user, group, and permission settings be managed in Linux? Discuss key commands and tools for creating, modifying, and deleting user accounts, groups, and file permissions.
b) Explain the importance of community involvement and collaboration in the development and maintenance of open source software projects.
c) What is a DHCP server? How can DHCP servers be configured in Linux? Explain how DHCP can be used to automate IP address assignment and configuration for network devices.

Section – II

Q.4 Answer any four. **16**

a) What is sed? How can sed be used to manipulate text files in Bash shell scripts? Discuss key sed commands and their uses.

b) What are the steps involved in obtaining and installing Git on your system? Are there any specific requirements or considerations?

c) Explain the process of committing files in Git. What does the "git commit" command do, and why is it important in version control?

d) How can you list and view existing branches in a Git repository? What is the command used to accomplish this?

e) What are the different ways to remove files in Git? How does "git reset" remove staged files, and how does "git rm" remove committed files?

Q.5 Answer any two. **12**

a) How can variables be used in Bash shell scripts? Discuss different types of variables, including environment variables and command-line arguments.

b) How can functions be created and used in Bash shell scripts? Discuss different types of functions, including library functions and user-defined functions.

c) Can you explain what a branch is in Git and why it is important for version control? How does branching help in managing code development?

Seat No.	

Set R

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Open Source Technologies (BTN06606)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the main difference between distributed and non-distributed VCS?
a) Distributed VCS allows offline access to repositories
b) Non-distributed VCS supports larger file sizes
c) Distributed VCS is faster in handling large codebases
d) Non-distributed VCS provides stronger data encryption

2) What is the purpose of the staging area in Git?
a) To store backup copies of files
b) To manage user permissions and access control
c) To prepare changes for commit
d) To synchronize local and remote repositories

3) What does the stash command do in Git?
a) Saves changes temporarily without committing them
b) Deletes untracked files from the repository
c) Reverts the repository to a previous commit
d) Merges changes from one branch to another

4) What command is used to add files to the staging area in Git?
a) git init b) git clone
c) git status d) git add

5) Which open source software license is known for its permissive nature and allows for more flexibility in using and distributing the software?
a) BSD License
b) GNU Lesser General Public License (LGPL)
c) Eclipse Public License
d) Mozilla Public License

6) Which task is primarily associated with system administrators in managing jobs in an open source operating system?
a) Installing new software
b) Managing user accounts
c) Monitoring system performance
d) Scheduling and controlling the execution of processes

7) Which movement advocates for the use and distribution of free software?
a) Open Source Movement
b) Commercial Software Movement
c) Free Software Movement
d) Closed Source Movement

8) Which command-line tool is used for stream editing and manipulation of text in Linux?
a) grep b) awk
c) sed d) cut

9) Which open source tool is commonly used for managing certificates in an open source operating system?
a) OpenSSL b) Apache HTTP Server
c) GNU Privacy Guard (GPG) d) DNS server

10) Which of the following is a common method for installing multiple operating systems on a single computer?
a) Multitasking b) Multithreading
c) Multiboot d) Multiprocessing

11) In the context of an open source operating system, what is the purpose of user, group, and permission management?
a) To install new software packages
b) To manage system resources efficiently
c) To allocate network bandwidth
d) To control access and privileges for users and groups

12) Which component of an open source operating system is responsible for the boot process?
a) Bootloader b) Kernel
c) File system d) Shell

13) What is the main function of a DHCP server in a network environment?
a) Assigning IP addresses to network devices
b) Transferring files between clients and servers
c) Hosting websites and serving web pages
d) Managing email communication

14) How can a web page be downloaded as a formatted text file using a shell script?

a) Using the wget command
b) Using the curl command
c) Using the scp command
d) Using the ftp command

Seat No.	

Set **R**

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Open Source Technologies (BTN06606)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any four. **16**

a) Discuss the differences between open source, source available, and proprietary software.
b) Discuss the key features and usage of the Apache License, BSD license, GNU General Public License, GNU Lesser
c) What are some common commands for file manipulation in Linux, including piping and redirection, and how do they work?
d) What is software management in Linux? How can software packages be installed, updated, and removed in Linux?
e) What is Open SSL? How can Open SSL be used to manage certificates and cryptographic services in Linux?

Q.3 Answer any two: **12**

a) How can user, group, and permission settings be managed in Linux? Discuss key commands and tools for creating, modifying, and deleting user accounts, groups, and file permissions.
b) Explain the importance of community involvement and collaboration in the development and maintenance of open source software projects.
c) What is a DHCP server? How can DHCP servers be configured in Linux? Explain how DHCP can be used to automate IP address assignment and configuration for network devices.

Section – II

Q.4 Answer any four. **16**

a) What is sed? How can sed be used to manipulate text files in Bash shell scripts? Discuss key sed commands and their uses.

b) What are the steps involved in obtaining and installing Git on your system? Are there any specific requirements or considerations?

c) Explain the process of committing files in Git. What does the "git commit" command do, and why is it important in version control?

d) How can you list and view existing branches in a Git repository? What is the command used to accomplish this?

e) What are the different ways to remove files in Git? How does "git reset" remove staged files, and how does "git rm" remove committed files?

Q.5 Answer any two. **12**

a) How can variables be used in Bash shell scripts? Discuss different types of variables, including environment variables and command-line arguments.

b) How can functions be created and used in Bash shell scripts? Discuss different types of functions, including library functions and user-defined functions.

c) Can you explain what a branch is in Git and why it is important for version control? How does branching help in managing code development?

Seat No.	

Set | S

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Open Source Technologies (BTN06606)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following is a common method for installing multiple operating systems on a single computer?
a) Multitasking b) Multithreading
c) Multiboot d) Multiprocessing

2) In the context of an open source operating system, what is the purpose of user, group, and permission management?
a) To install new software packages
b) To manage system resources efficiently
c) To allocate network bandwidth
d) To control access and privileges for users and groups

3) Which component of an open source operating system is responsible for the boot process?
a) Bootloader b) Kernel
c) File system d) Shell

4) What is the main function of a DHCP server in a network environment?
a) Assigning IP addresses to network devices
b) Transferring files between clients and servers
c) Hosting websites and serving web pages
d) Managing email communication

5) How can a web page be downloaded as a formatted text file using a shell script?
a) Using the wget command b) Using the curl command
c) Using the scp command d) Using the ftp command

6) What is the main difference between distributed and non-distributed VCS?
a) Distributed VCS allows offline access to repositories
b) Non-distributed VCS supports larger file sizes
c) Distributed VCS is faster in handling large codebases
d) Non-distributed VCS provides stronger data encryption

7) What is the purpose of the staging area in Git?
a) To store backup copies of files
b) To manage user permissions and access control
c) To prepare changes for commit
d) To synchronize local and remote repositories

8) What does the stash command do in Git?
a) Saves changes temporarily without committing them
b) Deletes untracked files from the repository
c) Reverts the repository to a previous commit
d) Merges changes from one branch to another

9) What command is used to add files to the staging area in Git?
a) git init
b) git clone
c) git status
d) git add

10) Which open source software license is known for its permissive nature and allows for more flexibility in using and distributing the software?
a) BSD License
b) GNU Lesser General Public License (LGPL)
c) Eclipse Public License
d) Mozilla Public License

11) Which task is primarily associated with system administrators in managing jobs in an open source operating system?
a) Installing new software
b) Managing user accounts
c) Monitoring system performance
d) Scheduling and controlling the execution of processes

12) Which movement advocates for the use and distribution of free software?
a) Open Source Movement
b) Commercial Software Movement
c) Free Software Movement
d) Closed Source Movement

13) Which command-line tool is used for stream editing and manipulation of text in Linux?
a) grep
b) awk
c) sed
d) cut

14) Which open source tool is commonly used for managing certificates in an open source operating system?

a) OpenSSL
b) Apache HTTP Server
c) GNU Privacy Guard (GPG)
d) DNS server

Seat No.		Set	S

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Open Source Technologies (BTN06606)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any four. **16**

a) Discuss the differences between open source, source available, and proprietary software.
b) Discuss the key features and usage of the Apache License, BSD license, GNU General Public License, GNU Lesser
c) What are some common commands for file manipulation in Linux, including piping and redirection, and how do they work?
d) What is software management in Linux? How can software packages be installed, updated, and removed in Linux?
e) What is Open SSL? How can Open SSL be used to manage certificates and cryptographic services in Linux?

Q.3 Answer any two: **12**

a) How can user, group, and permission settings be managed in Linux? Discuss key commands and tools for creating, modifying, and deleting user accounts, groups, and file permissions.
b) Explain the importance of community involvement and collaboration in the development and maintenance of open source software projects.
c) What is a DHCP server? How can DHCP servers be configured in Linux? Explain how DHCP can be used to automate IP address assignment and configuration for network devices.

Section – II

Q.4 Answer any four. **16**

a) What is sed? How can sed be used to manipulate text files in Bash shell scripts? Discuss key sed commands and their uses.

b) What are the steps involved in obtaining and installing Git on your system? Are there any specific requirements or considerations?

c) Explain the process of committing files in Git. What does the "git commit" command do, and why is it important in version control?

d) How can you list and view existing branches in a Git repository? What is the command used to accomplish this?

e) What are the different ways to remove files in Git? How does "git reset" remove staged files, and how does "git rm" remove committed files?

Q.5 Answer any two. **12**

a) How can variables be used in Bash shell scripts? Discuss different types of variables, including environment variables and command-line arguments.

b) How can functions be created and used in Bash shell scripts? Discuss different types of functions, including library functions and user-defined functions.

c) Can you explain what a branch is in Git and why it is important for version control? How does branching help in managing code development?

SLR-BD-513

Seat No.	

Set P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
AI/MI -Machine Learning (BTN06612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) What is machine learning?
a) Selective acquisition of knowledge through the use of manual programs
b) Selective acquisition of knowledge through the use of computer programs
c) Autonomous acquisition of knowledge through the use of manual programs
d) Autonomous acquisition of knowledge through the use of computer programs

2) How can you handle missing or corrupted data in a dataset?
a) Drop missing rows or columns
b) Assign a unique category to missing values
c) Replace missing values with mean/median/mode
d) All of the above

3) Machine learning algorithms build a model based on sample data, known as _____.
a) Training Data b) Transfer Data
c) Data Training d) None of the above

4) _____ is the machine learning algorithms that can be used with labeled data.
a) Regression algorithms b) Clustering algorithms
c) Association algorithms d) All of the above

5) _____ is used as an input to the machine learning model for training and prediction purposes.
a) Feature b) Feature Vector
c) Both A and B d) None of the above

6) _____ is the scenario when the model fails to decipher the underlying trend in the input data

a) Overfitting b) underfitting
c) Both A and B d) None of the above

7) The term machine learning was coined by _____.

a) James Gosling b) Arthur Samuel
c) Guido van Rossum d) None of the above

8) Which of the following is not a supervised learning?

a) PCA b) Naive Bayesian
c) Linear Regression d) Decision Tree

9) Real-Time decisions, Game Al, Learning Tasks, Skill acquisition, and Robot Navigation are applications of _____.

a) Reinforcement Learning
b) Supervised Learning: Classification
c) Unsupervised Learning: Regression
d) None of the above

10) _____ is a disadvantage of decision trees?

a) Decision trees are robust to outliers
b) Decision trees are prone to be overfit
c) Both A and B
d) None of the above

11) _____ is a part of machine learning that works with neural networks.

a) Artificial intelligence b) Deep learning
c) Both A and B d) None of the above

12) Which machine learning models are trained to make a series of decisions based on the rewards and feedback they receive for their actions?

a) Supervised learning b) Unsupervised learning
c) Reinforcement learning d) All of the above

13) The most common issue when using ML is _____.

a) Lack of skilled resources b) Inadequate Infrastructure
c) Poor Data Quality d) None of these

14) _____ is a widely used and effective machine learning algorithm based on the idea of bagging.

a) Regression b) Classification
c) Decision Tree d) Random Forest

SLR-BD-513

Seat No.	

Set P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
AI/MI -Machine Learning (BTN06612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any Four. **16**

a) What is machine learning? Give examples of machine learning problems.
b) Explain the Linear regression and Logistic regression in brief.
c) Explain Reinforcement learning with examples.
d) Explain Unsupervised learning with examples.
e) Explain Predictive and Descriptive tasks.

Q.3 Attempt any Two. **12**

a) Why Random Forest Model is an ensemble method? What is bagging in Random Forest Model?
b) Distinguish between supervised learning and unsupervised earning.
c) What are Support Vectors in SVMs? What is Margin? How is the classification made in SVM?

Section – II

Q.4 Attempt any Four. **16**

a) Explain Feed-forward network function.
b) Explain K-Nearest Neighbor classification with example.
c) Explain deep neural networks and its applications in brief.
d) Explain basic steps of Apriori algorithm for association rule learning.
e) Explain Artificial Neural Networks in brief.

Q.5 Attempt any Two. **12**

a) Explain Email Spam and Malware Filtering in brief.
b) Distinguish between Machine learning and Deep learning.
c) Explain image and Speech Recognition in brief.

Seat No.	

Set **Q**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
AI/MI -Machine Learning (BTN06612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) Which of the following is not a supervised learning?
a) PCA b) Naive Bayesian
c) Linear Regression d) Decision Tree

2) Real-Time decisions, Game AI, Learning Tasks, Skill acquisition, and Robot Navigation are applications of _____.
a) Reinforcement Learning
b) Supervised Learning: Classification
c) Unsupervised Learning: Regression
d) None of the above

3) _____ is a disadvantage of decision trees?
a) Decision trees are robust to outliers
b) Decision trees are prone to be overfit
c) Both A and B
d) None of the above

4) _____ is a part of machine learning that works with neural networks.
a) Artificial intelligence b) Deep learning
c) Both A and B d) None of the above

5) Which machine learning models are trained to make a series of decisions based on the rewards and feedback they receive for their actions?
a) Supervised learning b) Unsupervised learning
c) Reinforcement learning d) All of the above

6) The most common issue when using ML is _____.
a) Lack of skilled resources b) Inadequate Infrastructure
c) Poor Data Quality d) None of these

7) _____ is a widely used and effective machine learning algorithm based on the idea of bagging.
a) Regression b) Classification
c) Decision Tree d) Random Forest

8) What is machine learning?
a) Selective acquisition of knowledge through the use of manual programs
b) Selective acquisition of knowledge through the use of computer programs
c) Autonomous acquisition of knowledge through the use of manual programs
d) Autonomous acquisition of knowledge through the use of computer programs

9) How can you handle missing or corrupted data in a dataset?
a) Drop missing rows or columns
b) Assign a unique category to missing values
c) Replace missing values with mean/median/mode
d) All of the above

10) Machine learning algorithms build a model based on sample data, known as _____.
a) Training Data b) Transfer Data
c) Data Training d) None of the above

11) _____ is the machine learning algorithms that can be used with labeled data.
a) Regression algorithms b) Clustering algorithms
c) Association algorithms d) All of the above

12) _____ is used as an input to the machine learning model for training and prediction purposes.
a) Feature b) Feature Vector
c) Both A and B d) None of the above

13) _____ is the scenario when the model fails to decipher the underlying trend in the input data
a) Overfitting b) underfitting
c) Both A and B d) None of the above

14) The term machine learning was coined by _____.
a) James Gosling b) Arthur Samuel
c) Guido van Rossum d) None of the above

SLR-BD-513

Seat No.	

Set Q

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
AI/MI -Machine Learning (BTN06612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any Four. **16**

a) What is machine learning? Give examples of machine learning problems.
b) Explain the Linear regression and Logistic regression in brief.
c) Explain Reinforcement learning with examples.
d) Explain Unsupervised learning with examples.
e) Explain Predictive and Descriptive tasks.

Q.3 Attempt any Two. **12**

a) Why Random Forest Model is an ensemble method? What is bagging in Random Forest Model?
b) Distinguish between supervised learning and unsupervised earning.
c) What are Support Vectors in SVMs? What is Margin? How is the classification made in SVM?

Section – II

Q.4 Attempt any Four. **16**

a) Explain Feed-forward network function.
b) Explain K-Nearest Neighbor classification with example.
c) Explain deep neural networks and its applications in brief.
d) Explain basic steps of Apriori algorithm for association rule learning.
e) Explain Artificial Neural Networks in brief.

Q.5 Attempt any Two. **12**

a) Explain Email Spam and Malware Filtering in brief.
b) Distinguish between Machine learning and Deep learning.
c) Explain image and Speech Recognition in brief.

SLR-BD-513

Seat No.	

Set R

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
AI/MI -Machine Learning (BTN06612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) _____ is a part of machine learning that works with neural networks.
a) Artificial intelligence b) Deep learning
c) Both A and B d) None of the above

2) Which machine learning models are trained to make a series of decisions based on the rewards and feedback they receive for their actions?
a) Supervised learning b) Unsupervised learning
c) Reinforcement learning d) All of the above

3) The most common issue when using ML is _____.
a) Lack of skilled resources b) Inadequate Infrastructure
c) Poor Data Quality d) None of these

4) _____ is a widely used and effective machine learning algorithm based on the idea of bagging.
a) Regression b) Classification
c) Decision Tree d) Random Forest

5) What is machine learning?
a) Selective acquisition of knowledge through the use of manual programs
b) Selective acquisition of knowledge through the use of computer programs
c) Autonomous acquisition of knowledge through the use of manual programs
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6) How can you handle missing or corrupted data in a dataset?
a) Drop missing rows or columns
b) Assign a unique category to missing values
c) Replace missing values with mean/median/mode
d) All of the above

7) Machine learning algorithms build a model based on sample data, known as _____.
a) Training Data
b) Transfer Data
c) Data Training
d) None of the above

8) _____ is the machine learning algorithms that can be used with labeled data.
a) Regression algorithms
b) Clustering algorithms
c) Association algorithms
d) All of the above

9) _____ is used as an input to the machine learning model for training and prediction purposes.
a) Feature
b) Feature Vector
c) Both A and B
d) None of the above

10) _____ is the scenario when the model fails to decipher the underlying trend in the input data
a) Overfitting
b) underfitting
c) Both A and B
d) None of the above

11) The term machine learning was coined by _____.
a) James Gosling
b) Arthur Samuel
c) Guido van Rossum
d) None of the above

12) Which of the following is not a supervised learning?
a) PCA
b) Naive Bayesian
c) Linear Regression
d) Decision Tree

13) Real-Time decisions, Game Al, Learning Tasks, Skill acquisition, and Robot Navigation are applications of _____.
a) Reinforcement Learning
b) Supervised Learning: Classification
c) Unsupervised Learning: Regression
d) None of the above

14) _____ is a disadvantage of decision trees?
a) Decision trees are robust to outliers
b) Decision trees are prone to be overfit
c) Both A and B
d) None of the above

SLR-BD-513

Seat No.	

Set R

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
AI/MI -Machine Learning (BTN06612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any Four. **16**

a) What is machine learning? Give examples of machine learning problems.
b) Explain the Linear regression and Logistic regression in brief.
c) Explain Reinforcement learning with examples.
d) Explain Unsupervised learning with examples.
e) Explain Predictive and Descriptive tasks.

Q.3 Attempt any Two. **12**

a) Why Random Forest Model is an ensemble method? What is bagging in Random Forest Model?
b) Distinguish between supervised learning and unsupervised earning.
c) What are Support Vectors in SVMs? What is Margin? How is the classification made in SVM?

Section – II

Q.4 Attempt any Four. **16**

a) Explain Feed-forward network function.
b) Explain K-Nearest Neighbor classification with example.
c) Explain deep neural networks and its applications in brief.
d) Explain basic steps of Apriori algorithm for association rule learning.
e) Explain Artificial Neural Networks in brief.

Q.5 Attempt any Two. **12**

a) Explain Email Spam and Malware Filtering in brief.
b) Distinguish between Machine learning and Deep learning.
c) Explain image and Speech Recognition in brief.

Seat No.	

Set **S**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
AI/MI -Machine Learning (BTN06612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) _____ is the scenario when the model fails to decipher the underlying trend in the input data
a) Overfitting b) underfitting
c) Both A and B d) None of the above

2) The term machine learning was coined by _____.
a) James Gosling b) Arthur Samuel
c) Guido van Rossum d) None of the above

3) Which of the following is not a supervised learning?
a) PCA b) Naive Bayesian
c) Linear Regression d) Decision Tree

4) Real-Time decisions, Game Al, Learning Tasks, Skill acquisition, and Robot Navigation are applications of _____.
a) Reinforcement Learning
b) Supervised Learning: Classification
c) Unsupervised Learning: Regression
d) None of the above

5) _____ is a disadvantage of decision trees?
a) Decision trees are robust to outliers
b) Decision trees are prone to be overfit
c) Both A and B
d) None of the above

6) _____ is a part of machine learning that works with neural networks.
a) Artificial intelligence b) Deep learning
c) Both A and B d) None of the above

7) Which machine learning models are trained to make a series of decisions based on the rewards and feedback they receive for their actions?

a) Supervised learning
b) Unsupervised learning
c) Reinforcement learning
d) All of the above

8) The most common issue when using ML is _____.

a) Lack of skilled resources
b) Inadequate Infrastructure
c) Poor Data Quality
d) None of these

9) _____ is a widely used and effective machine learning algorithm based on the idea of bagging.

a) Regression
b) Classification
c) Decision Tree
d) Random Forest

10) What is machine learning?

a) Selective acquisition of knowledge through the use of manual programs
b) Selective acquisition of knowledge through the use of computer programs
c) Autonomous acquisition of knowledge through the use of manual programs
d) Autonomous acquisition of knowledge through the use of computer programs

11) How can you handle missing or corrupted data in a dataset?

a) Drop missing rows or columns
b) Assign a unique category to missing values
c) Replace missing values with mean/median/mode
d) All of the above

12) Machine learning algorithms build a model based on sample data, known as _____.

a) Training Data
b) Transfer Data
c) Data Training
d) None of the above

13) _____ is the machine learning algorithms that can be used with labeled data.

a) Regression algorithms
b) Clustering algorithms
c) Association algorithms
d) All of the above

14) _____ is used as an input to the machine learning model for training and prediction purposes.

a) Feature
b) Feature Vector
c) Both A and B
d) None of the above

SLR-BD-513

Seat No.		Set	S

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
AI/MI -Machine Learning (BTN06612)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any Four. **16**
- **a)** What is machine learning? Give examples of machine learning problems.
- **b)** Explain the Linear regression and Logistic regression in brief.
- **c)** Explain Reinforcement learning with examples.
- **d)** Explain Unsupervised learning with examples.
- **e)** Explain Predictive and Descriptive tasks.

Q.3 Attempt any Two. **12**
- **a)** Why Random Forest Model is an ensemble method? What is bagging in Random Forest Model?
- **b)** Distinguish between supervised learning and unsupervised earning.
- **c)** What are Support Vectors in SVMs? What is Margin? How is the classification made in SVM?

Section – II

Q.4 Attempt any Four. **16**
- **a)** Explain Feed-forward network function.
- **b)** Explain K-Nearest Neighbor classification with example.
- **c)** Explain deep neural networks and its applications in brief.
- **d)** Explain basic steps of Apriori algorithm for association rule learning.
- **e)** Explain Artificial Neural Networks in brief.

Q.5 Attempt any Two. **12**
- **a)** Explain Email Spam and Malware Filtering in brief.
- **b)** Distinguish between Machine learning and Deep learning.
- **c)** Explain image and Speech Recognition in brief.

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IoT Cloud Platform (BTN06614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which AWS service provides disaster recovery capabilities?
a) Amazon EC2 b) Amazon S3
c) Amazon RDS d) Amazon Glacier

2) What is the main purpose of the AWS dashboard?
a) Managing user accounts
b) Monitoring AWS service usage
c) Configuring virtual machines
d) Developing applications

3) What is the first step to create a new AWS account?
a) Choose a billing plan
b) Provide payment information
c) Verify email address
d) Set up multi-factor authentication

4) In IAM, what is a group?
a) A collection of IAM policies
b) A group of users with similar access requirements
c) A role assigned to an IAM user
d) A policy that defines resource permissions

5) What is an IAM role in AWS?
a) A group of users with administrative privileges
b) A temporary session to assume different user identities
c) A policy that defines permissions for a specific resource
d) An identity with specific permissions that can be assumed by AWS services or users

6) Which of the following is NOT an IAM best practice in AWS?
a) Regularly reviewing and rotating access keys
b) Using AWS root user for everyday tasks
c) Granting least privilege to IAM users
d) Enforcing strong password policies

7) Which AWS service provides firewall security for your VPC?
a) Amazon EC2
b) Amazon S3
c) Amazon VPC Security Groups
d) Amazon Route 53

8) What is NAT in the context of AWS VPC?
a) Network Address Translation b) Network Access Token
c) Network Availability Test d) Network Attached Storage

9) What is the primary purpose of Elastic Block Store (EBS) in EC2?
a) Storing and retrieving data from S3
b) Managing containerized applications
c) Providing virtual network connectivity
d) Offering persistent block-level storage for EC2 instances

10) Which of the following, is NOT an EC2 instance type?
a) t3.micro b) m5.large
c) g2.2xlarge d) n2.nano

11) What are CloudWatch dashboards in AWS?
a) Customizable visualizations of CloudWatch metrics and alarms
b) Configurable firewall rules for inbound and outbound traffic
c) Instances with preconfigured monitoring settings
d) Predefined templates for launching EC2 instances

12) What are the two monitoring types available in Amazon CloudWatch?
a) Basic and advanced b) Real-time and historical
c) Manual and automated d) Basic and detailed

13) In Amazon S3, what are objects?
a) Containers for organizing multiple buckets
b) Virtual machines for running applications
c) Data entities stored in S3 buckets
d) Access control policies for S3 buckets

14) What is versioning in Amazon S3?
a) A feature for managing different versions of an object in a bucket
b) A way to categorize objects based on their content type
c) A process for automatically migrating data between S3 storage classes
d) A mechanism for distributing data across multiple S3 regions

SLR-BD-514

Seat No.	

Set P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IoT Cloud Platform (BTN06614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any THREE. **12**

a) What is the AWS dashboard and how can it be used to manage AWS resources?
b) Discuss the core AWS services and their functionalities.
c) Explain the concept of AWS free tier and its benefits for users.
d) What is Identity and Access Management (IAM)?

Q.3 Attempt any TWO. **16**

a) What is AWS CLI? Describe the basic structure of AWS CLI commands and how they are used to interact with AWS resources.
b) What is VPC peering? How does it work and what are some use cases for VPC peering?
c) What is NAT in VPC? Explain how NAT gateways can be used to enable outbound internet traffic for resources within a private subnet.

Section – II

Q.4 Attempt any THREE. **12**

a) What is the Elastic Compute Cloud (EC2) and how does it work?
b) How is the pricing structure for EC2 instances determined?
c) Explain the lifecycle of an EC2 instance.
d) Explain the concept of auto-scaling and how it relates to EC2 instances.

Q.5 Attempt any TWO. **16**

a) What is Amazon Simple Storage Service (S3) and how does it function as an object storage service?
b) What are the different storage classes available in S3 and how do they differ in terms of durability, availability, and cost?
c) Explain the key components of AWS VPC, including subnets, IP addressing, and routing tables. Describe how these components create a custom network topology within VPC.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IoT Cloud Platform (BTN06614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) What is NAT in the context of AWS VPC?
a) Network Address Translation b) Network Access Token
c) Network Availability Test d) Network Attached Storage

2) What is the primary purpose of Elastic Block Store (EBS) in EC2?
a) Storing and retrieving data from S3
b) Managing containerized applications
c) Providing virtual network connectivity
d) Offering persistent block-level storage for EC2 instances

3) Which of the following, is NOT an EC2 instance type?
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c) Instances with preconfigured monitoring settings
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c) Manual and automated d) Basic and detailed

6) In Amazon S3, what are objects?
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b) Virtual machines for running applications
c) Data entities stored in S3 buckets
d) Access control policies for S3 buckets

7) What is versioning in Amazon S3?
   a) A feature for managing different versions of an object in a bucket
   b) A way to categorize objects based on their content type
   c) A process for automatically migrating data between S3 storage classes
   d) A mechanism for distributing data across multiple S3 regions

8) Which AWS service provides disaster recovery capabilities?
   a) Amazon EC2
   b) Amazon S3
   c) Amazon RDS
   d) Amazon Glacier

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   b) Monitoring AWS service usage
   c) Configuring virtual machines
   d) Developing applications

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   b) Provide payment information
   c) Verify email address
   d) Set up multi-factor authentication

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   c) A role assigned to an IAM user
   d) A policy that defines resource permissions

12) What is an IAM role in AWS?
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   b) A temporary session to assume different user identities
   c) A policy that defines permissions for a specific resource
   d) An identity with specific permissions that can be assumed by AWS services or users

13) Which of the following is NOT an IAM best practice in AWS?
   a) Regularly reviewing and rotating access keys
   b) Using AWS root user for everyday tasks
   c) Granting least privilege to IAM users
   d) Enforcing strong password policies

14) Which AWS service provides firewall security for your VPC?
   a) Amazon EC2
   b) Amazon S3
   c) Amazon VPC Security Groups
   d) Amazon Route 53

SLR-BD-514

Seat No.	

Set Q

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IoT Cloud Platform (BTN06614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any THREE. **12**

a) What is the AWS dashboard and how can it be used to manage AWS resources?
b) Discuss the core AWS services and their functionalities.
c) Explain the concept of AWS free tier and its benefits for users.
d) What is Identity and Access Management (IAM)?

Q.3 Attempt any TWO. **16**

a) What is AWS CLI? Describe the basic structure of AWS CLI commands and how they are used to interact with AWS resources.
b) What is VPC peering? How does it work and what are some use cases for VPC peering?
c) What is NAT in VPC? Explain how NAT gateways can be used to enable outbound internet traffic for resources within a private subnet.

Section – II

Q.4 Attempt any THREE. **12**

a) What is the Elastic Compute Cloud (EC2) and how does it work?
b) How is the pricing structure for EC2 instances determined?
c) Explain the lifecycle of an EC2 instance.
d) Explain the concept of auto-scaling and how it relates to EC2 instances.

Q.5 Attempt any TWO. **16**

a) What is Amazon Simple Storage Service (S3) and how does it function as an object storage service?
b) What are the different storage classes available in S3 and how do they differ in terms of durability, availability, and cost?
c) Explain the key components of AWS VPC, including subnets, IP addressing, and routing tables. Describe how these components create a custom network topology within VPC.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IoT Cloud Platform (BTN06614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) What are CloudWatch dashboards in AWS?
a) Customizable visualizations of CloudWatch metrics and alarms
b) Configurable firewall rules for inbound and outbound traffic
c) Instances with preconfigured monitoring settings
d) Predefined templates for launching EC2 instances

2) What are the two monitoring types available in Amazon CloudWatch?
a) Basic and advanced b) Real-time and historical
c) Manual and automated d) Basic and detailed

3) In Amazon S3, what are objects?
a) Containers for organizing multiple buckets
b) Virtual machines for running applications
c) Data entities stored in S3 buckets
d) Access control policies for S3 buckets

4) What is versioning in Amazon S3?
a) A feature for managing different versions of an object in a bucket
b) A way to categorize objects based on their content type
c) A process for automatically migrating data between S3 storage classes
d) A mechanism for distributing data across multiple S3 regions

5) Which AWS service provides disaster recovery capabilities?
a) Amazon EC2 b) Amazon S3
c) Amazon RDS d) Amazon Glacier

6) What is the main purpose of the AWS dashboard?
   a) Managing user accounts
   b) Monitoring AWS service usage
   c) Configuring virtual machines
   d) Developing applications

7) What is the first step to create a new AWS account?
   a) Choose a billing plan
   b) Provide payment information
   c) Verify email address
   d) Set up multi-factor authentication

8) In IAM, what is a group?
   a) A collection of IAM policies
   b) A group of users with similar access requirements
   c) A role assigned to an IAM user
   d) A policy that defines resource permissions

9) What is an IAM role in AWS?
   a) A group of users with administrative privileges
   b) A temporary session to assume different user identities
   c) A policy that defines permissions for a specific resource
   d) An identity with specific permissions that can be assumed by AWS services or users

10) Which of the following is NOT an IAM best practice in AWS?
   a) Regularly reviewing and rotating access keys
   b) Using AWS root user for everyday tasks
   c) Granting least privilege to IAM users
   d) Enforcing strong password policies

11) Which AWS service provides firewall security for your VPC?
   a) Amazon EC2
   b) Amazon S3
   c) Amazon VPC Security Groups
   d) Amazon Route 53

12) What is NAT in the context of AWS VPC?
   a) Network Address Translation b) Network Access Token
   c) Network Availability Test d) Network Attached Storage

13) What is the primary purpose of Elastic Block Store (EBS) in EC2?
   a) Storing and retrieving data from S3
   b) Managing containerized applications
   c) Providing virtual network connectivity
   d) Offering persistent block-level storage for EC2 instances

14) Which of the following, is NOT an EC2 instance type?

a) t3.micro
b) m5.large
c) g2.2xlarge
d) n2.nano

SLR-BD-514

Seat No.	

Set R

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IoT Cloud Platform (BTN06614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any THREE. **12**

a) What is the AWS dashboard and how can it be used to manage AWS resources?
b) Discuss the core AWS services and their functionalities.
c) Explain the concept of AWS free tier and its benefits for users.
d) What is Identity and Access Management (IAM)?

Q.3 Attempt any TWO. **16**

a) What is AWS CLI? Describe the basic structure of AWS CLI commands and how they are used to interact with AWS resources.
b) What is VPC peering? How does it work and what are some use cases for VPC peering?
c) What is NAT in VPC? Explain how NAT gateways can be used to enable outbound internet traffic for resources within a private subnet.

Section – II

Q.4 Attempt any THREE. **12**

a) What is the Elastic Compute Cloud (EC2) and how does it work?
b) How is the pricing structure for EC2 instances determined?
c) Explain the lifecycle of an EC2 instance.
d) Explain the concept of auto-scaling and how it relates to EC2 instances.

Q.5 Attempt any TWO. **16**

a) What is Amazon Simple Storage Service (S3) and how does it function as an object storage service?
b) What are the different storage classes available in S3 and how do they differ in terms of durability, availability, and cost?
c) Explain the key components of AWS VPC, including subnets, IP addressing, and routing tables. Describe how these components create a custom network topology within VPC.

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IoT Cloud Platform (BTN06614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which of the following is NOT an IAM best practice in AWS?
a) Regularly reviewing and rotating access keys
b) Using AWS root user for everyday tasks
c) Granting least privilege to IAM users
d) Enforcing strong password policies

2) Which AWS service provides firewall security for your VPC?
a) Amazon EC2
b) Amazon S3
c) Amazon VPC Security Groups
d) Amazon Route 53

3) What is NAT in the context of AWS VPC?
a) Network Address Translation b) Network Access Token
c) Network Availability Test d) Network Attached Storage

4) What is the primary purpose of Elastic Block Store (EBS) in EC2?
a) Storing and retrieving data from S3
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c) Providing virtual network connectivity
d) Offering persistent block-level storage for EC2 instances

5) Which of the following, is NOT an EC2 instance type?
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c) g2.2xlarge d) n2.nano

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d) Predefined templates for launching EC2 instances

7) What are the two monitoring types available in Amazon CloudWatch?
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b) Real-time and historical
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d) Basic and detailed

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c) Amazon RDS
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SLR-BD-514

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IoT Cloud Platform (BTN06614)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any THREE. **12**

a) What is the AWS dashboard and how can it be used to manage AWS resources?
b) Discuss the core AWS services and their functionalities.
c) Explain the concept of AWS free tier and its benefits for users.
d) What is Identity and Access Management (IAM)?

Q.3 Attempt any TWO. **16**

a) What is AWS CLI? Describe the basic structure of AWS CLI commands and how they are used to interact with AWS resources.
b) What is VPC peering? How does it work and what are some use cases for VPC peering?
c) What is NAT in VPC? Explain how NAT gateways can be used to enable outbound internet traffic for resources within a private subnet.

Section – II

Q.4 Attempt any THREE. **12**

a) What is the Elastic Compute Cloud (EC2) and how does it work?
b) How is the pricing structure for EC2 instances determined?
c) Explain the lifecycle of an EC2 instance.
d) Explain the concept of auto-scaling and how it relates to EC2 instances.

Q.5 Attempt any TWO. **16**

a) What is Amazon Simple Storage Service (S3) and how does it function as an object storage service?
b) What are the different storage classes available in S3 and how do they differ in terms of durability, availability, and cost?
c) Explain the key components of AWS VPC, including subnets, IP addressing, and routing tables. Describe how these components create a custom network topology within VPC.

SLR-BD-515

Seat No.	

Set P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Applications of IT and Control Engineering in Railway (BTN06615)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. 14

1) Clear perpendicular distance between inner faces of two rails is _____.
a) Gauge of track b) Inner gauge
c) Wheel base d) Wheel gauge

2) The highest speed of train in Indian Railway _____.
a) 140 kmph b) 120 kmph
c) 160 kmph d) 130 kmph

3) Rake carrying capacity of the BLC wagon is _____.
a) 40 wagons b) 45 wagons
c) 40 wagons d) 48 wagons

4) What do you mean by RDSO _____.
a) Research & Development Standard organization
b) Railway Development & Standard organization
c) Regional Development & Standard organization
d) None of above

5) Highest post in Railway _____.
a) General Manager b) Chief Engineer
c) Chairman Railway Board d) Divisional Railway Manager

6) What do you mean by LWR _____.
a) Long welded Rail b) Long weld able Rail
c) Linear welded rail d) None of above

7) What is the full form of PQRS used for Track renewal works?
a) Plasser quick Relaying system
b) Please quick return services
c) Poor Quality renewal system
d) None of above

8) with negative feedback in a closed loop control system, the system sensitivity to parameter variation _____.
a) Becomes infinite b) Becomes zero
c) Decreases d) Increases

9) In control system excessive bandwidth is not employed Because _____.
a) It leads to slower time response
b) Noise is proportional to bandwidth
c) Noise is proportional to the square of the bandwidth
d) It leads to low relative stability

10) Which of the following is the input of a controller?
a) Signal of fixed amplitude not dependent on desired variable value
b) Desired variable value
c) Sensed signal
d) Error signal

11) The reception signal is _____.
a) outer signal only
b) starter only
c) neither (outer signal) nor (starter)
d) both (outer signal) and (starter)

12) Shunting signals are known as _____.
a) Routing signals b) Starter signals
c) Ground signals d) Warner signals

13) In railways the signal that also acts as a routing signal is _____.
a) home signal b) advance starter signal
c) outer signal d) starter signal

14) The stations which do not have any signal are known as _____.
a) A-class stations b) B-class stations
c) Crossing stations d) Terminal stations

SLR-BD-515

Seat No.	

Set P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Applications of IT and Control Engineering in Railway (BTN06615)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any FOUR. **16**

a) What is mean by locomotive? Give its types.
b) Explain different layers of railway tracks.
c) Define following terminologies related to railway.
i) Pantograph
ii) Fishplate
iii) Fastening
iv) diamond crossing
d) Write short note on Display board System in Indian Railways.
e) Write a short note on Unreserved Ticketing System (UTS).

Q.3 Attempt any TWO. **12**

a) Give salient features of PRS system.
b) Explain Train Protection & Warning System.
c) Define control system with its types.

Section – II

Q.4 Attempt any FOUR. **16**

a) Give & explain the role of IT in Indian Railways.
b) Explain different networking devices.
c) Explain Railway tracking system.
d) Write a short note on Sensors used in Railways.
e) What are the basic requirements of UTS network?

Q.5 Attempt any TWO. **12**

a) What are the special signals used in Railway signaling?
b) Explain RMS and TMS.
c) What is mean by CRS? Give Safety measures in Railways.

Seat No.	

Set **Q**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Applications of IT and Control Engineering in Railway (BTN06615)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

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a) 40 wagons b) 45 wagons
c) 40 wagons d) 48 wagons

11) What do you mean by RDSO _____.
a) Research & Development Standard organization
b) Railway Development & Standard organization
c) Regional Development & Standard organization
d) None of above

12) Highest post in Railway _____.
a) General Manager b) Chief Engineer
c) Chairman Railway Board d) Divisional Railway Manager

13) What do you mean by LWR _____.
a) Long welded Rail b) Long weld able Rail
c) Linear welded rail d) None of above

14) What is the full form of PQRS used for Track renewal works?
a) Plasser quick Relaying system
b) Please quick return services
c) Poor Quality renewal system
d) None of above

SLR-BD-515

Seat No.	

Set Q

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Applications of IT and Control Engineering in Railway (BTN06615)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any FOUR. **16**

a) What is mean by locomotive? Give its types.
b) Explain different layers of railway tracks.
c) Define following terminologies related to railway.
i) Pantograph
ii) Fishplate
iii) Fastening
iv) diamond crossing
d) Write short note on Display board System in Indian Railways.
e) Write a short note on Unreserved Ticketing System (UTS).

Q.3 Attempt any TWO. **12**

a) Give salient features of PRS system.
b) Explain Train Protection & Warning System.
c) Define control system with its types.

Section – II

Q.4 Attempt any FOUR. **16**

a) Give & explain the role of IT in Indian Railways.
b) Explain different networking devices.
c) Explain Railway tracking system.
d) Write a short note on Sensors used in Railways.
e) What are the basic requirements of UTS network?

Q.5 Attempt any TWO. **12**

a) What are the special signals used in Railway signaling?
b) Explain RMS and TMS.
c) What is mean by CRS? Give Safety measures in Railways.

Seat No.	

Set **R**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Applications of IT and Control Engineering in Railway (BTN06615)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) The reception signal is _____.
a) outer signal only
b) starter only
c) neither (outer signal) nor (starter)
d) both (outer signal) and (starter)

2) Shunting signals are known as _____.
a) Routing signals b) Starter signals
c) Ground signals d) Warner signals

3) In railways the signal that also acts as a routing signal is _____.
a) home signal b) advance starter signal
c) outer signal d) starter signal

4) The stations which do not have any signal are known as _____.
a) A-class stations b) B-class stations
c) Crossing stations d) Terminal stations

5) Clear perpendicular distance between inner faces of two rails is _____.
a) Gauge of track b) Inner gauge
c) Wheel base d) Wheel gauge

6) The highest speed of train in Indian Railway _____.
a) 140 kmph b) 120 kmph
c) 160 kmph d) 130 kmph

7) Rake carrying capacity of the BLC wagon is _____.
a) 40 wagons b) 45 wagons
c) 40 wagons d) 48 wagons

8) What do you mean by RDSO _____.
a) Research & Development Standard organization
b) Railway Development & Standard organization
c) Regional Development & Standard organization
d) None of above

9) Highest post in Railway _____.
a) General Manager b) Chief Engineer
c) Chairman Railway Board d) Divisional Railway Manager

10) What do you mean by LWR _____.
a) Long welded Rail b) Long weld able Rail
c) Linear welded rail d) None of above

11) What is the full form of PQRS used for Track renewal works?
a) Plasser quick Relaying system
b) Please quick return services
c) Poor Quality renewal system
d) None of above

12) with negative feedback in a closed loop control system, the system sensitivity to parameter variation _____.
a) Becomes infinite b) Becomes zero
c) Decreases d) Increases

13) In control system excessive bandwidth is not employed Because _____.
a) It leads to slower time response
b) Noise is proportional to bandwidth
c) Noise is proportional to the square of the bandwidth
d) It leads to low relative stability

14) Which of the following is the input of a controller?
a) Signal of fixed amplitude not dependent on desired variable value
b) Desired variable value
c) Sensed signal
d) Error signal

SLR-BD-515

Seat No.	

Set R

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Applications of IT and Control Engineering in Railway (BTN06615)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any FOUR. **16**

a) What is mean by locomotive? Give its types.
b) Explain different layers of railway tracks.
c) Define following terminologies related to railway.
i) Pantograph
ii) Fishplate
iii) Fastening
iv) diamond crossing
d) Write short note on Display board System in Indian Railways.
e) Write a short note on Unreserved Ticketing System (UTS).

Q.3 Attempt any TWO. **12**

a) Give salient features of PRS system.
b) Explain Train Protection & Warning System.
c) Define control system with its types.

Section – II

Q.4 Attempt any FOUR. **16**

a) Give & explain the role of IT in Indian Railways.
b) Explain different networking devices.
c) Explain Railway tracking system.
d) Write a short note on Sensors used in Railways.
e) What are the basic requirements of UTS network?

Q.5 Attempt any TWO. **12**

a) What are the special signals used in Railway signaling?
b) Explain RMS and TMS.
c) What is mean by CRS? Give Safety measures in Railways.

Seat No.		Set	S

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Applications of IT and Control Engineering in Railway (BTN06615)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) What do you mean by LWR _____.
a) Long welded Rail b) Long weld able Rail
c) Linear welded rail d) None of above

2) What is the full form of PQRS used for Track renewal works?
a) Plasser quick Relaying system
b) Please quick return services
c) Poor Quality renewal system
d) None of above

3) with negative feedback in a closed loop control system, the system sensitivity to parameter variation _____.
a) Becomes infinite b) Becomes zero
c) Decreases d) Increases

4) In control system excessive bandwidth is not employed Because _____.
a) It leads to slower time response
b) Noise is proportional to bandwidth
c) Noise is proportional to the square of the bandwidth
d) It leads to low relative stability

5) Which of the following is the input of a controller?
a) Signal of fixed amplitude not dependent on desired variable value
b) Desired variable value
c) Sensed signal
d) Error signal

6) The reception signal is _____.
a) outer signal only
b) starter only
c) neither (outer signal) nor (starter)
d) both (outer signal) and (starter)

7) Shunting signals are known as _____.
a) Routing signals b) Starter signals
c) Ground signals d) Warner signals

8) In railways the signal that also acts as a routing signal is _____.
a) home signal b) advance starter signal
c) outer signal d) starter signal

9) The stations which do not have any signal are known as _____.
a) A-class stations b) B-class stations
c) Crossing stations d) Terminal stations

10) Clear perpendicular distance between inner faces of two rails is _____.
a) Gauge of track b) Inner gauge
c) Wheel base d) Wheel gauge

11) The highest speed of train in Indian Railway _____.
a) 140 kmph b) 120 kmph
c) 160 kmph d) 130 kmph

12) Rake carrying capacity of the BLC wagon is _____.
a) 40 wagons b) 45 wagons
c) 40 wagons d) 48 wagons

13) What do you mean by RDSO _____.
a) Research & Development Standard organization
b) Railway Development & Standard organization
c) Regional Development & Standard organization
d) None of above

14) Highest post in Railway _____.
a) General Manager b) Chief Engineer
c) Chairman Railway Board d) Divisional Railway Manager

SLR-BD-515

Seat No.		Set	S

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Applications of IT and Control Engineering in Railway (BTN06615)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any FOUR. **16**

a) What is mean by locomotive? Give its types.
b) Explain different layers of railway tracks.
c) Define following terminologies related to railway.
i) Pantograph
ii) Fishplate
iii) Fastening
iv) diamond crossing
d) Write short note on Display board System in Indian Railways.
e) Write a short note on Unreserved Ticketing System (UTS).

Q.3 Attempt any TWO. **12**

a) Give salient features of PRS system.
b) Explain Train Protection & Warning System.
c) Define control system with its types.

Section – II

Q.4 Attempt any FOUR. **16**

a) Give & explain the role of IT in Indian Railways.
b) Explain different networking devices.
c) Explain Railway tracking system.
d) Write a short note on Sensors used in Railways.
e) What are the basic requirements of UTS network?

Q.5 Attempt any TWO. **12**

a) What are the special signals used in Railway signaling?
b) Explain RMS and TMS.
c) What is mean by CRS? Give Safety measures in Railways.

SLR-BD-516

Seat No.		Set	P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Cyber Security -Cyber Forensic (BTN06616)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) Which of the following is an example of cybercrime?
a) Writing a blog post
b) Unauthorized access to someone's email account
c) Purchasing an item from an online store
d) Programming a video game

2) Which of the following is a classification of cybercrime?
a) Organized crime and white-collar crime
b) Financial crime, hacking, and identity theft
c) Domestic theft and shoplifting
d) Political lobbying

3) What is the primary function of a proxy server?
a) Encrypting user data for secure transmission
b) Acting as an intermediary between a user and a server to provide anonymity
c) Cracking passwords for legitimate purposes
d) Detecting and removing viruses

4) Password cracking involves which of the following techniques?
a) Dictionary attacks and brute force attacks
b) SQL injection
c) Setting up firewalls
d) Encrypting passwords for security

5) Which of the following is NOT a component of cyber law?
a) Intellectual property rights b) Cyberstalking laws
c) International monetary policy d) Data protection regulations

6) What is a key reason for the need for cyber laws in India?
a) Growth in e-commerce and digital banking
b) Decline in internet usage
c) Shortage of cybersecurity professionals
d) Increasing demand for physical locks

7) Which section of the Indian IT Act covers digital signatures?
a) Section 43A b) Section 3
c) Section 72 d) Section 66F

8) Computer forensics is most commonly used in which field?
a) Medical diagnostics b) Criminal investigations
c) Agricultural technology d) Manufacturing industries

9) Which was one of the earliest computer networks that laid the foundation for the internet?
a) ARPANET b) TOR Network
c) Wi-Fi Alliance d) Ethernet

10) What does an IP address identify?
a) The physical location of a device
b) A unique address assigned to a device in a network
c) A user's browsing history
d) The model of the router used

11) What is the chain of custody critical for in network forensics?
a) Ensuring the evidence is admissible in court
b) Speeding up data recovery
c) Encrypting evidence for storage
d) Reconstructing lost network configurations

12) Which component in a mobile phone manages cellular communication?
a) Central Processing Unit (CPU) b) SIM card
c) Baseband processor d) Graphics card

13) What is the main function of forensic toolkits for handheld devices?
a) Designing mobile applications
b) Extracting and analyzing data from handheld devices
c) Enhancing mobile performance
d) Monitoring real-time network traffic

14) A major challenge in using handheld device evidence in court is _____.
a) Slow processing speed of devices
b) Ensuring evidence authenticity and integrity
c) The high cost of forensic tools
d) Limited storage capacity of devices

Seat No.		Set	P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Cyber Security -Cyber Forensic (BTN06616)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain the classification of cybercrimes with suitable examples.
b) What are proxy servers and anonymizers? How are they misused in cybercrimes?
c) What are the key provisions of the Indian IT Act concerning cybercrime?
d) Explain the technique of SQL injection and its consequences in cyberattacks.
e) What is the relationship between cybercrime and information security? Provide examples.

Q.3 Attempt Any Two. **12**

a) Explain the concept of cyberstalking. Discuss its forms, consequences, and measures to combat it.
b) What are phishing attacks? Discuss their techniques, impact on victims, and preventive measures.
c) What is the role of digital signatures in the Indian IT Act? Discuss their legal significance and application.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain the digital forensics life cycle. What are its key stages?
b) What are the major challenges faced in computer forensics? Provide examples.
c) Discuss the role of Internet Protocols (IP) in network forensics.
d) Explain the working characteristics of cell phones relevant to forensic investigations.
e) What types of digital evidence can be extracted from handheld devices, and how is it used in investigations?

Q.5 Attempt Any Two. **12**

a) Explain the process of filtering and data reduction in network forensics. Why is it crucial in digital investigations?

b) What are the key steps involved in analyzing digital evidence from hand-held devices?

c) Analyze the role of cyber forensics in securing and authenticating digital evidence for legal proceedings.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Cyber Security -Cyber Forensic (BTN06616)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) Computer forensics is most commonly used in which field?
a) Medical diagnostics b) Criminal investigations
c) Agricultural technology d) Manufacturing industries

2) Which was one of the earliest computer networks that laid the foundation for the internet?
a) ARPANET b) TOR Network
c) Wi-Fi Alliance d) Ethernet

3) What does an IP address identify?
a) The physical location of a device
b) A unique address assigned to a device in a network
c) A user's browsing history
d) The model of the router used

4) What is the chain of custody critical for in network forensics?
a) Ensuring the evidence is admissible in court
b) Speeding up data recovery
c) Encrypting evidence for storage
d) Reconstructing lost network configurations

5) Which component in a mobile phone manages cellular communication?
a) Central Processing Unit (CPU) b) SIM card
c) Baseband processor d) Graphics card

6) What is the main function of forensic toolkits for handheld devices?
a) Designing mobile applications
b) Extracting and analyzing data from handheld devices
c) Enhancing mobile performance
d) Monitoring real-time network traffic

7) A major challenge in using handheld device evidence in court is _____.
a) Slow processing speed of devices
b) Ensuring evidence authenticity and integrity
c) The high cost of forensic tools
d) Limited storage capacity of devices

8) Which of the following is an example of cybercrime?
a) Writing a blog post
b) Unauthorized access to someone's email account
c) Purchasing an item from an online store
d) Programming a video game

9) Which of the following is a classification of cybercrime?
a) Organized crime and white-collar crime
b) Financial crime, hacking, and identity theft
c) Domestic theft and shoplifting
d) Political lobbying

10) What is the primary function of a proxy server?
a) Encrypting user data for secure transmission
b) Acting as an intermediary between a user and a server to provide anonymity
c) Cracking passwords for legitimate purposes
d) Detecting and removing viruses

11) Password cracking involves which of the following techniques?
a) Dictionary attacks and brute force attacks
b) SQL injection
c) Setting up firewalls
d) Encrypting passwords for security

12) Which of the following is NOT a component of cyber law?
a) Intellectual property rights
b) Cyberstalking laws
c) International monetary policy
d) Data protection regulations

13) What is a key reason for the need for cyber laws in India?
a) Growth in e-commerce and digital banking
b) Decline in internet usage
c) Shortage of cybersecurity professionals
d) Increasing demand for physical locks

14) Which section of the Indian IT Act covers digital signatures?
a) Section 43A
b) Section 3
c) Section 72
d) Section 66F

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Cyber Security -Cyber Forensic (BTN06616)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain the classification of cybercrimes with suitable examples.
b) What are proxy servers and anonymizers? How are they misused in cybercrimes?
c) What are the key provisions of the Indian IT Act concerning cybercrime?
d) Explain the technique of SQL injection and its consequences in cyberattacks.
e) What is the relationship between cybercrime and information security? Provide examples.

Q.3 Attempt Any Two. **12**

a) Explain the concept of cyberstalking. Discuss its forms, consequences, and measures to combat it.
b) What are phishing attacks? Discuss their techniques, impact on victims, and preventive measures.
c) What is the role of digital signatures in the Indian IT Act? Discuss their legal significance and application.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain the digital forensics life cycle. What are its key stages?
b) What are the major challenges faced in computer forensics? Provide examples.
c) Discuss the role of Internet Protocols (IP) in network forensics.
d) Explain the working characteristics of cell phones relevant to forensic investigations.
e) What types of digital evidence can be extracted from handheld devices, and how is it used in investigations?

Q.5 Attempt Any Two. **12**

a) Explain the process of filtering and data reduction in network forensics. Why is it crucial in digital investigations?

b) What are the key steps involved in analyzing digital evidence from hand-held devices?

c) Analyze the role of cyber forensics in securing and authenticating digital evidence for legal proceedings.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Cyber Security -Cyber Forensic (BTN06616)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) What is the chain of custody critical for in network forensics?
a) Ensuring the evidence is admissible in court
b) Speeding up data recovery
c) Encrypting evidence for storage
d) Reconstructing lost network configurations

2) Which component in a mobile phone manages cellular communication?
a) Central Processing Unit (CPU) b) SIM card
c) Baseband processor d) Graphics card

3) What is the main function of forensic toolkits for handheld devices?
a) Designing mobile applications
b) Extracting and analyzing data from handheld devices
c) Enhancing mobile performance
d) Monitoring real-time network traffic

4) A major challenge in using handheld device evidence in court is _____.
a) Slow processing speed of devices
b) Ensuring evidence authenticity and integrity
c) The high cost of forensic tools
d) Limited storage capacity of devices

5) Which of the following is an example of cybercrime?
a) Writing a blog post
b) Unauthorized access to someone's email account
c) Purchasing an item from an online store
d) Programming a video game

6) Which of the following is a classification of cybercrime?
a) Organized crime and white-collar crime
b) Financial crime, hacking, and identity theft
c) Domestic theft and shoplifting
d) Political lobbying

7) What is the primary function of a proxy server?
a) Encrypting user data for secure transmission
b) Acting as an intermediary between a user and a server to provide anonymity
c) Cracking passwords for legitimate purposes
d) Detecting and removing viruses

8) Password cracking involves which of the following techniques?
a) Dictionary attacks and brute force attacks
b) SQL injection
c) Setting up firewalls
d) Encrypting passwords for security

9) Which of the following is NOT a component of cyber law?
a) Intellectual property rights
b) Cyberstalking laws
c) International monetary policy
d) Data protection regulations

10) What is a key reason for the need for cyber laws in India?
a) Growth in e-commerce and digital banking
b) Decline in internet usage
c) Shortage of cybersecurity professionals
d) Increasing demand for physical locks

11) Which section of the Indian IT Act covers digital signatures?
a) Section 43A
b) Section 3
c) Section 72
d) Section 66F

12) Computer forensics is most commonly used in which field?
a) Medical diagnostics
b) Criminal investigations
c) Agricultural technology
d) Manufacturing industries

13) Which was one of the earliest computer networks that laid the foundation for the internet?
a) ARPANET
b) TOR Network
c) Wi-Fi Alliance
d) Ethernet

14) What does an IP address identify?
a) The physical location of a device
b) A unique address assigned to a device in a network
c) A user's browsing history
d) The model of the router used

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Cyber Security -Cyber Forensic (BTN06616)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain the classification of cybercrimes with suitable examples.
b) What are proxy servers and anonymizers? How are they misused in cybercrimes?
c) What are the key provisions of the Indian IT Act concerning cybercrime?
d) Explain the technique of SQL injection and its consequences in cyberattacks.
e) What is the relationship between cybercrime and information security? Provide examples.

Q.3 Attempt Any Two. **12**

a) Explain the concept of cyberstalking. Discuss its forms, consequences, and measures to combat it.
b) What are phishing attacks? Discuss their techniques, impact on victims, and preventive measures.
c) What is the role of digital signatures in the Indian IT Act? Discuss their legal significance and application.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain the digital forensics life cycle. What are its key stages?
b) What are the major challenges faced in computer forensics? Provide examples.
c) Discuss the role of Internet Protocols (IP) in network forensics.
d) Explain the working characteristics of cell phones relevant to forensic investigations.
e) What types of digital evidence can be extracted from handheld devices, and how is it used in investigations?

Q.5 Attempt Any Two. **12**

a) Explain the process of filtering and data reduction in network forensics. Why is it crucial in digital investigations?

b) What are the key steps involved in analyzing digital evidence from hand-held devices?

c) Analyze the role of cyber forensics in securing and authenticating digital evidence for legal proceedings.

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Cyber Security -Cyber Forensic (BTN06616)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) What is a key reason for the need for cyber laws in India?
a) Growth in e-commerce and digital banking
b) Decline in internet usage
c) Shortage of cybersecurity professionals
d) Increasing demand for physical locks

2) Which section of the Indian IT Act covers digital signatures?
a) Section 43A b) Section 3
c) Section 72 d) Section 66F

3) Computer forensics is most commonly used in which field?
a) Medical diagnostics b) Criminal investigations
c) Agricultural technology d) Manufacturing industries

4) Which was one of the earliest computer networks that laid the foundation for the internet?
a) ARPANET b) TOR Network
c) Wi-Fi Alliance d) Ethernet

5) What does an IP address identify?
a) The physical location of a device
b) A unique address assigned to a device in a network
c) A user's browsing history
d) The model of the router used

6) What is the chain of custody critical for in network forensics?
a) Ensuring the evidence is admissible in court
b) Speeding up data recovery
c) Encrypting evidence for storage
d) Reconstructing lost network configurations

7) Which component in a mobile phone manages cellular communication?
a) Central Processing Unit (CPU) b) SIM card
c) Baseband processor d) Graphics card

8) What is the main function of forensic toolkits for handheld devices?
a) Designing mobile applications
b) Extracting and analyzing data from handheld devices
c) Enhancing mobile performance
d) Monitoring real-time network traffic

9) A major challenge in using handheld device evidence in court is _____.
a) Slow processing speed of devices
b) Ensuring evidence authenticity and integrity
c) The high cost of forensic tools
d) Limited storage capacity of devices

10) Which of the following is an example of cybercrime?
a) Writing a blog post
b) Unauthorized access to someone's email account
c) Purchasing an item from an online store
d) Programming a video game

11) Which of the following is a classification of cybercrime?
a) Organized crime and white-collar crime
b) Financial crime, hacking, and identity theft
c) Domestic theft and shoplifting
d) Political lobbying

12) What is the primary function of a proxy server?
a) Encrypting user data for secure transmission
b) Acting as an intermediary between a user and a server to provide anonymity
c) Cracking passwords for legitimate purposes
d) Detecting and removing viruses

13) Password cracking involves which of the following techniques?
a) Dictionary attacks and brute force attacks
b) SQL injection
c) Setting up firewalls
d) Encrypting passwords for security

14) Which of the following is NOT a component of cyber law?
a) Intellectual property rights b) Cyberstalking laws
c) International monetary policy d) Data protection regulations

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Cyber Security -Cyber Forensic (BTN06616)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain the classification of cybercrimes with suitable examples.
b) What are proxy servers and anonymizers? How are they misused in cybercrimes?
c) What are the key provisions of the Indian IT Act concerning cybercrime?
d) Explain the technique of SQL injection and its consequences in cyberattacks.
e) What is the relationship between cybercrime and information security? Provide examples.

Q.3 Attempt Any Two. **12**

a) Explain the concept of cyberstalking. Discuss its forms, consequences, and measures to combat it.
b) What are phishing attacks? Discuss their techniques, impact on victims, and preventive measures.
c) What is the role of digital signatures in the Indian IT Act? Discuss their legal significance and application.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain the digital forensics life cycle. What are its key stages?
b) What are the major challenges faced in computer forensics? Provide examples.
c) Discuss the role of Internet Protocols (IP) in network forensics.
d) Explain the working characteristics of cell phones relevant to forensic investigations.
e) What types of digital evidence can be extracted from handheld devices, and how is it used in investigations?

Q.5 Attempt Any Two. **12**

a) Explain the process of filtering and data reduction in network forensics. Why is it crucial in digital investigations?

b) What are the key steps involved in analyzing digital evidence from hand-held devices?

c) Analyze the role of cyber forensics in securing and authenticating digital evidence for legal proceedings.

SLR-BD-517

Seat No.		Set	P

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science Machine Learning (BTN06613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) The most common issue when using Machine Learning is _____.
a) Lack of skilled resources b) Inadequate Infrastructure
c) Poor Data Quality d) None of these

2) Sentiment analysis is an example of _____.
i) Regression
ii) Classification
iii) Clustering
iv) Reinforcement Learning
a) (i) only b) (i) & (ii)
c) (i)&(iii) d) (i), (ii) & (iii)

3) Reinforcement learning is _____.
a) Supervised Learning b) Unsupervised Learning
c) Award-Based Learning d) None of above

4) Which ONE of the following are regression tasks?
a) Predict the age of a person
b) Predict the country from where the person comes from
c) Predict whether the price of petroleum will increase tomorrow
d) Predict whether a document is related to science

5) Which of the following is NOT supervised learning?
a) PCA b) Decision Tree
c) Linear Regression d) Naive Bayesian

6) Logistic regression is _____ regression technique that is used to model data having _____ outcome.
a) Linear, Numeric b) Linear, Binary
c) Non Linear, Numeric d) Non Linear, Binary

7) Which of the following is the centroid-based clustering method?
a) K-means clustering b) DBSCAN clustering
c) Hierarchical clustering d) KNN Algorithm

8) Which of the following statement is TRUE about the Association rule method?
a) It determines how strongly or how weakly two objects are connected
b) It determines the relation between two objects
c) Relation between particular objects
d) Relation between frequent item set

9) Which technique associates a conditional probability value with each data instances _____.
a) Linear Regression b) Logistic Regression
c) Simple Regression d) Multiple Linear Regressions

10) What is back propagation?
a) It is another name given to the curvy function in the Perceptron
b) It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn
c) It is another name given to the curvy function in the Perceptron
d) None of the above.

11) Artificial neural network used for _____.
a) Pattern Recognition b) Classification
c) Clustering d) All the above

12) Applications of NN (Neural Network) _____.
a) Risk management b) Data validation
c) Sales forecasting d) All of the above

13) Which of the following is the consequence between a node and its predecessors while creating Bayesian network?
a) Conditionally independent
b) Functionally dependent
c) Both Conditionally dependent & Dependent
d) Dependent

14) Bayes rule can be used for _____.
a) Solving queries
b) Increasing complexity
c) Answering probabilistic query
d) Decreasing Complexity

Seat No.	

Set | P

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science Machine Learning (BTN06613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Solve any four of the following. **16**
- **a)** What is Machine Learning? Explain with two Examples.
- **b)** Explain the Learning Vs Designing and Training Vs Testing?
- **c)** What is Feature? Explain the Feature Extraction technique of ML?
- **d)** Explain in brief the data processing of Machine Learning?
- **e)** Explain the Assessing Performance of Regression?

Q.3 Solve any two of the following. **12**
- **a)** Compare the Deep learning Vs Machine Learning.
- **b)** What is Reinforcement Learning? Explain with Examples?
- **c)** Write a note on Support Vector Machine (SVM) algorithm of ML?

Section – II

Q.4 Solve any four of the following. **16**
- **a)** Explain any six types of Activation functions in ANN?
- **b)** List the difference between Supervised and Unsupervised Machine learning?
- **c)** Explain how to find pattern using association rule.
- **d)** Write a note on DBSCAN?
- **e)** Explain Hierarchical Clustering Technique of ML?

Q.5 Solve any two of the following. **12**
- **a)** Explain Back-propagation algorithm of ANN?
- **b)** Explain Medical diagnosis Application of ML?
- **c)** Explain how Machine Learning is used for Traffic Prediction?

Seat No.	

Set **Q**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science Machine Learning (BTN06613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) Which of the following statement is TRUE about the Association rule method?
a) It determines how strongly or how weakly two objects are connected
b) It determines the relation between two objects
c) Relation between particular objects
d) Relation between frequent item set

2) Which technique associates a conditional probability value with each data instances _____.
a) Linear Regression b) Logistic Regression
c) Simple Regression d) Multiple Linear Regressions

3) What is back propagation?
a) It is another name given to the curvy function in the Perceptron
b) It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn
c) It is another name given to the curvy function in the Perceptron
d) None of the above.

4) Artificial neural network used for _____.
a) Pattern Recognition b) Classification
c) Clustering d) All the above

5) Applications of NN (Neural Network) _____.
a) Risk management b) Data validation
c) Sales forecasting d) All of the above

6) Which of the following is the consequence between a node and its predecessors while creating Bayesian network?
a) Conditionally independent
b) Functionally dependent
c) Both Conditionally dependent & Dependent
d) Dependent

7) Bayes rule can be used for _____.
a) Solving queries
b) Increasing complexity
c) Answering probabilistic query
d) Decreasing Complexity

8) The most common issue when using Machine Learning is _____.
a) Lack of skilled resources b) Inadequate Infrastructure
c) Poor Data Quality d) None of these

9) Sentiment analysis is an example of _____.
i) Regression
ii) Classification
iii) Clustering
iv) Reinforcement Learning
a) (i) only b) (i) & (ii)
c) (i)&(iii) d) (i), (ii) & (iii)

10) Reinforcement learning is _____.
a) Supervised Learning b) Unsupervised Learning
c) Award-Based Learning d) None of above

11) Which ONE of the following are regression tasks?
a) Predict the age of a person
b) Predict the country from where the person comes from
c) Predict whether the price of petroleum will increase tomorrow
d) Predict whether a document is related to science

12) Which of the following is NOT supervised learning?
a) PCA b) Decision Tree
c) Linear Regression d) Naive Bayesian

13) Logistic regression is _____ regression technique that is used to model data having _____ outcome.
a) Linear, Numeric b) Linear, Binary
c) Non Linear, Numeric d) Non Linear, Binary

14) Which of the following is the centroid-based clustering method?
a) K-means clustering b) DBSCAN clustering
c) Hierarchical clustering d) KNN Algorithm

Seat No.	

Set **Q**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science Machine Learning (BTN06613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Solve any four of the following. **16**
a) What is Machine Learning? Explain with two Examples.
b) Explain the Learning Vs Designing and Training Vs Testing?
c) What is Feature? Explain the Feature Extraction technique of ML?
d) Explain in brief the data processing of Machine Learning?
e) Explain the Assessing Performance of Regression?

Q.3 Solve any two of the following. **12**
a) Compare the Deep learning Vs Machine Learning.
b) What is Reinforcement Learning? Explain with Examples?
c) Write a note on Support Vector Machine (SVM) algorithm of ML?

Section – II

Q.4 Solve any four of the following. **16**
a) Explain any six types of Activation functions in ANN?
b) List the difference between Supervised and Unsupervised Machine learning?
c) Explain how to find pattern using association rule.
d) Write a note on DBSCAN?
e) Explain Hierarchical Clustering Technique of ML?

Q.5 Solve any two of the following. **12**
a) Explain Back-propagation algorithm of ANN?
b) Explain Medical diagnosis Application of ML?
c) Explain how Machine Learning is used for Traffic Prediction?

Seat No.	

Set **R**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science Machine Learning (BTN06613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) Artificial neural network used for _____.
a) Pattern Recognition b) Classification
c) Clustering d) All the above

2) Applications of NN (Neural Network) _____.
a) Risk management b) Data validation
c) Sales forecasting d) All of the above

3) Which of the following is the consequence between a node and its predecessors while creating Bayesian network?
a) Conditionally independent
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ii) Classification
iii) Clustering
iv) Reinforcement Learning
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c) It is another name given to the curvy function in the Perceptron
d) None of the above.

Seat No.	

Set **R**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science Machine Learning (BTN06613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four of the following. **16**
a) What is Machine Learning? Explain with two Examples.
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b) What is Reinforcement Learning? Explain with Examples?
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Section – II

Q.4 Solve any four of the following. **16**
a) Explain any six types of Activation functions in ANN?
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Q.5 Solve any two of the following. **12**
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b) Explain Medical diagnosis Application of ML?
c) Explain how Machine Learning is used for Traffic Prediction?

Seat No.		Set	S

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science Machine Learning (BTN06613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) Logistic regression is _____ regression technique that is used to model data having _____ outcome.
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c) Hierarchical clustering d) KNN Algorithm

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a) Pattern Recognition b) Classification
c) Clustering d) All the above

7) Applications of NN (Neural Network) _____.
a) Risk management b) Data validation
c) Sales forecasting d) All of the above

8) Which of the following is the consequence between a node and its predecessors while creating Bayesian network?
a) Conditionally independent
b) Functionally dependent
c) Both Conditionally dependent & Dependent
d) Dependent

9) Bayes rule can be used for _____.
a) Solving queries
b) Increasing complexity
c) Answering probabilistic query
d) Decreasing Complexity

10) The most common issue when using Machine Learning is _____.
a) Lack of skilled resources b) Inadequate Infrastructure
c) Poor Data Quality d) None of these

11) Sentiment analysis is an example of _____.
i) Regression
ii) Classification
iii) Clustering
iv) Reinforcement Learning
a) (i) only b) (i) & (ii)
c) (i)&(iii) d) (i), (ii) & (iii)

12) Reinforcement learning is _____.
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13) Which ONE of the following are regression tasks?
a) Predict the age of a person
b) Predict the country from where the person comes from
c) Predict whether the price of petroleum will increase tomorrow
d) Predict whether a document is related to science

14) Which of the following is NOT supervised learning?
a) PCA b) Decision Tree
c) Linear Regression d) Naive Bayesian

SLR-BD-517

Seat No.		Set	S

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science Machine Learning (BTN06613)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Solve any four of the following. **16**
a) What is Machine Learning? Explain with two Examples.
b) Explain the Learning Vs Designing and Training Vs Testing?
c) What is Feature? Explain the Feature Extraction technique of ML?
d) Explain in brief the data processing of Machine Learning?
e) Explain the Assessing Performance of Regression?

Q.3 Solve any two of the following. **12**
a) Compare the Deep learning Vs Machine Learning.
b) What is Reinforcement Learning? Explain with Examples?
c) Write a note on Support Vector Machine (SVM) algorithm of ML?

Section – II

Q.4 Solve any four of the following. **16**
a) Explain any six types of Activation functions in ANN?
b) List the difference between Supervised and Unsupervised Machine learning?
c) Explain how to find pattern using association rule.
d) Write a note on DBSCAN?
e) Explain Hierarchical Clustering Technique of ML?

Q.5 Solve any two of the following. **12**
a) Explain Back-propagation algorithm of ANN?
b) Explain Medical diagnosis Application of ML?
c) Explain how Machine Learning is used for Traffic Prediction?

SLR-BD-518

Seat No.	

Set P

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microwave Engineering (BTN06701)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The modes of wave propagation that a parallel plate waveguide can support are _____.
a) TEM, TE, TM modes b) TM, TE modes
c) TEM, TM modes d) TEM, TE modes

2) In TM mode, if the direction of wave propagation is in 'z' direction, then _____.
a) HZ=0 b) EZ=0
c) EY=0 d) HY=0

3) The modes of propagation supported by a rectangular wave guide is _____.
a) TM, TEM, TE modes b) TM, TE
c) TM, TEM d) TE, TEM

4) A waveguide acts as a _____.
a) Low pass filter b) Band pass filter
c) High pass filter d) All of the above

5) The relation between incident voltage matrix, reflected voltage matrix and S matrix for a microwave network _____.
a) $[v-] = [s][v+]$ b) $[v+] = [s][v-]$
c) $[v-][v] = [s]$ d) $[s] = [v][v-]$

6) Scattering matrix for a lossless matrix is _____.
a) Unitary b) Symmetric
c) Identity matrix d) Null matrix

7) The voltage equation for a 2 port network that can be represented as a matrix is _____.

a) V1 = AV2 + BI2
b) V1 = CV2 + DI2
c) V1 = BV2 + AI2
d) V1 = DV2 + CI2

8) ABCD matrix of the cascade connection of 2 networks is equal to _____.

a) Product of ABCD matrices representing the individual two ports
b) Sum of the ABCD matrices representing the individual two ports
c) Difference of the ABCD matrices representing the individual two ports
d) Sum of transpose of ABCD matrices representing the individual two ports

9) Microwave tubes are grouped into two categories depending on the type of _____.

a) Electron beam field interaction
b) Amplification method
c) Power gain achieved
d) Construction methods

10) The following vacuum tube can be used as an oscillator and an amplifier?

a) klystron
b) BWO
c) TWT
d) Magnetron

11) A PIN diode can be used in either a series or a shunt configuration to form _____.

a) Single pole single throw switch
b) Single pole double throw switch
c) Amplifier
d) Oscillator

12) Any semiconductor diode has a junction capacitance varying with reverse bias. If such a diode has microwave characteristics, it is called _____.

a) IMPATT diode
b) TRAPITT diode
c) SKOTTKY diode
d) None of the mentioned

13) GaAs is used in the fabrication of GUNN diodes because _____.

a) GaAs is cost effective
b) It less temperature sensitive
c) it has low conduction band electrons
d) less forbidden energy gap

14) The microwave bench in the lab is designed to work in the band _____.

a) X band
b) L band
c) S band
d) C band

SLR-BD-518

Seat No.	

Set P

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microwave Engineering (BTN06701)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of non - programmable calculators is allowed.

Section – I

Q.2 Solve any Four of the Followings. 16

a) Starting from the electric and magnetic field expressions in a rectangular waveguide, determine wave impedance at TM and TE mode.
b) Explain the construction and operation of magic tee.
c) Give the structural details and applications of strip lines.
d) Explain the significance of the scattering matrix.
e) Define coupling factor, directivity and isolation parameters of directional coupler.

Q.3 Solve any two of the followings. 12

a) Derive the field expressions for a rectangular waveguide for TE modes of propagation.
b) Explain the construction and operation of E-plane Tee and derive its S-matrix.
c) Explain the construction and operation of the circulator.

Section – II

Q.4 Solve any Four of the Followings. 16

a) Explain with a neat diagram electron bunching process in reflex klystron.
b) Explain Varactor diode. Discuss its constructional details.
c) Explain construction and working of IMPATT diode.
d) Explain operation, construction and applications of Gunn diode.
e) How impedance can be measured using a slotted line?

Q.5 Solve any two of the followings. 12

a) Explain construction and working of two cavity klystron amplifier with Applegate diagram.
b) Explain working of Tunnel diode with the help of an energy band diagram.
c) Explain different power measurement techniques.

SLR-BD-518

Seat No.	

Set Q

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microwave Engineering (BTN06701)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) ABCD matrix of the cascade connection of 2 networks is equal to _____.
a) Product of ABCD matrices representing the individual two ports
b) Sum of the ABCD matrices representing the individual two ports
c) Difference of the ABCD matrices representing the individual two ports
d) Sum of transpose of ABCD matrices representing the individual two ports

2) Microwave tubes are grouped into two categories depending on the type of _____.
a) Electron beam field interaction
b) Amplification method
c) Power gain achieved
d) Construction methods

3) The following vacuum tube can be used as an oscillator and an amplifier?
a) klystron b) BWO
c) TWT d) Magnetron

4) A PIN diode can be used in either a series or a shunt configuration to form _____.
a) Single pole single throw switch
b) Single pole double throw switch
c) Amplifier
d) Oscillator

5) Any semiconductor diode has a junction capacitance varying with reverse bias. If such a diode has microwave characteristics, it is called _____.

a) IMPATT diode
b) TRAPITT diode
c) SKOTTKY diode
d) None of the mentioned

6) GaAs is used in the fabrication of GUNN diodes because _____.

a) GaAs is cost effective
b) It less temperature sensitive
c) it has low conduction band electrons
d) less forbidden energy gap

7) The microwave bench in the lab is designed to work in the band _____.

a) X band
b) L band
c) S band
d) C band

8) The modes of wave propagation that a parallel plate waveguide can support are _____.

a) TEM, TE, TM modes
b) TM, TE modes
c) TEM, TM modes
d) TEM, TE modes

9) In TM mode, if the direction of wave propagation is in 'z' direction, then _____.

a) HZ=0
b) EZ=0
c) EY=0
d) HY=0

10) The modes of propagation supported by a rectangular wave guide is _____.

a) TM, TEM, TE modes
b) TM, TE
c) TM, TEM
d) TE, TEM

11) A waveguide acts as a _____.

a) Low pass filter
b) Band pass filter
c) High pass filter
d) All of the above

12) The relation between incident voltage matrix, reflected voltage matrix and S matrix for a microwave network _____.

a) $[v-] = [s][v+]$
b) $[v+] = [s][v-]$
c) $[v-][v] = [s]$
d) $[s] = [v][v-]$

13) Scattering matrix for a lossless matrix is _____.

a) Unitary
b) Symmetric
c) Identity matrix
d) Null matrix

14) The voltage equation for a 2 port network that can be represented as a matrix is _____.

a) V1 = AV2 + BI2
b) V1 = CV2 + DI2
c) V1 = BV2 + AI2
d) V1 = DV2 + CI2

SLR-BD-518

Seat No.	

Set Q

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microwave Engineering (BTN06701)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of non - programmable calculators is allowed.

Section – I

Q.2 Solve any Four of the Followings. **16**

a) Starting from the electric and magnetic field expressions in a rectangular waveguide, determine wave impedance at TM and TE mode.
b) Explain the construction and operation of magic tee.
c) Give the structural details and applications of strip lines.
d) Explain the significance of the scattering matrix.
e) Define coupling factor, directivity and isolation parameters of directional coupler.

Q.3 Solve any two of the followings. **12**

a) Derive the field expressions for a rectangular waveguide for TE modes of propagation.
b) Explain the construction and operation of E-plane Tee and derive its S-matrix.
c) Explain the construction and operation of the circulator.

Section – II

Q.4 Solve any Four of the Followings. **16**

a) Explain with a neat diagram electron bunching process in reflex klystron.
b) Explain Varactor diode. Discuss its constructional details.
c) Explain construction and working of IMPATT diode.
d) Explain operation, construction and applications of Gunn diode.
e) How impedance can be measured using a slotted line?

Q.5 Solve any two of the followings. **12**

a) Explain construction and working of two cavity klystron amplifier with Applegate diagram.
b) Explain working of Tunnel diode with the help of an energy band diagram.
c) Explain different power measurement techniques.

Seat No.	

Set R

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microwave Engineering (BTN06701)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) A PIN diode can be used in either a series or a shunt configuration to form _____.
a) Single pole single throw switch
b) Single pole double throw switch
c) Amplifier
d) Oscillator

2) Any semiconductor diode has a junction capacitance varying with reverse bias. If such a diode has microwave characteristics, it is called _____.
a) IMPATT diode b) TRAPITT diode
c) SKOTTKY diode d) None of the mentioned

3) GaAs is used in the fabrication of GUNN diodes because _____.
a) GaAs is cost effective
b) It less temperature sensitive
c) it has low conduction band electrons
d) less forbidden energy gap

4) The microwave bench in the lab is designed to work in the band _____.
a) X band b) L band
c) S band d) C band

5) The modes of wave propagation that a parallel plate waveguide can support are _____.
a) TEM, TE, TM modes b) TM, TE modes
c) TEM, TM modes d) TEM, TE modes

6) In TM mode, if the direction of wave propagation is in 'z' direction, then _____.

a) HZ=0 b) EZ=0
c) EY=0 d) HY=0

7) The modes of propagation supported by a rectangular wave guide is _____.

a) TM, TEM, TE modes b) TM, TE
c) TM, TEM d) TE, TEM

8) A waveguide acts as a _____.

a) Low pass filter b) Band pass filter
c) High pass filter d) All of the above

9) The relation between incident voltage matrix, reflected voltage matrix and S matrix for a microwave network _____.

a) $[v-] = [s][v+]$ b) $[v+] = [s][v-]$
c) $[v-][v] = [s]$ d) $[s] = [v][v-]$

10) Scattering matrix for a lossless matrix is _____.

a) Unitary b) Symmetric
c) Identity matrix d) Null matrix

11) The voltage equation for a 2 port network that can be represented as a matrix is _____.

a) V1 = AV2 + BI2 b) V1 = CV2 + DI2
c) V1 = BV2 + AI2 d) V1 = DV2 + CI2

12) ABCD matrix of the cascade connection of 2 networks is equal to _____.

a) Product of ABCD matrices representing the individual two ports
b) Sum of the ABCD matrices representing the individual two ports
c) Difference of the ABCD matrices representing the individual two ports
d) Sum of transpose of ABCD matrices representing the individual two ports

13) Microwave tubes are grouped into two categories depending on the type of _____.

a) Electron beam field interaction
b) Amplification method
c) Power gain achieved
d) Construction methods

14) The following vacuum tube can be used as an oscillator and an amplifier?

a) klystron b) BWO
c) TWT d) Magnetron

SLR-BD-518

Seat No.	

Set R

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microwave Engineering (BTN06701)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of non - programmable calculators is allowed.

Section – I

Q.2 Solve any Four of the Followings. 16

a) Starting from the electric and magnetic field expressions in a rectangular waveguide, determine wave impedance at TM and TE mode.
b) Explain the construction and operation of magic tee.
c) Give the structural details and applications of strip lines.
d) Explain the significance of the scattering matrix.
e) Define coupling factor, directivity and isolation parameters of directional coupler.

Q.3 Solve any two of the followings. 12

a) Derive the field expressions for a rectangular waveguide for TE modes of propagation.
b) Explain the construction and operation of E-plane Tee and derive its S-matrix.
c) Explain the construction and operation of the circulator.

Section – II

Q.4 Solve any Four of the Followings. 16

a) Explain with a neat diagram electron bunching process in reflex klystron.
b) Explain Varactor diode. Discuss its constructional details.
c) Explain construction and working of IMPATT diode.
d) Explain operation, construction and applications of Gunn diode.
e) How impedance can be measured using a slotted line?

Q.5 Solve any two of the followings. 12

a) Explain construction and working of two cavity klystron amplifier with Applegate diagram.
b) Explain working of Tunnel diode with the help of an energy band diagram.
c) Explain different power measurement techniques.

Seat No.	

Set **S**

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microwave Engineering (BTN06701)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Scattering matrix for a lossless matrix is _____.
a) Unitary b) Symmetric
c) Identity matrix d) Null matrix

2) The voltage equation for a 2 port network that can be represented as a matrix is _____.
a) V1 = AV2 + BI2 b) V1 = CV2 + DI2
c) V1 = BV2 + AI2 d) V1 = DV2 + CI2

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b) Sum of the ABCD matrices representing the individual two ports
c) Difference of the ABCD matrices representing the individual two ports
d) Sum of transpose of ABCD matrices representing the individual two ports

4) Microwave tubes are grouped into two categories depending on the type of _____.
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b) Amplification method
c) Power gain achieved
d) Construction methods

5) The following vacuum tube can be used as an oscillator and an amplifier?
a) klystron b) BWO
c) TWT d) Magnetron

6) A PIN diode can be used in either a series or a shunt configuration to form _____.
a) Single pole single throw switch
b) Single pole double throw switch
c) Amplifier
d) Oscillator

7) Any semiconductor diode has a junction capacitance varying with reverse bias. If such a diode has microwave characteristics, it is called _____.
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b) TRAPITT diode
c) SKOTTKY diode
d) None of the mentioned

8) GaAs is used in the fabrication of GUNN diodes because _____.
a) GaAs is cost effective
b) It less temperature sensitive
c) it has low conduction band electrons
d) less forbidden energy gap

9) The microwave bench in the lab is designed to work in the band _____.
a) X band
b) L band
c) S band
d) C band

10) The modes of wave propagation that a parallel plate waveguide can support are _____.
a) TEM, TE, TM modes
b) TM, TE modes
c) TEM, TM modes
d) TEM, TE modes

11) In TM mode, if the direction of wave propagation is in 'z' direction, then _____.
a) HZ=0
b) EZ=0
c) EY=0
d) HY=0

12) The modes of propagation supported by a rectangular wave guide is _____.
a) TM, TEM, TE modes
b) TM, TE
c) TM, TEM
d) TE, TEM

13) A waveguide acts as a _____.
a) Low pass filter
b) Band pass filter
c) High pass filter
d) All of the above

14) The relation between incident voltage matrix, reflected voltage matrix and S matrix for a microwave network _____.
a) $[v-] = [s][v+]$
b) $[v+] = [s][v-]$
c) $[v-][v] = [s]$
d) $[s] = [v][v-]$

SLR-BD-518

Seat No.	

Set S

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microwave Engineering (BTN06701)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of non - programmable calculators is allowed.

Section – I

Q.2 Solve any Four of the Followings. 16

a) Starting from the electric and magnetic field expressions in a rectangular waveguide, determine wave impedance at TM and TE mode.
b) Explain the construction and operation of magic tee.
c) Give the structural details and applications of strip lines.
d) Explain the significance of the scattering matrix.
e) Define coupling factor, directivity and isolation parameters of directional coupler.

Q.3 Solve any two of the followings. 12

a) Derive the field expressions for a rectangular waveguide for TE modes of propagation.
b) Explain the construction and operation of E-plane Tee and derive its S-matrix.
c) Explain the construction and operation of the circulator.

Section – II

Q.4 Solve any Four of the Followings. 16

a) Explain with a neat diagram electron bunching process in reflex klystron.
b) Explain Varactor diode. Discuss its constructional details.
c) Explain construction and working of IMPATT diode.
d) Explain operation, construction and applications of Gunn diode.
e) How impedance can be measured using a slotted line?

Q.5 Solve any two of the followings. 12

a) Explain construction and working of two cavity klystron amplifier with Applegate diagram.
b) Explain working of Tunnel diode with the help of an energy band diagram.
c) Explain different power measurement techniques.

Seat No.

Set P

Fourth.Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Communication (BTN06702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) The bridge is suitable at _____ layer of OSI reference model.
a) Application b) Transport
c) Data-link d) Network

2) _____ is a Network device, used for repackage and convert data going from one environment to another.
a) Router b) Gateway
c) Repeater d) Switch

3) The formal protocol that defines the MTA client and server in the Internet is called _____.
a) Systematic mail transfer protocol
b) Simple mail transfer protocol
c) DHCP
d) None of the above

4) _____ provide both static and dynamic address allocation which can be manual / automated.
a) SMTP b) DHCP
c) TELNET d) ICMP

5) The length of IPv6 is _____ bits.
a) 32 b) 64
c) 128 d) 16

6) Number of links to connect 'n' nodes in a mesh topology is _____.
a) N(N-1)/2 b) N(N-2)
c) N d) N2

7) _____ is the central device in star topology.
a) STP server b) Hub
c) PDC d) Router

8) The process-to-process delivery of the entire message is the responsibility of the _____ layer.
a) Transport b) Application
c) Physical d) Network

9) HDLC is an acronym for _____.
a) Half-duplex digital link combination
b) Host double-level circuit
c) High-duplex line communication
d) High-level data link control

10) The hamming distance between dataword, 110101 and 100010 is _____.
a) 3 b) 4
c) 2 d) 1

11) Urgent data requires the urgent pointer field as well as the URG bit in the _____ field.
a) Control b) Offset
c) Sequence number d) None

12) To accomplish flow control, TCP uses a _____ window protocol.
a) limited-size b) sliding
c) fixed-size d) None

13) An ACK segment, if carrying no data, consumes _____sequence number(s).
a) One b) Two
c) No d) Sixteen bit

14) The Ethernet address of system is of _____ bytes.
a) 6 b) 4
c) 32 d) 8

SLR-BD-519

Seat No.		Set	P

Fourth.Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Communication (BTN06702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt any Four of the following **16**

a) Differentiate between OSI-ISO & TCP-IP models.
b) Describe framing. State its types and explain any one type in detail.
c) With a neat sketch explain mode transition in HDLC.
d) Give details of IEEE 802.4.
e) Explain Go-back-N and selective repeat techniques.

Q.3 Attempt any two of the following **12**

a) Explain the working of stop and wait flow control and Sliding window flow control.
b) Draw TCP header format and explain each field.
c) A bit stream 1101011011 is transmitted using standard CRC method. The generator polynomial is x^4+x+1. Give the actual bit stream transmitted.

Section – II

Q.4 Attempt any Four of the following **16**

a) What is MAC? Compare ALOHA with Slotted ALOHA.
b) Draw IPv4 header format & compare IPv4 with IPv6.
c) Discuss Shortest Path Routing.
d) Explain how connection is established in FTP for file transfer.
e) Explain ICMP along with its any 4 different message types.

Q.5 Attempt any two of the following **12**

a) Give in details use of subnet mask and explain Classful IP address representation.
b) Describe Internet Domain Name System? Explain domain name space and sections.
c) With a neat sketch explain three way handshake.

Seat No.

Set Q

Fourth.Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Communication (BTN06702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Assume suitable data if required.
4) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) The process-to-process delivery of the entire message is the responsibility of the _____ layer.
a) Transport b) Application
c) Physical d) Network

2) HDLC is an acronym for _____.
a) Half-duplex digital link combination
b) Host double-level circuit
c) High-duplex line communication
d) High-level data link control

3) The hamming distance between dataword, 110101 and 100010 is _____.
a) 3 b) 4
c) 2 d) 1

4) Urgent data requires the urgent pointer field as well as the URG bit in the _____ field.
a) Control b) Offset
c) Sequence number d) None

5) To accomplish flow control, TCP uses a _____ window protocol.
a) limited-size b) sliding
c) fixed-size d) None

6) An ACK segment, if carrying no data, consumes _____sequence number(s).
   a) One b) Two
   c) No d) Sixteen bit

7) The Ethernet address of system is of _____ bytes.
   a) 6 b) 4
   c) 32 d) 8

8) The bridge is suitable at _____ layer of OSI reference model.
   a) Application b) Transport
   c) Data-link d) Network

9) _____ is a Network device, used for repackage and convert data going from one environment to another.
   a) Router b) Gateway
   c) Repeater d) Switch

10) The formal protocol that defines the MTA client and server in the Internet is called _____.
   a) Systematic mail transfer protocol
   b) Simple mail transfer protocol
   c) DHCP
   d) None of the above

11) _____ provide both static and dynamic address allocation which can be manual / automated.
   a) SMTP b) DHCP
   c) TELNET d) ICMP

12) The length of IPv6 is _____ bits.
   a) 32 b) 64
   c) 128 d) 16

13) Number of links to connect ‘n’ nodes in a mesh topology is _____.
   a) N(N-1)/2 b) N(N-2)
   c) N d) N2

14) _____ is the central device in star topology.
   a) STP server b) Hub
   c) PDC d) Router

SLR-BD-519

Seat No.	

Set Q

Fourth.Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Communication (BTN06702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt any Four of the following **16**

a) Differentiate between OSI-ISO & TCP-IP models.
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c) With a neat sketch explain mode transition in HDLC.
d) Give details of IEEE 802.4.
e) Explain Go-back-N and selective repeat techniques.

Q.3 Attempt any two of the following **12**

a) Explain the working of stop and wait flow control and Sliding window flow control.
b) Draw TCP header format and explain each field.
c) A bit stream 1101011011 is transmitted using standard CRC method. The generator polynomial is x^4+x+1. Give the actual bit stream transmitted.

Section – II

Q.4 Attempt any Four of the following **16**

a) What is MAC? Compare ALOHA with Slotted ALOHA.
b) Draw IPv4 header format & compare IPv4 with IPv6.
c) Discuss Shortest Path Routing.
d) Explain how connection is established in FTP for file transfer.
e) Explain ICMP along with its any 4 different message types.

Q.5 Attempt any two of the following **12**

a) Give in details use of subnet mask and explain Classful IP address representation.
b) Describe Internet Domain Name System? Explain domain name space and sections.
c) With a neat sketch explain three way handshake.

Seat No.

Set R

Fourth.Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Communication (BTN06702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Urgent data requires the urgent pointer field as well as the URG bit in the _____ field.
a) Control b) Offset
c) Sequence number d) None

2) To accomplish flow control, TCP uses a _____ window protocol.
a) limited-size b) sliding
c) fixed-size d) None

3) An ACK segment, if carrying no data, consumes _____sequence number(s).
a) One b) Two
c) No d) Sixteen bit

4) The Ethernet address of system is of _____ bytes.
a) 6 b) 4
c) 32 d) 8

5) The bridge is suitable at _____ layer of OSI reference model.
a) Application b) Transport
c) Data-link d) Network

6) _____ is a Network device, used for repackage and convert data going from one environment to another.
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   c) DHCP
   d) None of the above

8) _____ provide both static and dynamic address allocation which can be manual / automated.
   a) SMTP
   b) DHCP
   c) TELNET
   d) ICMP

9) The length of IPv6 is _____ bits.
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   b) 64
   c) 128
   d) 16

10) Number of links to connect 'n' nodes in a mesh topology is _____.
   a) N(N-1)/2
   b) N(N-2)
   c) N
   d) N2

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   b) Hub
   c) PDC
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   b) Host double-level circuit
   c) High-duplex line communication
   d) High-level data link control

14) The hamming distance between dataword, 110101 and 100010 is _____.
   a) 3
   b) 4
   c) 2
   d) 1

SLR-BD-519

Seat No.		Set	R

Fourth.Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Communication (BTN06702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any Four of the following **16**

a) Differentiate between OSI-ISO & TCP-IP models.
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Section – II

Q.4 Attempt any Four of the following **16**

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b) Draw IPv4 header format & compare IPv4 with IPv6.
c) Discuss Shortest Path Routing.
d) Explain how connection is established in FTP for file transfer.
e) Explain ICMP along with its any 4 different message types.

Q.5 Attempt any two of the following **12**

a) Give in details use of subnet mask and explain Classful IP address representation.
b) Describe Internet Domain Name System? Explain domain name space and sections.
c) With a neat sketch explain three way handshake.

Seat No.

Set S

Fourth.Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Communication (BTN06702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Number of links to connect 'n' nodes in a mesh topology is _____.
a) N(N-1)/2 b) N(N-2)
c) N d) N2

2) _____ is the central device in star topology.
a) STP server b) Hub
c) PDC d) Router

3) The process-to-process delivery of the entire message is the responsibility of the _____ layer.
a) Transport b) Application
c) Physical d) Network

4) HDLC is an acronym for _____.
a) Half-duplex digital link combination
b) Host double-level circuit
c) High-duplex line communication
d) High-level data link control

5) The hamming distance between dataword, 110101 and 100010 is _____.
a) 3 b) 4
c) 2 d) 1

6) Urgent data requires the urgent pointer field as well as the URG bit in the _____ field.
a) Control b) Offset
c) Sequence number d) None

7) To accomplish flow control, TCP uses a _____ window protocol.
a) limited-size b) sliding
c) fixed-size d) None

8) An ACK segment, if carrying no data, consumes _____sequence number(s).
a) One b) Two
c) No d) Sixteen bit

9) The Ethernet address of system is of _____ bytes.
a) 6 b) 4
c) 32 d) 8

10) The bridge is suitable at _____ layer of OSI reference model.
a) Application b) Transport
c) Data-link d) Network

11) _____ is a Network device, used for repackage and convert data going from one environment to another.
a) Router b) Gateway
c) Repeater d) Switch

12) The formal protocol that defines the MTA client and server in the Internet is called _____.
a) Systematic mail transfer protocol
b) Simple mail transfer protocol
c) DHCP
d) None of the above

13) _____ provide both static and dynamic address allocation which can be manual / automated.
a) SMTP b) DHCP
c) TELNET d) ICMP

14) The length of IPv6 is _____ bits.
a) 32 b) 64
c) 128 d) 16

SLR-BD-519

Seat No.		Set	S

Fourth.Y.(B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Communication (BTN06702)

Day & Date: Tuesday 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt any Four of the following **16**

a) Differentiate between OSI-ISO & TCP-IP models.
b) Describe framing. State its types and explain any one type in detail.
c) With a neat sketch explain mode transition in HDLC.
d) Give details of IEEE 802.4.
e) Explain Go-back-N and selective repeat techniques.

Q.3 Attempt any two of the following **12**

a) Explain the working of stop and wait flow control and Sliding window flow control.
b) Draw TCP header format and explain each field.
c) A bit stream 1101011011 is transmitted using standard CRC method. The generator polynomial is x^4+x+1. Give the actual bit stream transmitted.

Section – II

Q.4 Attempt any Four of the following **16**

a) What is MAC? Compare ALOHA with Slotted ALOHA.
b) Draw IPv4 header format & compare IPv4 with IPv6.
c) Discuss Shortest Path Routing.
d) Explain how connection is established in FTP for file transfer.
e) Explain ICMP along with its any 4 different message types.

Q.5 Attempt any two of the following **12**

a) Give in details use of subnet mask and explain Classful IP address representation.
b) Describe Internet Domain Name System? Explain domain name space and sections.
c) With a neat sketch explain three way handshake.

SLR-BD-520

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
VLSI Design (BTN06703)

Day & Date: Wednesday 04-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Which of the following is a characteristic of Verilog HDL?
a) Strongly typed language b) Better library
c) Case sensitive d) Not portable

2) Which of the following loops are supported by Verilog?
a) if-else loop b) for loop
c) while loop d) All the above

3) @posedge means _____.
a) Transition from x to 1 b) Transition from z to 1, x
c) Transition from 0 to 1, x or z d) Transition from 1 to 0

4) To introduce delays in a circuit, we can use a _____.
a) buffer b) Inverter
c) EXOR Gate d) Flip-Flop

5) The power dissipation in Pseudo-nMOS is reduced to about _____ compared to nMOS device.
a) 50% b) 30%
c) 60% d) 70%

6) MOS transistors consist of which of the following?
a) semiconductor layer b) metal layer
c) layer of silicon-di-oxide d) all of the mentioned

7) Why we needed HDLs while having many traditional Programming languages?

a) Traditional programming languages are complex
b) Some characteristics of digital hardware couldn't be captured by traditional languages
c) HDLs are complementary to traditional programming languages to complete the design process
d) HDLs offer more complexity than traditional programming languages.

8) A Verilog code contains Keyword always, which style of modelling is used in this code?

a) behavioral
b) structural
c) dataflow
d) none of these

9) Let x = 4'b1010 then &x and |x will result in _____ and _____ respectively.

a) 1'b1, 1'b1
b) 1'b0 and 1'b1
c) 1'b0,'b1
d) Can not be determined

10) Default value of a reg data type is _____.

a) 0
b) x
c) 1
d) z

11) VLSI technology uses _____ to form integrated circuit.

a) transistors
b) diodes
c) switches
d) buffers

12) Electrical charge flows from _____.

a) source to drain
b) source to ground
c) drain to source
d) source to gate

13) In Pseudo-nMOS logic, n transistor operates in _____.

a) cut off region
b) resistive region
c) saturation region
d) non saturation region

14) Most Lookup tables in FPGAs use _____ inputs, resulting in _____ possible outputs.

a) 4,16
b) 8,16
c) 4,12
d) 6,12

Seat No.	

Set **P**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
VLSI Design (BTN06703)

Day & Date: Wednesday 04-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

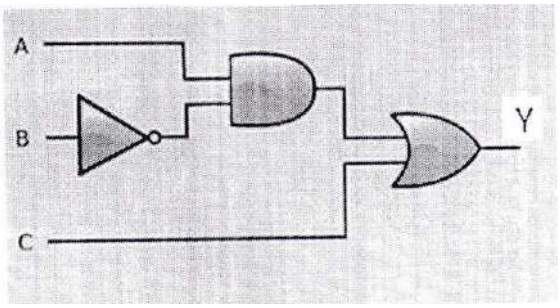
Section – I

Q.2 Solve any four. **16**

a) Write a Verilog code for T Flip flop.
b) List all the data types available in Verilog HDL. Explain any three data types with examples.
c) Explain operators in Verilog.
d) Explain the following control statement with an example.
i) if...else statement
ii) For loop
e) Write a Verilog code for Full Adder.

Q.3 Solve any two. **12**

a) Explain Gate Propagation Delay in Verilog.
b) Which are the Styles of Description in Verilog.
c) Write a Verilog code for output Y in Data Flow, Behavioural and Structural Style of Modelling. Circuit diagram is as shown below.



Section – II

Q.4 Solve any four. **16**

a) Design two input OR/NOR gate using complimentary pass transistor logic.

b) What is accumulation, depletion and enhancement mode of E MOSFET?

c) What is pseudo NMOS logic? Implement sum of full adder using this logic.

d) Differentiate between CPLD and FPGA Architecture.

e) Draw and explain architecture of FPGA.

Q.5 Solve any two. **12**

a) What is static and dynamic power dissipation of CMOS inverter?

b) How to obtain DC characteristics of CMOS inverter? What is effect of $\beta n/\beta p$ on this characteristic?

c) Design following equation using CMOS Logic.

$Y = \overline{(AB + CD)E}$

SLR-BD-520

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
VLSI Design (BTN06703)

Day & Date: Wednesday 04-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) A Verilog code contains Keyword always, which style of modelling is used in this code?
a) behavioral b) structural
c) dataflow d) none of these

2) Let x = 4'b1010 then &x and |x will result in _____ and _____ respectively.
a) 1'b1, 1'b1 b) 1'b0 and 1'b1
c) 1'b0,'b1 d) Can not be determined

3) Default value of a reg data type is _____.
a) 0 b) x
c) 1 d) z

4) VLSI technology uses _____ to form integrated circuit.
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6) In Pseudo-nMOS logic, n transistor operates in _____.
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7) Most Lookup tables in FPGAs use _____ inputs, resulting in _____ possible outputs.
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   c) 4,12 d) 6,12

8) Which of the following is a characteristic of Verilog HDL?
   a) Strongly typed language b) Better library
   c) Case sensitive d) Not portable

9) Which of the following loops are supported by Verilog?
   a) if-else loop b) for loop
   c) while loop d) All the above

10) @posedge means _____.
   a) Transition from x to 1 b) Transition from z to 1, x
   c) Transition from 0 to 1, x or z d) Transition from 1 to 0

11) To introduce delays in a circuit, we can use a _____.
   a) buffer b) Inverter
   c) EXOR Gate d) Flip-Flop

12) The power dissipation in Pseudo-nMOS is reduced to about _____ compared to nMOS device.
   a) 50% b) 30%
   c) 60% d) 70%

13) MOS transistors consist of which of the following?
   a) semiconductor layer b) metal layer
   c) layer of silicon-di-oxide d) all of the mentioned

14) Why we needed HDLs while having many traditional Programming languages?
   a) Traditional programming languages are complex
   b) Some characteristics of digital hardware couldn't be captured by traditional languages
   c) HDLs are complementary to traditional programming languages to complete the design process
   d) HDLs offer more complexity than traditional programming languages.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
VLSI Design (BTN06703)

Day & Date: Wednesday 04-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

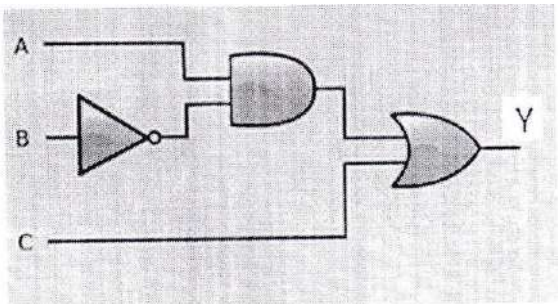
Section – I

Q.2 Solve any four. **16**

a) Write a Verilog code for T Flip flop.
b) List all the data types available in Verilog HDL. Explain any three data types with examples.
c) Explain operators in Verilog.
d) Explain the following control statement with an example.
i) if...else statement
ii) For loop
e) Write a Verilog code for Full Adder.

Q.3 Solve any two. **12**

a) Explain Gate Propagation Delay in Verilog.
b) Which are the Styles of Description in Verilog.
c) Write a Verilog code for output Y in Data Flow, Behavioural and Structural Style of Modelling. Circuit diagram is as shown below.



Section – II

Q.4 Solve any four. **16**

a) Design two input OR/NOR gate using complimentary pass transistor logic.

b) What is accumulation, depletion and enhancement mode of E MOSFET?

c) What is pseudo NMOS logic? Implement sum of full adder using this logic.

d) Differentiate between CPLD and FPGA Architecture.

e) Draw and explain architecture of FPGA.

Q.5 Solve any two. **12**

a) What is static and dynamic power dissipation of CMOS inverter?

b) How to obtain DC characteristics of CMOS inverter? What is effect of $\beta n/\beta p$ on this characteristic?

c) Design following equation using CMOS Logic.

$Y = \overline{(AB + CD)E}$

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
VLSI Design (BTN06703)

Day & Date: Wednesday 04-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) VLSI technology uses _____ to form integrated circuit.
a) transistors b) diodes
c) switches d) buffers

2) Electrical charge flows from _____.
a) source to drain b) source to ground
c) drain to source d) source to gate

3) In Pseudo-nMOS logic, n transistor operates in _____.
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4) Most Lookup tables in FPGAs use _____ inputs, resulting in _____ possible outputs.
a) 4,16 b) 8,16
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c) dataflow
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a) 1'b1, 1'b1
b) 1'b0 and 1'b1
c) 1'b0,'b1
d) Can not be determined

14) Default value of a reg data type is _____.

a) 0
b) x
c) 1
d) z

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
VLSI Design (BTN06703)

Day & Date: Wednesday 04-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) Write a Verilog code for T Flip flop.
b) List all the data types available in Verilog HDL. Explain any three data types with examples.
c) Explain operators in Verilog.
d) Explain the following control statement with an example.
i) if...else statement
ii) For loop
e) Write a Verilog code for Full Adder.

Q.3 Solve any two. **12**

a) Explain Gate Propagation Delay in Verilog.
b) Which are the Styles of Description in Verilog.
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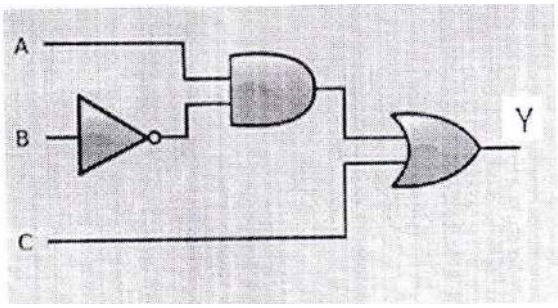

Section – II

Q.4 Solve any four. **16**

a) Design two input OR/NOR gate using complimentary pass transistor logic.

b) What is accumulation, depletion and enhancement mode of E MOSFET?

c) What is pseudo NMOS logic? Implement sum of full adder using this logic.

d) Differentiate between CPLD and FPGA Architecture.

e) Draw and explain architecture of FPGA.

Q.5 Solve any two. **12**

a) What is static and dynamic power dissipation of CMOS inverter?

b) How to obtain DC characteristics of CMOS inverter? What is effect of $\beta n/\beta p$ on this characteristic?

c) Design following equation using CMOS Logic.

$Y = \overline{(AB + CD)E}$

SLR-BD-520

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
VLSI Design (BTN06703)

Day & Date: Wednesday 04-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) MOS transistors consist of which of the following?
a) semiconductor layer b) metal layer
c) layer of silicon-di-oxide d) all of the mentioned

2) Why we needed HDLs while having many traditional Programming languages?
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5) Default value of a reg data type is _____.
a) 0 b) x
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7) Electrical charge flows from _____.
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8) In Pseudo-nMOS logic, n transistor operates in _____.
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10) Which of the following is a characteristic of Verilog HDL?
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a) Transition from x to 1 b) Transition from z to 1, x
c) Transition from 0 to 1, x or z d) Transition from 1 to 0

13) To introduce delays in a circuit, we can use a _____.
a) buffer b) Inverter
c) EXOR Gate d) Flip-Flop

14) The power dissipation in Pseudo-nMOS is reduced to about _____ compared to nMOS device.
a) 50% b) 30%
c) 60% d) 70%

SLR-BD-520

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
VLSI Design (BTN06703)

Day & Date: Wednesday 04-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

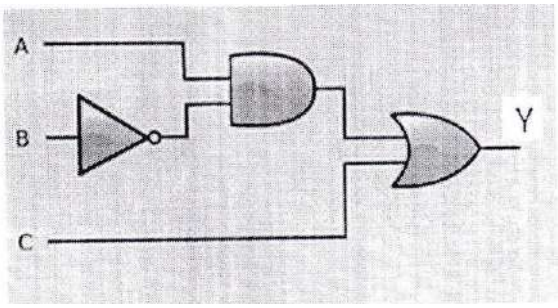
Section – I

Q.2 Solve any four. **16**

a) Write a Verilog code for T Flip flop.
b) List all the data types available in Verilog HDL. Explain any three data types with examples.
c) Explain operators in Verilog.
d) Explain the following control statement with an example.
i) if...else statement
ii) For loop
e) Write a Verilog code for Full Adder.

Q.3 Solve any two. **12**

a) Explain Gate Propagation Delay in Verilog.
b) Which are the Styles of Description in Verilog.
c) Write a Verilog code for output Y in Data Flow, Behavioural and Structural Style of Modelling. Circuit diagram is as shown below.



Section – II

Q.4 Solve any four. **16**

a) Design two input OR/NOR gate using complimentary pass transistor logic.

b) What is accumulation, depletion and enhancement mode of E MOSFET?

c) What is pseudo NMOS logic? Implement sum of full adder using this logic.

d) Differentiate between CPLD and FPGA Architecture.

e) Draw and explain architecture of FPGA.

Q.5 Solve any two. **12**

a) What is static and dynamic power dissipation of CMOS inverter?

b) How to obtain DC characteristics of CMOS inverter? What is effect of $\beta n/\beta p$ on this characteristic?

c) Design following equation using CMOS Logic.

$Y = \overline{(AB + CD)E}$

SLR-BD-521

Seat No.	

Set P

Fourth.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
PLC and Industrial Controllers (BTN06707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose correct answer. 14

1) What is the main function of the CPU in a PLC?
a) To provide power to the PLC
b) To store the program
c) To execute the program and control the input and output devices
d) To communicate with other PLCs

2) What is a PLC?
a) A type of controller used for industrial automation
b) A type of robot used for industrial automation
c) A type of sensor used for industrial automation
d) A type of software used for industrial automation

3) AC output field devices can interface to _____.
a) AC output modules b) Relay output modules
c) Both a and b d) Neither a or b

4) In a current sinking DC input module _____.
a) The current flows out of the input field device
b) Requires that a AC sources be used with mechanical switches
c) The current flows out of the input module
d) Currents can flow in either direction at the input module

5) What is the function of a sensor?
a) To convert physical quantities into electrical signals
b) To convert electrical signals into physical quantities
c) To measure the speed of a moving object
d) To control the temperature of a system

6) Which one of the following is a basic component of pneumatic power system?

a) Air tank
b) Compressor
c) Valves
d) All of the above

7) What type of power supply is typically used for a PLC?

a) AC
b) DC
c) Both AC and DC
d) Solar

8) Normally Open contacts are open _____.

a) When input is not energized
b) When input is energized
c) When input is higher than 20 volts
d) None of the above

9) A solenoid is an example of an _____ device.

a) Input
b) Output
c) IN OUT
d) None of the above

10) Which mini application of PLC is used for monitoring and controlling the temperature and pressure in a manufacturing process?

a) Traffic signal control
b) Home automation
c) Industrial robot control
d) Process control

11) Parallel connections of a ladder logic program are typically called _____.

a) Branches
b) Input
c) Output
d) Loop

12) An AND function implemented in ladder logic uses:

a) Normally-closed contacts in series
b) Normally-open contacts in series
c) A single normally-closed contact
d) Normally-open contacts in parallel

13) What is the purpose of a Human-Machine Interface (HMI) in industrial automation?

a) To control industrial robots
b) To program PLCs
c) To monitor and interact with the industrial process
d) To process raw materials

14) SCADA stands for _____.

a) Superior control and data acquisition system
b) Supervisory control and data acquisition system
c) Supervisory control and data appear system
d) None of the above

Seat No.	

Set | P

Fourth.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
PLC and Industrial Controllers (BTN06707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Assume suitable data if required.
3) Figures to the right indicates full marks

SECTION – I

Q.2 Attempt any Four of the following. **16**

a) Explain different Selection parameters of PLCs.
b) List different applications of PLC. Compare PLC with relay circuit.
c) Describe sinking and sourcing concept in PLC.
d) State working principle of IR Sensor. List applications of IR sensor.
e) Draw and describe the block diagram of DC discrete output module of PLC.

Q.3 Attempt any Two of following. **12**

a) With respect to PLC discuss.
i) Why a Separate PLC Power Supply?
ii) Power Supply Selection for PLC
b) What is gauge factor? What are the different types of strain gauge? Describe the construction and working of strain gauge.
c) What are the suitable materials for piezo electric sensor? What is piezo electric effect? Explain working of piezoelectric Sensor.

SECTION – II

Q.4 Attempt any Four of the following. **16**

a) How does a Push Button Switch Operate? Explain roll of Push Button in PLC.
b) List & explain the selection criteria for a limit switch in a PLC.
c) Explain use of Down Counter instruction in PLC with example.
d) Define industrial controller. Discuss the application areas of industrial controller.
e) What is use of comparison instruction in PLC programming? Explain any two comparison instruction in detail.

Q.5 Attempt any Two of the following. **12**

a) Explain working of AC servo motor with block diagram. List specification of it.

b) List different Methods of Programming a PLC. Draw Ladder diagram for basic gates.

c) Draw a ladder diagram for two lamps RED & YELLOW having following conditions.

i) When start button pressed RED & Yellow lamp will be ON.

ii) When stop button pressed RED lamps will be OFF.

iii) After 10 second YELLOW lamp will be OFF.

SLR-BD-521

Seat No.		Set	Q

Fourth.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
PLC and Industrial Controllers (BTN06707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose correct answer. **14**

1) Normally Open contacts are open _____.
a) When input is not energized
b) When input is energized
c) When input is higher than 20 volts
d) None of the above

2) A solenoid is an example of an _____ device.
a) Input b) Output
c) IN OUT d) None of the above

3) Which mini application of PLC is used for monitoring and controlling the temperature and pressure in a manufacturing process?
a) Traffic signal control b) Home automation
c) Industrial robot control d) Process control

4) Parallel connections of a ladder logic program are typically called _____.
a) Branches b) Input
c) Output d) Loop

5) An AND function implemented in ladder logic uses:
a) Normally-closed contacts in series
b) Normally-open contacts in series
c) A single normally-closed contact
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6) What is the purpose of a Human-Machine Interface (HMI) in industrial automation?
a) To control industrial robots
b) To program PLCs
c) To monitor and interact with the industrial process
d) To process raw materials

7) SCADA stands for _____.
a) Superior control and data acquisition system
b) Supervisory control and data acquisition system
c) Supervisory control and data appear system
d) None of the above

8) What is the main function of the CPU in a PLC?
a) To provide power to the PLC
b) To store the program
c) To execute the program and control the input and output devices
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9) What is a PLC?
a) A type of controller used for industrial automation
b) A type of robot used for industrial automation
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d) A type of software used for industrial automation

10) AC output field devices can interface to _____.
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d) Neither a or b

11) In a current sinking DC input module _____.
a) The current flows out of the input field device
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c) The current flows out of the input module
d) Currents can flow in either direction at the input module

12) What is the function of a sensor?
a) To convert physical quantities into electrical signals
b) To convert electrical signals into physical quantities
c) To measure the speed of a moving object
d) To control the temperature of a system

13) Which one of the following is a basic component of pneumatic power system?
a) Air tank
b) Compressor
c) Valves
d) All of the above

14) What type of power supply is typically used for a PLC?
a) AC
b) DC
c) Both AC and DC
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SLR-BD-521

Seat No.	

Set Q

Fourth.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
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SECTION – I

Q.2 Attempt any Four of the following. **16**

a) Explain different Selection parameters of PLCs.
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e) Draw and describe the block diagram of DC discrete output module of PLC.

Q.3 Attempt any Two of following. **12**

a) With respect to PLC discuss.
i) Why a Separate PLC Power Supply?
ii) Power Supply Selection for PLC
b) What is gauge factor? What are the different types of strain gauge? Describe the construction and working of strain gauge.
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SECTION – II

Q.4 Attempt any Four of the following. **16**

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b) List & explain the selection criteria for a limit switch in a PLC.
c) Explain use of Down Counter instruction in PLC with example.
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e) What is use of comparison instruction in PLC programming? Explain any two comparison instruction in detail.

Q.5 Attempt any Two of the following. **12**

a) Explain working of AC servo motor with block diagram. List specification of it.

b) List different Methods of Programming a PLC. Draw Ladder diagram for basic gates.

c) Draw a ladder diagram for two lamps RED & YELLOW having following conditions.

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ii) When stop button pressed RED lamps will be OFF.

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SLR-BD-521

Seat No.	

Set R

Fourth.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
PLC and Industrial Controllers (BTN06707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose correct answer. **14**

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a) Branches b) Input
c) Output d) Loop

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d) None of the above

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b) Home automation
c) Industrial robot control
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Seat No.	

Set **R**

Fourth.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
PLC and Industrial Controllers (BTN06707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
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SECTION – I

Q.2 Attempt any Four of the following. **16**

a) Explain different Selection parameters of PLCs.
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a) With respect to PLC discuss.
i) Why a Separate PLC Power Supply?
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SECTION – II

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Seat No.		Set	S

Fourth.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
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Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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Seat No.		Set	S

Fourth.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
PLC and Industrial Controllers (BTN06707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
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SECTION – I

Q.2 Attempt any Four of the following. **16**

a) Explain different Selection parameters of PLCs.
b) List different applications of PLC. Compare PLC with relay circuit.
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SECTION – II

Q.4 Attempt any Four of the following. **16**

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c) Draw a ladder diagram for two lamps RED & YELLOW having following conditions.

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ii) When stop button pressed RED lamps will be OFF.

iii) After 10 second YELLOW lamp will be OFF.

Seat No.	

Set **P**

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGIGEERING
Mobile Communication (BTN06708)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Who sets the standards of GSM?
a) ITU b) AT&T
c) ETSI d) USDC

2) Standard GSM systems support a data rate of _____.
a) 164 kbps b) 64 kbps
c) 128 kbps d) 9.6 kbps

3) Cellular concept replaces many low power transmitters to a single high power transmitter.
a) True b) False

4) Actual radio coverage of a cell is called _____.
a) Fingerprint b) Footprint
c) Imprint d) Matrix

5) How many users or voice channels are supported for each 200 KHz channel in GSM?
a) Eight b) Three
c) Sixty four d) Twelve

6) What is the name of a Base Transceiver Station in 2G system equivalent in a 4G LTE _____.
a) nodeB b) eNodeB
c) aNodeB d) nodeBPro

7) Which system is called as buffer and burst method?
a) FDMA b) TDMA
c) CDMA d) None of the above

8) Free space propagation model is to predict _____.
a) Received signal strength b) Transmitted power
c) Gain of transmitter d) Gain of receiver

9) Diffraction occurs when radio path between Tx. And Rx. is obstructed by _____.
a) Surface having sharp irregularities
b) Smooth irregularities
c) Rough surface
d) All types of surfaces

10) Which organization is responsible for developing LTE standards?
a) UMTS b) 3GPP
c) 3GPP2 d) ISO

11) OFDMA stands for _____.
a) omnidirectional frequency division multiple access
b) orthogonal frequency duplex multiple access
c) orthogonal frequency divider multiple access
d) orthogonal frequency division multiple access

12) Modulation techniques used in CDMA 2000 is _____.
a) Uplink-QPSK downlink-BPSK
b) Uplink-BPSK downlink-QPSK
c) Uplink-BPSK downlink-BPSK
d) None of the above

13) What is the minimum spectrum allocation required by W-CDMA?
a) 5 MHz b) 20 MHz
c) 1.25 MHz d) 200 KHz

14) What does LTE stands for?
a) Level Telecom Advanced b) Long Terminal Advanced
c) Long Term Evolution d) Long Time Evolution

SLR-BD-522

Seat No.		Set	P

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
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Mobile Communication (BTN06708)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
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Section – I

Q.2 Solve ANY FOUR: **16**

a) Explain different channel assignment strategies in cellular system.
b) What is small scale fading? What are its types? Explain in detail.
c) What is the need of cellular system? Explain the frequency reuse concept in cellular system.
d) What is diffraction? Explain knife edge diffraction.
e) Explain FDMA with its non-linear effects.

Q.3 Solve ANY TWO. **12**

a) Consider that a geographical service area of a cellular system is 5000 km^2. A total of 1000 radio channels are available for handling traffic, suppose area of a cell is 10 km^2.
  i) How many times would the cluster of size seven have to be replicated to cover entire service area?
  ii) Calculate number of channels per cell and system capacity for N=4 and N=7. Does decreasing N increases system capacity? Explain.
b) What are the different methods to improve the coverage and capacity of a cellular system? Explain in detail.
c) Explain two ray model in detail.

Section – II

Q.4 Solve ANY FOUR. **16**

a) What is handoff? Explain different types of handoff in GSM.
b) What are the different identifiers used in GSM? Explain in detail.
c) Draw and explain packet and frame formats of CDMA IS - 95.
d) What is E-UTRAN? Explain.
e) Explain the features, advantages, disadvantages and applications of 5G.

Q.5 Solve ANY TWO. **12**

a) Give the detail comparison of IMT 2000, IMT Advanced and IMT 2020.
b) Draw and explain the network architecture of GSM in detail.
c) Explain in detail radio interface, modulation, channels & features of 4G.

Seat No.	

Set Q

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-BD-522

Seat No.		Set	Q

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
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Section – II

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Seat No.	

Set R

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGIGEERING
Mobile Communication (BTN06708)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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a) 5 MHz b) 20 MHz
c) 1.25 MHz d) 200 KHz

4) What does LTE stands for?
a) Level Telecom Advanced b) Long Terminal Advanced
c) Long Term Evolution d) Long Time Evolution

5) Who sets the standards of GSM?
a) ITU b) AT&T
c) ETSI d) USDC

6) Standard GSM systems support a data rate of _____.
a) 164 kbps b) 64 kbps
c) 128 kbps d) 9.6 kbps

7) Cellular concept replaces many low power transmitters to a single high power transmitter.
a) True b) False

8) Actual radio coverage of a cell is called _____.
a) Fingerprint b) Footprint
c) Imprint d) Matrix

9) How many users or voice channels are supported for each 200 KHz channel in GSM?
a) Eight b) Three
c) Sixty four d) Twelve

10) What is the name of a Base Transceiver Station in 2G system equivalent in a 4G LTE _____.
a) nodeB b) eNodeB
c) aNodeB d) nodeBPro

11) Which system is called as buffer and burst method?
a) FDMA b) TDMA
c) CDMA d) None of the above

12) Free space propagation model is to predict _____.
a) Received signal strength b) Transmitted power
c) Gain of transmitter d) Gain of receiver

13) Diffraction occurs when radio path between Tx. And Rx. is obstructed by _____.
a) Surface having sharp irregularities
b) Smooth irregularities
c) Rough surface
d) All types of surfaces

14) Which organization is responsible for developing LTE standards?
a) UMTS b) 3GPP
c) 3GPP2 d) ISO

SLR-BD-522

Seat No.		Set	R

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGIGEERING
Mobile Communication (BTN06708)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve ANY FOUR: **16**

a) Explain different channel assignment strategies in cellular system.
b) What is small scale fading? What are its types? Explain in detail.
c) What is the need of cellular system? Explain the frequency reuse concept in cellular system.
d) What is diffraction? Explain knife edge diffraction.
e) Explain FDMA with its non-linear effects.

Q.3 Solve ANY TWO. **12**

a) Consider that a geographical service area of a cellular system is 5000 km^2. A total of 1000 radio channels are available for handling traffic, suppose area of a cell is 10 km^2.
  i) How many times would the cluster of size seven have to be replicated to cover entire service area?
  ii) Calculate number of channels per cell and system capacity for N=4 and N=7. Does decreasing N increases system capacity? Explain.
b) What are the different methods to improve the coverage and capacity of a cellular system? Explain in detail.
c) Explain two ray model in detail.

Section – II

Q.4 Solve ANY FOUR. **16**

a) What is handoff? Explain different types of handoff in GSM.
b) What are the different identifiers used in GSM? Explain in detail.
c) Draw and explain packet and frame formats of CDMA IS - 95.
d) What is E-UTRAN? Explain.
e) Explain the features, advantages, disadvantages and applications of 5G.

Q.5 Solve ANY TWO. **12**

a) Give the detail comparison of IMT 2000, IMT Advanced and IMT 2020.
b) Draw and explain the network architecture of GSM in detail.
c) Explain in detail radio interface, modulation, channels & features of 4G.

Seat No.	

Set **S**

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGIGEERING
Mobile Communication (BTN06708)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) What is the name of a Base Transceiver Station in 2G system equivalent in a 4G LTE _____.
a) nodeB b) eNodeB
c) aNodeB d) nodeBPro

2) Which system is called as buffer and burst method?
a) FDMA b) TDMA
c) CDMA d) None of the above

3) Free space propagation model is to predict _____.
a) Received signal strength b) Transmitted power
c) Gain of transmitter d) Gain of receiver

4) Diffraction occurs when radio path between Tx. And Rx. is obstructed by _____.
a) Surface having sharp irregularities
b) Smooth irregularities
c) Rough surface
d) All types of surfaces

5) Which organization is responsible for developing LTE standards?
a) UMTS b) 3GPP
c) 3GPP2 d) ISO

6) OFDMA stands for _____.
a) omnidirectional frequency division multiple access
b) orthogonal frequency duplex multiple access
c) orthogonal frequency divider multiple access
d) orthogonal frequency division multiple access

7) Modulation techniques used in CDMA 2000 is _____.
a) Uplink-QPSK downlink-BPSK
b) Uplink-BPSK downlink-QPSK
c) Uplink-BPSK downlink-BPSK
d) None of the above

8) What is the minimum spectrum allocation required by W-CDMA?
a) 5 MHz
b) 20 MHz
c) 1.25 MHz
d) 200 KHz

9) What does LTE stands for?
a) Level Telecom Advanced
b) Long Terminal Advanced
c) Long Term Evolution
d) Long Time Evolution

10) Who sets the standards of GSM?
a) ITU
b) AT&T
c) ETSI
d) USDC

11) Standard GSM systems support a data rate of _____.
a) 164 kbps
b) 64 kbps
c) 128 kbps
d) 9.6 kbps

12) Cellular concept replaces many low power transmitters to a single high power transmitter.
a) True
b) False

13) Actual radio coverage of a cell is called _____.
a) Fingerprint
b) Footprint
c) Imprint
d) Matrix

14) How many users or voice channels are supported for each 200 KHz channel in GSM?
a) Eight
b) Three
c) Sixty four
d) Twelve

SLR-BD-522

Seat No.		Set	S

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGIGEERING
Mobile Communication (BTN06708)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve ANY FOUR: **16**

a) Explain different channel assignment strategies in cellular system.
b) What is small scale fading? What are its types? Explain in detail.
c) What is the need of cellular system? Explain the frequency reuse concept in cellular system.
d) What is diffraction? Explain knife edge diffraction.
e) Explain FDMA with its non-linear effects.

Q.3 Solve ANY TWO. **12**

a) Consider that a geographical service area of a cellular system is 5000 km^2. A total of 1000 radio channels are available for handling traffic, suppose area of a cell is 10 km^2.
  i) How many times would the cluster of size seven have to be replicated to cover entire service area?
  ii) Calculate number of channels per cell and system capacity for N=4 and N=7. Does decreasing N increases system capacity? Explain.
b) What are the different methods to improve the coverage and capacity of a cellular system? Explain in detail.
c) Explain two ray model in detail.

Section – II

Q.4 Solve ANY FOUR. **16**

a) What is handoff? Explain different types of handoff in GSM.
b) What are the different identifiers used in GSM? Explain in detail.
c) Draw and explain packet and frame formats of CDMA IS - 95.
d) What is E-UTRAN? Explain.
e) Explain the features, advantages, disadvantages and applications of 5G.

Q.5 Solve ANY TWO. **12**

a) Give the detail comparison of IMT 2000, IMT Advanced and IMT 2020.
b) Draw and explain the network architecture of GSM in detail.
c) Explain in detail radio interface, modulation, channels & features of 4G.

SLR-BD-524

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
AI Applications (BTN06710)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following can improve the performance of an AI agent.
a) Perceiving b) Learning
c) Observing d) None

2) What is a common application of graph searching in artificial intelligence?
a) Maze Solving b) Network Routing
c) Topological Sorting d) All of these

3) What is the purpose of image segmentation in computer vision?
a) To enhance image resolution
b) To identify and label objects within an image
c) To convert color images to grayscale
d) To create depth map

4) What does the term chatbot refers to in AI?
a) A software that simulate human conversation
b) An advanced search engine
c) A tool for coding
d) A virtual reality headset

5) Knowledge representation format commonly used in expert system for expressing facts & rule.
a) Decision Trees b) Semantic Networks
c) First-order Logic d) Regression Model

6) What is the process of breaking text into smaller units, such as words or phrases, called in NLP?
a) Lemmatization b) Tokenization
c) Sentiment analysis d) Semantic parsing

7) What is the policy in the context of reinforcement learning?
   a) Set of all possible actions
   b) Sequence of state visited by the agent
   c) Probability distribution over actions given a state
   d) Environments rule and regulation

8) Which algorithm is commonly used for training agents in reinforcement learning?
   a) Q learning
   b) Random Forest
   c) K means clustering
   d) Support Vector Machine

9) Which component of expert system is responsible for acquiring knowledge from human experts.
   a) Inference engine
   b) Knowledge base
   c) User Interface
   d) Knowledge acquisition system

10) What is the role of bounding box in object detection in computer vision?
   a) To resize the image for better processing
   b) To specify position and size of detected object
   c) To add visual effects to image
   d) To convert images into a specific color

11) If a robot is able to change its own trajectory as per the external conditions, then the robot is considered as the _____
   a) Mobile
   b) Non-Servo
   c) Open Loop
   d) Intelligent

12) The probabilistic reasoning depends upon _____.
   a) Estimation
   b) Observations
   c) Likelihood
   d) All of these

13) Which term describes the common-sense of the judgmental part of problem solving?
   a) Values-based
   b) Critical
   c) Analytical
   d) Heuristic

14) An AI agent perceives and acts upon the environment using _____.
   a) Sensors
   b) Perceiver
   c) Actuators
   d) Both a and c

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
AI Applications (BTN06710)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.
4) Use of calculator is allowed.

Section – I

Q.2 Answer any four. **16**

a) Explain the tasks of pattern recognition.
b) Explain any two types of expert system tools and existing system.
c) Describe knowledge acquisition process.
d) Explain model based object recognition with applications.
e) Importance of AI in perspective of man vs computer.

Q.3 Answer any two: **12**

a) Explain Relaxation labelling method in detail.
b) Explain in detail architecture of expert system.
c) Describe intelligent agents and major components of intelligent system.

Section – II

Q.4 Answer any four. **16**

a) Explain the importance of Language model with N-gram character model.
b) Explain information retrieval system and its characteristics.
c) Describe application of reinforcement learning.
d) Explain any two application domains of robotic technology.
e) Explain the machine translation system.

Q.5 Answer any two. **12**

a) Explain the syntactic analysis in NLP.
b) Explain the process of generalization in reinforcement learning.
c) Explain in detail robot hardware i) sensors ii) effectors.

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
AI Applications (BTN06710)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which algorithm is commonly used for training agents in reinforcement learning?
a) Q learning b) Random Forest
c) K means clustering d) Support Vector Machine

2) Which component of expert system is responsible for acquiring knowledge from human experts.
a) Inference engine
b) Knowledge base
c) User Interface
d) Knowledge acquisition system

3) What is the role of bounding box in object detection in computer vision?
a) To resize the image for better processing
b) To specify position and size of detected object
c) To add visual effects to image
d) To convert images into a specific color

4) If a robot is able to change its own trajectory as per the external conditions, then the robot is considered as the _____
a) Mobile b) Non-Servo
c) Open Loop d) Intelligent

5) The probabilistic reasoning depends upon _____.
a) Estimation b) Observations
c) Likelihood d) All of these

6) Which term describes the common-sense of the judgmental part of problem solving?

a) Values-based b) Critical
c) Analytical d) Heuristic

7) An AI agent perceives and acts upon the environment using _____.

a) Sensors b) Perceiver
c) Actuators d) Both a and c

8) Which of the following can improve the performance of an AI agent.

a) Perceiving b) Learning
c) Observing d) None

9) What is a common application of graph searching in artificial intelligence?

a) Maze Solving b) Network Routing
c) Topological Sorting d) All of these

10) What is the purpose of image segmentation in computer vision?

a) To enhance image resolution
b) To identify and label objects within an image
c) To convert color images to grayscale
d) To create depth map

11) What does the term chatbot refers to in AI?

a) A software that simulate human conversation
b) An advanced search engine
c) A tool for coding
d) A virtual reality headset

12) Knowledge representation format commonly used in expert system for expressing facts & rule.

a) Decision Trees b) Semantic Networks
c) First-order Logic d) Regression Model

13) What is the process of breaking text into smaller units, such as words or phrases, called in NLP?

a) Lemmatization b) Tokenization
c) Sentiment analysis d) Semantic parsing

7) What is the policy in the context of reinforcement learning?

a) Set of all possible actions
b) Sequence of state visited by the agent
c) Probability distribution over actions given a state
d) Environments rule and regulation

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
AI Applications (BTN06710)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.
4) Use of calculator is allowed.

Section – I

Q.2 Answer any four. **16**

a) Explain the tasks of pattern recognition.
b) Explain any two types of expert system tools and existing system.
c) Describe knowledge acquisition process.
d) Explain model based object recognition with applications.
e) Importance of AI in perspective of man vs computer.

Q.3 Answer any two: **12**

a) Explain Relaxation labelling method in detail.
b) Explain in detail architecture of expert system.
c) Describe intelligent agents and major components of intelligent system.

Section – II

Q.4 Answer any four. **16**

a) Explain the importance of Language model with N-gram character model.
b) Explain information retrieval system and its characteristics.
c) Describe application of reinforcement learning.
d) Explain any two application domains of robotic technology.
e) Explain the machine translation system.

Q.5 Answer any two. **12**

a) Explain the syntactic analysis in NLP.
b) Explain the process of generalization in reinforcement learning.
c) Explain in detail robot hardware i) sensors ii) effectors.

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
AI Applications (BTN06710)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) If a robot is able to change its own trajectory as per the external conditions, then the robot is considered as the _____
a) Mobile b) Non-Servo
c) Open Loop d) Intelligent

2) The probabilistic reasoning depends upon _____.
a) Estimation b) Observations
c) Likelihood d) All of these

3) Which term describes the common-sense of the judgmental part of problem solving?
a) Values-based b) Critical
c) Analytical d) Heuristic

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a) Sensors b) Perceiver
c) Actuators d) Both a and c

5) Which of the following can improve the performance of an AI agent.
a) Perceiving b) Learning
c) Observing d) None

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a) Maze Solving b) Network Routing
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7) What is the purpose of image segmentation in computer vision?
   a) To enhance image resolution
   b) To identify and label objects within an image
   c) To convert color images to grayscale
   d) To create depth map

8) What does the term chatbot refers to in Al?
   a) A software that simulate human conversation
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   c) A tool for coding
   d) A virtual reality headset

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   b) Semantic Networks
   c) First-order Logic
   d) Regression Model

10) What is the process of breaking text into smaller units, such as words or phrases, called in NLP?
   a) Lemmatization
   b) Tokenization
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   d) Semantic parsing

11) What is the policy in the context of reinforcement learning?
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   b) Sequence of state visited by the agent
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12) Which algorithm is commonly used for training agents in reinforcement learning?
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   c) User Interface
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14) What is the role of bounding box in object detection in computer vision?
   a) To resize the image for better processing
   b) To specify position and size of detected object
   c) To add visual effects to image
   d) To convert images into a specific color

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
AI Applications (BTN06710)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.
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Section – I

Q.2 Answer any four. **16**
a) Explain the tasks of pattern recognition.
b) Explain any two types of expert system tools and existing system.
c) Describe knowledge acquisition process.
d) Explain model based object recognition with applications.
e) Importance of AI in perspective of man vs computer.

Q.3 Answer any two: **12**
a) Explain Relaxation labelling method in detail.
b) Explain in detail architecture of expert system.
c) Describe intelligent agents and major components of intelligent system.

Section – II

Q.4 Answer any four. **16**
a) Explain the importance of Language model with N-gram character model.
b) Explain information retrieval system and its characteristics.
c) Describe application of reinforcement learning.
d) Explain any two application domains of robotic technology.
e) Explain the machine translation system.

Q.5 Answer any two. **12**
a) Explain the syntactic analysis in NLP.
b) Explain the process of generalization in reinforcement learning.
c) Explain in detail robot hardware i) sensors ii) effectors.

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
AI Applications (BTN06710)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the process of breaking text into smaller units, such as words or phrases, called in NLP?
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a) Sensors b) Perceiver
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13) What does the term chatbot refers to in Al?
a) A software that simulate human conversation
b) An advanced search engine
c) A tool for coding
d) A virtual reality headset

14) Knowledge representation format commonly used in expert system for expressing facts & rule.
a) Decision Trees b) Semantic Networks
c) First-order Logic d) Regression Model

SLR-BD-524

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
AI Applications (BTN06710)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.
4) Use of calculator is allowed.

Section – I

Q.2 Answer any four. **16**

a) Explain the tasks of pattern recognition.
b) Explain any two types of expert system tools and existing system.
c) Describe knowledge acquisition process.
d) Explain model based object recognition with applications.
e) Importance of AI in perspective of man vs computer.

Q.3 Answer any two: **12**

a) Explain Relaxation labelling method in detail.
b) Explain in detail architecture of expert system.
c) Describe intelligent agents and major components of intelligent system.

Section – II

Q.4 Answer any four. **16**

a) Explain the importance of Language model with N-gram character model.
b) Explain information retrieval system and its characteristics.
c) Describe application of reinforcement learning.
d) Explain any two application domains of robotic technology.
e) Explain the machine translation system.

Q.5 Answer any two. **12**

a) Explain the syntactic analysis in NLP.
b) Explain the process of generalization in reinforcement learning.
c) Explain in detail robot hardware i) sensors ii) effectors.

SLR-BD-525

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science- Business Intelligence - BTN06713

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Information is transformed into _____ when it is used to make decisions and develop the corresponding actions.
a) Data b) Outcome
c) Knowledge d) Experience

2) i) Data mart is a subset of data warehouse.
ii) Data marts contain repositories of summarized data collected for analysis on a specific section or unit within an organization.
a) Only i is correct b) Only ii is correct
c) Both i and ii are correct d) Both are wrong

3) The objective of BI is_____.
a) To support decision-making and complex problem solving.
b) To support information gathering.
c) To support data collection.
d) To support data analysis

4) DSS stands for:____.
a) Decision Support System
b) Definition support System
c) Data sub system
d) Data storage system

5) Decisions can be classified into their _____.
a) Concept and thoughts b) Supply and Demand
c) Nature and scope d) Techniques

6) Data mining activities can be subdivided into two major investigation streams, which are _____.
   a) Interpretation and Sampling
   b) Interpretation and Prediction
   c) Forecast and Prediction
   d) Forecast and Interpretation

7) _____describes the data contained in the data warehouse.
   a) Relational data
   b) Operational data
   c) Metadata
   d) Informational data

8) What is the focus of relational marketing?
   a) Maximizing individual transactions
   b) Building long-term customer relationships
   c) Ignoring customer feedback
   d) Minimizing customer engagement

9) What does DMAIC stand for in Six Sigma methodology?
   a) Define, Measure, Analyze, Improve, Control
   b) Determine, Manage, Assess, Implement, Correct
   c) Data, Metrics, Analysis, Improvement, Control
   d) Develop, Maintain, Audit, Innovate, Collaborate

10) Which of the following is not a stage in “Lifetime of a Customer”?
   a) Acquisition
   b) Cross/Up Selling
   c) Bargaining
   d) Retention

11) Which term refers to the process of presenting data in a visual format to facilitate understanding and decision-making?
   a) Business Intelligence
   b) Data Visualization
   c) Data Analysis
   d) Report Generation

12) What is the purpose of introducing backlogging in logistic systems?
   a) Reduce demand variability
   b) Minimize inventory costs
   c) Address unfulfilled demand situations
   d) Avoid capacity constraints

13) Which of the following is not an optimization model?
   a) Extra Capacity
   b) Maximum Fixed Cost
   c) Backlogging
   d) Multiple Plants

14) What is a primary benefit of using performance dashboards?
   a) They slow down decision-making
   b) They complicate data understanding
   c) They reduce transparency
   d) They centralize information for quick insights

Seat No.	

Set | P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
Electronics & Telecommunication Engineering
Data Science- Business Intelligence - BTN06713

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Answer any four. **16**

a) How does the implementation of business intelligence (BI) contribute to making effective and timely decisions within an organization?
b) Elaborate the structured, unstructured and semi- structured types of decision according to their nature in a decision making process.
c) What is the purpose of ETL (Extract, Transform, Load) tools in the context of data warehousing, and how do they facilitate the movement and transformation of data?
d) Differentiate between OLAP (Online Analytical Processing) and OLTP (Online Transaction Processing) systems.
e) What are the key differences between data, information, and knowledge within the context of business intelligence.

Q.3 Answer any two: **12**

a) What are the fundamental components of a typical business intelligence (BI) architecture, and how do they work together to support data analysis and decision-making?
b) Elaborate with diagram the different phases in the development of a decision support system.
c) Elaborate the process of data mining with suitable diagram.

Section – II

Q.4 Answer any four. **16**

a) List and describe the three major categories of business reports.
b) What are the four perspectives that balanced scorecard (BSC) suggests to use to view organizational performance?
c) Describe the term market basket analysis in context to relational marketing.
d) Explain the concept of supply chain optimization and its significance in logistics.
e) Describe any 4 types of charts used for visualization in BI.

Q.5 Answer any two. **12**

a) What is meant by Business Performance Management (BPM)? List and briefly describe the four phases of the business performance management cycle.

b) How does Salesforce management contribute to organizational success, and what are the key decision-making processes involved in it?

c) Describe tactical planning and backlogging in context to optimization models for logistic planning.

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science- Business Intelligence - BTN06713

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the focus of relational marketing?
a) Maximizing individual transactions
b) Building long-term customer relationships
c) Ignoring customer feedback
d) Minimizing customer engagement

2) What does DMAIC stand for in Six Sigma methodology?
a) Define, Measure, Analyze, Improve, Control
b) Determine, Manage, Assess, Implement, Correct
c) Data, Metrics, Analysis, Improvement, Control
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3) Which of the following is not a stage in "Lifetime of a Customer"?
a) Acquisition b) Cross/Up Selling
c) Bargaining d) Retention

4) Which term refers to the process of presenting data in a visual format to facilitate understanding and decision-making?
a) Business Intelligence b) Data Visualization
c) Data Analysis d) Report Generation

5) What is the purpose of introducing backlogging in logistic systems?
a) Reduce demand variability
b) Minimize inventory costs
c) Address unfulfilled demand situations
d) Avoid capacity constraints

6) Which of the following is not an optimization model?
a) Extra Capacity b) Maximum Fixed Cost
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8) Information is transformed into _____ when it is used to make decisions and develop the corresponding actions.
a) Data
b) Outcome
c) Knowledge
d) Experience

9) i) Data mart is a subset of data warehouse.
ii) Data marts contain repositories of summarized data collected for analysis on a specific section or unit within an organization.
a) Only i is correct
b) Only ii is correct
c) Both i and ii are correct
d) Both are wrong

10) The objective of BI is_____.
a) To support decision-making and complex problem solving.
b) To support information gathering.
c) To support data collection.
d) To support data analysis

11) DSS stands for:____.
a) Decision Support System
b) Definition support System
c) Data sub system
d) Data storage system

12) Decisions can be classified into their _____.
a) Concept and thoughts
b) Supply and Demand
c) Nature and scope
d) Techniques

13) Data mining activities can be subdivided into two major investigation streams, which are _____.
a) Interpretation and Sampling
b) Interpretation and Prediction
c) Forecast and Prediction
d) Forecast and Interpretation

14) _____describes the data contained in the data warehouse.
a) Relational data
b) Operational data
c) Metadata
d) Informational data

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
Electronics & Telecommunication Engineering
Data Science- Business Intelligence - BTN06713

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Answer any four. **16**

a) How does the implementation of business intelligence (BI) contribute to making effective and timely decisions within an organization?
b) Elaborate the structured, unstructured and semi- structured types of decision according to their nature in a decision making process.
c) What is the purpose of ETL (Extract, Transform, Load) tools in the context of data warehousing, and how do they facilitate the movement and transformation of data?
d) Differentiate between OLAP (Online Analytical Processing) and OLTP (Online Transaction Processing) systems.
e) What are the key differences between data, information, and knowledge within the context of business intelligence.

Q.3 Answer any two: **12**

a) What are the fundamental components of a typical business intelligence (BI) architecture, and how do they work together to support data analysis and decision-making?
b) Elaborate with diagram the different phases in the development of a decision support system.
c) Elaborate the process of data mining with suitable diagram.

Section – II

Q.4 Answer any four. **16**

a) List and describe the three major categories of business reports.
b) What are the four perspectives that balanced scorecard (BSC) suggests to use to view organizational performance?
c) Describe the term market basket analysis in context to relational marketing.
d) Explain the concept of supply chain optimization and its significance in logistics.
e) Describe any 4 types of charts used for visualization in BI.

Q.5 Answer any two. **12**

a) What is meant by Business Performance Management (BPM)? List and briefly describe the four phases of the business performance management cycle.

b) How does Salesforce management contribute to organizational success, and what are the key decision-making processes involved in it?

c) Describe tactical planning and backlogging in context to optimization models for logistic planning.

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science- Business Intelligence - BTN06713

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) Which term refers to the process of presenting data in a visual format to facilitate understanding and decision-making?
a) Business Intelligence b) Data Visualization
c) Data Analysis d) Report Generation

2) What is the purpose of introducing backlogging in logistic systems?
a) Reduce demand variability
b) Minimize inventory costs
c) Address unfulfilled demand situations
d) Avoid capacity constraints

3) Which of the following is not an optimization model?
a) Extra Capacity b) Maximum Fixed Cost
c) Backlogging d) Multiple Plants

4) What is a primary benefit of using performance dashboards?
a) They slow down decision-making
b) They complicate data understanding
c) They reduce transparency
d) They centralize information for quick insights

5) Information is transformed into _____ when it is used to make decisions and develop the corresponding actions.
a) Data b) Outcome
c) Knowledge d) Experience

6) i) Data mart is a subset of data warehouse.
ii) Data marts contain repositories of summarized data collected for analysis on a specific section or unit within an organization.
a) Only i is correct b) Only ii is correct
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7) The objective of BI is_____.
a) To support decision-making and complex problem solving.
b) To support information gathering.
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d) To support data analysis

8) DSS stands for:____.
a) Decision Support System
b) Definition support System
c) Data sub system
d) Data storage system

9) Decisions can be classified into their _____.
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10) Data mining activities can be subdivided into two major investigation streams, which are _____.
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11) _____describes the data contained in the data warehouse.
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13) What does DMAIC stand for in Six Sigma methodology?
a) Define, Measure, Analyze, Improve, Control
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14) Which of the following is not a stage in “Lifetime of a Customer”?
a) Acquisition b) Cross/Up Selling
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Seat No.	

Set | R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
Electronics & Telecommunication Engineering
Data Science- Business Intelligence - BTN06713

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Answer any four. **16**

a) How does the implementation of business intelligence (BI) contribute to making effective and timely decisions within an organization?
b) Elaborate the structured, unstructured and semi- structured types of decision according to their nature in a decision making process.
c) What is the purpose of ETL (Extract, Transform, Load) tools in the context of data warehousing, and how do they facilitate the movement and transformation of data?
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Q.3 Answer any two: **12**

a) What are the fundamental components of a typical business intelligence (BI) architecture, and how do they work together to support data analysis and decision-making?
b) Elaborate with diagram the different phases in the development of a decision support system.
c) Elaborate the process of data mining with suitable diagram.

Section – II

Q.4 Answer any four. **16**

a) List and describe the three major categories of business reports.
b) What are the four perspectives that balanced scorecard (BSC) suggests to use to view organizational performance?
c) Describe the term market basket analysis in context to relational marketing.
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c) Describe tactical planning and backlogging in context to optimization models for logistic planning.

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science- Business Intelligence - BTN06713

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Data mining activities can be subdivided into two major investigation streams, which are _____.
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c) Forecast and Prediction
d) Forecast and Interpretation

2) _____describes the data contained in the data warehouse.
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b) Building long-term customer relationships
c) Ignoring customer feedback
d) Minimizing customer engagement

4) What does DMAIC stand for in Six Sigma methodology?
a) Define, Measure, Analyze, Improve, Control
b) Determine, Manage, Assess, Implement, Correct
c) Data, Metrics, Analysis, Improvement, Control
d) Develop, Maintain, Audit, Innovate, Collaborate

5) Which of the following is not a stage in "Lifetime of a Customer"?
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c) Data sub system
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14) Decisions can be classified into their _____.

a) Concept and thoughts b) Supply and Demand
c) Nature and scope d) Techniques

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Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
Electronics & Telecommunication Engineering
Data Science- Business Intelligence - BTN06713

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Answer any four. **16**

a) How does the implementation of business intelligence (BI) contribute to making effective and timely decisions within an organization?
b) Elaborate the structured, unstructured and semi- structured types of decision according to their nature in a decision making process.
c) What is the purpose of ETL (Extract, Transform, Load) tools in the context of data warehousing, and how do they facilitate the movement and transformation of data?
d) Differentiate between OLAP (Online Analytical Processing) and OLTP (Online Transaction Processing) systems.
e) What are the key differences between data, information, and knowledge within the context of business intelligence.

Q.3 Answer any two: **12**

a) What are the fundamental components of a typical business intelligence (BI) architecture, and how do they work together to support data analysis and decision-making?
b) Elaborate with diagram the different phases in the development of a decision support system.
c) Elaborate the process of data mining with suitable diagram.

Section – II

Q.4 Answer any four. **16**

a) List and describe the three major categories of business reports.
b) What are the four perspectives that balanced scorecard (BSC) suggests to use to view organizational performance?
c) Describe the term market basket analysis in context to relational marketing.
d) Explain the concept of supply chain optimization and its significance in logistics.
e) Describe any 4 types of charts used for visualization in BI.

Q.5 Answer any two. **12**

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c) Describe tactical planning and backlogging in context to optimization models for logistic planning.

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering - Advanced Communication and Modern Signaling in Railway (BTN06717)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which is the first engine less Train in India?
a) Train 16 b) Train 18
c) Train 20 d) Train 22

2) IT tools and business systems in IR are _____.
a) Mobile Ticketing b) Web Ticketing
c) Kiosk-based Ticketing d) All above

3) _____ for monitoring of stations, tracks, and passengers.
a) Train Tracking b) Train signaling
c) Train surveillance d) Train Monitoring

4) The hard-wired analogue cabling approach which has generally been replaced by _____ that operate over TCP/IP networks.
a) LAN b) CCTV
c) VSS d) WAN

5) IoT technologies in Railways is _____.
a) Non-real time b) Real-time
c) Backend d) Safety alert

6) The reception signal is _____.
a) outer signal only
b) starter only
c) neither (outer signal) nor (starter)
d) both (outer signal) and (starter)

7) UTS (Unreserved Ticketing System) is a mobile app developed by _____.
a) IRCTC b) CRIS
c) C-DAC d) None of these

8) Intermediate Block Signaling using MSDAC system consists of the following component: _____.

a) Axle Detectors
b) Electronics Field Units
c) Central Evaluator
d) All the above

9) In a railway network system, the primary “STOP” signal is known as _____.

a) Home Signal
b) Distant Signal
c) Clear Signal
d) Wait Signal

10) _____ Communication system is the backbone of Railways.

a) LTE
b) OFC
c) Single Line
d) Multiline

11) Which of following is not Preventive maintenance?

a) Periodical
b) non-periodical
c) Predictive
d) Condition based

12) How many zones are there in Indian Railways?

a) 16
b) 22
c) 20
d) 18

13) _____ is a railway signaling system that uses telecommunications between the train and track equipment.

a) Communications-based train control (CBTC)
b) Long distance communication
c) IOT Based system
d) Telephonic System

14) The stations which do not have any signal are known as _____.

a) A-class stations
b) B-class
c) Crossing stations
d) Terminal stations

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering - Advanced Communication and Modern Signaling in Railway (BTN06717)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any FOUR. **16**

a) Explain European Train Control System (ETCS).
b) Explain LTE for Railways (LTE-R).
c) What is the importance of railway signaling?
d) What is NextGen ATP for Automatic Train Operations?
e) Write note on trains through two-way satellite communication.

Q.3 Attempt any TWO. **12**

a) Explain the IP based Video Surveillance System (VSS).
b) Give importance of IoT (Internet of Things) in Railways.
c) What is Networked PA System in Railways.

Section – II

Q.4 Attempt any FOUR. **16**

a) What is VoIP based Train Control communication System (TCCS)? Give details.
b) Give Safety Slogans for Signal Department.
c) Give description of Warner signals and their indications.
d) What is UHF Digital (License free band radio) Handheld Trans-receivers? Explain.
e) Give Interlocking - Importance and Types.

Q.5 Attempt any TWO. **12**

a) Explain Technologies and processes to meet the challenges of signaling system maintenance.
b) Write note on ISDN Exchange in Railway.
c) What is Future Railway Mobile Communications System? Give details.

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering - Advanced Communication and Modern Signaling in Railway (BTN06717)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Intermediate Block Signaling using MSDAC system consists of the following component: _____.
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c) Central Evaluator d) All the above

2) In a railway network system, the primary "STOP" signal is known as _____.
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c) Single Line d) Multiline

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Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering - Advanced Communication and Modern Signaling in Railway (BTN06717)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any FOUR. **16**

a) Explain European Train Control System (ETCS).
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c) What is the importance of railway signaling?
d) What is NextGen ATP for Automatic Train Operations?
e) Write note on trains through two-way satellite communication.

Q.3 Attempt any TWO. **12**

a) Explain the IP based Video Surveillance System (VSS).
b) Give importance of IoT (Internet of Things) in Railways.
c) What is Networked PA System in Railways.

Section – II

Q.4 Attempt any FOUR. **16**

a) What is VoIP based Train Control communication System (TCCS)? Give details.
b) Give Safety Slogans for Signal Department.
c) Give description of Warner signals and their indications.
d) What is UHF Digital (License free band radio) Handheld Trans-receivers? Explain.
e) Give Interlocking - Importance and Types.

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Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering - Advanced Communication and Modern Signaling in Railway (BTN06717)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of following is not Preventive maintenance?
a) Periodical b) non-periodical
c) Predictive d) Condition based

2) How many zones are there in Indian Railways?
a) 16 b) 22
c) 20 d) 18

3) _____ is a railway signaling system that uses telecommunications between the train and track equipment.
a) Communications-based train control (CBTC)
b) Long distance communication
c) IOT Based system
d) Telephonic System

4) The stations which do not have any signal are known as _____.
a) A-class stations b) B-class
c) Crossing stations d) Terminal stations

5) Which is the first engine less Train in India?
a) Train 16 b) Train 18
c) Train 20 d) Train 22

6) IT tools and business systems in IR are _____.
a) Mobile Ticketing b) Web Ticketing
c) Kiosk-based Ticketing d) All above

7) _____ for monitoring of stations, tracks, and passengers.
a) Train Tracking b) Train signaling
c) Train surveillance d) Train Monitoring

8) The hard-wired analogue cabling approach which has generally been replaced by _____ that operate over TCP/IP networks.

a) LAN b) CCTV
c) VSS d) WAN

9) IoT technologies in Railways is _____.

a) Non-real time b) Real-time
c) Backend d) Safety alert

10) The reception signal is _____.

a) outer signal only
b) starter only
c) neither (outer signal) nor (starter)
d) both (outer signal) and (starter)

11) UTS (Unreserved Ticketing System) is a mobile app developed by _____.

a) IRCTC b) CRIS
c) C-DAC d) None of these

12) Intermediate Block Signaling using MSDAC system consists of the following component: _____.

a) Axle Detectors b) Electronics Field Units
c) Central Evaluator d) All the above

13) In a railway network system, the primary “STOP” signal is known as _____.

a) Home Signal b) Distant Signal
c) Clear Signal d) Wait Signal

14) _____ Communication system is the backbone of Railways.

a) LTE b) OFC
c) Single Line d) Multiline

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering - Advanced Communication and Modern Signaling in Railway (BTN06717)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any FOUR. **16**

a) Explain European Train Control System (ETCS).
b) Explain LTE for Railways (LTE-R).
c) What is the importance of railway signaling?
d) What is NextGen ATP for Automatic Train Operations?
e) Write note on trains through two-way satellite communication.

Q.3 Attempt any TWO. **12**

a) Explain the IP based Video Surveillance System (VSS).
b) Give importance of IoT (Internet of Things) in Railways.
c) What is Networked PA System in Railways.

Section – II

Q.4 Attempt any FOUR. **16**

a) What is VoIP based Train Control communication System (TCCS)? Give details.
b) Give Safety Slogans for Signal Department.
c) Give description of Warner signals and their indications.
d) What is UHF Digital (License free band radio) Handheld Trans-receivers? Explain.
e) Give Interlocking - Importance and Types.

Q.5 Attempt any TWO. **12**

a) Explain Technologies and processes to meet the challenges of signaling system maintenance.
b) Write note on ISDN Exchange in Railway.
c) What is Future Railway Mobile Communications System? Give details.

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering - Advanced Communication and Modern Signaling in Railway (BTN06717)

Day & Date: Friday, 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The reception signal is _____.
a) outer signal only
b) starter only
c) neither (outer signal) nor (starter)
d) both (outer signal) and (starter)

2) UTS (Unreserved Ticketing System) is a mobile app developed by _____.
a) IRCTC b) CRIS
c) C-DAC d) None of these

3) Intermediate Block Signaling using MSDAC system consists of the following component: _____.
a) Axle Detectors b) Electronics Field Units
c) Central Evaluator d) All the above

4) In a railway network system, the primary "STOP" signal is known as _____.
a) Home Signal b) Distant Signal
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5) _____ Communication system is the backbone of Railways.
a) LTE b) OFC
c) Single Line d) Multiline

6) Which of following is not Preventive maintenance?
a) Periodical b) non-periodical
c) Predictive d) Condition based

7) How many zones are there in Indian Railways?
a) 16 b) 22
c) 20 d) 18

8) _____ is a railway signaling system that uses telecommunications between the train and track equipment.
a) Communications-based train control (CBTC)
b) Long distance communication
c) IOT Based system
d) Telephonic System

9) The stations which do not have any signal are known as _____.
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c) Crossing stations d) Terminal stations

10) Which is the first engine less Train in India?
a) Train 16 b) Train 18
c) Train 20 d) Train 22

11) IT tools and business systems in IR are _____.
a) Mobile Ticketing b) Web Ticketing
c) Kiosk-based Ticketing d) All above

12) _____ for monitoring of stations, tracks, and passengers.
a) Train Tracking b) Train signaling
c) Train surveillance d) Train Monitoring

13) The hard-wired analogue cabling approach which has generally been replaced by _____ that operate over TCP/IP networks.
a) LAN b) CCTV
c) VSS d) WAN

14) IoT technologies in Railways is _____.
a) Non-real time b) Real-time
c) Backend d) Safety alert

SLR-BD-528

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering - Advanced Communication and Modern Signaling in Railway (BTN06717)

Day & Date: Friday, 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any FOUR. **16**

a) Explain European Train Control System (ETCS).
b) Explain LTE for Railways (LTE-R).
c) What is the importance of railway signaling?
d) What is NextGen ATP for Automatic Train Operations?
e) Write note on trains through two-way satellite communication.

Q.3 Attempt any TWO. **12**

a) Explain the IP based Video Surveillance System (VSS).
b) Give importance of IoT (Internet of Things) in Railways.
c) What is Networked PA System in Railways.

Section – II

Q.4 Attempt any FOUR. **16**

a) What is VoIP based Train Control communication System (TCCS)? Give details.
b) Give Safety Slogans for Signal Department.
c) Give description of Warner signals and their indications.
d) What is UHF Digital (License free band radio) Handheld Trans-receivers? Explain.
e) Give Interlocking - Importance and Types.

Q.5 Attempt any TWO. **12**

a) Explain Technologies and processes to meet the challenges of signaling system maintenance.
b) Write note on ISDN Exchange in Railway.
c) What is Future Railway Mobile Communications System? Give details.

Seat No.	

Set **P**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONIC & TELECOMMUNICATION ENGINEERING
Research Methodology (BTN06704)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A Hypothesis must be ____.
a) Diffuse b) Specific
c) Slow d) Speedy

2) Which of the following options most appropriately explains ethics____.
a) It states how to write a research report flawlessly
b) It gives the methodology of researching within social norms
c) It governs the prevention of plagiarism
d) It provides a common set of do's and don'ts of conducting ethical research

3) Fundamental Research is otherwise called ____.
a) Action Research b) Survey
c) Pilot study d) Pure Research

4) Ethics in research lays the bounds of discipline for a researcher ____.
a) True b) Can not be determined
c) False d) None of the above

5) In the capacity of a researcher, how can you solve the problems that exist in the society?
a) Eradicate unethical people front the society
b) Request the research institute to form a body of members for solving the problems
c) Participate in the activities of a suitable NGO to help in fighting the problems
d) None of the above

6) The first step in formulating a problem is ____.
a) Statement of the problem b) Gathering of Data
c) Measurement d) Survey

7) A method of collecting primary data in which a number of individuals with a common interest interact is called ____.

a) Telephone Interview b) Clinical Interview
c) Focused Interview d) Group Interview

8) Selecting sample units in just a hit and miss fashion is called ____.

a) Convenience or Accidental sampling
b) Purposive sampling
c) Stratified sampling
d) Proportionate sampling

9) Good Research is always____.

a) Slow b) Fast
c) Narrow d) Systematic

10) ANOVA is ____.

a) A government body which social societal
b) The name of societal packages
c) A one-way analysis of Variance
d) A two-way analysis of Variance

11) The two important components of research responsibility are: sincerity in work and avoiding ____.

a) Plagiarism b) Writing the thesis
c) Research techniques d) Confidentiality

12) Converting a question into a Researchable problem is called ____.

a) Solution b) Examination
c) Problem formulation d) Problem Solving

13) Sampling which provides for a known non zero chance of selection is ____.

a) Probability sampling b) Non probability sampling
c) multiple Choice d) analysis

14) A Blue print of Research work is called ____.

a) Research Problem b) Research design
c) Research tools d) Research methods

Seat No.	

Set **P**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONIC & TELECOMMUNICATION ENGINEERING
Research Methodology (BTN06704)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve the following: (Any Four) **16**

a) Describe the basic principles of experimental design. Mention basic types of errors.
b) Describe the important points to be considered for selecting a research problem.
c) Explain Importance of Literature Review in defining a Problem.
d) Differentiate Research methods & methodology.
e) Define and explain the term “Research”. Explain its importance and objectives.

Q.3 Solve the following: (Any Two) **12**

a) What is research problem? Define the main issues which should receive the attention of the researcher in formulating the research problem.
b) Explain the meaning of the following:
1) Extraneous variables
2) Confounded relationship
3) Treatments
c) Write short note on:
1) Defining and formulating the research problem.
2) Identifying gap areas from literature review.

Section - II

Q.4 Solve the following: (Any Four) **16**

a) Explain issues that should be addressed while writing a research report.
b) Describe different methods of data collection.
c) Write short Note on:
1) Ethical issues and ethical committees.
2) Environmental impacts on research ethics.
d) Explain Sampling Methods with example.
e) What do you understand by research report or thesis? Indicate its need and importance in the research work.

Q.5 Attempt the following: (Any Two) **12**

a) Write short note on:
1) Plagiarism
2) Citation
3) Bibliography

b) Describe, in brief, the layout of a research report, covering all relevant points.

c) Explain Data Processing and Analysis strategies using Chi-Square, ANOVA with suitable example.

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONIC & TELECOMMUNICATION ENGINEERING
Research Methodology (BTN06704)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Selecting sample units in just a hit and miss fashion is called ____.
a) Convenience or Accidental sampling
b) Purposive sampling
c) Stratified sampling
d) Proportionate sampling

2) Good Research is always____.
a) Slow b) Fast
c) Narrow d) Systematic

3) ANOVA is ____.
a) A government body which social societal
b) The name of societal packages
c) A one-way analysis of Variance
d) A two-way analysis of Variance

4) The two important components of research responsibility are: sincerity in work and avoiding ____.
a) Plagiarism b) Writing the thesis
c) Research techniques d) Confidentiality

5) Converting a question into a Researchable problem is called ____.
a) Solution b) Examination
c) Problem formulation d) Problem Solving

6) Sampling which provides for a known non zero chance of selection is ____.
a) Probability sampling b) Non probability sampling
c) multiple Choice d) analysis

7) A Blue print of Research work is called ____.
a) Research Problem b) Research design
c) Research tools d) Research methods

8) A Hypothesis must be ____.

a) Diffuse
b) Specific
c) Slow
d) Speedy

9) Which of the following options most appropriately explains ethics____.

a) It states how to write a research report flawlessly
b) It gives the methodology of researching within social norms
c) It governs the prevention of plagiarism
d) It provides a common set of do's and don'ts of conducting ethical research

10) Fundamental Research is otherwise called ____.

a) Action Research
b) Survey
c) Pilot study
d) Pure Research

11) Ethics in research lays the bounds of discipline for a researcher ____.

a) True
b) Can not be determined
c) False
d) None of the above

12) In the capacity of a researcher, how can you solve the problems that exist in the society?

a) Eradicate unethical people front the society
b) Request the research institute to form a body of members for solving the problems
c) Participate in the activities of a suitable NGO to help in fighting the problems
d) None of the above

13) The first step in formulating a problem is ____.

a) Statement of the problem
b) Gathering of Data
c) Measurement
d) Survey

14) A method of collecting primary data in which a number of individuals with a common interest interact is called ____.

a) Telephone Interview
b) Clinical Interview
c) Focused Interview
d) Group Interview

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONIC & TELECOMMUNICATION ENGINEERING
Research Methodology (BTN06704)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve the following: (Any Four) **16**

a) Describe the basic principles of experimental design. Mention basic types of errors.
b) Describe the important points to be considered for selecting a research problem.
c) Explain Importance of Literature Review in defining a Problem.
d) Differentiate Research methods & methodology.
e) Define and explain the term “Research”. Explain its importance and objectives.

Q.3 Solve the following: (Any Two) **12**

a) What is research problem? Define the main issues which should receive the attention of the researcher in formulating the research problem.
b) Explain the meaning of the following:
1) Extraneous variables
2) Confounded relationship
3) Treatments
c) Write short note on:
1) Defining and formulating the research problem.
2) Identifying gap areas from literature review.

Section - II

Q.4 Solve the following: (Any Four) **16**

a) Explain issues that should be addressed while writing a research report.
b) Describe different methods of data collection.
c) Write short Note on:
1) Ethical issues and ethical committees.
2) Environmental impacts on research ethics.
d) Explain Sampling Methods with example.
e) What do you understand by research report or thesis? Indicate its need and importance in the research work.

Q.5 Attempt the following: (Any Two) **12**

a) Write short note on:
1) Plagiarism
2) Citation
3) Bibliography

b) Describe, in brief, the layout of a research report, covering all relevant points.

c) Explain Data Processing and Analysis strategies using Chi-Square, ANOVA with suitable example.

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONIC & TELECOMMUNICATION ENGINEERING
Research Methodology (BTN06704)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The two important components of research responsibility are: sincerity in work and avoiding ____.
a) Plagiarism b) Writing the thesis
c) Research techniques d) Confidentiality

2) Converting a question into a Researchable problem is called ____.
a) Solution b) Examination
c) Problem formulation d) Problem Solving

3) Sampling which provides for a known non zero chance of selection is ____.
a) Probability sampling b) Non probability sampling
c) multiple Choice d) analysis

4) A Blue print of Research work is called ____.
a) Research Problem b) Research design
c) Research tools d) Research methods

5) A Hypothesis must be ____.
a) Diffuse b) Specific
c) Slow d) Speedy

6) Which of the following options most appropriately explains ethics____.
a) It states how to write a research report flawlessly
b) It gives the methodology of researching within social norms
c) It governs the prevention of plagiarism
d) It provides a common set of do's and don'ts of conducting ethical research

7) Fundamental Research is otherwise called ____.
a) Action Research b) Survey
c) Pilot study d) Pure Research

8) Ethics in research lays the bounds of discipline for a researcher ____.

a) True
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c) False
d) None of the above

9) In the capacity of a researcher, how can you solve the problems that exist in the society?

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10) The first step in formulating a problem is ____.

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c) Measurement
d) Survey

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c) Focused Interview
d) Group Interview

12) Selecting sample units in just a hit and miss fashion is called ____.

a) Convenience or Accidental sampling
b) Purposive sampling
c) Stratified sampling
d) Proportionate sampling

13) Good Research is always____.

a) Slow
b) Fast
c) Narrow
d) Systematic

14) ANOVA is ____.

a) A government body which social societal
b) The name of societal packages
c) A one-way analysis of Variance
d) A two-way analysis of Variance

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONIC & TELECOMMUNICATION ENGINEERING
Research Methodology (BTN06704)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve the following: (Any Four) **16**

a) Describe the basic principles of experimental design. Mention basic types of errors.
b) Describe the important points to be considered for selecting a research problem.
c) Explain Importance of Literature Review in defining a Problem.
d) Differentiate Research methods & methodology.
e) Define and explain the term “Research”. Explain its importance and objectives.

Q.3 Solve the following: (Any Two) **12**

a) What is research problem? Define the main issues which should receive the attention of the researcher in formulating the research problem.
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2) Confounded relationship
3) Treatments
c) Write short note on:
1) Defining and formulating the research problem.
2) Identifying gap areas from literature review.

Section - II

Q.4 Solve the following: (Any Four) **16**

a) Explain issues that should be addressed while writing a research report.
b) Describe different methods of data collection.
c) Write short Note on:
1) Ethical issues and ethical committees.
2) Environmental impacts on research ethics.
d) Explain Sampling Methods with example.
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a) Write short note on:
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2) Citation
3) Bibliography

b) Describe, in brief, the layout of a research report, covering all relevant points.

c) Explain Data Processing and Analysis strategies using Chi-Square, ANOVA with suitable example.

Seat No.	

Set **S**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONIC & TELECOMMUNICATION ENGINEERING
Research Methodology (BTN06704)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The first step in formulating a problem is ____.
a) Statement of the problem b) Gathering of Data
c) Measurement d) Survey

2) A method of collecting primary data in which a number of individuals with a common interest interact is called ____.
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c) Focused Interview d) Group Interview

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c) Stratified sampling
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d) A two-way analysis of Variance

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c) Research techniques d) Confidentiality

7) Converting a question into a Researchable problem is called ____.
a) Solution b) Examination
c) Problem formulation d) Problem Solving

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c) multiple Choice
d) analysis

9) A Blue print of Research work is called ____.

a) Research Problem
b) Research design
c) Research tools
d) Research methods

10) A Hypothesis must be ____.

a) Diffuse
b) Specific
c) Slow
d) Speedy

11) Which of the following options most appropriately explains ethics____.

a) It states how to write a research report flawlessly
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c) It governs the prevention of plagiarism
d) It provides a common set of do's and don'ts of conducting ethical research

12) Fundamental Research is otherwise called ____.

a) Action Research
b) Survey
c) Pilot study
d) Pure Research

13) Ethics in research lays the bounds of discipline for a researcher ____.

a) True
b) Can not be determined
c) False
d) None of the above

14) In the capacity of a researcher, how can you solve the problems that exist in the society?

a) Eradicate unethical people front the society
b) Request the research institute to form a body of members for solving the problems
c) Participate in the activities of a suitable NGO to help in fighting the problems
d) None of the above

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRONIC & TELECOMMUNICATION ENGINEERING
Research Methodology (BTN06704)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve the following: (Any Four) **16**

a) Describe the basic principles of experimental design. Mention basic types of errors.
b) Describe the important points to be considered for selecting a research problem.
c) Explain Importance of Literature Review in defining a Problem.
d) Differentiate Research methods & methodology.
e) Define and explain the term “Research”. Explain its importance and objectives.

Q.3 Solve the following: (Any Two) **12**

a) What is research problem? Define the main issues which should receive the attention of the researcher in formulating the research problem.
b) Explain the meaning of the following:
1) Extraneous variables
2) Confounded relationship
3) Treatments
c) Write short note on:
1) Defining and formulating the research problem.
2) Identifying gap areas from literature review.

Section - II

Q.4 Solve the following: (Any Four) **16**

a) Explain issues that should be addressed while writing a research report.
b) Describe different methods of data collection.
c) Write short Note on:
1) Ethical issues and ethical committees.
2) Environmental impacts on research ethics.
d) Explain Sampling Methods with example.
e) What do you understand by research report or thesis? Indicate its need and importance in the research work.

Q.5 Attempt the following: (Any Two) **12**

a) Write short note on:
1) Plagiarism
2) Citation
3) Bibliography

b) Describe, in brief, the layout of a research report, covering all relevant points.

c) Explain Data Processing and Analysis strategies using Chi-Square, ANOVA with suitable example.

SLR-BD-530

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-I) (CBCS) Examination: March/April-2025
Electronics & Telecommunication Engineering
Database Management System (197044704)

Day & Date: Monday, 02-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following is not a purpose of a database system?
a) Redundancy reduction b) Data isolation
c) Data inconsistency d) Data sharing

2) Which language is used to define the structure of a database schema?
a) DML b) DDL
c) DCL d) TCL

3) In an E-R model, a weak entity set: _____
a) Has a primary key
b) Does not have a discriminator
c) Requires a strong entity for identification
d) Can exist independently

4) A super key is: _____
a) A subset of candidate key
b) A primary key with foreign keys
c) Any set of attributes that uniquely identifies a tuple
d) Always a composite key

5) Which of the following is a unary operation in relational algebra?
a) Join b) Selection
c) Cartesian Product d) Set Difference

6) Which SQL clause is used to sort the results of a query?
a) GROUP BY b) WHERE
c) ORDER BY d) HAVING

7) The SELECT clause is used to _____

a) Delete rows b) Insert rows
c) Retrieve data d) Modify schema

8) A view is: _____

a) A physical table b) A temporary table
c) A virtual table d) A type of constraint

9) Which normal form removes partial dependencies?

a) 1NF b) 2NF
c) 3NF d) BCNF

10) BCNF is a stronger version of _____

a) 1NF b) 2NF
c) 3NF d) None

11) Which of the following uses ordered structure for indexing?

a) Hashing b) B+ Tree
c) Heap d) Static table

12) Two-Phase Locking Protocol helps in: _____

a) Deadlock detection b) Ensuring atomicity
c) Serializability d) Durability

13) A transaction that completes its execution successfully is in the: _____

a) Active state b) Partially committed state
c) Failed state d) Committed state

14) Functional dependencies express the relationship between _____

a) Tables b) Tuples
c) Attributes d) Rows

SLR-BD-530

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-I) (CBCS) Examination: March/April-2025
Electronics & Telecommunication Engineering
Database Management System (197044704)

Day & Date: Monday, 02-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any THREE **12**

a) Explain ER diagram with an example.
b) Draw 1:1, 1:N and M:N mapping cardinality and explain.
c) Discuss the structure and components of two-tier and three-tier DBMS architectures.
d) Describe the concepts of specialization and generalization in database design.

Q.3 Attempt any TWO **16**

a) Describe the advantages of database management systems over conventional file processing systems.
b) In SQL, explain the terms with example:
i) select
ii) distinct
iii) where
iv) order by
c) With the help of an example explain aggregate functions in SQL.

Section – II

Q.4 Attempt any THREE **12**

a) List and explain ACID properties in transactions.
b) Differentiate indexing and hashing.
c) What is Big data? Write and explain characteristics of Big data.
d) Describe the concept of deadlock in a system.

Q.5 Attempt any TWO **16**

a) Discuss the importance of normalization in database design. What are the requirements for achieving First Normal Form (1NF) and Second Normal Form (2NF)?
b) Draw the transaction state diagram and explain each state.
c) What is NoSQL? Explain the CAP theorem in the context of NoSQL databases.

SLR-BD-530

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem-I) (CBCS) Examination: March/April-2025
Electronics & Telecommunication Engineering
Database Management System (197044704)

Day & Date: Monday, 02-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A view is: _____
a) A physical table b) A temporary table
c) A virtual table d) A type of constraint

2) Which normal form removes partial dependencies?
a) 1NF b) 2NF
c) 3NF d) BCNF

3) BCNF is a stronger version of _____
a) 1NF b) 2NF
c) 3NF d) None

4) Which of the following uses ordered structure for indexing?
a) Hashing b) B+ Tree
c) Heap d) Static table

5) Two-Phase Locking Protocol helps in: _____
a) Deadlock detection b) Ensuring atomicity
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6) A transaction that completes its execution successfully is in the: _____
a) Active state b) Partially committed state
c) Failed state d) Committed state

7) Functional dependencies express the relationship between _____
a) Tables b) Tuples
c) Attributes d) Rows

8) Which of the following is not a purpose of a database system?
a) Redundancy reduction b) Data isolation
c) Data inconsistency d) Data sharing

9) Which language is used to define the structure of a database schema?

a) DML b) DDL
c) DCL d) TCL

10) In an E-R model, a weak entity set: _____

a) Has a primary key
b) Does not have a discriminator
c) Requires a strong entity for identification
d) Can exist independently

11) A super key is: _____

a) A subset of candidate key
b) A primary key with foreign keys
c) Any set of attributes that uniquely identifies a tuple
d) Always a composite key

12) Which of the following is a unary operation in relational algebra?

a) Join b) Selection
c) Cartesian Product d) Set Difference

13) Which SQL clause is used to sort the results of a query?

a) GROUP BY b) WHERE
c) ORDER BY d) HAVING

14) The SELECT clause is used to _____

a) Delete rows b) Insert rows
c) Retrieve data d) Modify schema

SLR-BD-530

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem-I) (CBCS) Examination: March/April-2025
Electronics & Telecommunication Engineering
Database Management System (197044704)

Day & Date: Monday, 02-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any THREE **12**

a) Explain ER diagram with an example.
b) Draw 1:1, 1:N and M:N mapping cardinality and explain.
c) Discuss the structure and components of two-tier and three-tier DBMS architectures.
d) Describe the concepts of specialization and generalization in database design.

Q.3 Attempt any TWO **16**

a) Describe the advantages of database management systems over conventional file processing systems.
b) In SQL, explain the terms with example:
i) select
ii) distinct
iii) where
iv) order by
c) With the help of an example explain aggregate functions in SQL.

Section – II

Q.4 Attempt any THREE **12**

a) List and explain ACID properties in transactions.
b) Differentiate indexing and hashing.
c) What is Big data? Write and explain characteristics of Big data.
d) Describe the concept of deadlock in a system.

Q.5 Attempt any TWO **16**

a) Discuss the importance of normalization in database design. What are the requirements for achieving First Normal Form (1NF) and Second Normal Form (2NF)?
b) Draw the transaction state diagram and explain each state.
c) What is NoSQL? Explain the CAP theorem in the context of NoSQL databases.

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (CBCS) Examination: March/April-2025
Electronics & Telecommunication Engineering
Database Management System (197044704)

Day & Date: Monday, 02-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following uses ordered structure for indexing?
a) Hashing b) B+ Tree
c) Heap d) Static table

2) Two-Phase Locking Protocol helps in: _____
a) Deadlock detection b) Ensuring atomicity
c) Serializability d) Durability

3) A transaction that completes its execution successfully is in the: _____
a) Active state b) Partially committed state
c) Failed state d) Committed state

4) Functional dependencies express the relationship between _____
a) Tables b) Tuples
c) Attributes d) Rows

5) Which of the following is not a purpose of a database system?
a) Redundancy reduction b) Data isolation
c) Data inconsistency d) Data sharing

6) Which language is used to define the structure of a database schema?
a) DML b) DDL
c) DCL d) TCL

7) In an E-R model, a weak entity set: _____
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b) Does not have a discriminator
c) Requires a strong entity for identification
d) Can exist independently

8) A super key is: _____
a) A subset of candidate key
b) A primary key with foreign keys
c) Any set of attributes that uniquely identifies a tuple
d) Always a composite key

9) Which of the following is a unary operation in relational algebra?
a) Join
b) Selection
c) Cartesian Product
d) Set Difference

10) Which SQL clause is used to sort the results of a query?
a) GROUP BY
b) WHERE
c) ORDER BY
d) HAVING

11) The SELECT clause is used to _____
a) Delete rows
b) Insert rows
c) Retrieve data
d) Modify schema

12) A view is: _____
a) A physical table
b) A temporary table
c) A virtual table
d) A type of constraint

13) Which normal form removes partial dependencies?
a) 1NF
b) 2NF
c) 3NF
d) BCNF

14) BCNF is a stronger version of _____
a) 1NF
b) 2NF
c) 3NF
d) None

SLR-BD-530

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem-I) (CBCS) Examination: March/April-2025
Electronics & Telecommunication Engineering
Database Management System (197044704)

Day & Date: Monday, 02-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any THREE **12**

a) Explain ER diagram with an example.
b) Draw 1:1, 1:N and M:N mapping cardinality and explain.
c) Discuss the structure and components of two-tier and three-tier DBMS architectures.
d) Describe the concepts of specialization and generalization in database design.

Q.3 Attempt any TWO **16**

a) Describe the advantages of database management systems over conventional file processing systems.
b) In SQL, explain the terms with example:
i) select
ii) distinct
iii) where
iv) order by
c) With the help of an example explain aggregate functions in SQL.

Section – II

Q.4 Attempt any THREE **12**

a) List and explain ACID properties in transactions.
b) Differentiate indexing and hashing.
c) What is Big data? Write and explain characteristics of Big data.
d) Describe the concept of deadlock in a system.

Q.5 Attempt any TWO **16**

a) Discuss the importance of normalization in database design. What are the requirements for achieving First Normal Form (1NF) and Second Normal Form (2NF)?
b) Draw the transaction state diagram and explain each state.
c) What is NoSQL? Explain the CAP theorem in the context of NoSQL databases.

Seat No.	

Set **S**

Fourth. Y. (B. Tech) (Sem-I) (CBCS) Examination: March/April-2025
Electronics & Telecommunication Engineering
Database Management System (197044704)

Day & Date: Monday, 02-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which SQL clause is used to sort the results of a query?
a) GROUP BY b) WHERE
c) ORDER BY d) HAVING

2) The SELECT clause is used to _____
a) Delete rows b) Insert rows
c) Retrieve data d) Modify schema

3) A view is: _____
a) A physical table b) A temporary table
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4) Which normal form removes partial dependencies?
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c) Heap d) Static table

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a) Deadlock detection b) Ensuring atomicity
c) Serializability d) Durability

8) A transaction that completes its execution successfully is in the: _____
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c) Failed state d) Committed state

9) Functional dependencies express the relationship between _____
a) Tables b) Tuples
c) Attributes d) Rows

10) Which of the following is not a purpose of a database system?
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c) Data inconsistency d) Data sharing

11) Which language is used to define the structure of a database schema?
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c) DCL d) TCL

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b) A primary key with foreign keys
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d) Always a composite key

14) Which of the following is a unary operation in relational algebra?
a) Join b) Selection
c) Cartesian Product d) Set Difference

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (CBCS) Examination: March/April-2025
Electronics & Telecommunication Engineering
Database Management System (197044704)

Day & Date: Monday, 02-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any THREE **12**

a) Explain ER diagram with an example.
b) Draw 1:1, 1:N and M:N mapping cardinality and explain.
c) Discuss the structure and components of two-tier and three-tier DBMS architectures.
d) Describe the concepts of specialization and generalization in database design.

Q.3 Attempt any TWO **16**

a) Describe the advantages of database management systems over conventional file processing systems.
b) In SQL, explain the terms with example:
i) select
ii) distinct
iii) where
iv) order by
c) With the help of an example explain aggregate functions in SQL.

Section – II

Q.4 Attempt any THREE **12**

a) List and explain ACID properties in transactions.
b) Differentiate indexing and hashing.
c) What is Big data? Write and explain characteristics of Big data.
d) Describe the concept of deadlock in a system.

Q.5 Attempt any TWO **16**

a) Discuss the importance of normalization in database design. What are the requirements for achieving First Normal Form (1NF) and Second Normal Form (2NF)?
b) Draw the transaction state diagram and explain each state.
c) What is NoSQL? Explain the CAP theorem in the context of NoSQL databases.

SLR-BD-531

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS &TELE COMMUNICATION ENGINEERING
Wireless Sensor Networks (BTN06802)

Day & Date: Monday, 26-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Multiple Choice Questions. (1 x 10) **10**

1) A Sensor Network must contain _____
a) Battery b) Communication Network
c) Memory d) All of above

2) This mode of WSN will communication directly with each other
a) Digital b) Physical
c) ad-hoc d) Infrastructure

3) AD-hoc Mode of WSN is Known as _____ mode
a) router b) roaming
c) infrastructure d) digital

4) Each Sensor Node is equipped with ____
a) Only one sensing device
b) One or more sensing devices
c) Only more than one sensing device
d) No sensing devices attached

5) A WSN is designed to collect information from _____ environment.
a) Logical b) Physical
c) both a and b d) None

6) Malware means _____
a) Small software b) Instruction
c) block diagram d) None

7) RFID Consists of _____
a) RFID Reader b) RFID Tag
c) Both a and b d) None

8) EMC stands for -
a) Electric Measurements and Components
b) Electromagnetic Compatibility
c) Electric and Mechanical Components
d) None

9) The principle behind backscatter communication is _____of radio waves.
a) refraction b) reflection
c) ionization d) back propagation

10) The directivity of an isotropic antenna is equal to _____
a) zero b) infinity
c) one d) none

SLR-BD-531

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS &TELE COMMUNICATION ENGINEERING
Wireless Sensor Networks (BTN06802)

Day & Date: Monday, 26-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.

SECTION - I

Q.2 Attempt any Two. **08**

a) Explain Hardware components of Single Node architecture with suitable diagram.
b) Explain the Operating System for WSN.
c) What are the types of Sources and Sinks in Network Architecture.

Q.3 Attempt any Two. **12**

a) Explain the Gateway used in WSN with its types.
b) For Sensor Network Scenario, explain Single Hop and Multiple Hop networks.
c) Explain Wireless Sensor Network with suitable diagram.

SECTION - II

Q.4 Attempt any Two. **08**

a) What is malicious Node? Explain it.
b) Explain MAC layer in WSN.
c) Why energy management is required in WSN?

Q.5 Attempt any Two. **12**

a) Explain Application of RFID in healthcare application with suitable example.
b) Explain the Aspects of EMC.
c) Explain RFID with suitable diagram.

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS &TELE COMMUNICATION ENGINEERING
Wireless Sensor Networks (BTN06802)

Day & Date: Monday, 26-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Multiple Choice Questions. (1 x 10) **10**

1) Malware means _____
a) Small software b) Instruction
c) block diagram d) None

2) RFID Consists of _____
a) RFID Reader b) RFID Tag
c) Both a and b d) None

3) EMC stands for -
a) Electric Measurements and Components
b) Electromagnetic Compatibility
c) Electric and Mechanical Components
d) None

4) The principle behind backscatter communication is _____of radio waves.
a) refraction b) reflection
c) ionization d) back propagation

5) The directivity of an isotropic antenna is equal to _____
a) zero b) infinity
c) one d) none

6) A Sensor Network must contain _____
a) Battery b) Communication Network
c) Memory d) All of above

7) This mode of WSN will communication directly with each other
a) Digital b) Physical
c) ad-hoc d) Infrastructure

8) AD-hoc Mode of WSN is Known as _____ mode
a) router b) roaming
c) infrastructure d) digital

9) Each Sensor Node is equipped with ____
a) Only one sensing device
b) One or more sensing devices
c) Only more than one sensing device
d) No sensing devices attached

10) A WSN is designed to collect information from _____ environment.
a) Logical b) Physical
c) both a and b d) None

SLR-BD-531

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS &TELE COMMUNICATION ENGINEERING
Wireless Sensor Networks (BTN06802)

Day & Date: Monday, 26-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.

SECTION - I

Q.2 Attempt any Two. **08**

a) Explain Hardware components of Single Node architecture with suitable diagram.
b) Explain the Operating System for WSN.
c) What are the types of Sources and Sinks in Network Architecture.

Q.3 Attempt any Two. **12**

a) Explain the Gateway used in WSN with its types.
b) For Sensor Network Scenario, explain Single Hop and Multiple Hop networks.
c) Explain Wireless Sensor Network with suitable diagram.

SECTION - II

Q.4 Attempt any Two. **08**

a) What is malicious Node? Explain it.
b) Explain MAC layer in WSN.
c) Why energy management is required in WSN?

Q.5 Attempt any Two. **12**

a) Explain Application of RFID in healthcare application with suitable example.
b) Explain the Aspects of EMC.
c) Explain RFID with suitable diagram.

SLR-BD-531

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS &TELE COMMUNICATION ENGINEERING
Wireless Sensor Networks (BTN06802)

Day & Date: Monday, 26-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Multiple Choice Questions. (1 x 10) 10

1) The principle behind backscatter communication is _____of radio waves.
a) refraction b) reflection
c) ionization d) back propagation

2) The directivity of an isotropic antenna is equal to _____
a) zero b) infinity
c) one d) none

3) A Sensor Network must contain _____
a) Battery b) Communication Network
c) Memory d) All of above

4) This mode of WSN will communication directly with each other
a) Digital b) Physical
c) ad-hoc d) Infrastructure

5) AD-hoc Mode of WSN is Known as _____ mode
a) router b) roaming
c) infrastructure d) digital

6) Each Sensor Node is equipped with ____
a) Only one sensing device
b) One or more sensing devices
c) Only more than one sensing device
d) No sensing devices attached

7) A WSN is designed to collect information from _____ environment.

a) Logical b) Physical
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8) Malware means _____

a) Small software b) Instruction
c) block diagram d) None

9) RFID Consists of _____

a) RFID Reader b) RFID Tag
c) Both a and b d) None

10) EMC stands for -

a) Electric Measurements and Components
b) Electromagnetic Compatibility
c) Electric and Mechanical Components
d) None

SLR-BD-531

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS &TELE COMMUNICATION ENGINEERING
Wireless Sensor Networks (BTN06802)

Day & Date: Monday, 26-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.

SECTION - I

Q.2 Attempt any Two. **08**

a) Explain Hardware components of Single Node architecture with suitable diagram.
b) Explain the Operating System for WSN.
c) What are the types of Sources and Sinks in Network Architecture.

Q.3 Attempt any Two. **12**

a) Explain the Gateway used in WSN with its types.
b) For Sensor Network Scenario, explain Single Hop and Multiple Hop networks.
c) Explain Wireless Sensor Network with suitable diagram.

SECTION - II

Q.4 Attempt any Two. **08**

a) What is malicious Node? Explain it.
b) Explain MAC layer in WSN.
c) Why energy management is required in WSN?

Q.5 Attempt any Two. **12**

a) Explain Application of RFID in healthcare application with suitable example.
b) Explain the Aspects of EMC.
c) Explain RFID with suitable diagram.

SLR-BD-531

Seat No.	

Set S

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS &TELE COMMUNICATION ENGINEERING
Wireless Sensor Networks (BTN06802)

Day & Date: Monday, 26-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Multiple Choice Questions. (1 x 10) 10

1) AD-hoc Mode of WSN is Known as _____ mode
a) router b) roaming
c) infrastructure d) digital

2) Each Sensor Node is equipped with ____
a) Only one sensing device
b) One or more sensing devices
c) Only more than one sensing device
d) No sensing devices attached

3) A WSN is designed to collect information from _____ environment.
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a) RFID Reader b) RFID Tag
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c) Electric and Mechanical Components
d) None

7) The principle behind backscatter communication is _____of radio waves.

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c) ionization d) back propagation

8) The directivity of an isotropic antenna is equal to _____

a) zero b) infinity
c) one d) none

9) A Sensor Network must contain _____

a) Battery b) Communication Network
c) Memory d) All of above

10) This mode of WSN will communication directly with each other

a) Digital b) Physical
c) ad-hoc d) Infrastructure

SLR-BD-531

Seat No.	

Set S

Fourth. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS &TELE COMMUNICATION ENGINEERING
Wireless Sensor Networks (BTN06802)

Day & Date: Monday, 26-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.

SECTION - I

Q.2 Attempt any Two. **08**

a) Explain Hardware components of Single Node architecture with suitable diagram.
b) Explain the Operating System for WSN.
c) What are the types of Sources and Sinks in Network Architecture.

Q.3 Attempt any Two. **12**

a) Explain the Gateway used in WSN with its types.
b) For Sensor Network Scenario, explain Single Hop and Multiple Hop networks.
c) Explain Wireless Sensor Network with suitable diagram.

SECTION - II

Q.4 Attempt any Two. **08**

a) What is malicious Node? Explain it.
b) Explain MAC layer in WSN.
c) Why energy management is required in WSN?

Q.5 Attempt any Two. **12**

a) Explain Application of RFID in healthcare application with suitable example.
b) Explain the Aspects of EMC.
c) Explain RFID with suitable diagram.

SLR-BD-532

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS &TELE COMMUNICATION ENGINEERING
Satellite Communication (BTN06803)

Day & Date: Monday, 26-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 MCQ/Objective type questions **10**

1) The angle between the line from the earth station's antenna to the satellite and the line between the earth station's antenna and the earth's horizon is called as _____
a) Angle of inclination b) Angle of elevation
c) Apogee angle d) LOS angle

2) What is the eccentricity of a GEO?
a) 1.01 b) 0.87
c) 1.0 d) 0.0

3) The transmitter-receiver combination in the satellite is known as _____
a) Relay b) Repeater
c) Transponder d) Duplexer

4) Write the equation of the system noise factor.
a) TS=Tant +Tel + (L-1)T0/G1+L(F-1)T0/G1
b) TS=Tant +Tel + (L-1)T0/G1
c) TS=Tant +L(F-1)T0/G1
d) None of the above

5) A satellite signal transmitted from a satellite transponder to earth's stations is _____
a) Uplink b) Downlink
c) Terrestrial d) Earthbound

6) Shannon's law relates _____
a) Antenna gain to bandwidth
b) Frequency to antenna gain
c) Antenna gain to transmission losses
d) Information carring capacity to S/N ratio

7) Satellite used for intercontinental communications are known as __.

a) COMAT b) DOMSAT
c) INTELSAT d) EARSAT

8) Which of the following is the first active satellite?

a) Echo I b) Telstar I
c) Early Bird d) Sputnik I

9) The velocity of a geostationary satellite is nearly _____.

a) 1255 km/hr b) 6757 km/hr
c) 9422 km/hr d) 12644 km/hr

10) Video signals in TV are _____

a) Amplitude modulated b) de-modulated
c) Frequency modulated d) None of these

Seat No.	

Set **P**

Fourth. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS &TELE COMMUNICATION ENGINEERING
Satellite Communication (BTN06803)

Day & Date: Monday, 26-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any two of the following. **08**

a) A satellite is orbiting in the equatorial plane with a period from perigee to perigee of 12h. Given that the eccentricity is 0.002, calculate the semi major axis. The earth's equatorial radius is 6378.1414 km.
b) Write a note on Rain Attenuation.
c) Explain the Three Kepler Law of motion.

Q.3 Solve any two of the following. **12**

a) Explain the Antenna look angles for satellite with a neat diagram.
b) Explain the Polar Mount Antenna.
c) Explain the different Launching orbits of ISRO.

SECTION – II

Q.4 Solve any two of the following. **08**

a) Explain the Altitude control with diagram.
b) Write a note on different Transmission Losses.
c) Explain the Spin satellite Stabilization Process.

Q.5 Solve any two of the following. **12**

a) Write a brief note on Wide-band receiver.
b) Explain Master antenna TV system.
c) Explain how to calculate the Link Power Budget for both uplink and downlink.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS &TELE COMMUNICATION ENGINEERING
Satellite Communication (BTN06803)

Day & Date: Monday, 26-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 MCQ/Objective type questions **10**

1) Shannon's law relates _____
a) Antenna gain to bandwidth
b) Frequency to antenna gain
c) Antenna gain to transmission losses
d) Information carring capacity to S/N ratio

2) Satellite used for intercontinental communications are known as __.
a) COMAT b) DOMSAT
c) INTELSAT d) EARSAT

3) Which of the following is the first active satellite?
a) Echo I b) Telstar I
c) Early Bird d) Sputnik I

4) The velocity of a geostationary satellite is nearly _____.
a) 1255 km/hr b) 6757 km/hr
c) 9422 km/hr d) 12644 km/hr

5) Video signals in TV are _____
a) Amplitude modulated b) de-modulated
c) Frequency modulated d) None of these

6) The angle between the line from the earth station's antenna to the satellite and the line between the earth station's antenna and the earth's horizon is called as _____
a) Angle of inclination b) Angle of elevation
c) Apogee angle d) LOS angle

7) What is the eccentricity of a GEO?
a) 1.01 b) 0.87
c) 1.0 d) 0.0

8) The transmitter-receiver combination in the satellite is known as _____

a) Relay
b) Repeater
c) Transponder
d) Duplexer

9) Write the equation of the system noise factor.

a) TS=Tant +Tel + (L-1)T0/G1+L(F-1)T0/G1
b) TS=Tant +Tel + (L-1)T0/G1
c) TS=Tant +L(F-1)T0/G1
d) None of the above

10) A satellite signal transmitted from a satellite transponder to earth's stations is _____

a) Uplink
b) Downlink
c) Terrestrial
d) Earthbound

SLR-BD-532

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS &TELE COMMUNICATION ENGINEERING
Satellite Communication (BTN06803)

Day & Date: Monday, 26-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any two of the following. **08**

a) A satellite is orbiting in the equatorial plane with a period from perigee to perigee of 12h. Given that the eccentricity is 0.002, calculate the semi major axis. The earth's equatorial radius is 6378.1414 km.
b) Write a note on Rain Attenuation.
c) Explain the Three Kepler Law of motion.

Q.3 Solve any two of the following. **12**

a) Explain the Antenna look angles for satellite with a neat diagram.
b) Explain the Polar Mount Antenna.
c) Explain the different Launching orbits of ISRO.

SECTION – II

Q.4 Solve any two of the following. **08**

a) Explain the Altitude control with diagram.
b) Write a note on different Transmission Losses.
c) Explain the Spin satellite Stabilization Process.

Q.5 Solve any two of the following. **12**

a) Write a brief note on Wide-band receiver.
b) Explain Master antenna TV system.
c) Explain how to calculate the Link Power Budget for both uplink and downlink.

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS &TELE COMMUNICATION ENGINEERING
Satellite Communication (BTN06803)

Day & Date: Monday, 26-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 MCQ/Objective type questions **10**

1) The velocity of a geostationary satellite is nearly _____.
a) 1255 km/hr b) 6757 km/hr
c) 9422 km/hr d) 12644 km/hr

2) Video signals in TV are _____
a) Amplitude modulated b) de-modulated
c) Frequency modulated d) None of these

3) The angle between the line from the earth station's antenna to the satellite and the line between the earth station's antenna and the earth's horizon is called as _____
a) Angle of inclination b) Angle of elevation
c) Apogee angle d) LOS angle

4) What is the eccentricity of a GEO?
a) 1.01 b) 0.87
c) 1.0 d) 0.0

5) The transmitter-receiver combination in the satellite is known as _____
a) Relay b) Repeater
c) Transponder d) Duplexer

6) Write the equation of the system noise factor.
a) TS=Tant +Tel + (L-1)T0/G1+L(F-1)T0/G1
b) TS=Tant +Tel + (L-1)T0/G1
c) TS=Tant +L(F-1)T0/G1
d) None of the above

7) A satellite signal transmitted from a satellite transponder to earth's stations is _____

a) Uplink
b) Downlink
c) Terrestrial
d) Earthbound

8) Shannon's law relates _____

a) Antenna gain to bandwidth
b) Frequency to antenna gain
c) Antenna gain to transmission losses
d) Information carring capacity to S/N ratio

9) Satellite used for intercontinental communications are known as __.

a) COMAT
b) DOMSAT
c) INTELSAT
d) EARSAT

10) Which of the following is the first active satellite?

a) Echo I
b) Telstar I
c) Early Bird
d) Sputnik I

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS &TELE COMMUNICATION ENGINEERING
Satellite Communication (BTN06803)

Day & Date: Monday, 26-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any two of the following. **08**

a) A satellite is orbiting in the equatorial plane with a period from perigee to perigee of 12h. Given that the eccentricity is 0.002, calculate the semi major axis. The earth's equatorial radius is 6378.1414 km.
b) Write a note on Rain Attenuation.
c) Explain the Three Kepler Law of motion.

Q.3 Solve any two of the following. **12**

a) Explain the Antenna look angles for satellite with a neat diagram.
b) Explain the Polar Mount Antenna.
c) Explain the different Launching orbits of ISRO.

SECTION – II

Q.4 Solve any two of the following. **08**

a) Explain the Altitude control with diagram.
b) Write a note on different Transmission Losses.
c) Explain the Spin satellite Stabilization Process.

Q.5 Solve any two of the following. **12**

a) Write a brief note on Wide-band receiver.
b) Explain Master antenna TV system.
c) Explain how to calculate the Link Power Budget for both uplink and downlink.

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS &TELE COMMUNICATION ENGINEERING
Satellite Communication (BTN06803)

Day & Date: Monday, 26-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 MCQ/Objective type questions **10**

1) The transmitter-receiver combination in the satellite is known as _____
a) Relay b) Repeater
c) Transponder d) Duplexer

2) Write the equation of the system noise factor.
a) TS=Tant +Tel + (L-1)T0/G1+L(F-1)T0/G1
b) TS=Tant +Tel + (L-1)T0/G1
c) TS=Tant +L(F-1)T0/G1
d) None of the above

3) A satellite signal transmitted from a satellite transponder to earth's stations is _____
a) Uplink b) Downlink
c) Terrestrial d) Earthbound

4) Shannon's law relates _____
a) Antenna gain to bandwidth
b) Frequency to antenna gain
c) Antenna gain to transmission losses
d) Information carring capacity to S/N ratio

5) Satellite used for intercontinental communications are known as __.
a) COMAT b) DOMSAT
c) INTELSAT d) EARSAT

6) Which of the following is the first active satellite?
a) Echo I b) Telstar I
c) Early Bird d) Sputnik I

7) The velocity of a geostationary satellite is nearly _____.

a) 1255 km/hr b) 6757 km/hr
c) 9422 km/hr d) 12644 km/hr

8) Video signals in TV are _____

a) Amplitude modulated b) de-modulated
c) Frequency modulated d) None of these

9) The angle between the line from the earth station's antenna to the satellite and the line between the earth station's antenna and the earth's horizon is called as _____

a) Angle of inclination b) Angle of elevation
c) Apogee angle d) LOS angle

10) What is the eccentricity of a GEO?

a) 1.01 b) 0.87
c) 1.0 d) 0.0

SLR-BD-532

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRONICS &TELE COMMUNICATION ENGINEERING
Satellite Communication (BTN06803)

Day & Date: Monday, 26-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any two of the following. **08**

a) A satellite is orbiting in the equatorial plane with a period from perigee to perigee of 12h. Given that the eccentricity is 0.002, calculate the semi major axis. The earth's equatorial radius is 6378.1414 km.
b) Write a note on Rain Attenuation.
c) Explain the Three Kepler Law of motion.

Q.3 Solve any two of the following. **12**

a) Explain the Antenna look angles for satellite with a neat diagram.
b) Explain the Polar Mount Antenna.
c) Explain the different Launching orbits of ISRO.

SECTION – II

Q.4 Solve any two of the following. **08**

a) Explain the Altitude control with diagram.
b) Write a note on different Transmission Losses.
c) Explain the Spin satellite Stabilization Process.

Q.5 Solve any two of the following. **12**

a) Write a brief note on Wide-band receiver.
b) Explain Master antenna TV system.
c) Explain how to calculate the Link Power Budget for both uplink and downlink.

SLR-BD-534

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electric Vehicles (BTN06805)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options. 10

1) In BLDC motor field winding is kept on _____.
a) Stator b) Rotor
c) Can be placed anywhere d) Absent

2) Reluctance motor can produce torque at _____.
a) any speed less than synchronous speed
b) synchronous speed only
c) any speed greater than synchronous speed
d) all of the mentioned

3) Which of the following is the electrolyte used in a lead-acid battery?
a) Nitric acid b) Sulphuric acid
c) Lead-acid d) Hydrochloric acid

4) Electric vehicles are less expensive to own and operate that conventional internal combustion engines.
a) True b) False

5) An EV only needs one of the following maintenance jobs done. Which is it?
a) Oil change b) Belt replacement
c) New spark plugs d) Brake pad inspections

6) The main sources of electricity for hybrid are _____.
a) Batteries b) Capacitors
c) Both a and b d) None of the above

7) Electric vehicle and hybrid vehicle have following components common except _____.

a) Battery
b) ECU
c) Generator
d) Internal combustion engine

8) To increase the output voltage, battery cells are connected in _____.

a) Inclined
b) Series
c) Parallel
d) Series-parallel

9) The voltage generated by an alternator in an automobile is controlled by the _____.

a) brushes
b) rotor
c) starter
d) rotor winding

10) Allow the current to flow from the alternator to the battery but not in the opposite direction by the use of _____.

a) diode
b) triode
c) capacitor
d) insulator

SLR-BD-534

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electric Vehicles (BTN06805)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any TWO. **08**

a) State and explain the need of Electric Vehicles.
b) State the basic parts of electric vehicles, and explain anyone.
c) Explain construction and working of Synchronous Reluctance Motors.

Q.3 Attempt any TWO. **12**

a) Explain construction and working of Permanent magnet synchronous Motors.
b) Explain selection criteria of motors for EV's.
c) Write a short note on BLDC.

Section - II

Q.4 Attempt any TWO. **08**

a) What are selection criteria of batteries for EV's.
b) State technical Specification of,
i) Aluminum Air Battery
ii) Lithium ion
c) Explain in detail charger technology used for these batteries.

Q.5 Attempt any TWO. **12**

a) Write short note on Electric Vehicle.
b) State Electric Vehicles Rules Regulations and explain anyone.
c) Which charger technology used for Lead Acid Battery?

SLR-BD-534

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electric Vehicles (BTN06805)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options. 10

1) The main sources of electricity for hybrid are _____.
a) Batteries b) Capacitors
c) Both a and b d) None of the above

2) Electric vehicle and hybrid vehicle have following components common except _____.
a) Battery b) ECU
c) Generator d) Internal combustion engine

3) To increase the output voltage, battery cells are connected in _____.
a) Inclined b) Series
c) Parallel d) Series-parallel

4) The voltage generated by an alternator in an automobile is controlled by the _____.
a) brushes b) rotor
c) starter d) rotor winding

5) Allow the current to flow from the alternator to the battery but not in the opposite direction by the use of _____.
a) diode b) triode
c) capacitor d) insulator

6) In BLDC motor field winding is kept on _____.
a) Stator b) Rotor
c) Can be placed anywhere d) Absent

7) Reluctance motor can produce torque at _____.
a) any speed less than synchronous speed
b) synchronous speed only
c) any speed greater than synchronous speed
d) all of the mentioned

8) Which of the following is the electrolyte used in a lead-acid battery?
a) Nitric acid
b) Sulphuric acid
c) Lead-acid
d) Hydrochloric acid

9) Electric vehicles are less expensive to own and operate that conventional internal combustion engines.
a) True
b) False

10) An EV only needs one of the following maintenance jobs done. Which is it?
a) Oil change
b) Belt replacement
c) New spark plugs
d) Brake pad inspections

SLR-BD-534

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electric Vehicles (BTN06805)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any TWO. **08**

a) State and explain the need of Electric Vehicles.
b) State the basic parts of electric vehicles, and explain anyone.
c) Explain construction and working of Synchronous Reluctance Motors.

Q.3 Attempt any TWO. **12**

a) Explain construction and working of Permanent magnet synchronous Motors.
b) Explain selection criteria of motors for EV's.
c) Write a short note on BLDC.

Section - II

Q.4 Attempt any TWO. **08**

a) What are selection criteria of batteries for EV's.
b) State technical Specification of,
i) Aluminum Air Battery
ii) Lithium ion
c) Explain in detail charger technology used for these batteries.

Q.5 Attempt any TWO. **12**

a) Write short note on Electric Vehicle.
b) State Electric Vehicles Rules Regulations and explain anyone.
c) Which charger technology used for Lead Acid Battery?

SLR-BD-534

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electric Vehicles (BTN06805)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options. 10

1) The voltage generated by an alternator in an automobile is controlled by the _____.
a) brushes b) rotor
c) starter d) rotor winding

2) Allow the current to flow from the alternator to the battery but not in the opposite direction by the use of _____.
a) diode b) triode
c) capacitor d) insulator

3) In BLDC motor field winding is kept on _____.
a) Stator b) Rotor
c) Can be placed anywhere d) Absent

4) Reluctance motor can produce torque at _____.
a) any speed less than synchronous speed
b) synchronous speed only
c) any speed greater than synchronous speed
d) all of the mentioned

5) Which of the following is the electrolyte used in a lead-acid battery?
a) Nitric acid b) Sulphuric acid
c) Lead-acid d) Hydrochloric acid

6) Electric vehicles are less expensive to own and operate that conventional internal combustion engines.
a) True b) False

7) An EV only needs one of the following maintenance jobs done. Which is it?

a) Oil change
b) Belt replacement
c) New spark plugs
d) Brake pad inspections

8) The main sources of electricity for hybrid are _____.

a) Batteries
b) Capacitors
c) Both a and b
d) None of the above

9) Electric vehicle and hybrid vehicle have following components common except _____.

a) Battery
b) ECU
c) Generator
d) Internal combustion engine

10) To increase the output voltage, battery cells are connected in _____.

a) Inclined
b) Series
c) Parallel
d) Series-parallel

SLR-BD-534

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electric Vehicles (BTN06805)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any TWO. **08**

a) State and explain the need of Electric Vehicles.
b) State the basic parts of electric vehicles, and explain anyone.
c) Explain construction and working of Synchronous Reluctance Motors.

Q.3 Attempt any TWO. **12**

a) Explain construction and working of Permanent magnet synchronous Motors.
b) Explain selection criteria of motors for EV's.
c) Write a short note on BLDC.

Section - II

Q.4 Attempt any TWO. **08**

a) What are selection criteria of batteries for EV's.
b) State technical Specification of,
i) Aluminum Air Battery
ii) Lithium ion
c) Explain in detail charger technology used for these batteries.

Q.5 Attempt any TWO. **12**

a) Write short note on Electric Vehicle.
b) State Electric Vehicles Rules Regulations and explain anyone.
c) Which charger technology used for Lead Acid Battery?

SLR-BD-534

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electric Vehicles (BTN06805)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options. 10

1) Which of the following is the electrolyte used in a lead-acid battery?
a) Nitric acid b) Sulphuric acid
c) Lead-acid d) Hydrochloric acid

2) Electric vehicles are less expensive to own and operate that conventional internal combustion engines.
a) True b) False

3) An EV only needs one of the following maintenance jobs done. Which is it?
a) Oil change b) Belt replacement
c) New spark plugs d) Brake pad inspections

4) The main sources of electricity for hybrid are _____.
a) Batteries b) Capacitors
c) Both a and b d) None of the above

5) Electric vehicle and hybrid vehicle have following components common except _____.
a) Battery b) ECU
c) Generator d) Internal combustion engine

6) To increase the output voltage, battery cells are connected in _____.
a) Inclined b) Series
c) Parallel d) Series-parallel

7) The voltage generated by an alternator in an automobile is controlled by the _____.

a) brushes
b) rotor
c) starter
d) rotor winding

8) Allow the current to flow from the alternator to the battery but not in the opposite direction by the use of _____.

a) diode
b) triode
c) capacitor
d) insulator

9) In BLDC motor field winding is kept on _____.

a) Stator
b) Rotor
c) Can be placed anywhere
d) Absent

10) Reluctance motor can produce torque at _____.

a) any speed less than synchronous speed
b) synchronous speed only
c) any speed greater than synchronous speed
d) all of the mentioned

SLR-BD-534

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electric Vehicles (BTN06805)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any TWO. **08**

a) State and explain the need of Electric Vehicles.
b) State the basic parts of electric vehicles, and explain anyone.
c) Explain construction and working of Synchronous Reluctance Motors.

Q.3 Attempt any TWO. **12**

a) Explain construction and working of Permanent magnet synchronous Motors.
b) Explain selection criteria of motors for EV's.
c) Write a short note on BLDC.

Section - II

Q.4 Attempt any TWO. **08**

a) What are selection criteria of batteries for EV's.
b) State technical Specification of,
i) Aluminum Air Battery
ii) Lithium ion
c) Explain in detail charger technology used for these batteries.

Q.5 Attempt any TWO. **12**

a) Write short note on Electric Vehicle.
b) State Electric Vehicles Rules Regulations and explain anyone.
c) Which charger technology used for Lead Acid Battery?

SLR-BD-535

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
Electronics & Telecommunication Engineering
Mechatronics (BTN06806)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions. **10**

1) PLC programs written in _____.
a) Ladder diagram b) PLC diagram
c) Multiplexer diagram d) None of above

2) Sensors who requires external power supply is called as _____.
a) Active sensor b) Passive sensor
c) Primary sensors d) Secondary sensors

3) PLC Operates on following signals _____.
a) Digital b) Impulse
c) Analog d) Frequency

4) What are transducers?
a) They convert power from one form to another
b) They convert work from one form to another
c) They convert work to power
d) They convert energy from one form to another

5) Micro-Electro-Mechanical Systems (MEMS) consists of _____.
a) microelectronic elements b) actuators, sensors
c) mechanical structures d) all of the above

6) What is the full form of CNC?
a) Computer numerical control
b) Computer number control
c) Computer network control
d) Computer numbers count

7) Smallest change which a sensor can detect is _____.
a) Resolution b) Accuracy
c) Precision d) Scale

8) A thermocouple is a transducer.
a) Ture b) False

9) The analog to digital conversion in a measurement system takes place inside _____.
a) Transducer b) signal processor
c) display d) led

10) What type of energy conversion does a piezoelectric transducer perform?
a) It converts mechanical energy to sound energy
b) It converts sound energy to mechanical energy
c) It converts mechanical energy to electrical energy
d) It converts electrical energy to mechanical energy

SLR-BD-535

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
Electronics & Telecommunication Engineering
Mechatronics (BTN06806)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve any Two of the Following. **08**

a) Draw & Explain block diagram of mechatronics systems.
b) Draw and describe PLC architecture in detail.
c) Write a Short note on Industry 4.0.

Q.3 Solve any Two of the Following. **12**

a) State Different PLC instruction, and Explain any two Logical Instructions.
b) Compare between PLC & PC Based control systems.
c) Define mechatronics system & Explain Car engine management system.

Section - II

Q.4 Solve any Two of the Following. **08**

a) Compare between sensors & actuators.
b) Write a short note on source current and sink current.
c) Compare Hydraulic and pneumatic actuators.

Q.5 Solve any Two of the Following. **12**

a) Write a note on Variable frequency drive motors.
b) Describe the operation of Gyroscope with Proper diagram. Also State its applications.
c) Explain construction and working of servo motors.

SLR-BD-535

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
Electronics & Telecommunication Engineering
Mechatronics (BTN06806)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions. **10**

1) What is the full form of CNC?
a) Computer numerical control
b) Computer number control
c) Computer network control
d) Computer numbers count

2) Smallest change which a sensor can detect is _____.
a) Resolution b) Accuracy
c) Precision d) Scale

3) A thermocouple is a transducer.
a) Ture b) False

4) The analog to digital conversion in a measurement system takes place inside _____.
a) Transducer b) signal processor
c) display d) led

5) What type of energy conversion does a piezoelectric transducer perform?
a) It converts mechanical energy to sound energy
b) It converts sound energy to mechanical energy
c) It converts mechanical energy to electrical energy
d) It converts electrical energy to mechanical energy

6) PLC programs written in _____.
a) Ladder diagram b) PLC diagram
c) Multiplexer diagram d) None of above

7) Sensors who requires external power supply is called as _____.
a) Active sensor b) Passive sensor
c) Primary sensors d) Secondary sensors

8) PLC Operates on following signals _____.
a) Digital b) Impulse
c) Analog d) Frequency

9) What are transducers?
a) They convert power from one form to another
b) They convert work from one form to another
c) They convert work to power
d) They convert energy from one form to another

10) Micro-Electro-Mechanical Systems (MEMS) consists of _____.
a) microelectronic elements b) actuators, sensors
c) mechanical structures d) all of the above

SLR-BD-535

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
Electronics & Telecommunication Engineering
Mechatronics (BTN06806)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve any Two of the Following. **08**

a) Draw & Explain block diagram of mechatronics systems.
b) Draw and describe PLC architecture in detail.
c) Write a Short note on Industry 4.0.

Q.3 Solve any Two of the Following. **12**

a) State Different PLC instruction, and Explain any two Logical Instructions.
b) Compare between PLC & PC Based control systems.
c) Define mechatronics system & Explain Car engine management system.

Section - II

Q.4 Solve any Two of the Following. **08**

a) Compare between sensors & actuators.
b) Write a short note on source current and sink current.
c) Compare Hydraulic and pneumatic actuators.

Q.5 Solve any Two of the Following. **12**

a) Write a note on Variable frequency drive motors.
b) Describe the operation of Gyroscope with Proper diagram. Also State its applications.
c) Explain construction and working of servo motors.

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
Electronics & Telecommunication Engineering
Mechatronics (BTN06806)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions. **10**

1) The analog to digital conversion in a measurement system takes place inside _____.
a) Transducer b) signal processor
c) display d) led

2) What type of energy conversion does a piezoelectric transducer perform?
a) It converts mechanical energy to sound energy
b) It converts sound energy to mechanical energy
c) It converts mechanical energy to electrical energy
d) It converts electrical energy to mechanical energy

3) PLC programs written in _____.
a) Ladder diagram b) PLC diagram
c) Multiplexer diagram d) None of above

4) Sensors who requires external power supply is called as _____.
a) Active sensor b) Passive sensor
c) Primary sensors d) Secondary sensors

5) PLC Operates on following signals _____.
a) Digital b) Impulse
c) Analog d) Frequency

6) What are transducers?
a) They convert power from one form to another
b) They convert work from one form to another
c) They convert work to power
d) They convert energy from one form to another

7) Micro-Electro-Mechanical Systems (MEMS) consists of _____.
a) microelectronic elements b) actuators, sensors
c) mechanical structures d) all of the above

8) What is the full form of CNC?
a) Computer numerical control
b) Computer number control
c) Computer network control
d) Computer numbers count

9) Smallest change which a sensor can detect is _____.
a) Resolution b) Accuracy
c) Precision d) Scale

10) A thermocouple is a transducer.
a) Ture b) False

SLR-BD-535

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
Electronics & Telecommunication Engineering
Mechatronics (BTN06806)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve any Two of the Following. **08**

a) Draw & Explain block diagram of mechatronics systems.
b) Draw and describe PLC architecture in detail.
c) Write a Short note on Industry 4.0.

Q.3 Solve any Two of the Following. **12**

a) State Different PLC instruction, and Explain any two Logical Instructions.
b) Compare between PLC & PC Based control systems.
c) Define mechatronics system & Explain Car engine management system.

Section - II

Q.4 Solve any Two of the Following. **08**

a) Compare between sensors & actuators.
b) Write a short note on source current and sink current.
c) Compare Hydraulic and pneumatic actuators.

Q.5 Solve any Two of the Following. **12**

a) Write a note on Variable frequency drive motors.
b) Describe the operation of Gyroscope with Proper diagram. Also State its applications.
c) Explain construction and working of servo motors.

SLR-BD-535

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
Electronics & Telecommunication Engineering
Mechatronics (BTN06806)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions. **10**

1) PLC Operates on following signals _____.
a) Digital b) Impulse
c) Analog d) Frequency

2) What are transducers?
a) They convert power from one form to another
b) They convert work from one form to another
c) They convert work to power
d) They convert energy from one form to another

3) Micro-Electro-Mechanical Systems (MEMS) consists of _____.
a) microelectronic elements b) actuators, sensors
c) mechanical structures d) all of the above

4) What is the full form of CNC?
a) Computer numerical control
b) Computer number control
c) Computer network control
d) Computer numbers count

5) Smallest change which a sensor can detect is _____.
a) Resolution b) Accuracy
c) Precision d) Scale

6) A thermocouple is a transducer.
a) Ture b) False

7) The analog to digital conversion in a measurement system takes place inside _____.
a) Transducer b) signal processor
c) display d) led

8) What type of energy conversion does a piezoelectric transducer perform?

a) It converts mechanical energy to sound energy
b) It converts sound energy to mechanical energy
c) It converts mechanical energy to electrical energy
d) It converts electrical energy to mechanical energy

9) PLC programs written in _____.

a) Ladder diagram
b) PLC diagram
c) Multiplexer diagram
d) None of above

10) Sensors who requires external power supply is called as _____.

a) Active sensor
b) Passive sensor
c) Primary sensors
d) Secondary sensors

SLR-BD-535

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
Electronics & Telecommunication Engineering
Mechatronics (BTN06806)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve any Two of the Following. **08**

a) Draw & Explain block diagram of mechatronics systems.
b) Draw and describe PLC architecture in detail.
c) Write a Short note on Industry 4.0.

Q.3 Solve any Two of the Following. **12**

a) State Different PLC instruction, and Explain any two Logical Instructions.
b) Compare between PLC & PC Based control systems.
c) Define mechatronics system & Explain Car engine management system.

Section - II

Q.4 Solve any Two of the Following. **08**

a) Compare between sensors & actuators.
b) Write a short note on source current and sink current.
c) Compare Hydraulic and pneumatic actuators.

Q.5 Solve any Two of the Following. **12**

a) Write a note on Variable frequency drive motors.
b) Describe the operation of Gyroscope with Proper diagram. Also State its applications.
c) Explain construction and working of servo motors.

SLR-BD-536

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Biomedical Instrumentation (BTN06807)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct answer. **10**

1) What is the primary purpose of medical instruments?
a) To diagnose diseases
b) To treat diseases
c) To measure physiological parameters
d) All of the above

2) Which component of a medical instrument converts physical input into an electrical signal?
a) Sensor b) Transducer
c) Display unit d) Power source

3) What is the primary function of the auditory system?
a) Balance b) Vision
c) Hearing d) Smell

4) What is the term used to describe unwanted interference in biomedical signals or images?
a) Noise b) Artifacts
c) Distortion d) Aberration

5) In electroencephalography (EEG), what are the events commonly detected?
a) Heartbeats b) Eye blinks
c) Muscle contractions d) Respiratory cycles

6) What is the primary purpose of data acquisition in biomedical engineering?
a) To analyze data b) To store data
c) To process data d) To collect data

7) Which imaging modality uses ionizing radiation to produce 2D images of internal structures?

a) X-Ray b) MRI
c) Ultrasound d) PET

8) Which imaging modality is commonly used to detect abnormalities in brain activity by measuring changes in blood flow and oxygenation?

a) X-Ray b) MRI
c) fMRI d) PET

9) In PET imaging, what does "PET" stand for?

a) Positron Emission Tomography
b) Proton Excitation Technique
c) Photon Emission Test
d) Positron Electromagnetic Tomography

10) Which of the following is a type of prosthetic device?

a) Insulin pump b) Pacemaker
c) Artificial limb d) X-ray machine

SLR-BD-536

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Biomedical Instrumentation (BTN06807)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any TWO. **08**

a) Discuss the classifications of medical instruments based on their functions and provide examples of each category.
b) Write short note on Biological neurons and different biological systems.
c) Define biomedical signal processing and explain its significance in healthcare and medical research.

Q.3 Attempt any TWO. **12**

a) Explain the challenges encountered in measuring a living system and discuss the crucial role engineers play in addressing these challenges within healthcare facilities.
b) Describe common artifacts found in biomedical images, such as noise, motion artifacts, and imaging artifacts.
c) Discuss the regulation of blood pressure and blood flow by the autonomic nervous system and hormonal factors.

Section - II

Q.4 Attempt any TWO. **08**

a) Define a transducer and explain its role in biomedical signal recording.
b) Describe the fundamental concepts of Computed Tomography (CT) scans and Positron Emission Tomography (PET) in the context of biomedical imaging.
c) Explain the principles of patient monitoring systems used in healthcare settings.

Q.5 Attempt any TWO. **12**

a) Describe common types of electrodes used in biomedical signal recording, including surface electrodes, invasive electrodes, and implantable electrodes.
b) Discuss the significance of clinical laboratory instruments in capturing and analyzing ID biomedical signals.
c) Explain the role of rehabilitation in the recovery process of patients.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Biomedical Instrumentation (BTN06807)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct answer. **10**

1) What is the primary purpose of data acquisition in biomedical engineering?
a) To analyze data b) To store data
c) To process data d) To collect data

2) Which imaging modality uses ionizing radiation to produce 2D images of internal structures?
a) X-Ray b) MRI
c) Ultrasound d) PET

3) Which imaging modality is commonly used to detect abnormalities in brain activity by measuring changes in blood flow and oxygenation?
a) X-Ray b) MRI
c) fMRI d) PET

4) In PET imaging, what does "PET" stand for?
a) Positron Emission Tomography
b) Proton Excitation Technique
c) Photon Emission Test
d) Positron Electromagnetic Tomography

5) Which of the following is a type of prosthetic device?
a) Insulin pump b) Pacemaker
c) Artificial limb d) X-ray machine

6) What is the primary purpose of medical instruments?
a) To diagnose diseases
b) To treat diseases
c) To measure physiological parameters
d) All of the above

7) Which component of a medical instrument converts physical input into an electrical signal?

a) Sensor
b) Transducer
c) Display unit
d) Power source

8) What is the primary function of the auditory system?

a) Balance
b) Vision
c) Hearing
d) Smell

9) What is the term used to describe unwanted interference in biomedical signals or images?

a) Noise
b) Artifacts
c) Distortion
d) Aberration

10) In electroencephalography (EEG), what are the events commonly detected?

a) Heartbeats
b) Eye blinks
c) Muscle contractions
d) Respiratory cycles

SLR-BD-536

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Biomedical Instrumentation (BTN06807)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any TWO. **08**

a) Discuss the classifications of medical instruments based on their functions and provide examples of each category.
b) Write short note on Biological neurons and different biological systems.
c) Define biomedical signal processing and explain its significance in healthcare and medical research.

Q.3 Attempt any TWO. **12**

a) Explain the challenges encountered in measuring a living system and discuss the crucial role engineers play in addressing these challenges within healthcare facilities.
b) Describe common artifacts found in biomedical images, such as noise, motion artifacts, and imaging artifacts.
c) Discuss the regulation of blood pressure and blood flow by the autonomic nervous system and hormonal factors.

Section - II

Q.4 Attempt any TWO. **08**

a) Define a transducer and explain its role in biomedical signal recording.
b) Describe the fundamental concepts of Computed Tomography (CT) scans and Positron Emission Tomography (PET) in the context of biomedical imaging.
c) Explain the principles of patient monitoring systems used in healthcare settings.

Q.5 Attempt any TWO. **12**

a) Describe common types of electrodes used in biomedical signal recording, including surface electrodes, invasive electrodes, and implantable electrodes.
b) Discuss the significance of clinical laboratory instruments in capturing and analyzing ID biomedical signals.
c) Explain the role of rehabilitation in the recovery process of patients.

SLR-BD-536

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Biomedical Instrumentation (BTN06807)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct answer. **10**

1) In PET imaging, what does "PET" stand for?
a) Positron Emission Tomography
b) Proton Excitation Technique
c) Photon Emission Test
d) Positron Electromagnetic Tomography

2) Which of the following is a type of prosthetic device?
a) Insulin pump b) Pacemaker
c) Artificial limb d) X-ray machine

3) What is the primary purpose of medical instruments?
a) To diagnose diseases
b) To treat diseases
c) To measure physiological parameters
d) All of the above

4) Which component of a medical instrument converts physical input into an electrical signal?
a) Sensor b) Transducer
c) Display unit d) Power source

5) What is the primary function of the auditory system?
a) Balance b) Vision
c) Hearing d) Smell

6) What is the term used to describe unwanted interference in biomedical signals or images?
a) Noise b) Artifacts
c) Distortion d) Aberration

7) In electroencephalography (EEG), what are the events commonly detected?

a) Heartbeats b) Eye blinks
c) Muscle contractions d) Respiratory cycles

8) What is the primary purpose of data acquisition in biomedical engineering?

a) To analyze data b) To store data
c) To process data d) To collect data

9) Which imaging modality uses ionizing radiation to produce 2D images of internal structures?

a) X-Ray b) MRI
c) Ultrasound d) PET

10) Which imaging modality is commonly used to detect abnormalities in brain activity by measuring changes in blood flow and oxygenation?

a) X-Ray b) MRI
c) fMRI d) PET

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Biomedical Instrumentation (BTN06807)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any TWO. **08**

a) Discuss the classifications of medical instruments based on their functions and provide examples of each category.
b) Write short note on Biological neurons and different biological systems.
c) Define biomedical signal processing and explain its significance in healthcare and medical research.

Q.3 Attempt any TWO. **12**

a) Explain the challenges encountered in measuring a living system and discuss the crucial role engineers play in addressing these challenges within healthcare facilities.
b) Describe common artifacts found in biomedical images, such as noise, motion artifacts, and imaging artifacts.
c) Discuss the regulation of blood pressure and blood flow by the autonomic nervous system and hormonal factors.

Section - II

Q.4 Attempt any TWO. **08**

a) Define a transducer and explain its role in biomedical signal recording.
b) Describe the fundamental concepts of Computed Tomography (CT) scans and Positron Emission Tomography (PET) in the context of biomedical imaging.
c) Explain the principles of patient monitoring systems used in healthcare settings.

Q.5 Attempt any TWO. **12**

a) Describe common types of electrodes used in biomedical signal recording, including surface electrodes, invasive electrodes, and implantable electrodes.
b) Discuss the significance of clinical laboratory instruments in capturing and analyzing ID biomedical signals.
c) Explain the role of rehabilitation in the recovery process of patients.

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Biomedical Instrumentation (BTN06807)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 05:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct answer. **10**

1) What is the primary function of the auditory system?
a) Balance b) Vision
c) Hearing d) Smell

2) What is the term used to describe unwanted interference in biomedical signals or images?
a) Noise b) Artifacts
c) Distortion d) Aberration

3) In electroencephalography (EEG), what are the events commonly detected?
a) Heartbeats b) Eye blinks
c) Muscle contractions d) Respiratory cycles

4) What is the primary purpose of data acquisition in biomedical engineering?
a) To analyze data b) To store data
c) To process data d) To collect data

5) Which imaging modality uses ionizing radiation to produce 2D images of internal structures?
a) X-Ray b) MRI
c) Ultrasound d) PET

6) Which imaging modality is commonly used to detect abnormalities in brain activity by measuring changes in blood flow and oxygenation?
a) X-Ray b) MRI
c) fMRI d) PET

7) In PET imaging, what does "PET" stand for?
a) Positron Emission Tomography
b) Proton Excitation Technique
c) Photon Emission Test
d) Positron Electromagnetic Tomography

8) Which of the following is a type of prosthetic device?
a) Insulin pump b) Pacemaker
c) Artificial limb d) X-ray machine

9) What is the primary purpose of medical instruments?
a) To diagnose diseases
b) To treat diseases
c) To measure physiological parameters
d) All of the above

10) Which component of a medical instrument converts physical input into an electrical signal?
a) Sensor b) Transducer
c) Display unit d) Power source

SLR-BD-536

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Biomedical Instrumentation (BTN06807)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any TWO. **08**

a) Discuss the classifications of medical instruments based on their functions and provide examples of each category.
b) Write short note on Biological neurons and different biological systems.
c) Define biomedical signal processing and explain its significance in healthcare and medical research.

Q.3 Attempt any TWO. **12**

a) Explain the challenges encountered in measuring a living system and discuss the crucial role engineers play in addressing these challenges within healthcare facilities.
b) Describe common artifacts found in biomedical images, such as noise, motion artifacts, and imaging artifacts.
c) Discuss the regulation of blood pressure and blood flow by the autonomic nervous system and hormonal factors.

Section - II

Q.4 Attempt any TWO. **08**

a) Define a transducer and explain its role in biomedical signal recording.
b) Describe the fundamental concepts of Computed Tomography (CT) scans and Positron Emission Tomography (PET) in the context of biomedical imaging.
c) Explain the principles of patient monitoring systems used in healthcare settings.

Q.5 Attempt any TWO. **12**

a) Describe common types of electrodes used in biomedical signal recording, including surface electrodes, invasive electrodes, and implantable electrodes.
b) Discuss the significance of clinical laboratory instruments in capturing and analyzing ID biomedical signals.
c) Explain the role of rehabilitation in the recovery process of patients.

Seat No.	

Set P

T.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Power System - III (BTN07501)

Day & Date: Saturday, 17-May-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the Correct Alternatives from the Options and Rewrite the Sentence. **14**

1) Reactance diagram contains which of the following?
a) Resistance of Alternator
b) Resistance of transformer winding
c) Induction motor's equivalent circuit
d) Inductive reactance of transmission lines

2) Impedance diagram is used for analysis of _____.
a) Load flow b) Alternator
c) Fault d) Transmission Line

3) Fault level means _____.
a) Voltage at the point of fault b) fault current
c) Fault power factor d) fault MVA

4) The magnitude of p.u impedance of a transformer determined from the HT side and LT side of transformer are _____.
a) Unequal b) Equal
c) Depends on the turns ratio d) None of above

5) The most common buses in power system are _____.
a) slack bus b) generator bus
c) load bus d) a and b

6) A transformer rated at 11KV/0.4 KV, 500 KVA, 5% Reactance. What is the Shirt Circuit MVA of transformer when it is connected to infinite bus?
a) 15 MVA b) 5MVA
c) 10MVA d) 20 MVA

7) _____ is a series type unbalanced faults occurs in power system.
a) L-L
b) L-L-G
c) L-L-L
d) Open Conductor Fault

8) Which among the following quantities are specified at the generator Bus?
a) P & Q
b) P & |V|
c) Q & |V|
d) P & δ

9) The three phase SC MVA to be interrupted by a circuit breaker in a power system is given by _____.
a) $\sqrt{3}$ x post fault line voltage in kV x SC current in kA
b) 3 x pre fault line voltage in kV x SC current in kA
c) $\sqrt{3}$ x pre fault line voltage in kV x SC current in kA
d) $(1/\sqrt{3})$ x pre fault line voltage in kV x SC current in kA

10) Under line to line fault zero sequence component of fault current will be _____.
a) Very Large
b) Zero
c) Negligible
d) Both b & c

11) In load flow studies of a power system, a voltage control bus is specified by _____.
a) Real power and reactive power
b) Reactive power and voltage magnitude
c) Voltage and voltage phase angle
d) Real power and voltage magnitude

12) What is the value of $(1 + a + a2)$?
a) ∞
b) 1
c) -1
d) 0

13) What are the common assumptions made for the equal area criterion?
a) The transmission line and machine resistances are neglected.
b) Rotor speed of the machine is constant
c) Mechanical input remains constant.
d) All of these
e) None of these

14) Equal area criterion is used to study _____.
a) Load flow analysis
b) fault analysis
c) stability analysis
d) none of these

Seat No.	

Set **P**

T.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Power System - III (BTN07501)

Day & Date: Saturday, 17-May-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

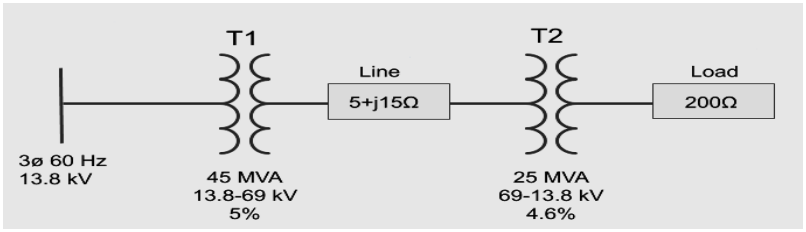
Section – I

Q.2 Attempt any four. **16**

a) Explain Per Unit System with Merits and Demerits.

b) G: 300MVA, 20kV, X"=1.2 Ω
T1: 350MVA, 230V Y/20kV Δ, X=15.2 Ω/ph
T2: 300MVA, 230V Y/13.2kV Δ, X=16 Ω/ph
TL: l=64km, XTL= 0.5 Ω /km
M1: 200MVA, 13.2kV, X"=1.6 Ω
M2: 100MVA, 13.2kV, X"= 1.6 Ω
Draw the Single line diagram for above data

c) Calculate Per Unit Impedance line and per unit impedance of load. If base impedance for line is 115.8 Ω and base impedance for load is 5.232 Ω.



d) With the help of sample power system, describe step by step method for formation of Y bus using inspection method.

e) Write short note on selection of circuit breaker.

Q.3 Attempt any two. **12**

a) Describe any two methods of short circuit current control with neat circuit diagram also state merits and demerits of each.

b) The primary and secondary sides of a single phase 1 MVA, 4kV / 2kV transformer have a leakage reactance of 2 Ω each. Find the p.u reactance of the transformer referred to the primary and secondary side.

c) Explain how an unbalanced set of three phase voltages (Va, Vb, Vc,) can be represented by three sets of symmetrical components (Va1, Va2, Va0).

Section – II

Q.4 Attempt any four. **16**

a) Derive power flow equation in rectangular form for the load flow analysis.

b) Explain rotor dynamics and derive expression for swing equation.

c) Describe various types of buses in power system and their significance in brief.

d) Explain with sequence network various open conductor fault on power system.

e) Derive an expression for single line to ground fault on an unloaded synchronous generator.

Q.5 Attempt any two. **12**

a) Derive the necessary equation to determine the fault current for single line to ground fault. Draw a diagram showing the interconnections of sequence networks.

b) Derive an expression for load flow analysis by Gauss-Siedel method.

c) State Equal Area Criterion (EAC). What are the assumptions made in applying EAC? Discuss its applications.

Seat No.	

Set Q

T.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Power System - III (BTN07501)

Day & Date: Saturday, 17-May-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the Correct Alternatives from the Options and Rewrite the Sentence. **14**

1) Which among the following quantities are specified at the generator Bus?
a) P & Q b) P & |V|
c) Q & |V| d) P & δ

2) The three phase SC MVA to be interrupted by a circuit breaker in a power system is given by _____.
a) $\sqrt{3}$ x post fault line voltage in kV x SC current in kA
b) 3 x pre fault line voltage in kV x SC current in kA
c) $\sqrt{3}$ x pre fault line voltage in kV x SC current in kA
d) $(1/\sqrt{3})$ x pre fault line voltage in kV x SC current in kA

3) Under line to line fault zero sequence component of fault current will be _____.
a) Very Large b) Zero
c) Negligible d) Both b & c

4) In load flow studies of a power system, a voltage control bus is specified by _____.
a) Real power and reactive power
b) Reactive power and voltage magnitude
c) Voltage and voltage phase angle
d) Real power and voltage magnitude

5) What is the value of $(1 + a + a2)$?
a) ∞ b) 1
c) -1 d) 0

6) What are the common assumptions made for the equal area criterion?
a) The transmission line and machine resistances are neglected.
b) Rotor speed of the machine is constant
c) Mechanical input remains constant.
d) All of these
e) None of these

7) Equal area criterion is used to study _____.
a) Load flow analysis b) fault analysis
c) stability analysis d) none of these

8) Reactance diagram contains which of the following?
a) Resistance of Alternator
b) Resistance of transformer winding
c) Induction motor's equivalent circuit
d) Inductive reactance of transmission lines

9) Impedance diagram is used for analysis of _____.
a) Load flow b) Alternator
c) Fault d) Transmission Line

10) Fault level means _____.
a) Voltage at the point of fault b) fault current
c) Fault power factor d) fault MVA

11) The magnitude of p.u impedance of a transformer determined from the HT side and LT side of transformer are _____.
a) Unequal b) Equal
c) Depends on the turns ratio d) None of above

12) The most common buses in power system are _____.
a) slack bus b) generator bus
c) load bus d) a and b

13) A transformer rated at 11KV/0.4 KV, 500 KVA, 5% Reactance. What is the Shirt Circuit MVA of transformer when it is connected to infinite bus?
a) 15 MVA b) 5MVA
c) 10MVA d) 20 MVA

14) _____ is a series type unbalanced faults occurs in power system.
a) L-L b) L-L-G
c) L-L-L d) Open Conductor Fault

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Power System - III (BTN07501)

Day & Date: Saturday, 17-May-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

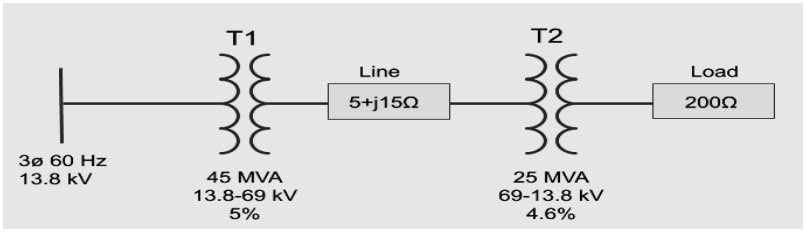
Section – I

Q.2 Attempt any four. **16**

a) Explain Per Unit System with Merits and Demerits.

b) G: 300MVA, 20kV, X"=1.2 Ω
T1: 350MVA, 230V Y/20kV Δ, X=15.2 Ω/ph
T2: 300MVA, 230V Y/13.2kV Δ, X=16 Ω/ph
TL: l=64km, XTL= 0.5 Ω /km
M1: 200MVA, 13.2kV, X"=1.6 Ω
M2: 100MVA, 13.2kV, X"= 1.6 Ω
Draw the Single line diagram for above data

c) Calculate Per Unit Impedance line and per unit impedance of load. If base impedance for line is 115.8 Ω and base impedance for load is 5.232 Ω.



d) With the help of sample power system, describe step by step method for formation of Y bus using inspection method.

e) Write short note on selection of circuit breaker.

Q.3 Attempt any two. **12**

a) Describe any two methods of short circuit current control with neat circuit diagram also state merits and demerits of each.

b) The primary and secondary sides of a single phase 1 MVA, 4kV / 2kV transformer have a leakage reactance of 2 Ω each. Find the p.u reactance of the transformer referred to the primary and secondary side.

c) Explain how an unbalanced set of three phase voltages (Va, Vb, Vc,) can be represented by three sets of symmetrical components (Va1, Va2, Va0).

Section – II

Q.4 Attempt any four. **16**

a) Derive power flow equation in rectangular form for the load flow analysis.

b) Explain rotor dynamics and derive expression for swing equation.

c) Describe various types of buses in power system and their significance in brief.

d) Explain with sequence network various open conductor fault on power system.

e) Derive an expression for single line to ground fault on an unloaded synchronous generator.

Q.5 Attempt any two. **12**

a) Derive the necessary equation to determine the fault current for single line to ground fault. Draw a diagram showing the interconnections of sequence networks.

b) Derive an expression for load flow analysis by Gauss-Siedel method.

c) State Equal Area Criterion (EAC). What are the assumptions made in applying EAC? Discuss its applications.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Power System - III (BTN07501)

Day & Date: Saturday, 17-May-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the Correct Alternatives from the Options and Rewrite the Sentence. **14**

1) In load flow studies of a power system, a voltage control bus is specified by _____.
a) Real power and reactive power
b) Reactive power and voltage magnitude
c) Voltage and voltage phase angle
d) Real power and voltage magnitude

2) What is the value of $(1 + a + a2)$?
a) ∞ b) 1
c) -1 d) 0

3) What are the common assumptions made for the equal area criterion?
a) The transmission line and machine resistances are neglected.
b) Rotor speed of the machine is constant
c) Mechanical input remains constant.
d) All of these
e) None of these

4) Equal area criterion is used to study _____.
a) Load flow analysis b) fault analysis
c) stability analysis d) none of these

5) Reactance diagram contains which of the following?
a) Resistance of Alternator
b) Resistance of transformer winding
c) Induction motor's equivalent circuit
d) Inductive reactance of transmission lines

6) Impedance diagram is used for analysis of _____.
a) Load flow b) Alternator
c) Fault d) Transmission Line

7) Fault level means _____.
a) Voltage at the point of fault b) fault current
c) Fault power factor d) fault MVA

8) The magnitude of p.u impedance of a transformer determined from the HT side and LT side of transformer are _____.
a) Unequal b) Equal
c) Depends on the turns ratio d) None of above

9) The most common buses in power system are _____.
a) slack bus b) generator bus
c) load bus d) a and b

10) A transformer rated at 11KV/0.4 KV, 500 KVA, 5% Reactance. What is the Shirt Circuit MVA of transformer when it is connected to infinite bus?
a) 15 MVA b) 5MVA
c) 10MVA d) 20 MVA

11) _____ is a series type unbalanced faults occurs in power system.
a) L-L b) L-L-G
c) L-L-L d) Open Conductor Fault

12) Which among the following quantities are specified at the generator Bus?
a) P & Q b) P & |V|
c) Q & |V| d) P & δ

13) The three phase SC MVA to be interrupted by a circuit breaker in a power system is given by _____.
a) $\sqrt{3}$ x post fault line voltage in kV x SC current in kA
b) 3 x pre fault line voltage in kV x SC current in kA
c) $\sqrt{3}$ x pre fault line voltage in kV x SC current in kA
d) $(1/\sqrt{3})$ x pre fault line voltage in kV x SC current in kA

14) Under line to line fault zero sequence component of fault current will be _____.
a) Very Large b) Zero
c) Negligible d) Both b & c

Seat No.	

Set **R**

T.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Power System - III (BTN07501)

Day & Date: Saturday, 17-May-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

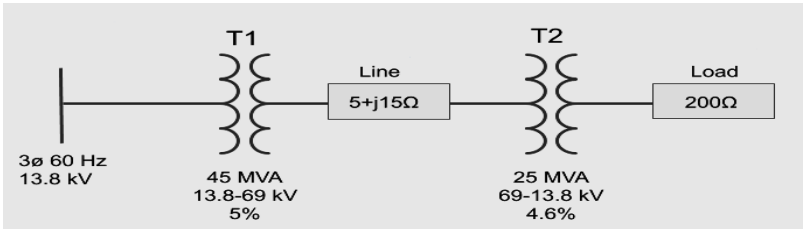
Section – I

Q.2 Attempt any four. **16**

a) Explain Per Unit System with Merits and Demerits.

b) G: 300MVA, 20kV, X"=1.2 Ω
T1: 350MVA, 230V Y/20kV Δ, X=15.2 Ω/ph
T2: 300MVA, 230V Y/13.2kV Δ, X=16 Ω/ph
TL: l=64km, XTL= 0.5 Ω /km
M1: 200MVA, 13.2kV, X"=1.6 Ω
M2: 100MVA, 13.2kV, X"= 1.6 Ω
Draw the Single line diagram for above data

c) Calculate Per Unit Impedance line and per unit impedance of load. If base impedance for line is 115.8 Ω and base impedance for load is 5.232 Ω.



d) With the help of sample power system, describe step by step method for formation of Y bus using inspection method.

e) Write short note on selection of circuit breaker.

Q.3 Attempt any two. **12**

a) Describe any two methods of short circuit current control with neat circuit diagram also state merits and demerits of each.

b) The primary and secondary sides of a single phase 1 MVA, 4kV / 2kV transformer have a leakage reactance of 2 Ω each. Find the p.u reactance of the transformer referred to the primary and secondary side.

c) Explain how an unbalanced set of three phase voltages (Va, Vb, Vc,) can be represented by three sets of symmetrical components (Va1, Va2, Va0).

Section – II

Q.4 Attempt any four. **16**

a) Derive power flow equation in rectangular form for the load flow analysis.

b) Explain rotor dynamics and derive expression for swing equation.

c) Describe various types of buses in power system and their significance in brief.

d) Explain with sequence network various open conductor fault on power system.

e) Derive an expression for single line to ground fault on an unloaded synchronous generator.

Q.5 Attempt any two. **12**

a) Derive the necessary equation to determine the fault current for single line to ground fault. Draw a diagram showing the interconnections of sequence networks.

b) Derive an expression for load flow analysis by Gauss-Siedel method.

c) State Equal Area Criterion (EAC). What are the assumptions made in applying EAC? Discuss its applications.

Seat No.	

Set **S**

T.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Power System - III (BTN07501)

Day & Date: Saturday, 17-May-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the Correct Alternatives from the Options and Rewrite the Sentence. 14

1) A transformer rated at 11KV/0.4 KV, 500 KVA, 5% Reactance. What is the Shirt Circuit MVA of transformer when it is connected to infinite bus?
a) 15 MVA b) 5MVA
c) 10MVA d) 20 MVA

2) _____ is a series type unbalanced faults occurs in power system.
a) L-L b) L-L-G
c) L-L-L d) Open Conductor Fault

3) Which among the following quantities are specified at the generator Bus?
a) P & Q b) P & |V|
c) Q & |V| d) P & δ

4) The three phase SC MVA to be interrupted by a circuit breaker in a power system is given by _____.
a) $\sqrt{3}$ x post fault line voltage in kV x SC current in kA
b) 3 x pre fault line voltage in kV x SC current in kA
c) $\sqrt{3}$ x pre fault line voltage in kV x SC current in kA
d) $(1/\sqrt{3})$ x pre fault line voltage in kV x SC current in kA

5) Under line to line fault zero sequence component of fault current will be _____.
a) Very Large b) Zero
c) Negligible d) Both b & c

6) In load flow studies of a power system, a voltage control bus is specified by _____.
a) Real power and reactive power
b) Reactive power and voltage magnitude
c) Voltage and voltage phase angle
d) Real power and voltage magnitude

7) What is the value of $(1 + a + a2)$?
a) ∞ b) 1
c) -1 d) 0

8) What are the common assumptions made for the equal area criterion?
a) The transmission line and machine resistances are neglected.
b) Rotor speed of the machine is constant
c) Mechanical input remains constant.
d) All of these
e) None of these

9) Equal area criterion is used to study _____.
a) Load flow analysis b) fault analysis
c) stability analysis d) none of these

10) Reactance diagram contains which of the following?
a) Resistance of Alternator
b) Resistance of transformer winding
c) Induction motor's equivalent circuit
d) Inductive reactance of transmission lines

11) Impedance diagram is used for analysis of _____.
a) Load flow b) Alternator
c) Fault d) Transmission Line

12) Fault level means _____.
a) Voltage at the point of fault b) fault current
c) Fault power factor d) fault MVA

13) The magnitude of p.u impedance of a transformer determined from the HT side and LT side of transformer are _____.
a) Unequal b) Equal
c) Depends on the turns ratio d) None of above

14) The most common buses in power system are _____.
a) slack bus b) generator bus
c) load bus d) a and b

Seat No.	

Set **S**

T.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (CBCS)
Examination: March/April - 2025
Power System - III (BTN07501)

Day & Date: Saturday, 17-May-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

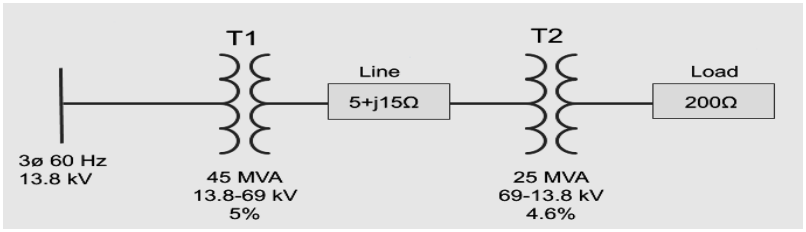
Section – I

Q.2 Attempt any four. **16**

a) Explain Per Unit System with Merits and Demerits.

b) G: 300MVA, 20kV, X"=1.2 Ω
T1: 350MVA, 230V Y/20kV Δ, X=15.2 Ω/ph
T2: 300MVA, 230V Y/13.2kV Δ, X=16 Ω/ph
TL: l=64km, XTL= 0.5 Ω /km
M1: 200MVA, 13.2kV, X"=1.6 Ω
M2: 100MVA, 13.2kV, X"= 1.6 Ω
Draw the Single line diagram for above data

c) Calculate Per Unit Impedance line and per unit impedance of load. If base impedance for line is 115.8 Ω and base impedance for load is 5.232 Ω.



d) With the help of sample power system, describe step by step method for formation of Y bus using inspection method.

e) Write short note on selection of circuit breaker.

Q.3 Attempt any two. **12**

a) Describe any two methods of short circuit current control with neat circuit diagram also state merits and demerits of each.

b) The primary and secondary sides of a single phase 1 MVA, 4kV / 2kV transformer have a leakage reactance of 2 Ω each. Find the p.u reactance of the transformer referred to the primary and secondary side.

c) Explain how an unbalanced set of three phase voltages (Va, Vb, Vc,) can be represented by three sets of symmetrical components (Va1, Va2, Va0).

Section – II

Q.4 Attempt any four. **16**

a) Derive power flow equation in rectangular form for the load flow analysis.

b) Explain rotor dynamics and derive expression for swing equation.

c) Describe various types of buses in power system and their significance in brief.

d) Explain with sequence network various open conductor fault on power system.

e) Derive an expression for single line to ground fault on an unloaded synchronous generator.

Q.5 Attempt any two. **12**

a) Derive the necessary equation to determine the fault current for single line to ground fault. Draw a diagram showing the interconnections of sequence networks.

b) Derive an expression for load flow analysis by Gauss-Siedel method.

c) State Equal Area Criterion (EAC). What are the assumptions made in applying EAC? Discuss its applications.

SLR-BD-580

Seat No.		Set	P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Linear Control Systems (BTN07502)

Day & Date: Monday, 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) ____ has tendency to oscillate.
a) Open loop system b) Closed loop system
c) Both (a) and (b) d) Neither (a) nor (b)

2) By which of the following the control action is determined when a man walks along a path?
a) Brain b) Hands
c) Legs d) Eyes

3) Zero initial condition for a system means ____.
a) input reference signal is zero
b) zero stored energy
c) ne initial movement of moving parts
d) system is at rest and no energy is stored in any of its components

4) The capacitance, in force-current analogy, is analogous to ____
a) Momentum b) Velocity
c) Displacement d) Mass

5) The viscous friction co-efficient, in force-voltage analogy, is analogous to ____.
a) charge b) resistance
c) reciprocal of inductance d) reciprocal of conductance

6) In a signal flow graph method, how is an overall transfer function of a system obtained?
a) Poisson's equation
b) Block diagram reduction rules
c) Mason's equation
d) Lagrange's equation

7) Associative law for summing point is applicable only to those summing points which are ____ connected to each other.
a) Directly b) Indirectly
c) Orthogonally d) Diagonally

8) The transient response of a system is mainly due to ____.
a) inertia forces b) internal focus
c) stored energy d) friction

9) In case of type-1 system state acceleration is ____.
a) Unity b) Infinity
c) Zero d) 10

10) According to the property of impulse test signal, what is the value of an impulse at t=0?
a) Zero b) Unity
c) Infinite d) Unpredictable

11) Root locus specifies the movement of closed loop poles especially when the gain of system ____.
a) Remains constant b) Exhibit variations
c) Gives zero feedback d) Gives infinite poles

12) Which unit is adopted for magnitude measurement in Bode plots?
a) Degree b) Decimal
c) Decibel d) Deviation

13) What should be the nature of root locus about the real axis?
a) Asymmetric b) Symmetric
c) Exponential d) Decaying

14) If a pole is located at origin, how does it get represented on the magnitude plot?
a) -10 log (ω) dB b) -20 log (ω) dB
c) -40 log (ω) dB d) -60 log (ω) dB

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Linear Control Systems (BTN07502)

Day & Date: Monday, 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

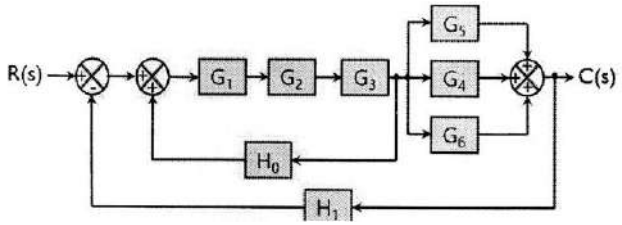
Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of no-programmable calculator is allowed.

Section – I

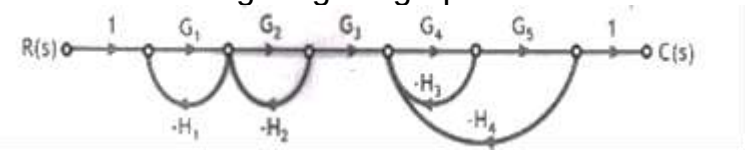
Q.2 Attempt the following questions: (Any Four) **16**

a) What is control system? Explain open loop and closed loop control system with their advantages and disadvantages.

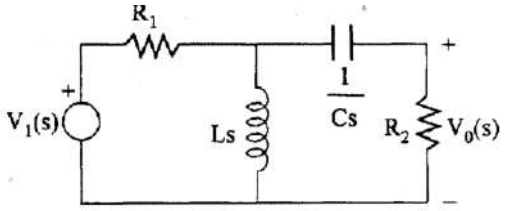
b) Reduce the block diagram using reduction rules and obtain C(s)/R(s)



c) Find C/R for the signal glow graph shown below



d) Find the transfer function $V_0(s)\ /V_i(s)$ of the following electrical system.

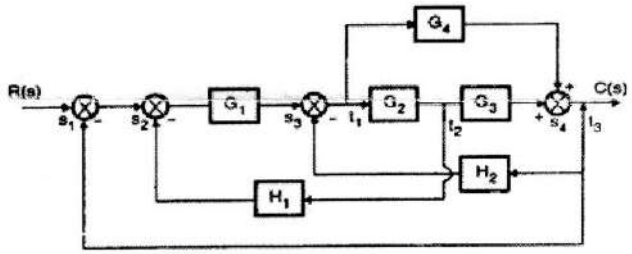


e) The TF of a system is given by T(s)= $\frac{K\,(s+6)}{s(s+2)\,(s^2+7s+16)}$ Determine:

a) Poles
b) Zeros
c) Characteristic equation
d) Pole Zero Plot in s-plane

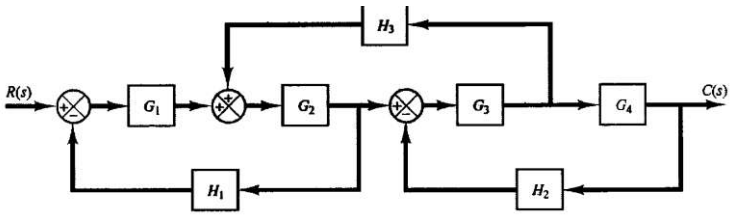
Q.3 **a)** Derive the transfer function of armature-controlled DC servomotor. **06**

b) Determine the TF C(s)/R(s), for the block diagram shown by first drawing its Signal Flow Graph and then using Mason's Gain Formula. **06**



OR

c) Determine the overall transfer function C(s)/R(s) from the Block Diagram. **06**



Section – II

Q.4 **Answer the following: (Any Four)** **16**

a) For a unity feedback system with open loop transfer function $G(s)\frac{20}{s(s+1)}$. Determine the damping ratio, maximum overshoot, rise time and peak time.

b) How to find the centroid and the angle of asymptotes for root locus technique.

c) Determine the range of K to analyze stability of a unity-feedback control system whose open-loop transfer function is $G(s) = \frac{K}{s(s+)(s+2)}$.

d) Derive the rise time and peak overshoot for a second order underdamped system with unit step input.

e) Explain the correlation between time domain and frequency domain.

Q.5 **Answer the following: (Any Two)** **12**

a) Sketch the root locus and evaluate stability of the system given by $G\ (s)\ = \frac{K}{s(s+0.5)(s^2+0.6s+10)}$

b) Sketch the Bode Plot for the system with TF given by $G(s) = \frac{4}{s(s+1)(s+2)}$ and hence determine the gain margin and the phase margin of the system.

c) The open loop transfer function of the systems is given as $G(s) = \frac{2}{s(s+4)(s+6)}$. Determine respectively the positional, velocity and acceleration error constants for these systems. Also, determine the steady state errors with step input r(t) = u(t), ramp input r(t) = t and acceleration input r(t) = (1/2)t^2

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Linear Control Systems (BTN07502)

Day & Date: Monday, 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The transient response of a system is mainly due to ____.
a) inertia forces b) internal focus
c) stored energy d) friction

2) In case of type-1 system state acceleration is ____.
a) Unity b) Infinity
c) Zero d) 10

3) According to the property of impulse test signal, what is the value of an impulse at t=0?
a) Zero b) Unity
c) Infinite d) Unpredictable

4) Root locus specifies the movement of closed loop poles especially when the gain of system ____.
a) Remains constant b) Exhibit variations
c) Gives zero feedback d) Gives infinite poles

5) Which unit is adopted for magnitude measurement in Bode plots?
a) Degree b) Decimal
c) Decibel d) Deviation

6) What should be the nature of root locus about the real axis?
a) Asymmetric b) Symmetric
c) Exponential d) Decaying

7) If a pole is located at origin, how does it get represented on the magnitude plot?

a) -10 log (ω) dB
b) -20 log (ω) dB
c) -40 log (ω) dB
d) -60 log (ω) dB

8) ____ has tendency to oscillate.

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9) By which of the following the control action is determined when a man walks along a path?

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c) Legs
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10) Zero initial condition for a system means ____.

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a) Directly
b) Indirectly
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Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Linear Control Systems (BTN07502)

Day & Date: Monday, 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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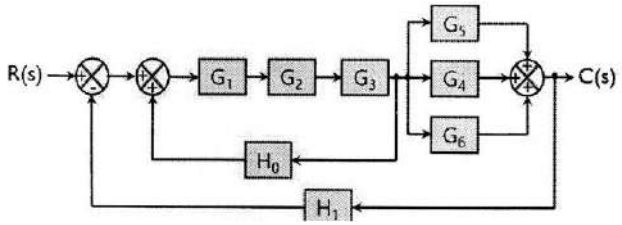
Section – I

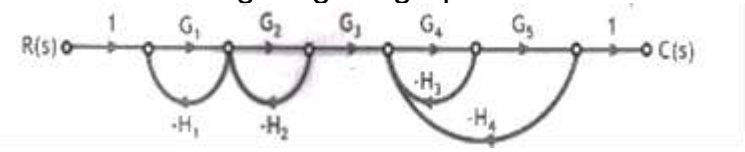
Q.2 Attempt the following questions: (Any Four) **16**

a) What is control system? Explain open loop and closed loop control system with their advantages and disadvantages.

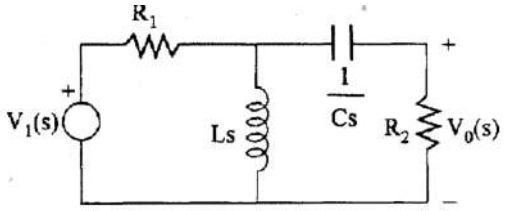
b) Reduce the block diagram using reduction rules and obtain C(s)/R(s)



c) Find C/R for the signal glow graph shown below



d) Find the transfer function $V_0(s)\ /V_i(s)$ of the following electrical system.



e) The TF of a system is given by T(s)= $\frac{K\,(s+6)}{s(s+2)\,(s^2+7s+16)}$ Determine:

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Q.3 **a)** Derive the transfer function of armature-controlled DC servomotor. **06**

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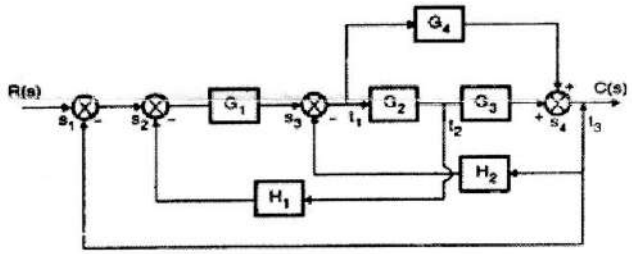

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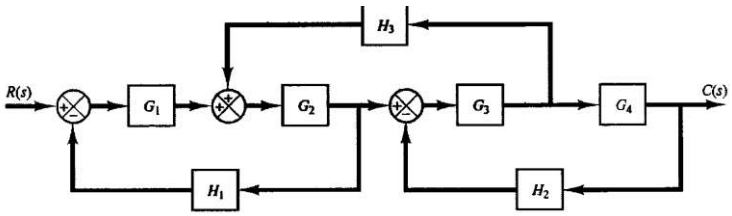

Section – II

Q.4 **Answer the following: (Any Four)** **16**

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c) Determine the range of K to analyze stability of a unity-feedback control system whose open-loop transfer function is $G(s) = \frac{K}{s(s+)(s+2)}$.

d) Derive the rise time and peak overshoot for a second order underdamped system with unit step input.

e) Explain the correlation between time domain and frequency domain.

Q.5 **Answer the following: (Any Two)** **12**

a) Sketch the root locus and evaluate stability of the system given by $G\ (s)\ = \frac{K}{s(s+0.5)(s^2+0.6s+10)}$

b) Sketch the Bode Plot for the system with TF given by $G(s) = \frac{4}{s(s+1)(s+2)}$ and hence determine the gain margin and the phase margin of the system.

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Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Linear Control Systems (BTN07502)

Day & Date: Monday, 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Assume suitable data if necessary.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Root locus specifies the movement of closed loop poles especially when the gain of system ____.
a) Remains constant b) Exhibit variations
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2) Which unit is adopted for magnitude measurement in Bode plots?
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4) If a pole is located at origin, how does it get represented on the magnitude plot?
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c) -40 log (ω) dB d) -60 log (ω) dB

5) ____ has tendency to oscillate.
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6) By which of the following the control action is determined when a man walks along a path?
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7) Zero initial condition for a system means ____.
a) input reference signal is zero
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9) The viscous friction co-efficient, in force-voltage analogy, is analogous to ____.
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10) In a signal flow graph method, how is an overall transfer function of a system obtained?
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13) In case of type-1 system state acceleration is ____.
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14) According to the property of impulse test signal, what is the value of an impulse at t=0?
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Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Linear Control Systems (BTN07502)

Day & Date: Monday, 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt the following questions: (Any Four) **16**

a) What is control system? Explain open loop and closed loop control system with their advantages and disadvantages.

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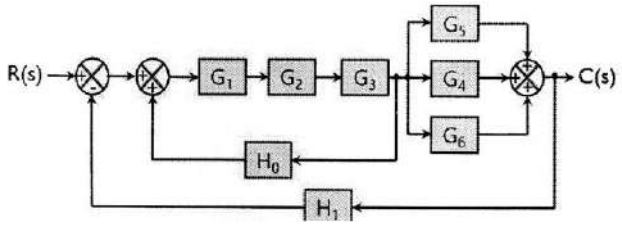

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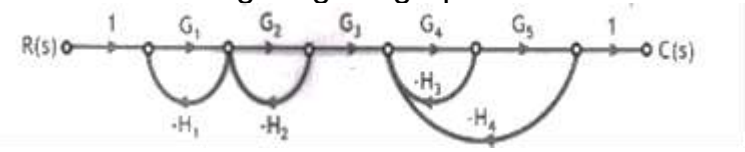
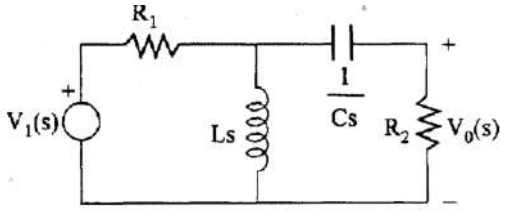


d) Find the transfer function $V_0(s)\ /V_i(s)$ of the following electrical system.



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Q.3 **a)** Derive the transfer function of armature-controlled DC servomotor. **06**

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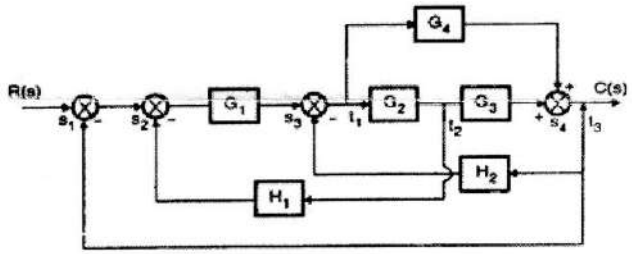

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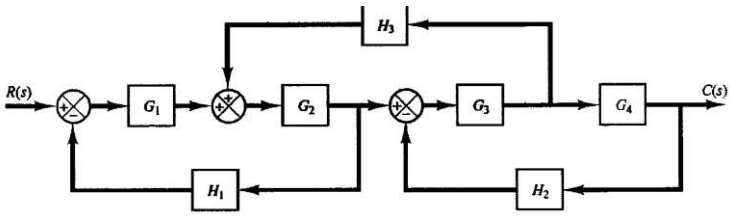
c) Determine the overall transfer function C(s)/R(s) from the Block Diagram. **06**



Section – II

Q.4 **Answer the following: (Any Four)** **16**

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SLR-BD-580

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Linear Control Systems (BTN07502)

Day & Date: Monday, 19-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

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

1) In a signal flow graph method, how is an overall transfer function of a system obtained?
a) Poisson's equation
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9) If a pole is located at origin, how does it get represented on the magnitude plot?
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10) ____ has tendency to oscillate.
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Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Linear Control Systems (BTN07502)

Day & Date: Monday, 19-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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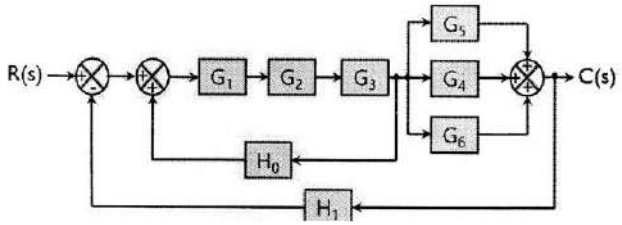
Section – I

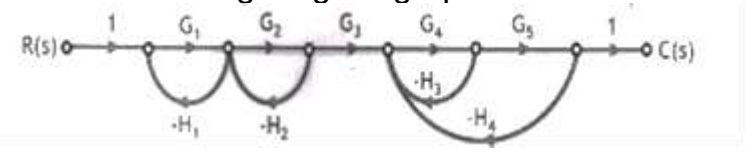
Q.2 Attempt the following questions: (Any Four) **16**

a) What is control system? Explain open loop and closed loop control system with their advantages and disadvantages.

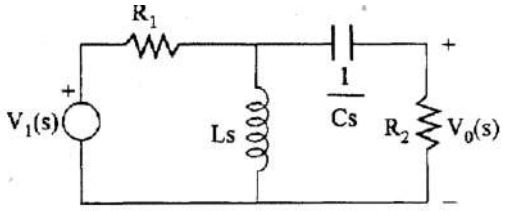
b) Reduce the block diagram using reduction rules and obtain C(s)/R(s)



c) Find C/R for the signal glow graph shown below



d) Find the transfer function $V_0(s)\ /V_i(s)$ of the following electrical system.

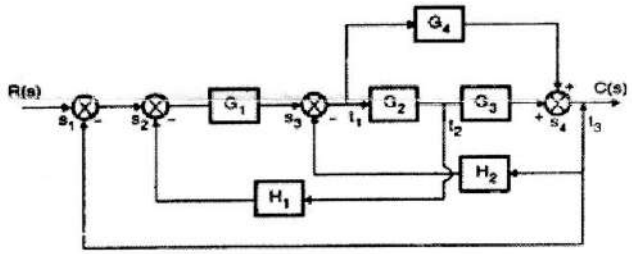


e) The TF of a system is given by T(s)= $\frac{K\,(s+6)}{s(s+2)\,(s^2+7s+16)}$ Determine:

a) Poles
b) Zeros
c) Characteristic equation
d) Pole Zero Plot in s-plane

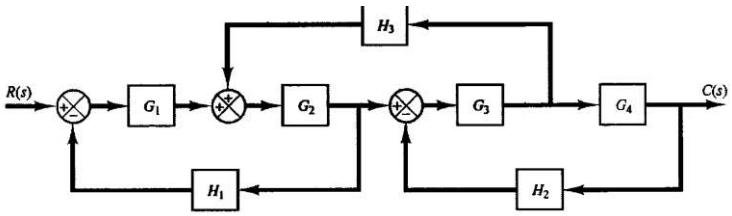
Q.3 **a)** Derive the transfer function of armature-controlled DC servomotor. **06**

b) Determine the TF C(s)/R(s), for the block diagram shown by first drawing its Signal Flow Graph and then using Mason's Gain Formula. **06**



OR

c) Determine the overall transfer function C(s)/R(s) from the Block Diagram. **06**



Section – II

Q.4 **Answer the following: (Any Four)** **16**

a) For a unity feedback system with open loop transfer function $G(s)\frac{20}{s(s+1)}$. Determine the damping ratio, maximum overshoot, rise time and peak time.

b) How to find the centroid and the angle of asymptotes for root locus technique.

c) Determine the range of K to analyze stability of a unity-feedback control system whose open-loop transfer function is $G(s) = \frac{K}{s(s+)(s+2)}$.

d) Derive the rise time and peak overshoot for a second order underdamped system with unit step input.

e) Explain the correlation between time domain and frequency domain.

Q.5 **Answer the following: (Any Two)** **12**

a) Sketch the root locus and evaluate stability of the system given by $G\ (s)\ = \frac{K}{s(s+0.5)(s^2+0.6s+10)}$

b) Sketch the Bode Plot for the system with TF given by $G(s) = \frac{4}{s(s+1)(s+2)}$ and hence determine the gain margin and the phase margin of the system.

c) The open loop transfer function of the systems is given as $G(s) = \frac{2}{s(s+4)(s+6)}$. Determine respectively the positional, velocity and acceleration error constants for these systems. Also, determine the steady state errors with step input r(t) = u(t), ramp input r(t) = t and acceleration input r(t) = (1/2)t^2

SLR-BD-581

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Microcontroller System (BTN07503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) For selection of banks the bits used are _____.
a) PSW. 1 AND PSW. 0 b) PSW. 7 AND PSW. 6
c) PSW. 3 AND PSW. 4 d) SCON. 4 AND SCON. 3

2) Internal pull up resisters are not available for _____.
a) port 0 b) port 1
c) port 2 d) port 3

3) An alternate function of port pin P3.3 in 8051 microcontroller is _____.
a) Timer 0 b) Timer 1
c) Interrupt 0 d) Interrupt 1

4) Which pin of the LCD is used for adjusting its contrast?
a) pin no 1 b) pin no 2
c) pin no 3 d) pin no

5) Address lines are required for accessing the data if memory capacity is 4KB bytes.
a) 10 b) 11
c) 12 d) 13

6) MOVC A, @ A + PC is an example of _____ addressing mode.
a) Immediate b) Direct
c) Indexed d) None of these

7) ISR ends with _____.
a) END b) RET
c) RI,TI d) None

8) Number of steps to rotate stepper motor for 180 degree at a step angle of 1.8 degree is _____.

a) 200 b) 400
c) 100 d) 300

9) JC, JNC instructions checked content of _____register.

a) DPTR b) B
c) A d) PSW

10) In PIC 16F877 Port C and D are _____ & _____ bits wide respectively.

a) 6, 3 b) 3, 8
c) 8, 8 d) 6, 8

11) LM35 has how many pins?

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

12) What is the standard form of ARM?

a) Advanced RISC Machine
b) Automatic RISC Machine
c) Automatic RISC Motor
d) None of the above

13) PIC 16F877 A consists of _____ KB flash program memory.

a) 2 b) 4
c) 8 d) None of these

14) For writing commands on an LCD, RS bit is _____.

a) set b) reset
c) set & reset d) none of the mentioned

SLR-BD-581

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Microcontroller System (BTN07503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Compare between microprocessor and microcontroller.
b) Draw and explain TMOD SFR of 8051 microcontroller.
c) Explain with example the various addressing modes of 8051 microcontroller.
d) Explain any four Arithmetic instruction of 8051 microcontroller.
e) Write an ALP to perform multiplication of two 8-bit numbers stored at 20H and 21H memory location. Store result at 50H and 51H memory location.

Q.3 Attempt the following. (Any Two) **12**

a) Explain IE and IP SFR's related with interrupt in 8051 microcontroller.
b) Draw and explain internal memory Structure of RAM in 8051 microcontroller.
c) Explain following pins of 8051 microcontroller.
1) EA
2) PSEN
3) ALE
4) RESET

Section – II

Q.4 Attempt the following (Any Four). **16**

a) Explain the features of PIC 16F877.
b) Explain the architecture of ARM Processor.
c) Draw the interfacing diagram of LM35 with 8051 Microcontroller.
d) Draw and explain Status Register of PIC 16F877A.
e) Explain following pins of LCD.
1) RS
2) R/W
3) Enable
4) VEE

Q.5 Attempt the following (Any Two). **12**

a) Draw the interfacing diagram of 4KB data RAM with 8051 microcontroller also mention starting and ending addresses of interfaces memory.

b) Draw and explain interfacing diagram of 8051 microcontroller with ADC 0809.

c) Draw the interfacing diagram of stepper motor with 8051. Write an ALP to rotate the stepper motor one revolution in anticlockwise direction and then stop.

SLR-BD-581

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Microcontroller System (BTN07503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) Number of steps to rotate stepper motor for 180 degree at a step angle of 1.8 degree is _____.
a) 200 b) 400
c) 100 d) 300

2) JC, JNC instructions checked content of _____register.
a) DPTR b) B
c) A d) PSW

3) In PIC 16F877 Port C and D are _____ & _____ bits wide respectively.
a) 6, 3 b) 3, 8
c) 8, 8 d) 6, 8

4) LM35 has how many pins?
a) 2 b) 1
c) 3 d) 4

5) What is the standard form of ARM?
a) Advanced RISC Machine
b) Automatic RISC Machine
c) Automatic RISC Motor
d) None of the above

6) PIC 16F877 A consists of _____ KB flash program memory.
a) 2 b) 4
c) 8 d) None of these

7) For writing commands on an LCD, RS bit is _____.
a) set b) reset
c) set & reset d) none of the mentioned

8) For selection of banks the bits used are _____.
a) PSW. 1 AND PSW. 0 b) PSW. 7 AND PSW. 6
c) PSW. 3 AND PSW. 4 d) SCON. 4 AND SCON. 3

9) Internal pull up resisters are not available for _____.
a) port 0 b) port 1
c) port 2 d) port 3

10) An alternate function of port pin P3.3 in 8051 microcontroller is _____.
a) Timer 0 b) Timer 1
c) Interrupt 0 d) Interrupt 1

11) Which pin of the LCD is used for adjusting its contrast?
a) pin no 1 b) pin no 2
c) pin no 3 d) pin no

12) Address lines are required for accessing the data if memory capacity is 4KB bytes.
a) 10 b) 11
c) 12 d) 13

13) MOVC A, @ A + PC is an example of _____ addressing mode.
a) Immediate b) Direct
c) Indexed d) None of these

14) ISR ends with _____.
a) END b) RET
c) RI,TI d) None

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Microcontroller System (BTN07503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Compare between microprocessor and microcontroller.
b) Draw and explain TMOD SFR of 8051 microcontroller.
c) Explain with example the various addressing modes of 8051 microcontroller.
d) Explain any four Arithmetic instruction of 8051 microcontroller.
e) Write an ALP to perform multiplication of two 8-bit numbers stored at 20H and 21H memory location. Store result at 50H and 51H memory location.

Q.3 Attempt the following. (Any Two) **12**

a) Explain IE and IP SFR's related with interrupt in 8051 microcontroller.
b) Draw and explain internal memory Structure of RAM in 8051 microcontroller.
c) Explain following pins of 8051 microcontroller.
1) EA
2) PSEN
3) ALE
4) RESET

Section – II

Q.4 Attempt the following (Any Four). **16**

a) Explain the features of PIC 16F877.
b) Explain the architecture of ARM Processor.
c) Draw the interfacing diagram of LM35 with 8051 Microcontroller.
d) Draw and explain Status Register of PIC 16F877A.
e) Explain following pins of LCD.
1) RS
2) R/W
3) Enable
4) VEE

Q.5 Attempt the following (Any Two). **12**

a) Draw the interfacing diagram of 4KB data RAM with 8051 microcontroller also mention starting and ending addresses of interfaces memory.

b) Draw and explain interfacing diagram of 8051 microcontroller with ADC 0809.

c) Draw the interfacing diagram of stepper motor with 8051. Write an ALP to rotate the stepper motor one revolution in anticlockwise direction and then stop.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Microcontroller System (BTN07503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) LM35 has how many pins?
a) 2 b) 1
c) 3 d) 4

2) What is the standard form of ARM?
a) Advanced RISC Machine
b) Automatic RISC Machine
c) Automatic RISC Motor
d) None of the above

3) PIC 16F877 A consists of _____ KB flash program memory.
a) 2 b) 4
c) 8 d) None of these

4) For writing commands on an LCD, RS bit is _____.
a) set b) reset
c) set & reset d) none of the mentioned

5) For selection of banks the bits used are _____.
a) PSW. 1 AND PSW. 0 b) PSW. 7 AND PSW. 6
c) PSW. 3 AND PSW. 4 d) SCON. 4 AND SCON. 3

6) Internal pull up resisters are not available for _____.
a) port 0 b) port 1
c) port 2 d) port 3

7) An alternate function of port pin P3.3 in 8051 microcontroller is _____.
a) Timer 0 b) Timer 1
c) Interrupt 0 d) Interrupt 1

8) Which pin of the LCD is used for adjusting its contrast?
a) pin no 1 b) pin no 2
c) pin no 3 d) pin no

9) Address lines are required for accessing the data if memory capacity is 4KB bytes.
a) 10 b) 11
c) 12 d) 13

10) MOVC A, @ A + PC is an example of _____ addressing mode.
a) Immediate b) Direct
c) Indexed d) None of these

11) ISR ends with _____.
a) END b) RET
c) RI,TI d) None

12) Number of steps to rotate stepper motor for 180 degree at a step angle of 1.8 degree is _____.
a) 200 b) 400
c) 100 d) 300

13) JC, JNC instructions checked content of _____register.
a) DPTR b) B
c) A d) PSW

14) In PIC 16F877 Port C and D are _____ & _____ bits wide respectively.
a) 6, 3 b) 3, 8
c) 8, 8 d) 6, 8

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Microcontroller System (BTN07503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Compare between microprocessor and microcontroller.
b) Draw and explain TMOD SFR of 8051 microcontroller.
c) Explain with example the various addressing modes of 8051 microcontroller.
d) Explain any four Arithmetic instruction of 8051 microcontroller.
e) Write an ALP to perform multiplication of two 8-bit numbers stored at 20H and 21H memory location. Store result at 50H and 51H memory location.

Q.3 Attempt the following. (Any Two) **12**

a) Explain IE and IP SFR's related with interrupt in 8051 microcontroller.
b) Draw and explain internal memory Structure of RAM in 8051 microcontroller.
c) Explain following pins of 8051 microcontroller.
1) EA
2) PSEN
3) ALE
4) RESET

Section – II

Q.4 Attempt the following (Any Four). **16**

a) Explain the features of PIC 16F877.
b) Explain the architecture of ARM Processor.
c) Draw the interfacing diagram of LM35 with 8051 Microcontroller.
d) Draw and explain Status Register of PIC 16F877A.
e) Explain following pins of LCD.
1) RS
2) R/W
3) Enable
4) VEE

Q.5 Attempt the following (Any Two). **12**

a) Draw the interfacing diagram of 4KB data RAM with 8051 microcontroller also mention starting and ending addresses of interfaces memory.

b) Draw and explain interfacing diagram of 8051 microcontroller with ADC 0809.

c) Draw the interfacing diagram of stepper motor with 8051. Write an ALP to rotate the stepper motor one revolution in anticlockwise direction and then stop.

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Microcontroller System (BTN07503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) MOVC A, @ A + PC is an example of _____ addressing mode.
a) Immediate b) Direct
c) Indexed d) None of these

2) ISR ends with _____.
a) END b) RET
c) RI,TI d) None

3) Number of steps to rotate stepper motor for 180 degree at a step angle of 1.8 degree is _____.
a) 200 b) 400
c) 100 d) 300

4) JC, JNC instructions checked content of _____register.
a) DPTR b) B
c) A d) PSW

5) In PIC 16F877 Port C and D are _____ & _____ bits wide respectively.
a) 6, 3 b) 3, 8
c) 8, 8 d) 6, 8

6) LM35 has how many pins?
a) 2 b) 1
c) 3 d) 4

7) What is the standard form of ARM?
a) Advanced RISC Machine
b) Automatic RISC Machine
c) Automatic RISC Motor
d) None of the above

8) PIC 16F877 A consists of _____ KB flash program memory.
a) 2 b) 4
c) 8 d) None of these

9) For writing commands on an LCD, RS bit is _____.
a) set b) reset
c) set & reset d) none of the mentioned

10) For selection of banks the bits used are _____.
a) PSW. 1 AND PSW. 0 b) PSW. 7 AND PSW. 6
c) PSW. 3 AND PSW. 4 d) SCON. 4 AND SCON. 3

11) Internal pull up resisters are not available for _____.
a) port 0 b) port 1
c) port 2 d) port 3

12) An alternate function of port pin P3.3 in 8051 microcontroller is _____.
a) Timer 0 b) Timer 1
c) Interrupt 0 d) Interrupt 1

13) Which pin of the LCD is used for adjusting its contrast?
a) pin no 1 b) pin no 2
c) pin no 3 d) pin no

14) Address lines are required for accessing the data if memory capacity is 4KB bytes.
a) 10 b) 11
c) 12 d) 13

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Microcontroller System (BTN07503)

Day & Date: Tuesday 20-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Compare between microprocessor and microcontroller.
b) Draw and explain TMOD SFR of 8051 microcontroller.
c) Explain with example the various addressing modes of 8051 microcontroller.
d) Explain any four Arithmetic instruction of 8051 microcontroller.
e) Write an ALP to perform multiplication of two 8-bit numbers stored at 20H and 21H memory location. Store result at 50H and 51H memory location.

Q.3 Attempt the following. (Any Two) **12**

a) Explain IE and IP SFR's related with interrupt in 8051 microcontroller.
b) Draw and explain internal memory Structure of RAM in 8051 microcontroller.
c) Explain following pins of 8051 microcontroller.
1) EA
2) PSEN
3) ALE
4) RESET

Section – II

Q.4 Attempt the following (Any Four). **16**

a) Explain the features of PIC 16F877.
b) Explain the architecture of ARM Processor.
c) Draw the interfacing diagram of LM35 with 8051 Microcontroller.
d) Draw and explain Status Register of PIC 16F877A.
e) Explain following pins of LCD.
1) RS
2) R/W
3) Enable
4) VEE

Q.5 Attempt the following (Any Two). **12**

a) Draw the interfacing diagram of 4KB data RAM with 8051 microcontroller also mention starting and ending addresses of interfaces memory.

b) Draw and explain interfacing diagram of 8051 microcontroller with ADC 0809.

c) Draw the interfacing diagram of stepper motor with 8051. Write an ALP to rotate the stepper motor one revolution in anticlockwise direction and then stop.

SLR-BD-582

Seat No.	

Set P

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
Electrical Engineering
Electromagnetic Engineering (BTN07504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Unit vector is having _____.
a) Direction with one magnitude
b) Magnitude is one but not direction
c) Not both magnitude and direction
d) None of above

2) The differential volume (dv) in cylindrical coordinate system is given by _____.
a) drdΦdz b) rdrdΦdz
c) rdrdΦ d) rdΦdz

3) The potential difference in an open circuit is _____.
a) Zero b) Unity
c) Infinity d) Circuit does not exist

4) To convert spherical coordinate into Cartesian 'x' coordinate, we have relation
a) $x = r \sin\theta \cos\varphi$ b) $x = r \sin\theta \sin\varphi$
c) $x = r \cos\theta \cos\varphi$ d) $x = \sin\theta \cos\varphi$

5) The relation between field intensity and potential is _____.
a) $E = \nabla V$ b) $E = -\nabla V$
c) $V = \nabla \times E$ d) $V = -(\nabla \times E)$

6) $A \times B$ is given as _____.
a) $A \cos\theta$ b) $AB \sin\theta \, an$
c) AB d) $AB \cos\theta \, an$

7) The electric field intensity is defined a _____.
a) Force per unit charge
b) Force on a test charge
c) Force per unit charge on a test charge
d) Product of force and charge

8) Coulomb law is employed in _____.
a) Electrostatics b) Magnetostatics
c) Electromagnetic d) Maxwell theory

9) The units of capacitance are _____.
a) volts/coulomb b) coulombs/volt
c) ohms d) henry/Wb

10) Capacitance increases with _____.
a) increase in plate area and decrease in distance between the plates
b) increase in plate area and-distance-between the plates
c) decrease in plate area and value of applied voltage
d) reduction in plate area and distance between the plates

11) Magnetic vector potential for volume current is expressed as ____.
a) $B = \nabla \times A$ b) $A = \nabla \times B$
c) $B = \nabla . A$ d) $A = \nabla . B$

12) $\nabla \times H = J$ is known as _____.
a) Maxwell's equation b) Ampere's law
c) Ohm's law d) Gauss's law

13) Lorentz force equation is _____.
a) $F = Q \times [E + V \times B]$ b) $F = Q[E + V \times B]$
c) $F = Q\,V + E \times B$ d) $F = Q[B + V \times E]$

14) The magnetic energy of a magnetic material is given by _____.
a) $BH/2$ b) $B/2H$
c) $H/2B$ d) B/H

SLR-BD-582

Seat No.		Set	P

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
Electrical Engineering
Electromagnetic Engineering (BTN07504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four **16**

a) If $\emptyset = 3x^2y - y^3z^2$ find the gradient of $\emptyset$ at point $(1, -2, 1)$

b) Derive the relation between E and V.

c) Derive continuity equation of a current.

d) Parallel plate capacitor has conducting plates of area 0.04m^2. The plates are separated by a dielectric material whose relative permittivity is 2 with plate separation of 1 cm.
Find:
i) Its capacitance
ii) Charge on plates if $V = 10V$.

e) Transform $A = 3a_x + 4a_y + 5a_z$ to spherical coordinate system at point. $(3,4,5)$

Q.3 Attempt Any Two. **12**

a) If $D = 4x^3a_x - 2ya_y + 2za_2$. Find total charge enclosed within the region $-1 \leq x, y, z \leq 1$.

b) State Gauss law with mathematical expression and it's any two applications in detail.

c) Three-point charges $Q_1 = 10^{-6}C, Q_2 = 10^{-6}C, Q_3 = 0.5 \times 10^{-6}C$, are located at corners of equilateral triangle of 50 cm side. Determine magnitude and direction of force on Q_3

Section – II

Q.4 Attempt Any Four **16**

a) A current filament of $3a_x$ lies along x axis. Find H component at $P\ (-1, 3, 2)$.

b) State and prove Ampere's circuital law in point form.

c) Explain vector magnetic potential.

d) Derive Maxwell's equation in point and integral form from Gauss law for static electric field.

e) Derive expression for force on a wire carrying a current.

Q.5 Attempt Any Two. **12**

a) Derive expression for boundary conditions in magnetic field.

b) Evaluate both sides of Stroke's theorem for the field $H = (y^2z/x)a_x + (0.5y^2z^2/x^2)az$ and find current in a_y direction crossing the square surface in the plane $y = 2$, bounded by $x = z = 1$ and $x = z = 2$.

c) Derive Magnetic field intensity due to finite length element.

SLR-BD-582

Seat No.	

Set Q

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
Electrical Engineering
Electromagnetic Engineering (BTN07504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Coulomb law is employed in _____.
a) Electrostatics b) Magnetostatics
c) Electromagnetic d) Maxwell theory

2) The units of capacitance are _____.
a) volts/coulomb b) coulombs/volt
c) ohms d) henry/Wb

3) Capacitance increases with _____.
a) increase in plate area and decrease in distance between the plates
b) increase in plate area and-distance-between the plates
c) decrease in plate area and value of applied voltage
d) reduction in plate area and distance between the plates

4) Magnetic vector potential for volume current is expressed as ____.
a) $B = \nabla \times A$ b) $A = \nabla \times B$
c) $B = \nabla . A$ d) $A = \nabla . B$

5) $\nabla \times H = J$ is known as _____.
a) Maxwell's equation b) Ampere's law
c) Ohm's law d) Gauss's law

6) Lorentz force equation is _____.
a) $F = Q \times [E + V \times B]$ b) $F = Q[E + V \times B]$
c) $F = Q\,V + E \times B$ d) $F = Q[B + V \times E]$

7) The magnetic energy of a magnetic material is given by _____.
a) $BH/2$ b) $B/2H$
c) $H/2B$ d) B/H

8) Unit vector is having _____.
a) Direction with one magnitude
b) Magnitude is one but not direction
c) Not both magnitude and direction
d) None of above

9) The differential volume (dv) in cylindrical coordinate system is given by _____.
a) drdΦdz b) rdrdΦdz
c) rdrdΦ d) rdΦdz

10) The potential difference in an open circuit is _____.
a) Zero b) Unity
c) Infinity d) Circuit does not exist

11) To convert spherical coordinate into Cartesian 'x' coordinate, we have relation
a) $x = r\sin\theta\cos\varphi$ b) $x = r\sin\theta\sin\varphi$
c) $x = r\cos\theta\cos\varphi$ d) $x = \sin\theta\cos\varphi$

12) The relation between field intensity and potential is _____.
a) $E = \nabla V$ b) $E = -\nabla V$
c) $V = \nabla \times E$ d) $V = -(\nabla \times E)$

13) $A \times B$ is given as _____.
a) $A\cos\theta$ b) $AB\sin\theta\, an$
c) AB d) $AB\cos\theta\, an$

14) The electric field intensity is defined a _____.
a) Force per unit charge
b) Force on a test charge
c) Force per unit charge on a test charge
d) Product of force and charge

SLR-BD-582

Seat No.	

Set Q

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
Electrical Engineering
Electromagnetic Engineering (BTN07504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four **16**

a) If $\emptyset = 3x^2y - y^3z^2$ find the gradient of $\emptyset$ at point $(1, -2, 1)$

b) Derive the relation between E and V.

c) Derive continuity equation of a current.

d) Parallel plate capacitor has conducting plates of area 0.04m^2. The plates are separated by a dielectric material whose relative permittivity is 2 with plate separation of 1 cm.
Find:
i) Its capacitance
ii) Charge on plates if $V = 10V$.

e) Transform $A = 3a_x + 4a_y + 5a_z$ to spherical coordinate system at point. $(3,4,5)$

Q.3 Attempt Any Two. **12**

a) If $D = 4x^3a_x - 2ya_y + 2za_2$. Find total charge enclosed within the region $-1 \leq x, y, z \leq 1$.

b) State Gauss law with mathematical expression and it's any two applications in detail.

c) Three-point charges $Q_1 = 10^{-6}C, Q_2 = 10^{-6}C, Q_3 = 0.5 \times 10^{-6}C$, are located at corners of equilateral triangle of 50 cm side. Determine magnitude and direction of force on Q_3

Section – II

Q.4 Attempt Any Four **16**

a) A current filament of $3a_x$ lies along x axis. Find H component at $P\ (-1, 3, 2)$.

b) State and prove Ampere's circuital law in point form.

c) Explain vector magnetic potential.

d) Derive Maxwell's equation in point and integral form from Gauss law for static electric field.

e) Derive expression for force on a wire carrying a current.

Q.5 Attempt Any Two. **12**

a) Derive expression for boundary conditions in magnetic field.

b) Evaluate both sides of Stroke's theorem for the field $H = (y^2z/x)a_x + (0.5y^2z^2/x^2)az$ and find current in a_y direction crossing the square surface in the plane $y = 2$, bounded by $x = z = 1$ and $x = z = 2$.

c) Derive Magnetic field intensity due to finite length element.

Seat No.	

Set **R**

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
Electrical Engineering
Electromagnetic Engineering (BTN07504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Magnetic vector potential for volume current is expressed as _____.
a) $B = \nabla \times A$ b) $A = \nabla \times B$
c) $B = \nabla . A$ d) $A = \nabla . B$

2) $\nabla \times H = J$ is known as _____.
a) Maxwell's equation b) Ampere's law
c) Ohm's law d) Gauss's law

3) Lorentz force equation is _____.
a) $F = Q \times [E + V \times B]$ b) $F = Q[E + V \times B]$
c) $F = Q\,V + E \times B$ d) $F = Q[B + V \times E]$

4) The magnetic energy of a magnetic material is given by _____.
a) $BH/2$ b) $B/2H$
c) $H/2B$ d) B/H

5) Unit vector is having _____.
a) Direction with one magnitude
b) Magnitude is one but not direction
c) Not both magnitude and direction
d) None of above

6) The differential volume (dv) in cylindrical coordinate system is given by _____.
a) drdΦdz b) rdrdΦdz
c) rdrdΦ d) rdΦdz

7) The potential difference in an open circuit is _____.
a) Zero b) Unity
c) Infinity d) Circuit does not exist

8) To convert spherical coordinate into Cartesian 'x' coordinate, we have relation

a) $x = r \sin\theta \cos\varphi$ b) $x = r \sin\theta \sin\varphi$

c) $x = r \cos\theta \cos\varphi$ d) $x = \sin\theta \cos\varphi$

9) The relation between field intensity and potential is _____.

a) $E = \nabla V$ b) $E = -\nabla V$

c) $V = \nabla \times E$ d) $V = -(\nabla \times E)$

10) $A \times B$ is given as _____.

a) $A \cos\theta$ b) $AB \sin\theta \, an$

c) AB d) $AB \cos\theta \, an$

11) The electric field intensity is defined a _____.

a) Force per unit charge
b) Force on a test charge
c) Force per unit charge on a test charge
d) Product of force and charge

12) Coulomb law is employed in _____.

a) Electrostatics b) Magnetostatics

c) Electromagnetic d) Maxwell theory

13) The units of capacitance are _____.

a) volts/coulomb b) coulombs/volt

c) ohms d) henry/Wb

14) Capacitance increases with _____.

a) increase in plate area and decrease in distance between the plates
b) increase in plate area and-distance-between the plates
c) decrease in plate area and value of applied voltage
d) reduction in plate area and distance between the plates

SLR-BD-582

Seat No.	

Set R

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
Electrical Engineering
Electromagnetic Engineering (BTN07504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four **16**

a) If $\emptyset = 3x^2y - y^3z^2$ find the gradient of $\emptyset$ at point $(1, -2, 1)$

b) Derive the relation between E and V.

c) Derive continuity equation of a current.

d) Parallel plate capacitor has conducting plates of area 0.04m^2. The plates are separated by a dielectric material whose relative permittivity is 2 with plate separation of 1 cm.
Find:
i) Its capacitance
ii) Charge on plates if $V = 10V$.

e) Transform $A = 3a_x + 4a_y + 5a_z$ to spherical coordinate system at point. $(3,4,5)$

Q.3 Attempt Any Two. **12**

a) If $D = 4x^3a_x - 2ya_y + 2za_2$. Find total charge enclosed within the region $-1 \leq x, y, z \leq 1$.

b) State Gauss law with mathematical expression and it's any two applications in detail.

c) Three-point charges $Q_1 = 10^{-6}C, Q_2 = 10^{-6}C, Q_3 = 0.5 \times 10^{-6}C$, are located at corners of equilateral triangle of 50 cm side. Determine magnitude and direction of force on Q_3

Section – II

Q.4 Attempt Any Four **16**

a) A current filament of $3a_x$ lies along x axis. Find H component at $P\ (-1, 3, 2)$.

b) State and prove Ampere's circuital law in point form.

c) Explain vector magnetic potential.

d) Derive Maxwell's equation in point and integral form from Gauss law for static electric field.

e) Derive expression for force on a wire carrying a current.

Q.5 Attempt Any Two. **12**

a) Derive expression for boundary conditions in magnetic field.

b) Evaluate both sides of Stroke's theorem for the field $H = (y^2z/x)a_x + (0.5y^2z^2/x^2)az$ and find current in a_y direction crossing the square surface in the plane $y = 2$, bounded by $x = z = 1$ and $x = z = 2$.

c) Derive Magnetic field intensity due to finite length element.

SLR-BD-582

Seat No.	

Set S

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
Electrical Engineering
Electromagnetic Engineering (BTN07504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) $A \times B$ is given as _____.
a) $A\cos\theta$ b) $AB\sin\theta\, an$
c) AB d) $AB\cos\theta\, an$

2) The electric field intensity is defined a _____.
a) Force per unit charge
b) Force on a test charge
c) Force per unit charge on a test charge
d) Product of force and charge

3) Coulomb law is employed in _____.
a) Electrostatics b) Magnetostatics
c) Electromagnetic d) Maxwell theory

4) The units of capacitance are _____.
a) volts/coulomb b) coulombs/volt
c) ohms d) henry/Wb

5) Capacitance increases with _____.
a) increase in plate area and decrease in distance between the plates
b) increase in plate area and-distance-between the plates
c) decrease in plate area and value of applied voltage
d) reduction in plate area and distance between the plates

6) Magnetic vector potential for volume current is expressed as ____.
a) $B = \nabla \times A$ b) $A = \nabla \times B$
c) $B = \nabla . A$ d) $A = \nabla . B$

7) $\nabla \times H = J$ is known as _____.

a) Maxwell's equation b) Ampere's law
c) Ohm's law d) Gauss's law

8) Lorentz force equation is _____.

a) $F = Q \times [E + V \times B]$ b) $F = Q[E + V \times B]$
c) $F = Q\,V + E \times B$ d) $F = Q[B + V \times E]$

9) The magnetic energy of a magnetic material is given by _____.

a) $BH/2$ b) $B/2H$
c) $H/2B$ d) B/H

10) Unit vector is having _____.

a) Direction with one magnitude
b) Magnitude is one but not direction
c) Not both magnitude and direction
d) None of above

11) The differential volume (dv) in cylindrical coordinate system is given by _____.

a) drdΦdz b) rdrdΦdz
c) rdrdΦ d) rdΦdz

12) The potential difference in an open circuit is _____.

a) Zero b) Unity
c) Infinity d) Circuit does not exist

13) To convert spherical coordinate into Cartesian 'x' coordinate, we have relation

a) $x = r \sin\theta \cos\varphi$ b) $x = r \sin\theta \sin\varphi$
c) $x = r \cos\theta \cos\varphi$ d) $x = \sin\theta \cos\varphi$

14) The relation between field intensity and potential is _____.

a) $E = \nabla V$ b) $E = -\nabla V$
c) $V = \nabla \times E$ d) $V = -(\nabla \times E)$

SLR-BD-582

Seat No.		Set	S

T. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
Electrical Engineering
Electromagnetic Engineering (BTN07504)

Day & Date: Wednesday 21-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four **16**

a) If $\emptyset = 3x^2y - y^3z^2$ find the gradient of $\emptyset$ at point $(1, -2, 1)$

b) Derive the relation between E and V.

c) Derive continuity equation of a current.

d) Parallel plate capacitor has conducting plates of area 0.04m^2. The plates are separated by a dielectric material whose relative permittivity is 2 with plate separation of 1 cm.
Find:
i) Its capacitance
ii) Charge on plates if $V = 10V$.

e) Transform $A = 3a_x + 4a_y + 5a_z$ to spherical coordinate system at point. $(3,4,5)$

Q.3 Attempt Any Two. **12**

a) If $D = 4x^3a_x - 2ya_y + 2za_2$. Find total charge enclosed within the region $-1 \leq x, y, z \leq 1$.

b) State Gauss law with mathematical expression and it's any two applications in detail.

c) Three-point charges $Q_1 = 10^{-6}C, Q_2 = 10^{-6}C, Q_3 = 0.5 \times 10^{-6}C$, are located at corners of equilateral triangle of 50 cm side. Determine magnitude and direction of force on Q_3

Section – II

Q.4 Attempt Any Four **16**

a) A current filament of $3a_x$ lies along x axis. Find H component at $P\ (-1, 3, 2)$.

b) State and prove Ampere's circuital law in point form.

c) Explain vector magnetic potential.

d) Derive Maxwell's equation in point and integral form from Gauss law for static electric field.

e) Derive expression for force on a wire carrying a current.

Q.5 Attempt Any Two. **12**

a) Derive expression for boundary conditions in magnetic field.

b) Evaluate both sides of Stroke's theorem for the field $H = (y^2z/x)a_x + (0.5y^2z^2/x^2)az$ and find current in a_y direction crossing the square surface in the plane $y = 2$, bounded by $x = z = 1$ and $x = z = 2$.

c) Derive Magnetic field intensity due to finite length element.

SLR-BD-583

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Information Technology & Management (BTN07512)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The dimension of the e-commerce that enables commerce across national boundaries called _____.
a) Interactivity b) global reach
c) Richness d) Ubiquity

2) The primary source of financing during the early years of e-commerce was _____.
a) bank loans b) large retail firms
c) venture capital funds d) initial public offerings

3) The largest component of a web site budget is _____.
a) system maintenance
b) system development
c) content design and development
d) telecommunications

4) A security plan begins with a(n) is _____.
a) security policy b) risk assessment
c) implementation plan d) security organization

5) Creating multiple versions of information goods & selling essentially the same product to different market segment at different prices is called _____.
a) Versioning b) Bundling
c) Transactive content d) price discrimination

6) What is an alternative name for a weak entity?
a) Dominant b) Owner
c) Child d) All of the above

7) Identify which of the following life cycle contains the phases: test case design, test execution, defect tracking, maintenance?

a) SDLC b) STLC
c) SQLC d) BCL

8) Identify the incorrect phase of STLC (Software Testing Life cycle).

a) Test closure b) Coding
c) Requirement analysis d) Test planning

9) Identify the simplest model of SDLC?

a) Agile b) RAD
c) Waterfall d) Spiral

10) One approach to developing a personal set of ethics is to _____.

a) rely solely on one's personal character to determine what action to take
b) stress the importance of rules
c) ignore problems associated with the magnitude of consequences
d) Avoid examining the consequences of particular

11) Which of the following statements describes ethics?

a) Ethics are standard of behavior by which conduct is judged
b) Morals are a foundation for ethical behavior
c) Ethical values are situation specific and time oriented.
d) All of the statements describe ethics

12) _____ is a program that serves as an interface between application program and a Set of coordinated and integrated files called a database.

a) DDS b) DBMS
c) MIS d) Control

13) In _____ system the interaction between various subsystems cannot be defined with certainty.

a) Open System b) Closed System
c) Deterministic System d) Probabilistic System

14) SDLC stands for _____.

a) System Development Life Cycle
b) Structure Design Life Cycle
c) System Design Life Cycle
d) Structure Development Life Cycle

SLR-BD-583

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Information Technology & Management (BTN07512)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**

a) Describe various types of information system.
b) Explain ethical and legal issues in e-business.
c) Explain e-payment systems with Indian context.
d) Explain importance of data management.
e) Describe functions of data base and data base management system.
f) Explain how IT support people for information System.

Q.3 Attempt any two. **12**

a) Describe the tactical and strategic benefits of data warehouse, data marts and data centers.
b) Describe mobile e-commerce. Also describe major e-commerce mechanisms.
c) Explain architecture and emerging computing environments of Information System.

Section – II

Q.4 Attempt any Four. **16**

a) Describe features of modern organizational structure.
b) Explain major phases in SDLC.
c) Distinguish software projects and other engineering projects.
d) Explain role of project manager.
e) Explain project life cycle & software development life cycle.
f) Explain green IT practices.

Q.5 Attempt any two. **12**

a) Explain issues related to workplace behavior and health and how to overcome them.
b) Describe ethical and social issues arose because of IT and IS.
c) Describe trade secrets, copyrights, patents with examples.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Information Technology & Management (BTN07512)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Identify the incorrect phase of STLC (Software Testing Life cycle).
a) Test closure b) Coding
c) Requirement analysis d) Test planning

2) Identify the simplest model of SDLC?
a) Agile b) RAD
c) Waterfall d) Spiral

3) One approach to developing a personal set of ethics is to _____.
a) rely solely on one's personal character to determine what action to take
b) stress the importance of rules
c) ignore problems associated with the magnitude of consequences
d) Avoid examining the consequences of particular

4) Which of the following statements describes ethics?
a) Ethics are standard of behavior by which conduct is judged
b) Morals are a foundation for ethical behavior
c) Ethical values are situation specific and time oriented.
d) All of the statements describe ethics

5) _____ is a program that serves as an interface between application program and a Set of coordinated and integrated files called a database.
a) DDS b) DBMS
c) MIS d) Control

6) In _____ system the interaction between various subsystems cannot be defined with certainty.
a) Open System b) Closed System
c) Deterministic System d) Probabilistic System

7) SDLC stands for _____.
a) System Development Life Cycle
b) Structure Design Life Cycle
c) System Design Life Cycle
d) Structure Development Life Cycle

8) The dimension of the e-commerce that enables commerce across national boundaries called _____.
a) Interactivity b) global reach
c) Richness d) Ubiquity

9) The primary source of financing during the early years of e-commerce was _____.
a) bank loans b) large retail firms
c) venture capital funds d) initial public offerings

10) The largest component of a web site budget is _____.
a) system maintenance
b) system development
c) content design and development
d) telecommunications

11) A security plan begins with a(n) is _____.
a) security policy b) risk assessment
c) implementation plan d) security organization

12) Creating multiple versions of information goods & selling essentially the same product to different market segment at different prices is called _____.
a) Versioning b) Bundling
c) Transactive content d) price discrimination

13) What is an alternative name for a weak entity?
a) Dominant b) Owner
c) Child d) All of the above

14) Identify which of the following life cycle contains the phases: test case design, test execution, defect tracking, maintenance?
a) SDLC b) STLC
c) SQLC d) BCL

SLR-BD-583

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Information Technology & Management (BTN07512)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**

a) Describe various types of information system.
b) Explain ethical and legal issues in e-business.
c) Explain e-payment systems with Indian context.
d) Explain importance of data management.
e) Describe functions of data base and data base management system.
f) Explain how IT support people for information System.

Q.3 Attempt any two. **12**

a) Describe the tactical and strategic benefits of data warehouse, data marts and data centers.
b) Describe mobile e-commerce. Also describe major e-commerce mechanisms.
c) Explain architecture and emerging computing environments of Information System.

Section – II

Q.4 Attempt any Four. **16**

a) Describe features of modern organizational structure.
b) Explain major phases in SDLC.
c) Distinguish software projects and other engineering projects.
d) Explain role of project manager.
e) Explain project life cycle & software development life cycle.
f) Explain green IT practices.

Q.5 Attempt any two. **12**

a) Explain issues related to workplace behavior and health and how to overcome them.
b) Describe ethical and social issues arose because of IT and IS.
c) Describe trade secrets, copyrights, patents with examples.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Information Technology & Management (BTN07512)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following statements describes ethics?
a) Ethics are standard of behavior by which conduct is judged
b) Morals are a foundation for ethical behavior
c) Ethical values are situation specific and time oriented.
d) All of the statements describe ethics

2) _____ is a program that serves as an interface between application program and a Set of coordinated and integrated files called a database.
a) DDS b) DBMS
c) MIS d) Control

3) In _____ system the interaction between various subsystems cannot be defined with certainty.
a) Open System b) Closed System
c) Deterministic System d) Probabilistic System

4) SDLC stands for _____.
a) System Development Life Cycle
b) Structure Design Life Cycle
c) System Design Life Cycle
d) Structure Development Life Cycle

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a) Interactivity b) global reach
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6) The primary source of financing during the early years of e-commerce was _____.

a) bank loans b) large retail firms
c) venture capital funds d) initial public offerings

7) The largest component of a web site budget is _____.

a) system maintenance
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c) implementation plan d) security organization

9) Creating multiple versions of information goods & selling essentially the same product to different market segment at different prices is called _____.

a) Versioning b) Bundling
c) Transactive content d) price discrimination

10) What is an alternative name for a weak entity?

a) Dominant b) Owner
c) Child d) All of the above

11) Identify which of the following life cycle contains the phases: test case design, test execution, defect tracking, maintenance?

a) SDLC b) STLC
c) SQLC d) BCL

12) Identify the incorrect phase of STLC (Software Testing Life cycle).

a) Test closure b) Coding
c) Requirement analysis d) Test planning

13) Identify the simplest model of SDLC?

a) Agile b) RAD
c) Waterfall d) Spiral

14) One approach to developing a personal set of ethics is to _____.

a) rely solely on one's personal character to determine what action to take
b) stress the importance of rules
c) ignore problems associated with the magnitude of consequences
d) Avoid examining the consequences of particular

SLR-BD-583

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Information Technology & Management (BTN07512)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**

a) Describe various types of information system.
b) Explain ethical and legal issues in e-business.
c) Explain e-payment systems with Indian context.
d) Explain importance of data management.
e) Describe functions of data base and data base management system.
f) Explain how IT support people for information System.

Q.3 Attempt any two. **12**

a) Describe the tactical and strategic benefits of data warehouse, data marts and data centers.
b) Describe mobile e-commerce. Also describe major e-commerce mechanisms.
c) Explain architecture and emerging computing environments of Information System.

Section – II

Q.4 Attempt any Four. **16**

a) Describe features of modern organizational structure.
b) Explain major phases in SDLC.
c) Distinguish software projects and other engineering projects.
d) Explain role of project manager.
e) Explain project life cycle & software development life cycle.
f) Explain green IT practices.

Q.5 Attempt any two. **12**

a) Explain issues related to workplace behavior and health and how to overcome them.
b) Describe ethical and social issues arose because of IT and IS.
c) Describe trade secrets, copyrights, patents with examples.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Information Technology & Management (BTN07512)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is an alternative name for a weak entity?
a) Dominant b) Owner
c) Child d) All of the above

2) Identify which of the following life cycle contains the phases: test case design, test execution, defect tracking, maintenance?
a) SDLC b) STLC
c) SQLC d) BCL

3) Identify the incorrect phase of STLC (Software Testing Life cycle).
a) Test closure b) Coding
c) Requirement analysis d) Test planning

4) Identify the simplest model of SDLC?
a) Agile b) RAD
c) Waterfall d) Spiral

5) One approach to developing a personal set of ethics is to _____.
a) rely solely on one's personal character to determine what action to take
b) stress the importance of rules
c) ignore problems associated with the magnitude of consequences
d) Avoid examining the consequences of particular

6) Which of the following statements describes ethics?
a) Ethics are standard of behavior by which conduct is judged
b) Morals are a foundation for ethical behavior
c) Ethical values are situation specific and time oriented.
d) All of the statements describe ethics

7) _____ is a program that serves as an interface between application program and a Set of coordinated and integrated files called a database.

a) DDS b) DBMS
c) MIS d) Control

8) In _____ system the interaction between various subsystems cannot be defined with certainty.

a) Open System b) Closed System
c) Deterministic System d) Probabilistic System

9) SDLC stands for _____.

a) System Development Life Cycle
b) Structure Design Life Cycle
c) System Design Life Cycle
d) Structure Development Life Cycle

10) The dimension of the e-commerce that enables commerce across national boundaries called _____.

a) Interactivity b) global reach
c) Richness d) Ubiquity

11) The primary source of financing during the early years of e-commerce was _____.

a) bank loans b) large retail firms
c) venture capital funds d) initial public offerings

12) The largest component of a web site budget is _____.

a) system maintenance
b) system development
c) content design and development
d) telecommunications

13) A security plan begins with a(n) is _____.

a) security policy b) risk assessment
c) implementation plan d) security organization

14) Creating multiple versions of information goods & selling essentially the same product to different market segment at different prices is called _____.

a) Versioning b) Bundling
c) Transactive content d) price discrimination

SLR-BD-583

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Information Technology & Management (BTN07512)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**

a) Describe various types of information system.
b) Explain ethical and legal issues in e-business.
c) Explain e-payment systems with Indian context.
d) Explain importance of data management.
e) Describe functions of data base and data base management system.
f) Explain how IT support people for information System.

Q.3 Attempt any two. **12**

a) Describe the tactical and strategic benefits of data warehouse, data marts and data centers.
b) Describe mobile e-commerce. Also describe major e-commerce mechanisms.
c) Explain architecture and emerging computing environments of Information System.

Section – II

Q.4 Attempt any Four. **16**

a) Describe features of modern organizational structure.
b) Explain major phases in SDLC.
c) Distinguish software projects and other engineering projects.
d) Explain role of project manager.
e) Explain project life cycle & software development life cycle.
f) Explain green IT practices.

Q.5 Attempt any two. **12**

a) Explain issues related to workplace behavior and health and how to overcome them.
b) Describe ethical and social issues arose because of IT and IS.
c) Describe trade secrets, copyrights, patents with examples.

SLR-BD-585

Seat No.		Set	P

T.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Business Ethics (BTN07514)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Ethics is important for _____.
a) Non-managerial employees
b) Middle-level managers
c) Top management
d) All of above

2) Why business ethics are important?
a) It formulates the firm's image and builds the brand
b) It influences the buying decision of the customers
c) Build confidence within employees
d) All of the above

3) Equity shareholders are called _____
a) Owners of the company b) Partners of the company
c) Guardian of the company d) Executives of the company

4) Which one of the following is not principle business ethics?
a) Principle of universality b) Principle of humanity
c) Principle of autonomy d) Principle of dissatisfaction

5) Codes of conduct and codes of ethics _____.
a) are formal statements that describe what an organization expects of its employees.
b) become necessary only after a company has been in legal trouble.
c) are designed for top executives and managers, not regular employees.
d) rarely become an effective component of the ethics and compliance program.

6) Ethics should guide the technology towards _____.
a) Political justice b) Cultural justice
c) Social justice d) None of the above

7) The disadvantage of the social responsibility is _____.
a) Possession of resources
b) Ethical obligation
c) Public image
d) Violation of profit maximization

8) Which of the following is an example of an area where business ethics apply?
a) Conduct of international operations
b) Nowhere
c) In the personal life of staff
d) None of the above

9) What is meant by the phrase CSR?
a) Corporate Social Responsibility
b) Company Social Responsibility
c) Corporate Society Responsibility
d) Company Society Responsibility

10) The moral principles, standards of behavior, or set of values that guide a person's actions in the workplace is called _____
a) Office place ethics b) Factory place ethics
c) Behavioral ethics d) Workplace ethics

11) Stakeholders are considered more important to an organization when _____.
a) they can make use of their power on the organization
b) they do not emphasize the urgency of their issues
c) their issues are not legitimate
d) they can express themselves articulately

12) Which of the following relating to CSR theories is correct?
a) Institutional theory is based on the shareholder concept
b) Social contract is the key concept of legitimacy theory
c) The key concept of enlightened self-interest is stakeholder relations
d) Stakeholder theory requires organisations to manage community perceptions to survive

13) Managerial ethics can be characterized by all of the following levels except _____.
a) immoral management b) amoral management
c) demoral management d) moral management

14) The four types of social responsibility include: _____.

a) legal, philanthropic, economic, and ethical
b) ethical, moral, social, and economic
c) philanthropic, justice, economic, and ethical
d) legal, moral, ethical, and economic

SLR-BD-585

Seat No.	

Set P

T.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Business Ethics (BTN07514)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**
- **a)** Explain the importance of business ethics.
- **b)** Explain various principles of business ethics.
- **c)** Write short note on organization for business ethics management.
- **d)** Explain in detail standard of ethical behavior.
- **e)** Write short note on corporate accountability.

Q.3 Attempt any two. **12**
- **a)** Explain normative, descriptive and contemporary ethical theories.
- **b)** Write short note model of ethical decision making.
- **c)** Explain the objectives and importance of CSR.

Section – II

Q.4 Attempt any Four. **16**
- **a)** State and explain modes of organization.
- **b)** Explain ethical challenges of globalization.
- **c)** Write short note on business ethics and environmental values.
- **d)** Explain business and sustainability in detail.
- **e)** Explain ethical issues in the relation between business and government.

Q.5 Attempt any Two. **12**
- **a)** Write short note on corporate citizenship and regulation.
- **b)** Explain Globalization and CSOs e.
- **c)** Write short note on ethical challenges of globalization.

SLR-BD-585

Seat No.	

Set Q

T.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Business Ethics (BTN07514)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) Which of the following is an example of an area where business ethics apply?
a) Conduct of international operations
b) Nowhere
c) In the personal life of staff
d) None of the above

2) What is meant by the phrase CSR?
a) Corporate Social Responsibility
b) Company Social Responsibility
c) Corporate Society Responsibility
d) Company Society Responsibility

3) The moral principles, standards of behavior, or set of values that guide a person's actions in the workplace is called _____
a) Office place ethics b) Factory place ethics
c) Behavioral ethics d) Workplace ethics

4) Stakeholders are considered more important to an organization when _____.
a) they can make use of their power on the organization
b) they do not emphasize the urgency of their issues
c) their issues are not legitimate
d) they can express themselves articulately

5) Which of the following relating to CSR theories is correct?
a) Institutional theory is based on the shareholder concept
b) Social contract is the key concept of legitimacy theory
c) The key concept of enlightened self-interest is stakeholder relations
d) Stakeholder theory requires organisations to manage community perceptions to survive

6) Managerial ethics can be characterized by all of the following levels except _____.
a) immoral management b) amoral management
c) demoral management d) moral management

7) The four types of social responsibility include: _____.
a) legal, philanthropic, economic, and ethical
b) ethical, moral, social, and economic
c) philanthropic, justice, economic, and ethical
d) legal, moral, ethical, and economic

8) Ethics is important for _____.
a) Non-managerial employees
b) Middle-level managers
c) Top management
d) All of above

9) Why business ethics are important?
a) It formulates the firm's image and builds the brand
b) It influences the buying decision of the customers
c) Build confidence within employees
d) All of the above

10) Equity shareholders are called _____
a) Owners of the company b) Partners of the company
c) Guardian of the company d) Executives of the company

11) Which one of the following is not principle business ethics?
a) Principle of universality b) Principle of humanity
c) Principle of autonomy d) Principle of dissatisfaction

12) Codes of conduct and codes of ethics _____.
a) are formal statements that describe what an organization expects of its employees.
b) become necessary only after a company has been in legal trouble.
c) are designed for top executives and managers, not regular employees.
d) rarely become an effective component of the ethics and compliance program.

13) Ethics should guide the technology towards _____.

a) Political justice
b) Cultural justice
c) Social justice
d) None of the above

14) The disadvantage of the social responsibility is _____.

a) Possession of resources
b) Ethical obligation
c) Public image
d) Violation of profit maximization

SLR-BD-585

Seat No.	

Set Q

T.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Business Ethics (BTN07514)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**
- **a)** Explain the importance of business ethics.
- **b)** Explain various principles of business ethics.
- **c)** Write short note on organization for business ethics management.
- **d)** Explain in detail standard of ethical behavior.
- **e)** Write short note on corporate accountability.

Q.3 Attempt any two. **12**
- **a)** Explain normative, descriptive and contemporary ethical theories.
- **b)** Write short note model of ethical decision making.
- **c)** Explain the objectives and importance of CSR.

Section – II

Q.4 Attempt any Four. **16**
- **a)** State and explain modes of organization.
- **b)** Explain ethical challenges of globalization.
- **c)** Write short note on business ethics and environmental values.
- **d)** Explain business and sustainability in detail.
- **e)** Explain ethical issues in the relation between business and government.

Q.5 Attempt any Two. **12**
- **a)** Write short note on corporate citizenship and regulation.
- **b)** Explain Globalization and CSOs e.
- **c)** Write short note on ethical challenges of globalization.

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Business Ethics (BTN07514)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Stakeholders are considered more important to an organization when _____.
a) they can make use of their power on the organization
b) they do not emphasize the urgency of their issues
c) their issues are not legitimate
d) they can express themselves articulately

2) Which of the following relating to CSR theories is correct?
a) Institutional theory is based on the shareholder concept
b) Social contract is the key concept of legitimacy theory
c) The key concept of enlightened self-interest is stakeholder relations
d) Stakeholder theory requires organisations to manage community perceptions to survive

3) Managerial ethics can be characterized by all of the following levels except _____.
a) immoral management b) amoral management
c) demoral management d) moral management

4) The four types of social responsibility include: _____.
a) legal, philanthropic, economic, and ethical
b) ethical, moral, social, and economic
c) philanthropic, justice, economic, and ethical
d) legal, moral, ethical, and economic

5) Ethics is important for _____.
a) Non-managerial employees
b) Middle-level managers
c) Top management
d) All of above

6) Why business ethics are important?
a) It formulates the firm's image and builds the brand
b) It influences the buying decision of the customers
c) Build confidence within employees
d) All of the above

7) Equity shareholders are called _____
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8) Which one of the following is not principle business ethics?
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c) Principle of autonomy d) Principle of dissatisfaction

9) Codes of conduct and codes of ethics _____.
a) are formal statements that describe what an organization expects of its employees.
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d) rarely become an effective component of the ethics and compliance program.

10) Ethics should guide the technology towards _____.
a) Political justice b) Cultural justice
c) Social justice d) None of the above

11) The disadvantage of the social responsibility is _____.
a) Possession of resources
b) Ethical obligation
c) Public image
d) Violation of profit maximization

12) Which of the following is an example of an area where business ethics apply?
a) Conduct of international operations
b) Nowhere
c) In the personal life of staff
d) None of the above

13) What is meant by the phrase CSR?
a) Corporate Social Responsibility
b) Company Social Responsibility
c) Corporate Society Responsibility
d) Company Society Responsibility

14) The moral principles, standards of behavior, or set of values that guide a person's actions in the workplace is called _____

a) Office place ethics
b) Factory place ethics
c) Behavioral ethics
d) Workplace ethics

SLR-BD-585

Seat No.	

Set R

T.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Business Ethics (BTN07514)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**
- **a)** Explain the importance of business ethics.
- **b)** Explain various principles of business ethics.
- **c)** Write short note on organization for business ethics management.
- **d)** Explain in detail standard of ethical behavior.
- **e)** Write short note on corporate accountability.

Q.3 Attempt any two. **12**
- **a)** Explain normative, descriptive and contemporary ethical theories.
- **b)** Write short note model of ethical decision making.
- **c)** Explain the objectives and importance of CSR.

Section – II

Q.4 Attempt any Four. **16**
- **a)** State and explain modes of organization.
- **b)** Explain ethical challenges of globalization.
- **c)** Write short note on business ethics and environmental values.
- **d)** Explain business and sustainability in detail.
- **e)** Explain ethical issues in the relation between business and government.

Q.5 Attempt any Two. **12**
- **a)** Write short note on corporate citizenship and regulation.
- **b)** Explain Globalization and CSOs e.
- **c)** Write short note on ethical challenges of globalization.

Seat No.	

Set **S**

T.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Business Ethics (BTN07514)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Ethics should guide the technology towards _____.
a) Political justice b) Cultural justice
c) Social justice d) None of the above

2) The disadvantage of the social responsibility is _____.
a) Possession of resources
b) Ethical obligation
c) Public image
d) Violation of profit maximization

3) Which of the following is an example of an area where business ethics apply?
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4) What is meant by the phrase CSR?
a) Corporate Social Responsibility
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d) Company Society Responsibility

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c) their issues are not legitimate
d) they can express themselves articulately

7) Which of the following relating to CSR theories is correct?
a) Institutional theory is based on the shareholder concept
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9) The four types of social responsibility include: _____.
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b) ethical, moral, social, and economic
c) philanthropic, justice, economic, and ethical
d) legal, moral, ethical, and economic

10) Ethics is important for _____.
a) Non-managerial employees
b) Middle-level managers
c) Top management
d) All of above

11) Why business ethics are important?
a) It formulates the firm's image and builds the brand
b) It influences the buying decision of the customers
c) Build confidence within employees
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12) Equity shareholders are called _____
a) Owners of the company b) Partners of the company
c) Guardian of the company d) Executives of the company

13) Which one of the following is not principle business ethics?
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14) Codes of conduct and codes of ethics _____.

a) are formal statements that describe what an organization expects of its employees.
b) become necessary only after a company has been in legal trouble.
c) are designed for top executives and managers, not regular employees.
d) rarely become an effective component of the ethics and compliance program.

SLR-BD-585

Seat No.	

Set S

T.Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Business Ethics (BTN07514)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**
- **a)** Explain the importance of business ethics.
- **b)** Explain various principles of business ethics.
- **c)** Write short note on organization for business ethics management.
- **d)** Explain in detail standard of ethical behavior.
- **e)** Write short note on corporate accountability.

Q.3 Attempt any two. **12**
- **a)** Explain normative, descriptive and contemporary ethical theories.
- **b)** Write short note model of ethical decision making.
- **c)** Explain the objectives and importance of CSR.

Section – II

Q.4 Attempt any Four. **16**
- **a)** State and explain modes of organization.
- **b)** Explain ethical challenges of globalization.
- **c)** Write short note on business ethics and environmental values.
- **d)** Explain business and sustainability in detail.
- **e)** Explain ethical issues in the relation between business and government.

Q.5 Attempt any Two. **12**
- **a)** Write short note on corporate citizenship and regulation.
- **b)** Explain Globalization and CSOs e.
- **c)** Write short note on ethical challenges of globalization.

SLR-BD-586

Seat No.

Set P

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Managerial Economics (BTN07515)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) "Capitalism" refers to: ____
a) the use of markets
b) government ownership of capital goods
c) private ownership of capital goods
d) private ownership of homes & cars

2) Macroeconomics deals with: ____
a) The behavior of firms
b) Economic aggregates
c) The activities of individual units
d) The behavior of the electronics industry

3) The study of inflation is part of: ____
a) Normative economics b) Macroeconomics
c) Microeconomics d) Descriptive economics

4) Which of the following is a determinant of demand?
a) the price of a substitute good
b) the price of a complement good
c) the price of the good next month
d) all of the above

5) The demand curve for a normal good shifts leftward if income ____or the expected future price ____.
a) decreases; falls b) increases; rises
c) increases; falls d) decreases; rises

6) A surplus occurs when the price is ____.
a) equal to the equilibrium price
b) greater than the equilibrium price
c) less than the equilibrium price
d) None of the above

7) If two goods are complements, then ____
a) the cross-price elasticity of demand will be negative
b) the cross-price elasticity of demand will be zero
c) the cross-price elasticity of demand will be positive
d) an increase in the price of one good will increase demand for the other

8) The price elasticity of demand equals ____.
a) the percentage change in the quantity demanded divided by the percentage change in the price
b) the change in the quantity demanded divided by the change in price
c) the percentage change in the price divided by the percentage change in the quantity demanded
d) the change in the price divided by the change in quantity demanded

9) Constraints in an LP model represents ____.
a) Limitations
b) Requirements
c) balancing, limitations and requirements
d) all of the above

10) The linear function of the variables which is to be maximize or minimize is called ____.
a) Constraints b) Objective function
c) Decision variable d) None of the above

11) Using equation method, Break-even point is calculated as ____
a) Sales = Variable expenses + Fixed expenses + Profit
b) Sales = Variable expenses + Fixed expenses – Profit
c) Sales = Variable expenses - Fixed expenses + Profit
d) None of the above

12) Profit-Volume ratio is also known as ____
a) Contribution ratio b) Contribution/Sales ratio
c) Marginal Income percentage d) All of the above

13) Which of the following best describes an oligopoly?
a) many monopolistically competitive firms
b) a few firms sharing monopoly power
c) a former monopoly that has been broken up by the government
d) a government-granted franchise or monopoly

14) Marginal revenue is equal to price for which one of the following types of market structure?

a) Monopoly
b) Perfect competition
c) Monopolistic competition
d) Oligopoly

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Managerial Economics (BTN07515)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION-I

Q.2 Answer the following questions. (Any Four) **16**

a) Explain scope of managerial economics for business decision.
b) State the difference between Microeconomics and Macroeconomics.
c) Explain measuring values of market exchange.
d) State and explain the determinants of demand.
e) Explain price elasticity of demand.
f) Explain the concept cross price elasticity.

Q.3 Answer the following questions. (Any Two) **12**

a) Explain economics contribution to managerial decision.
b) Explain cardinal and ordinal approach of consumer behavior.
c) Explain elasticities for nonlinear demand functions.

SECTION-II

Q.4 Answer the following questions. (Any Four) **16**

a) Explain Trend projection method for demand forecasting.
b) Explain Barometric Method for demand forecasting.
c) Explain the impact of linear cost and revenue functions on breakeven analysis.
d) Explain the concept profit margin of safety.
e) Explain the concept demand side of market.
f) Explain the degree of competition in market.

Q.5 Answer the following questions. (Any Two) **12**

a) State and explain the applications of Linear Programming Techniques.
b) Explain Market Structure. Also state the objectives of market structure.
c) Explain following costs of production:
1) Fixed and Variable Costs
2) Total, Average, and Marginal Costs
3) Short-Run and Long-Run Costs

Seat No.

Set Q

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Managerial Economics (BTN07515)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The price elasticity of demand equals ____.
a) the percentage change in the quantity demanded divided by the percentage change in the price
b) the change in the quantity demanded divided by the change in price
c) the percentage change in the price divided by the percentage change in the quantity demanded
d) the change in the price divided by the change in quantity demanded

2) Constraints in an LP model represents ____.
a) Limitations
b) Requirements
c) balancing, limitations and requirements
d) all of the above

3) The linear function of the variables which is to be maximize or minimize is called ____.
a) Constraints b) Objective function
c) Decision variable d) None of the above

4) Using equation method, Break-even point is calculated as ____
a) Sales = Variable expenses + Fixed expenses + Profit
b) Sales = Variable expenses + Fixed expenses – Profit
c) Sales = Variable expenses - Fixed expenses + Profit
d) None of the above

5) Profit-Volume ratio is also known as ____
a) Contribution ratio b) Contribution/Sales ratio
c) Marginal Income percentage d) All of the above

6) Which of the following best describes an oligopoly?
a) many monopolistically competitive firms
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c) a former monopoly that has been broken up by the government
d) a government-granted franchise or monopoly

7) Marginal revenue is equal to price for which one of the following types of market structure?
a) Monopoly b) Perfect competition
c) Monopolistic competition d) Oligopoly

8) "Capitalism" refers to: ____
a) the use of markets
b) government ownership of capital goods
c) private ownership of capital goods
d) private ownership of homes & cars

9) Macroeconomics deals with: ____
a) The behavior of firms
b) Economic aggregates
c) The activities of individual units
d) The behavior of the electronics industry

10) The study of inflation is part of: ____
a) Normative economics b) Macroeconomics
c) Microeconomics d) Descriptive economics

11) Which of the following is a determinant of demand?
a) the price of a substitute good
b) the price of a complement good
c) the price of the good next month
d) all of the above

12) The demand curve for a normal good shifts leftward if income ____or the expected future price ____.
a) decreases; falls b) increases; rises
c) increases; falls d) decreases; rises

13) A surplus occurs when the price is ____.
a) equal to the equilibrium price
b) greater than the equilibrium price
c) less than the equilibrium price
d) None of the above

14) If two goods are complements, then ____

a) the cross-price elasticity of demand will be negative
b) the cross-price elasticity of demand will be zero
c) the cross-price elasticity of demand will be positive
d) an increase in the price of one good will increase demand for the other

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Managerial Economics (BTN07515)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION-I

Q.2 Answer the following questions. (Any Four) **16**

a) Explain scope of managerial economics for business decision.
b) State the difference between Microeconomics and Macroeconomics.
c) Explain measuring values of market exchange.
d) State and explain the determinants of demand.
e) Explain price elasticity of demand.
f) Explain the concept cross price elasticity.

Q.3 Answer the following questions. (Any Two) **12**

a) Explain economics contribution to managerial decision.
b) Explain cardinal and ordinal approach of consumer behavior.
c) Explain elasticities for nonlinear demand functions.

SECTION-II

Q.4 Answer the following questions. (Any Four) **16**

a) Explain Trend projection method for demand forecasting.
b) Explain Barometric Method for demand forecasting.
c) Explain the impact of linear cost and revenue functions on breakeven analysis.
d) Explain the concept profit margin of safety.
e) Explain the concept demand side of market.
f) Explain the degree of competition in market.

Q.5 Answer the following questions. (Any Two) **12**

a) State and explain the applications of Linear Programming Techniques.
b) Explain Market Structure. Also state the objectives of market structure.
c) Explain following costs of production:
1) Fixed and Variable Costs
2) Total, Average, and Marginal Costs
3) Short-Run and Long-Run Costs

Seat No.

Set R

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Managerial Economics (BTN07515)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Using equation method, Break-even point is calculated as ____
a) Sales = Variable expenses + Fixed expenses + Profit
b) Sales = Variable expenses + Fixed expenses – Profit
c) Sales = Variable expenses - Fixed expenses + Profit
d) None of the above

2) Profit-Volume ratio is also known as ____
a) Contribution ratio b) Contribution/Sales ratio
c) Marginal Income percentage d) All of the above

3) Which of the following best describes an oligopoly?
a) many monopolistically competitive firms
b) a few firms sharing monopoly power
c) a former monopoly that has been broken up by the government
d) a government-granted franchise or monopoly

4) Marginal revenue is equal to price for which one of the following types of market structure?
a) Monopoly b) Perfect competition
c) Monopolistic competition d) Oligopoly

5) "Capitalism" refers to: ____
a) the use of markets
b) government ownership of capital goods
c) private ownership of capital goods
d) private ownership of homes & cars

6) Macroeconomics deals with: ____
a) The behavior of firms
b) Economic aggregates
c) The activities of individual units
d) The behavior of the electronics industry

7) The study of inflation is part of: ____
a) Normative economics b) Macroeconomics
c) Microeconomics d) Descriptive economics

8) Which of the following is a determinant of demand?
a) the price of a substitute good
b) the price of a complement good
c) the price of the good next month
d) all of the above

9) The demand curve for a normal good shifts leftward if income ____or the expected future price ____.
a) decreases; falls b) increases; rises
c) increases; falls d) decreases; rises

10) A surplus occurs when the price is ____.
a) equal to the equilibrium price
b) greater than the equilibrium price
c) less than the equilibrium price
d) None of the above

11) If two goods are complements, then ____
a) the cross-price elasticity of demand will be negative
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c) the cross-price elasticity of demand will be positive
d) an increase in the price of one good will increase demand for the other

12) The price elasticity of demand equals ____.
a) the percentage change in the quantity demanded divided by the percentage change in the price
b) the change in the quantity demanded divided by the change in price
c) the percentage change in the price divided by the percentage change in the quantity demanded
d) the change in the price divided by the change in quantity demanded

13) Constraints in an LP model represents ____.
a) Limitations
b) Requirements
c) balancing, limitations and requirements
d) all of the above

14) The linear function of the variables which is to be maximize or minimize is called ____.

a) Constraints
b) Objective function
c) Decision variable
d) None of the above

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Managerial Economics (BTN07515)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION-I

Q.2 Answer the following questions. (Any Four) **16**

a) Explain scope of managerial economics for business decision.
b) State the difference between Microeconomics and Macroeconomics.
c) Explain measuring values of market exchange.
d) State and explain the determinants of demand.
e) Explain price elasticity of demand.
f) Explain the concept cross price elasticity.

Q.3 Answer the following questions. (Any Two) **12**

a) Explain economics contribution to managerial decision.
b) Explain cardinal and ordinal approach of consumer behavior.
c) Explain elasticities for nonlinear demand functions.

SECTION-II

Q.4 Answer the following questions. (Any Four) **16**

a) Explain Trend projection method for demand forecasting.
b) Explain Barometric Method for demand forecasting.
c) Explain the impact of linear cost and revenue functions on breakeven analysis.
d) Explain the concept profit margin of safety.
e) Explain the concept demand side of market.
f) Explain the degree of competition in market.

Q.5 Answer the following questions. (Any Two) **12**

a) State and explain the applications of Linear Programming Techniques.
b) Explain Market Structure. Also state the objectives of market structure.
c) Explain following costs of production:
1) Fixed and Variable Costs
2) Total, Average, and Marginal Costs
3) Short-Run and Long-Run Costs

Seat No.

Set S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Managerial Economics (BTN07515)

Day & Date: Thursday 22-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) A surplus occurs when the price is ____.
a) equal to the equilibrium price
b) greater than the equilibrium price
c) less than the equilibrium price
d) None of the above

2) If two goods are complements, then ____
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3) The price elasticity of demand equals ____.
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b) the change in the quantity demanded divided by the change in price
c) the percentage change in the price divided by the percentage change in the quantity demanded
d) the change in the price divided by the change in quantity demanded

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b) Requirements
c) balancing, limitations and requirements
d) all of the above

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a) Constraints b) Objective function
c) Decision variable d) None of the above

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b) Sales = Variable expenses + Fixed expenses – Profit
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d) None of the above

7) Profit-Volume ratio is also known as ____

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b) a few firms sharing monopoly power
c) a former monopoly that has been broken up by the government
d) a government-granted franchise or monopoly

9) Marginal revenue is equal to price for which one of the following types of market structure?

a) Monopoly b) Perfect competition
c) Monopolistic competition d) Oligopoly

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a) the use of markets
b) government ownership of capital goods
c) private ownership of capital goods
d) private ownership of homes & cars

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a) The behavior of firms
b) Economic aggregates
c) The activities of individual units
d) The behavior of the electronics industry

12) The study of inflation is part of: ____

a) Normative economics b) Macroeconomics
c) Microeconomics d) Descriptive economics

13) Which of the following is a determinant of demand?

a) the price of a substitute good
b) the price of a complement good
c) the price of the good next month
d) all of the above

14) The demand curve for a normal good shifts leftward if income ____or the expected future price ____.

a) decreases; falls
b) increases; rises
c) increases; falls
d) decreases; rises

SLR-BD-586

Seat No.	

Set S

T. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Managerial Economics (BTN07515)

Day & Date: Thursday 22-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION-I

Q.2 Answer the following questions. (Any Four) **16**

a) Explain scope of managerial economics for business decision.
b) State the difference between Microeconomics and Macroeconomics.
c) Explain measuring values of market exchange.
d) State and explain the determinants of demand.
e) Explain price elasticity of demand.
f) Explain the concept cross price elasticity.

Q.3 Answer the following questions. (Any Two) **12**

a) Explain economics contribution to managerial decision.
b) Explain cardinal and ordinal approach of consumer behavior.
c) Explain elasticities for nonlinear demand functions.

SECTION-II

Q.4 Answer the following questions. (Any Four) **16**

a) Explain Trend projection method for demand forecasting.
b) Explain Barometric Method for demand forecasting.
c) Explain the impact of linear cost and revenue functions on breakeven analysis.
d) Explain the concept profit margin of safety.
e) Explain the concept demand side of market.
f) Explain the degree of competition in market.

Q.5 Answer the following questions. (Any Two) **12**

a) State and explain the applications of Linear Programming Techniques.
b) Explain Market Structure. Also state the objectives of market structure.
c) Explain following costs of production:
1) Fixed and Variable Costs
2) Total, Average, and Marginal Costs
3) Short-Run and Long-Run Costs

SLR-BD-587

Seat No.	

Set P

T. Y (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Smart Energy Management System (BTN07516)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which of the following smart grid components is responsible for monitoring things such as electric current and voltage, among other things?
a) IT operations b) Control systems & sensors
c) Analytic software d) Communications

2) Which of the following best describes the smart grid's analytic software's responsibilities?
a) It monitors a smart grid's current voltage.
b) It is tasked with preventing malware from infecting the smart grid.
c) It analyzes the electricity to ensure it is coming from renewable resources.
d) It analyzes the power grid's processes and can automate.

3) Alternate Mark Inversion (AMI) is also known as _____
a) Pseudo ternary coding b) Manchester coding
c) Polar NRZ format d) None of the above

4) In Alternate Mark Inversion (AMI) _____
a) 0 is encoded as positive pulse and 1 is encoded as negative pulse
b) 0 is encoded as no pulse and 1 is encoded as negative pulse
c) 0 is encoded as negative pulse and 1 is encoded as positive pulse
d) 0 is encoded as no pulse and 1 is encoded as positive or negative pulse

5) Advantages of using AMI _____
a) Needs least power as due to opposite polarity
b) prevents build-up of DC
c) may be used for longer distance
d) all of the above

6) Which of the following AMI components is the collection of networks in which the entire infrastructure is built on?

a) The collector b) Smart meters
c) The communication channel d) Head-end system

7) In Alternate Mark Inversion (AMI) _____

a) 0 is encoded as positive pulse and 1 is encoded as negative pulse
b) 0 is encoded as no pulse and 1 is encoded as negative pulse
c) 0 is encoded as negative pulse and 1 is encoded as positive pulse
d) 0 is encoded as no pulse and 1 is encoded as positive or negative pulse

8) Advantages of using AMI _____

a) Needs least power as due to opposite polarity
b) prevents build-up of DC
c) may be used for longer distance
d) all of the above

9) The interference caused by the adjacent pulses in digital transmission is called _____

a) Inter symbol interference b) White noise
c) Image frequency interference d) Transit time noise

10) Eye pattern _____

a) is used to study ISI
b) may be seen on CRO
c) resembles the shape of human eye
d) All of the above

11) The time interval over which the received signal may be sampled without error may be explained by _____

a) Width of eye opening of eye pattern
b) Rate of closure of eye of eye pattern
c) Height of the eye opening of eye pattern
d) All of the above

12) For a noise to be white Gaussian noise, the optimum filter is known as:

a) Low pass filter b) Base band filter
c) Matched filter d) Bessel filter

13) Matched filters are used _____

a) For maximizing signal to noise ratio
b) For signal detection
c) In radar
d) All of the above

14) The number of bits of data transmitted per second is called _____

a) Data signaling rate b) Modulation rate
c) Coding d) None of the above

SLR-BD-587

Seat No.	

Set P

T. Y (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Smart Energy Management System (BTN07516)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to right indicates full marks.
3) Assume the suitable data whenever necessary.

Section – I

Q.2 Solve any four: **16**

a) Explain how the automatic meter reading can make the system smarter.
b) List the smart appliances and describe an integration of smart appliances into grid for home and building automation.
c) Explain outage management system
d) Explain IED application for monitoring and protection.
e) Explain phase measuring unit.

Q.3 Solve any two **12**

a) Explain wide area measurement system.
b) Compare micro grid and smart grid.
c) Describe the power quality issues of grid connected renewable energy sources.

Section – II

Q.4 Solve any four **16**

a) Explain about power quality Audit and its applications.
b) Draw the flow chart of procedure for monitoring power quality and issues of power quality monitoring.
c) Explain the importance of power quality in smart grid.
d) What is the impact of smart grid component integration on distribution network operation?
e) Write a short note on need of Smart grid Management system.

Q.5 Solve any two **12**

a) Explain the IP based protocols.
b) Explain about power quality control technologies.
c) Write the application of DSO.

SLR-BD-587

Seat No.	

Set Q

T. Y (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Smart Energy Management System (BTN07516)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Advantages of using AMI _____
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3) Eye pattern _____
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a) Width of eye opening of eye pattern
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SLR-BD-587

Seat No.	

Set Q

T. Y (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Smart Energy Management System (BTN07516)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to right indicates full marks.
3) Assume the suitable data whenever necessary.

Section – I

Q.2 Solve any four: **16**

a) Explain how the automatic meter reading can make the system smarter.
b) List the smart appliances and describe an integration of smart appliances into grid for home and building automation.
c) Explain outage management system
d) Explain IED application for monitoring and protection.
e) Explain phase measuring unit.

Q.3 Solve any two **12**

a) Explain wide area measurement system.
b) Compare micro grid and smart grid.
c) Describe the power quality issues of grid connected renewable energy sources.

Section – II

Q.4 Solve any four **16**

a) Explain about power quality Audit and its applications.
b) Draw the flow chart of procedure for monitoring power quality and issues of power quality monitoring.
c) Explain the importance of power quality in smart grid.
d) What is the impact of smart grid component integration on distribution network operation?
e) Write a short note on need of Smart grid Management system.

Q.5 Solve any two **12**

a) Explain the IP based protocols.
b) Explain about power quality control technologies.
c) Write the application of DSO.

Seat No.	

Set R

T. Y (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Smart Energy Management System (BTN07516)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The time interval over which the received signal may be sampled without error may be explained by _____
a) Width of eye opening of eye pattern
b) Rate of closure of eye of eye pattern
c) Height of the eye opening of eye pattern
d) All of the above

2) For a noise to be white Gaussian noise, the optimum filter is known as:
a) Low pass filter b) Base band filter
c) Matched filter d) Bessel filter

3) Matched filters are used _____
a) For maximizing signal to noise ratio
b) For signal detection
c) In radar
d) All of the above

4) The number of bits of data transmitted per second is called _____
a) Data signaling rate b) Modulation rate
c) Coding d) None of the above

5) Which of the following smart grid components is responsible for monitoring things such as electric current and voltage, among other things?
a) IT operations b) Control systems & sensors
c) Analytic software d) Communications

6) Which of the following best describes the smart grid's analytic software's responsibilities?
a) It monitors a smart grid's current voltage.
b) It is tasked with preventing malware from infecting the smart grid.
c) It analyzes the electricity to ensure it is coming from renewable resources.
d) It analyzes the power grid's processes and can automate.

7) Alternate Mark Inversion (AMI) is also known as _____
a) Pseudo ternary coding b) Manchester coding
c) Polar NRZ format d) None of the above

8) In Alternate Mark Inversion (AMI) _____
a) 0 is encoded as positive pulse and 1 is encoded as negative pulse
b) 0 is encoded as no pulse and 1 is encoded as negative pulse
c) 0 is encoded as negative pulse and 1 is encoded as positive pulse
d) 0 is encoded as no pulse and 1 is encoded as positive or negative pulse

9) Advantages of using AMI _____
a) Needs least power as due to opposite polarity
b) prevents build-up of DC
c) may be used for longer distance
d) all of the above

10) Which of the following AMI components is the collection of networks in which the entire infrastructure is built on?
a) The collector b) Smart meters
c) The communication channel d) Head-end system

11) In Alternate Mark Inversion (AMI) _____
a) 0 is encoded as positive pulse and 1 is encoded as negative pulse
b) 0 is encoded as no pulse and 1 is encoded as negative pulse
c) 0 is encoded as negative pulse and 1 is encoded as positive pulse
d) 0 is encoded as no pulse and 1 is encoded as positive or negative pulse

12) Advantages of using AMI _____
a) Needs least power as due to opposite polarity
b) prevents build-up of DC
c) may be used for longer distance
d) all of the above

13) The interference caused by the adjacent pulses in digital transmission is called _____
a) Inter symbol interference b) White noise
c) Image frequency interference d) Transit time noise

14) Eye pattern _____
a) is used to study ISI
b) may be seen on CRO
c) resembles the shape of human eye
d) All of the above

SLR-BD-587

Seat No.	

Set R

T. Y (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Smart Energy Management System (BTN07516)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to right indicates full marks.
3) Assume the suitable data whenever necessary.

Section – I

Q.2 Solve any four: **16**

a) Explain how the automatic meter reading can make the system smarter.
b) List the smart appliances and describe an integration of smart appliances into grid for home and building automation.
c) Explain outage management system
d) Explain IED application for monitoring and protection.
e) Explain phase measuring unit.

Q.3 Solve any two **12**

a) Explain wide area measurement system.
b) Compare micro grid and smart grid.
c) Describe the power quality issues of grid connected renewable energy sources.

Section – II

Q.4 Solve any four **16**

a) Explain about power quality Audit and its applications.
b) Draw the flow chart of procedure for monitoring power quality and issues of power quality monitoring.
c) Explain the importance of power quality in smart grid.
d) What is the impact of smart grid component integration on distribution network operation?
e) Write a short note on need of Smart grid Management system.

Q.5 Solve any two **12**

a) Explain the IP based protocols.
b) Explain about power quality control technologies.
c) Write the application of DSO.

SLR-BD-587

Seat No.	

Set S

T. Y (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Smart Energy Management System (BTN07516)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Which of the following AMI components is the collection of networks in which the entire infrastructure is built on?
a) The collector b) Smart meters
c) The communication channel d) Head-end system

2) In Alternate Mark Inversion (AMI) _____
a) 0 is encoded as positive pulse and 1 is encoded as negative pulse
b) 0 is encoded as no pulse and 1 is encoded as negative pulse
c) 0 is encoded as negative pulse and 1 is encoded as positive pulse
d) 0 is encoded as no pulse and 1 is encoded as positive or negative pulse

3) Advantages of using AMI _____
a) Needs least power as due to opposite polarity
b) prevents build-up of DC
c) may be used for longer distance
d) all of the above

4) The interference caused by the adjacent pulses in digital transmission is called _____
a) Inter symbol interference b) White noise
c) Image frequency interference d) Transit time noise

5) Eye pattern _____
a) is used to study ISI
b) may be seen on CRO
c) resembles the shape of human eye
d) All of the above

6) The time interval over which the received signal may be sampled without error may be explained by _____
   a) Width of eye opening of eye pattern
   b) Rate of closure of eye of eye pattern
   c) Height of the eye opening of eye pattern
   d) All of the above

7) For a noise to be white Gaussian noise, the optimum filter is known as:
   a) Low pass filter b) Base band filter
   c) Matched filter d) Bessel filter

8) Matched filters are used _____
   a) For maximizing signal to noise ratio
   b) For signal detection
   c) In radar
   d) All of the above

9) The number of bits of data transmitted per second is called _____
   a) Data signaling rate b) Modulation rate
   c) Coding d) None of the above

10) Which of the following smart grid components is responsible for monitoring things such as electric current and voltage, among other things?
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   c) Analytic software d) Communications

11) Which of the following best describes the smart grid's analytic software's responsibilities?
   a) It monitors a smart grid's current voltage.
   b) It is tasked with preventing malware from infecting the smart grid.
   c) It analyzes the electricity to ensure it is coming from renewable resources.
   d) It analyzes the power grid's processes and can automate.

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   a) Pseudo ternary coding b) Manchester coding
   c) Polar NRZ format d) None of the above

13) In Alternate Mark Inversion (AMI) _____
   a) 0 is encoded as positive pulse and 1 is encoded as negative pulse
   b) 0 is encoded as no pulse and 1 is encoded as negative pulse
   c) 0 is encoded as negative pulse and 1 is encoded as positive pulse
   d) 0 is encoded as no pulse and 1 is encoded as positive or negative pulse

14) Advantages of using AMI _____
   a) Needs least power as due to opposite polarity
   b) prevents build-up of DC
   c) may be used for longer distance
   d) all of the above

SLR-BD-587

Seat No.	

Set S

T. Y (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Smart Energy Management System (BTN07516)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to right indicates full marks.
3) Assume the suitable data whenever necessary.

Section – I

Q.2 Solve any four: **16**

a) Explain how the automatic meter reading can make the system smarter.
b) List the smart appliances and describe an integration of smart appliances into grid for home and building automation.
c) Explain outage management system
d) Explain IED application for monitoring and protection.
e) Explain phase measuring unit.

Q.3 Solve any two **12**

a) Explain wide area measurement system.
b) Compare micro grid and smart grid.
c) Describe the power quality issues of grid connected renewable energy sources.

Section – II

Q.4 Solve any four **16**

a) Explain about power quality Audit and its applications.
b) Draw the flow chart of procedure for monitoring power quality and issues of power quality monitoring.
c) Explain the importance of power quality in smart grid.
d) What is the impact of smart grid component integration on distribution network operation?
e) Write a short note on need of Smart grid Management system.

Q.5 Solve any two **12**

a) Explain the IP based protocols.
b) Explain about power quality control technologies.
c) Write the application of DSO.

SLR-BD-588

Seat No.		Set	P

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electric Motors and Controls for Electric Vehicle (BTN07517)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In an AC voltage controller-fed induction motor drive, what type of load is suitable for smooth operation?
a) Constant torque load b) Variable torque load
c) Constant power load d) Constant current load

2) What is the primary principle of operation of a Switched Reluctance Motor (SRM)?
a) Electromagnetic indication b) Permanent magnet interaction
c) Reluctance variation d) Voltage regulation

3) What is the role of Hall effect sensors in a Brushless DC motor?
a) Generate magnetic field
b) Commutate the motor
c) Provide mechanical output
d) Convert electrical energy to mechanical energy

4) In a parallel hybrid electric drivetrain, how are the internal combustion engine and the electric connected to the wheels?
a) Directly
b) Through a mechanical transmission
c) Via a generator charging the battery
d) Through a power-split device

5) In a chopper-fed DC drive, what is the function of the chopper?
a) Convert DC to AC b) Regulate DC voltage
c) Control DC current d) Generate PWM signals

6) Which type of slip recovery scheme adjusts the rotor resistance to control slip?
a) V/f control b) Slip power recovery control
c) Rotor resistance control d) Flux control

7) Which of the following statement is true about the speed control of a three-phase rectifier-fed DC drive?
a) Speed control is achieved by varying the armature resistance
b) Speed control is achieved by varying the field resistance
c) Speed control is achieved by adjusting the rectifier firing angle
d) Speed control is fixed and cannot be adjusted

8) Which of the following control loops used by Direct torque control _____.
a) Speed control loop b) torque control loop
c) both a & b d) none of the above

9) The Field Oriented Control (FOC) enables the induction machine being controlled alike the _____
a) separately excited DC Machine
b) Permanent magnet DC Machine
c) Switched reluctance machine
d) Stepper motor

10) The principle of vector control of electrical drives is based on _____.
a) only the control of the magnitude of each phase current and voltage.
b) the control of both the magnitude and the phase of each phase current and voltage.
c) only the control of the phase of each phase current and voltage
d) none of the above

11) _____ control gives a motor the capability to act as a generator while in operation.
a) Parallel mode b) Power Split mode
c) Engine brake mode d) Regenerative mode

12) Power split mode of hybrid electric vehicle control uses _____
a) Series & Parallel control topology
b) Only Series control topology
c) Only Parallel control topology
d) None of the above

13) _____ is a technique that allows you to instantaneously control the motor magnetic flux and its electromagnetic torque in a decoupled way.
a) Scalar Control b) Vector Control
c) Direct Torque Control d) none of the above

14) _____ method relies on keeping V/f ratio constant so as to maintain air gap flux at constant value.
a) Scalar Control b) Vector Control above
c) Torque Control d) None of these

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electric Motors and Controls for Electric Vehicle (BTN07517)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are Compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Explain with block diagram components of hybrid electric vehicle.
b) State and explain different characteristics of dc series motor applicable for traction purpose.
c) Explain in closed loop control with cyclo converter based Induction Motor drives.
d) Explain the need of slip recovery in slip ring induction drive. Explain Static Scherbius scheme of control.
e) Explain with neat sketch the operation of three phase CSI fed induction motor drive.
f) With neat diagram explain half wave-controlled rectifier fed dc series motor.

Q.3 Attempt any two of the following. **12**

a) Explain power flow in Hybrid electric drive train system with different modes.
b) What is meant by time ratio control and frequency modulation control in case of dc-dc converter?
c) Define ac voltage controller and explain the method of single & three phase stator voltage control of Induction motor drive.

Section – II

Q.4 Attempt any four of the following. **16**

a) Explain in detail indirect vector control of induction machine.
b) Explain in detail dc drive analogy of field-oriented control of Induction Machine.
c) Explain power split mode of control of electric vehicle.
d) Explain the operation of V/f method of controlling the speed of three phase induction motor.
e) Explain the method of reduction in torque ripple in torque control of induction motor.
f) Describe space vector modulation control in case of induction machine.

Q.5 Attempt any two of the following. **12**

a) Why vehicle supervisory control is required for hybrid electric vehicle (HEV)? Explain different control strategy mode of HEV.

b) Explain with block diagram, theory and principle of Direct vector control of induction motor.

c) Explain with block diagram Direct Torque Control strategy of induction machine.

d) Explain different mode selection strategy for control of electric vehicles.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electric Motors and Controls for Electric Vehicle (BTN07517)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following control loops used by Direct torque control _____.
a) Speed control loop b) torque control loop
c) both a & b d) none of the above

2) The Field Oriented Control (FOC) enables the induction machine being controlled alike the _____
a) separately excited DC Machine
b) Permanent magnet DC Machine
c) Switched reluctance machine
d) Stepper motor

3) The principle of vector control of electrical drives is based on _____.
a) only the control of the magnitude of each phase current and voltage.
b) the control of both the magnitude and the phase of each phase current and voltage.
c) only the control of the phase of each phase current and voltage
d) none of the above

4) _____ control gives a motor the capability to act as a generator while in operation.
a) Parallel mode b) Power Split mode
c) Engine brake mode d) Regenerative mode

5) Power split mode of hybrid electric vehicle control uses _____
a) Series & Parallel control topology
b) Only Series control topology
c) Only Parallel control topology
d) None of the above

6) _____ is a technique that allows you to instantaneously control the motor magnetic flux and its electromagnetic torque in a decoupled way.

a) Scalar Control b) Vector Control
c) Direct Torque Control d) none of the above

7) _____ method relies on keeping V/f ratio constant so as to maintain air gap flux at constant value.

a) Scalar Control b) Vector Control above
c) Torque Control d) None of these

8) In an AC voltage controller-fed induction motor drive, what type of load is suitable for smooth operation?

a) Constant torque load b) Variable torque load
c) Constant power load d) Constant current load

9) What is the primary principle of operation of a Switched Reluctance Motor (SRM)?

a) Electromagnetic indication b) Permanent magnet interaction
c) Reluctance variation d) Voltage regulation

10) What is the role of Hall effect sensors in a Brushless DC motor?

a) Generate magnetic field
b) Commutate the motor
c) Provide mechanical output
d) Convert electrical energy to mechanical energy

11) In a parallel hybrid electric drivetrain, how are the internal combustion engine and the electric connected to the wheels?

a) Directly
b) Through a mechanical transmission
c) Via a generator charging the battery
d) Through a power-split device

12) In a chopper-fed DC drive, what is the function of the chopper?

a) Convert DC to AC b) Regulate DC voltage
c) Control DC current d) Generate PWM signals

13) Which type of slip recovery scheme adjusts the rotor resistance to control slip?

a) V/f control b) Slip power recovery control
c) Rotor resistance control d) Flux control

14) Which of the following statement is true about the speed control of a three-phase rectifier-fed DC drive?

a) Speed control is achieved by varying the armature resistance
b) Speed control is achieved by varying the field resistance
c) Speed control is achieved by adjusting the rectifier firing angle
d) Speed control is fixed and cannot be adjusted

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electric Motors and Controls for Electric Vehicle (BTN07517)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are Compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Explain with block diagram components of hybrid electric vehicle.
b) State and explain different characteristics of dc series motor applicable for traction purpose.
c) Explain in closed loop control with cyclo converter based Induction Motor drives.
d) Explain the need of slip recovery in slip ring induction drive. Explain Static Scherbius scheme of control.
e) Explain with neat sketch the operation of three phase CSI fed induction motor drive.
f) With neat diagram explain half wave-controlled rectifier fed dc series motor.

Q.3 Attempt any two of the following. **12**

a) Explain power flow in Hybrid electric drive train system with different modes.
b) What is meant by time ratio control and frequency modulation control in case of dc-dc converter?
c) Define ac voltage controller and explain the method of single & three phase stator voltage control of Induction motor drive.

Section – II

Q.4 Attempt any four of the following. **16**

a) Explain in detail indirect vector control of induction machine.
b) Explain in detail dc drive analogy of field-oriented control of Induction Machine.
c) Explain power split mode of control of electric vehicle.
d) Explain the operation of V/f method of controlling the speed of three phase induction motor.
e) Explain the method of reduction in torque ripple in torque control of induction motor.
f) Describe space vector modulation control in case of induction machine.

Q.5 Attempt any two of the following. **12**

a) Why vehicle supervisory control is required for hybrid electric vehicle (HEV)? Explain different control strategy mode of HEV.

b) Explain with block diagram, theory and principle of Direct vector control of induction motor.

c) Explain with block diagram Direct Torque Control strategy of induction machine.

d) Explain different mode selection strategy for control of electric vehicles.

Seat No.	

Set R

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electric Motors and Controls for Electric Vehicle (BTN07517)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) _____ control gives a motor the capability to act as a generator while in operation.
a) Parallel mode b) Power Split mode
c) Engine brake mode d) Regenerative mode

2) Power split mode of hybrid electric vehicle control uses _____
a) Series & Parallel control topology
b) Only Series control topology
c) Only Parallel control topology
d) None of the above

3) _____ is a technique that allows you to instantaneously control the motor magnetic flux and its electromagnetic torque in a decoupled way.
a) Scalar Control b) Vector Control
c) Direct Torque Control d) none of the above

4) _____ method relies on keeping V/f ratio constant so as to maintain air gap flux at constant value.
a) Scalar Control b) Vector Control above
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5) In an AC voltage controller-fed induction motor drive, what type of load is suitable for smooth operation?
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7) What is the role of Hall effect sensors in a Brushless DC motor?
a) Generate magnetic field
b) Commutate the motor
c) Provide mechanical output
d) Convert electrical energy to mechanical energy

8) In a parallel hybrid electric drivetrain, how are the internal combustion engine and the electric connected to the wheels?
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c) Via a generator charging the battery
d) Through a power-split device

9) In a chopper-fed DC drive, what is the function of the chopper?
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b) Regulate DC voltage
c) Control DC current
d) Generate PWM signals

10) Which type of slip recovery scheme adjusts the rotor resistance to control slip?
a) V/f control
b) Slip power recovery control
c) Rotor resistance control
d) Flux control

11) Which of the following statement is true about the speed control of a three-phase rectifier-fed DC drive?
a) Speed control is achieved by varying the armature resistance
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c) Speed control is achieved by adjusting the rectifier firing angle
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12) Which of the following control loops used by Direct torque control _____.
a) Speed control loop
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c) both a & b
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13) The Field Oriented Control (FOC) enables the induction machine being controlled alike the _____
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b) Permanent magnet DC Machine
c) Switched reluctance machine
d) Stepper motor

14) The principle of vector control of electrical drives is based on _____.
a) only the control of the magnitude of each phase current and voltage.
b) the control of both the magnitude and the phase of each phase current and voltage.
c) only the control of the phase of each phase current and voltage
d) none of the above

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electric Motors and Controls for Electric Vehicle (BTN07517)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are Compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Explain with block diagram components of hybrid electric vehicle.
b) State and explain different characteristics of dc series motor applicable for traction purpose.
c) Explain in closed loop control with cyclo converter based Induction Motor drives.
d) Explain the need of slip recovery in slip ring induction drive. Explain Static Scherbius scheme of control.
e) Explain with neat sketch the operation of three phase CSI fed induction motor drive.
f) With neat diagram explain half wave-controlled rectifier fed dc series motor.

Q.3 Attempt any two of the following. **12**

a) Explain power flow in Hybrid electric drive train system with different modes.
b) What is meant by time ratio control and frequency modulation control in case of dc-dc converter?
c) Define ac voltage controller and explain the method of single & three phase stator voltage control of Induction motor drive.

Section – II

Q.4 Attempt any four of the following. **16**

a) Explain in detail indirect vector control of induction machine.
b) Explain in detail dc drive analogy of field-oriented control of Induction Machine.
c) Explain power split mode of control of electric vehicle.
d) Explain the operation of V/f method of controlling the speed of three phase induction motor.
e) Explain the method of reduction in torque ripple in torque control of induction motor.
f) Describe space vector modulation control in case of induction machine.

Q.5 Attempt any two of the following. **12**

a) Why vehicle supervisory control is required for hybrid electric vehicle (HEV)? Explain different control strategy mode of HEV.

b) Explain with block diagram, theory and principle of Direct vector control of induction motor.

c) Explain with block diagram Direct Torque Control strategy of induction machine.

d) Explain different mode selection strategy for control of electric vehicles.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electric Motors and Controls for Electric Vehicle (BTN07517)

Day & Date: Friday 23-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which type of slip recovery scheme adjusts the rotor resistance to control slip?
a) V/f control b) Slip power recovery control
c) Rotor resistance control d) Flux control

2) Which of the following statement is true about the speed control of a three-phase rectifier-fed DC drive?
a) Speed control is achieved by varying the armature resistance
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3) Which of the following control loops used by Direct torque control _____.
a) Speed control loop b) torque control loop
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4) The Field Oriented Control (FOC) enables the induction machine being controlled alike the _____
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b) Permanent magnet DC Machine
c) Switched reluctance machine
d) Stepper motor

5) The principle of vector control of electrical drives is based on _____.
a) only the control of the magnitude of each phase current and voltage.
b) the control of both the magnitude and the phase of each phase current and voltage.
c) only the control of the phase of each phase current and voltage
d) none of the above

6) _____ control gives a motor the capability to act as a generator while in operation.

a) Parallel mode
b) Power Split mode
c) Engine brake mode
d) Regenerative mode

7) Power split mode of hybrid electric vehicle control uses _____

a) Series & Parallel control topology
b) Only Series control topology
c) Only Parallel control topology
d) None of the above

8) _____ is a technique that allows you to instantaneously control the motor magnetic flux and its electromagnetic torque in a decoupled way.

a) Scalar Control
b) Vector Control
c) Direct Torque Control
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9) _____ method relies on keeping V/f ratio constant so as to maintain air gap flux at constant value.

a) Scalar Control
b) Vector Control above
c) Torque Control
d) None of these

10) In an AC voltage controller-fed induction motor drive, what type of load is suitable for smooth operation?

a) Constant torque load
b) Variable torque load
c) Constant power load
d) Constant current load

11) What is the primary principle of operation of a Switched Reluctance Motor (SRM)?

a) Electromagnetic indication
b) Permanent magnet interaction
c) Reluctance variation
d) Voltage regulation

12) What is the role of Hall effect sensors in a Brushless DC motor?

a) Generate magnetic field
b) Commutate the motor
c) Provide mechanical output
d) Convert electrical energy to mechanical energy

13) In a parallel hybrid electric drivetrain, how are the internal combustion engine and the electric connected to the wheels?

a) Directly
b) Through a mechanical transmission
c) Via a generator charging the battery
d) Through a power-split device

14) In a chopper-fed DC drive, what is the function of the chopper?

a) Convert DC to AC
b) Regulate DC voltage
c) Control DC current
d) Generate PWM signals

SLR-BD-588

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electric Motors and Controls for Electric Vehicle (BTN07517)

Day & Date: Friday 23-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are Compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Explain with block diagram components of hybrid electric vehicle.
b) State and explain different characteristics of dc series motor applicable for traction purpose.
c) Explain in closed loop control with cyclo converter based Induction Motor drives.
d) Explain the need of slip recovery in slip ring induction drive. Explain Static Scherbius scheme of control.
e) Explain with neat sketch the operation of three phase CSI fed induction motor drive.
f) With neat diagram explain half wave-controlled rectifier fed dc series motor.

Q.3 Attempt any two of the following. **12**

a) Explain power flow in Hybrid electric drive train system with different modes.
b) What is meant by time ratio control and frequency modulation control in case of dc-dc converter?
c) Define ac voltage controller and explain the method of single & three phase stator voltage control of Induction motor drive.

Section – II

Q.4 Attempt any four of the following. **16**

a) Explain in detail indirect vector control of induction machine.
b) Explain in detail dc drive analogy of field-oriented control of Induction Machine.
c) Explain power split mode of control of electric vehicle.
d) Explain the operation of V/f method of controlling the speed of three phase induction motor.
e) Explain the method of reduction in torque ripple in torque control of induction motor.
f) Describe space vector modulation control in case of induction machine.

Q.5 Attempt any two of the following. **12**

a) Why vehicle supervisory control is required for hybrid electric vehicle (HEV)? Explain different control strategy mode of HEV.

b) Explain with block diagram, theory and principle of Direct vector control of induction motor.

c) Explain with block diagram Direct Torque Control strategy of induction machine.

d) Explain different mode selection strategy for control of electric vehicles.

SLR-BD-589

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Economics (BTN07506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which of the following market structures has a predominant feature of price leadership?
a) Perfectly competitive b) Monopoly
c) Oligopoly d) Monopolistic

2) Average revenue is _____
a) Total revenue divided by the number of units sold
b) Revenue earned by all the units of the output
c) Revenue earned by the average sized firm in the industry
d) Net addition made to the total revenue by selling one more unit of a commodity

3) Which of these is an economic activity?
a) Father teaching his son at home instead of spending on coaching
b) A housewife making food for the family on her own
c) A hair dresser doing hair cut designing on payment
d) A singer giving a show on his son's wedding anniversary

4) Which of the following is NOT an account in the Balance of Payments?
a) Current Account b) Capital Account
c) Financial Account d) Future Account

5) Which of the following is not a regulatory institution in Indian financial system?
a) RBI b) CIBIL
c) SEBI d) IRDA

6) In a mixed economy which sector (s) is 1 are found _____

a) Private only
b) Public only
c) None
d) Both (a) Private and (b)Public

7) Who is known as father of economics?

a) Adam Smith
b) Prof. A. Samulson
c) Alfred Marshall
d) J. R. Hicks

8) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False
b) True
c) Partly true
d) Partly False

9) Which one of the following is not the function of money?

a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

10) Which one of the following cost can never become zero?

a) Average cost
b) Fixed cost
c) Marginal cost
d) Variable cost

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Economics (BTN07506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Economics (BTN07506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) In a mixed economy which sector (s) is 1 are found _____
a) Private only b) Public only
c) None d) Both (a) Private and (b)Public

1) Who is known as father of economics?
a) Adam Smith b) Prof. A. Samulson
c) Alfred Marshall d) J. R. Hicks

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a) False b) True
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d) Store of value

5) Which one of the following cost can never become zero?
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   b) Revenue earned by all the units of the output
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   d) Net addition made to the total revenue by selling one more unit of a commodity

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   c) SEBI
   d) IRDA

SLR-BD-589

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Economics (BTN07506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Economics (BTN07506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which one of the following is not the function of money?
a) Medium of exchange
b) Measure of Happiness
c) Standard of deferred payment
d) Store of value

2) Which one of the following cost can never become zero?
a) Average cost b) Fixed cost
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c) Alfred Marshall d) J. R. Hicks

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a) False b) True
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Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Economics (BTN07506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
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Q.2 Write short notes. **10**
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b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

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Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

SLR-BD-589

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Economics (BTN07506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which of these is an economic activity?
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SLR-BD-589

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Economics (BTN07506)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Write short notes. **10**
a) Positive and Normative Economics
b) Saving and investment

Q.3 Write short notes. **10**
a) Importance of Money in the economy
b) Monopoly

Q.4 Discuss the role of state government in economic activity. **10**

Q.5 Explain the properties of perfect and imperfectly competitive market. **10**

Q.6 Define national income. Explain the methods of measuring national income. **10**

Q.7 Define commercial bank, discuss the function of commercial banking in India. **10**

SLR-BD-590

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN07507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) What protects the intellectual property created by artists?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

2) If a company develops a new technology that improves its main product, what type of intellectual property can they use to stop others from copying their invention?
a) Copyright b) Patents
c) Trademarks d) Registered Designs

3) All of the following are examples of intellectual property protections except _____.
a) Copyrights b) Patents
c) Contracts d) Trademarks

4) The first Patent Law was enacted in India in the year _____
a) 1856 b) 1880
c) 1905 d) 1850

5) How long does intellectual property last? (after the death of the author)
a) 10 yrs b) 30 yrs
c) 60 yrs d) 70 yrs

6) Which of the following can you copyright?
a) Literary work b) Ideas
c) Choreographic work d) Fashion

7) Which of the following identifies as a trademark?

a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

8) What is the subject matter of a patent?

a) Art b) Invention
c) Goods d) Ideas

9) What is copyright meant for?

a) Film work b) Books
c) Essay d) All of these

10) In which article is intellectual property rights outlined?

a) Article 15 b) Article 27
c) Article 13 d) Article 20

SLR-BD-590

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN07507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?
b) Explain Outlines concepts of confidentiality and information security.
c) Explain the Comparison of the Indian IPR system with international IPR frameworks.

Q.3 Solve any Four: **20**

a) Explain the role of Engineers and Managers in technology development in project commercialization.
b) Write a short note on the shifting paradigms of R&D and their linkage to IPR.
c) Explain Copyright issues in creative works.
d) Discuss the importance of Law on Industrial designs.
e) Explain commercial exploitation and infringement.
f) Write a short note on IPR and Electronic Commerce.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN07507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

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a) Literary work b) Ideas
c) Choreographic work d) Fashion

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8) All of the following are examples of intellectual property protections except _____.

a) Copyrights b) Patents
c) Contracts d) Trademarks

9) The first Patent Law was enacted in India in the year _____

a) 1856 b) 1880
c) 1905 d) 1850

10) How long does intellectual property last? (after the death of the author)

a) 10 yrs b) 30 yrs
c) 60 yrs d) 70 yrs

SLR-BD-590

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN07507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?
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e) Explain commercial exploitation and infringement.
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SLR-BD-590

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN07507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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SLR-BD-590

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN07507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?
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Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN07507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

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a) 1856 b) 1880
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SLR-BD-590

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN07507)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any Two: **20**

a) What is Intellectual property? How it is useful for Engineers?
b) Explain Outlines concepts of confidentiality and information security.
c) Explain the Comparison of the Indian IPR system with international IPR frameworks.

Q.3 Solve any Four: **20**

a) Explain the role of Engineers and Managers in technology development in project commercialization.
b) Write a short note on the shifting paradigms of R&D and their linkage to IPR.
c) Explain Copyright issues in creative works.
d) Discuss the importance of Law on Industrial designs.
e) Explain commercial exploitation and infringement.
f) Write a short note on IPR and Electronic Commerce.

SLR-BD-591

Seat No.		Set	P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Introduction to Sociology (BTN07508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Name of state having highest percentage of literacy level.
a) West Bengal b) Punjab
c) Kerala d) Maharashtra

2) Functions of Social Institutes is ____.
a) To meet fundamental needs of society
b) To improve the Society
c) To meet the needs of Family
d) None of above

3) Social change is change in ____.
a) Society b) Community
c) Individual d) Education

4) Which is recognized as one of the first environmental movements in country?
a) Chipko Movement
b) Kisan Movement
c) Lok satta Movement
d) Naramada Bachao Andolan

5) Science that deals with the relationship between living organism with their physical environment and each other is called ____.
a) Ecosystem b) Biodiversity
c) Environment d) Ecology

6) In which year the term sociology was coined?

a) 1798 b) 1815
c) 1839 d) 1857

7) The word sociology is made up of two words. These are ____.

a) Societies and logy b) Societia and logistia
c) Socious and logos d) Socia and logos

8) Who is the father of Sociology?

a) Karl Max b) Herbert Spencer
c) Auguste Comte d) Charles Darwin

9) The major component of demography are:

a) Mortality b) Fertility
c) Migration d) All of these

10) India occupies _____ rank among the population of the different countries of world.

a) Third b) First
c) Forth d) Second

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Introduction to Sociology (BTN07508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
2) Figures to the right indicate full marks.

Q.2 Solve the following: (Any Four)

a) What is Sociology? And explain with concept like social structure, role, norms, values etc. **10**

b) Explain with detail trends of Urbanization in developing countries and world. **10**

c) Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development. **10**

d) Explain with detail social movements like protest, reformist, radical in India. **10**

e) Explain in detail demographic change in India & world along with Human Ecology. **10**

f) Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Introduction to Sociology (BTN07508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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1) In which year the term sociology was coined?
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SLR-BD-591

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Introduction to Sociology (BTN07508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
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Q.2 Solve the following: (Any Four)

a)	What is Sociology? And explain with concept like social structure, role, norms, values etc.	**10**
b)	Explain with detail trends of Urbanization in developing countries and world.	**10**
c)	Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development.	**10**
d)	Explain with detail social movements like protest, reformist, radical in India.	**10**
e)	Explain in detail demographic change in India & world along with Human Ecology.	**10**
f)	Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization.	**10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Introduction to Sociology (BTN07508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) The major component of demography are:
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Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Introduction to Sociology (BTN07508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Q. no 2 to Q. no 7.
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c)	Explain with detail processes of social change like modernization, Industrialization, Environmental & Ecological changes & development.	**10**
d)	Explain with detail social movements like protest, reformist, radical in India.	**10**
e)	Explain in detail demographic change in India & world along with Human Ecology.	**10**
f)	Explain in detail social institutions for marriage, family, cast, tribe. Explain formal and informal organization.	**10**

SLR-BD-591

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Introduction to Sociology (BTN07508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

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4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Social change is change in ____.
a) Society b) Community
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SLR-BD-591

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Introduction to Sociology (BTN07508)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
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SLR-BD-592

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Stress and Coping (BTN07509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) What is stress?
a) A state of physical tiredness
b) The body's response to a demand or challenge
c) A type of exercise
d) A form of relaxation

2) Which of the following is a healthy way to cope with stress?
a) Concentrating the stressor
b) Engaging in regular physical activity
c) Investing time on social media
d) Consuming excessive amounts of caffeine

3) Which of the following is a relaxation technique often used for stress management?
a) Procrastination b) Meditation
c) Caffeine consumption d) Multitasking

4) What is the purpose of time management in stress reduction?
a) To increase stress by overloading schedules
b) To create a sense of urgency
c) To prioritize tasks and reduce overwhelm
d) To eliminate breaks and relaxation time

5) Which of the following is a potential source of social support?
a) Isolation from friends and family
b) Engaging in negative self-talk
c) Seeking help from friends, family, or support groups
d) Avoiding all forms of communication

6) When a task appears overwhelming, it is best to _____
a) Put it aside till later
b) Drink alcohol to relax
c) Break it down into smaller task
d) Avoid the task

7) Anxiety can cause the following moods _____
a) Irritable
b) Nervous
c) Anxious
d) All of the above

8) The following are the characteristics of Positive Stress.
a) It improves performance
b) It feels exciting
c) It motivates
d) All of the above

9) A good way to prevent stress is _____
a) Drinking beverages high in caffeine
b) Sitting ideal doing nothing
c) Overeating
d) Taking time out for relaxation

10) Absenteeism, turnover and less productivity are _____ symptoms of stress.
a) Medical
b) Psychological
c) Behavioral
d) None of these

SLR-BD-592

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Stress and Coping (BTN07509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Stress and Coping (BTN07509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
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Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) When a task appears overwhelming, it is best to _____
a) Put it aside till later
b) Drink alcohol to relax
c) Break it down into smaller task
d) Avoid the task

2) Anxiety can cause the following moods _____
a) Irritable b) Nervous
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3) The following are the characteristics of Positive Stress.
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b) To create a sense of urgency
c) To prioritize tasks and reduce overwhelm
d) To eliminate breaks and relaxation time

10) Which of the following is a potential source of social support?
a) Isolation from friends and family
b) Engaging in negative self-talk
c) Seeking help from friends, family, or support groups
d) Avoiding all forms of communication

SLR-BD-592

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Stress and Coping (BTN07509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

SLR-BD-592

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Stress and Coping (BTN07509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. **10**

1) A good way to prevent stress is _____
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8) When a task appears overwhelming, it is best to _____
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c) Break it down into smaller task
d) Avoid the task

9) Anxiety can cause the following moods _____
a) Irritable b) Nervous
c) Anxious d) All of the above

10) The following are the characteristics of Positive Stress.
a) It improves performance
b) It feels exciting
c) It motivates
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SLR-BD-592

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Stress and Coping (BTN07509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

Q.4 Describe in detail the different causes of stress. **10**

Q.5 Discuss the nature of stress response. **10**

Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

Seat No.	

Set | S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Stress and Coping (BTN07509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

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SLR-BD-592

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Stress and Coping (BTN07509)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions out of Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 Define Stress & explain current and historical status of stress. **10**

Q.3 Describe various consequences due to stress. **10**

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Q.6 What are some effective techniques for managing stress. **10**

Q.7 How does social support contribute to stress mitigation. **10**

SLR-BD-593

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Professional Ethics and Human Value (BTN07510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values, and beliefs
c) Only Values d) Psychology

2) Word ethichs is definded as a _____
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

3) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) Authority

4) The study on ethics helps to know the people's _____.
a) Learn good or bad things
b) Copyright
c) Morality
d) Beliefs, values, and morals

5) The objectives of professional ethics in engineering are _____.
a) To understand the moral values that ought to guide the Engineering profession
b) To resolve the moral issues in the profession, and
c) To justify the moral judgment concerning the profession
d) All the above

6) The main core human values are _____.

a) Right conduct b) Peace
c) Both a & b d) None of these

7) Preconditioning is ____.

a) Assuming without knowing b) Knowing without assuming
c) Only assuming d) Only knowing

8) Value education deals with ____.

a) What is universally valuable to all of us
b) What is conductive to our individual and collective of us
c) Enables to be in harmony with ourselves, other and rest of nature
d) All of the above

9) Courage is the tendency to accept and face ____.

a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

10) Human life is lived at four levels individuals, family, society and ____.

a) Nature b) Nurture
c) World d) Universe

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Professional Ethics and Human Value (BTN07510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

SLR-BD-593

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Professional Ethics and Human Value (BTN07510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. 10

1) The main core human values are _____.
a) Right conduct b) Peace
c) Both a & b d) None of these

2) Preconditioning is ____.
a) Assuming without knowing b) Knowing without assuming
c) Only assuming d) Only knowing

3) Value education deals with ____.
a) What is universally valuable to all of us
b) What is conductive to our individual and collective of us
c) Enables to be in harmony with ourselves, other and rest of nature
d) All of the above

4) Courage is the tendency to accept and face ____.
a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

5) Human life is lived at four levels individuals, family, society and ____.
a) Nature b) Nurture
c) World d) Universe

6) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values, and beliefs
c) Only Values d) Psychology

7) Word ethichs is definded as a _____
   a) Motivation
   b) Set of attitudes concerned with the value of work
   c) Attitude
   d) Values

8) _____ is defined as the duty, obligation or even authority.
   a) Work
   b) Responsibility
   c) Democracy
   d) Authority

9) The study on ethics helps to know the people's _____.
   a) Learn good or bad things
   b) Copyright
   c) Morality
   d) Beliefs, values, and morals

10) The objectives of professional ethics in engineering are _____.
   a) To understand the moral values that ought to guide the Engineering profession
   b) To resolve the moral issues in the profession, and
   c) To justify the moral judgment concerning the profession
   d) All the above

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Professional Ethics and Human Value (BTN07510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Professional Ethics and Human Value (BTN07510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Courage is the tendency to accept and face ____.
a) Self-confidence
b) Risks and difficult tasks in rational ways
c) Physical courage
d) Social courage

2) Human life is lived at four levels individuals, family, society and ____.
a) Nature b) Nurture
c) World d) Universe

3) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values, and beliefs
c) Only Values d) Psychology

4) Word ethichs is definded as a _____
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

5) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) Authority

6) The study on ethics helps to know the people's _____.
a) Learn good or bad things
b) Copyright
c) Morality
d) Beliefs, values, and morals

7) The objectives of professional ethics in engineering are _____.

a) To understand the moral values that ought to guide the Engineering profession
b) To resolve the moral issues in the profession, and
c) To justify the moral judgment concerning the profession
d) All the above

8) The main core human values are _____.

a) Right conduct b) Peace
c) Both a & b d) None of these

9) Preconditioning is ____.

a) Assuming without knowing b) Knowing without assuming
c) Only assuming d) Only knowing

10) Value education deals with ____.

a) What is universally valuable to all of us
b) What is conductive to our individual and collective of us
c) Enables to be in harmony with ourselves, other and rest of nature
d) All of the above

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Professional Ethics and Human Value (BTN07510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

SLR-BD-593

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Professional Ethics and Human Value (BTN07510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) Authority

2) The study on ethics helps to know the people's _____.
a) Learn good or bad things
b) Copyright
c) Morality
d) Beliefs, values, and morals

3) The objectives of professional ethics in engineering are _____.
a) To understand the moral values that ought to guide the Engineering profession
b) To resolve the moral issues in the profession, and
c) To justify the moral judgment concerning the profession
d) All the above

4) The main core human values are _____.
a) Right conduct b) Peace
c) Both a & b d) None of these

5) Preconditioning is ____.
a) Assuming without knowing b) Knowing without assuming
c) Only assuming d) Only knowing

6) Value education deals with ____.
   a) What is universally valuable to all of us
   b) What is conductive to our individual and collective of us
   c) Enables to be in harmony with ourselves, other and rest of nature
   d) All of the above

7) Courage is the tendency to accept and face ____.
   a) Self-confidence
   b) Risks and difficult tasks in rational ways
   c) Physical courage
   d) Social courage

8) Human life is lived at four levels individuals, family, society and ____.
   a) Nature b) Nurture
   c) World d) Universe

9) Ethics is the word that refers to _____.
   a) Human tendency b) Morals, values, and beliefs
   c) Only Values d) Psychology

10) Word ethichs is definded as a _____
   a) Motivation
   b) Set of attitudes concerned with the value of work
   c) Attitude
   d) Values

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Professional Ethics and Human Value (BTN07510)

Day & Date: Sunday, 25-05-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 List the human values. Explain any two in detail. **10**

OR

Write a detailed note on assessment of safety and risk.

Q.3 Explain the role of Engineers as manager. **10**

OR

List and explain the skills required to handle moral problems in Engineering Ethics.

Q.4 **Write short notes: (Any Four)** **20**

a) Honesty
b) Self-Confidence
c) The Three Mile Island Theory
d) Character
e) Trade secret
f) Cooperation

SLR-BD-594

Seat No.	

Set P

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICALS ENGINEERING
Electrical Machine Design (BTN07601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Laminations of core are generally made of _____.
a) case iron b) carbon
c) silicon steel d) stainless steel

2) The major consideration to develop a good design is _____.
a) Durability
b) Cost
c) Compliance with performance criteria as laid down in specifications
d) All of the above

3) The main areas of design are _____.
a) Magnetic circuit b) Electrical circuit
c) Installation d) All of the above

4) Hot rolled sheets have _____ permeability.
a) Zero b) Low
c) Unity d) Hight

5) What does the window space factor depend on?
a) it depends on the core
b) it depends on the armature
c) it depends on the insulation
d) it depends on the insulation and copper

6) Power transformers are designed to have maximum efficiency at _____.
a) Full load b) 50% load
c) 80% load d) no load

7) The value of flux involved in the emf equation of a transformer is _____.
a) rms value b) Average Value
c) Maximum value d) Instantaneous value

8) In a dc machine the peripheral speed should not exceed _____.
a) 15m/s b) 30m/s
c) 50m/s d) 60m/s

9) In a dc machine the diameter of an armature is governed by _____.
a) Pole pitch b) peripheral speed
c) core length d) Both (a) and (b)

10) The speed of synchronous Machine _____.
a) Increase with increase in load
b) Decrease with increase in load
c) Always remains constant
d) Varies with power factor

11) Synchronous motors are generally not self-starting because _____.
a) the direction of rotation is not fixed
b) the direction of instantaneous torque reverses after half cycle
c) starters cannot be used on these machines
d) starting winding is not provided on the machines

12) Slip rings are usually made of _____.
a) Copper b) Carbon
c) Phosphor bronze d) Aluminium

13) Iron losses in a D.C. machine are independent of variations in _____.
a) speed b) load
c) voltage d) speed and voltage

14) What does the insulation and copper of the transformer depend on?
a) current rating
b) voltage rating
c) output power
d) voltage rating and output power

Seat No.	

Set **P**

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICALS ENGINEERING
Electrical Machine Design (BTN07601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt any four. **16**

a) Derive the expression for output equation for single phase core type transformer.

b) Define:
i) Window Space Factor
ii) Stacking Factor

c) Explain the factors those affect size of rotating electrical machines.

d) Calculate the number of turns and the cross section of a conductor for a 100kva, 11000/400volts, 50hz, single phase core type transformer use 1.6A/mm^2 as current density, 0.070 wb as flux.

e) The ratio of the flux in weber to full load mmf in a 400KVA, 50hz, 1 phase core type transformer is $2.4x10^{-6}$ calculate the net iron area and window area of transformer, maximum flux density in the core is 1.3 wb/m^2, current density 2.7A/mm^2 window space factor is 0.26 also calculate the full load mmf.

Q.3 Attempt any Two. **12**

a) Explain in details how number of poles are selected in DC machine.

b) What are the different method of cooling in transformer. Explain with diagram.

c) Find the suitable number of poles and diameter of core of 400kw, 550V, 180 rpm dc generator having 92% efficiency. Assume an average flux density in the air gap of about 0.6wb/m^2 and ampere per metres to be 35000.

Section – II

Q.4 Attempt any four. **16**

a) Derive the output equation of three phase induction motor.

b) Explain the choice of specific magnetic loading for synchronous machine.

c) Discuss the effect of air gap length of 3 phase induction motor on following factor.

i) Power Factor
ii) Overload Capacity
iii) Pulsation loss and noise

d) A 15HP, 400V, 1430rpm, 3 phase induction motor with an efficiency of 80% and PF 81% has inner diameter of stator 30cm and length 12cm. Estimate the diameter and length for a 50HP, 406V, 4pole, 50Hz induction motor to be designed for 84% efficiency and 85% power factor assuming same specific loadings as the previous motor.

e) Find the main dimension of a 100MVA, 11KV, 50HZ, 40 pole salient pole generator, assuming air gap flux density as 0.65wb/m^2 and ampere conductor as 40,000 per metre the peripheral speed should not exceed 60 m/sec assume kw = 0.955.

Q.5 Attempt any Two. **12**

a) Derive an expression for output equation of turbo alternator.

b) In the design of a 30HP, 3 phase, 440V, 960RPM, 50HZ delta connected induction motor, assume the specific electric loading of 25000ac/m, specific magnetic loading of 0.46wb/m^2 full load efficiency 86%, pf 0.87 and estimate the following:

i) Stator Core Dimensions
ii) Number of stator slots and winding turns

c) Calculate the length of air gap of a 15kw, 400V, 50HZ, delta connected 1440 rpm induction motor having both full efficiency and pf as 0.88 each Assume Bav = 0.45 Tesla, ac = 23000 amp cond/m, ratio of core length to pole pitch = 0.85, Assume kw = 0.966.

SLR-BD-594

Seat No.	

Set Q

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICALS ENGINEERING
Electrical Machine Design (BTN07601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) In a dc machine the peripheral speed should not exceed _____.
a) 15m/s b) 30m/s
c) 50m/s d) 60m/s

2) In a dc machine the diameter of an armature is governed by _____.
a) Pole pitch b) peripheral speed
c) core length d) Both (a) and (b)

3) The speed of synchronous Machine _____.
a) Increase with increase in load
b) Decrease with increase in load
c) Always remains constant
d) Varies with power factor

4) Synchronous motors are generally not self-starting because _____.
a) the direction of rotation is not fixed
b) the direction of instantaneous torque reverses after half cycle
c) starters cannot be used on these machines
d) starting winding is not provided on the machines

5) Slip rings are usually made of _____.
a) Copper b) Carbon
c) Phosphor bronze d) Aluminium

6) Iron losses in a D.C. machine are independent of variations in _____.
a) speed b) load
c) voltage d) speed and voltage

7) What does the insulation and copper of the transformer depend on?
a) current rating
b) voltage rating
c) output power
d) voltage rating and output power

8) Laminations of core are generally made of _____.
a) case iron
b) carbon
c) silicon steel
d) stainless steel

9) The major consideration to develop a good design is _____.
a) Durability
b) Cost
c) Compliance with performance criteria as laid down in specifications
d) All of the above

10) The main areas of design are _____.
a) Magnetic circuit
b) Electrical circuit
c) Installation
d) All of the above

11) Hot rolled sheets have _____ permeability.
a) Zero
b) Low
c) Unity
d) Hight

12) What does the window space factor depend on?
a) it depends on the core
b) it depends on the armature
c) it depends on the insulation
d) it depends on the insulation and copper

13) Power transformers are designed to have maximum efficiency at _____.
a) Full load
b) 50% load
c) 80% load
d) no load

14) The value of flux involved in the emf equation of a transformer is _____.
a) rms value
b) Average Value
c) Maximum value
d) Instantaneous value

Seat No.	

Set **Q**

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICALS ENGINEERING
Electrical Machine Design (BTN07601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt any four. **16**

a) Derive the expression for output equation for single phase core type transformer.

b) Define:
i) Window Space Factor
ii) Stacking Factor

c) Explain the factors those affect size of rotating electrical machines.

d) Calculate the number of turns and the cross section of a conductor for a 100kva, 11000/400volts, 50hz, single phase core type transformer use 1.6A/mm^2 as current density, 0.070 wb as flux.

e) The ratio of the flux in weber to full load mmf in a 400KVA, 50hz, 1 phase core type transformer is $2.4x10^{-6}$ calculate the net iron area and window area of transformer, maximum flux density in the core is 1.3 wb/m^2, current density 2.7A/mm^2 window space factor is 0.26 also calculate the full load mmf.

Q.3 Attempt any Two. **12**

a) Explain in details how number of poles are selected in DC machine.

b) What are the different method of cooling in transformer. Explain with diagram.

c) Find the suitable number of poles and diameter of core of 400kw, 550V, 180 rpm dc generator having 92% efficiency. Assume an average flux density in the air gap of about 0.6wb/m^2 and ampere per metres to be 35000.

Section – II

Q.4 Attempt any four. **16**

a) Derive the output equation of three phase induction motor.

b) Explain the choice of specific magnetic loading for synchronous machine.

c) Discuss the effect of air gap length of 3 phase induction motor on following factor.

i) Power Factor
ii) Overload Capacity
iii) Pulsation loss and noise

d) A 15HP, 400V, 1430rpm, 3 phase induction motor with an efficiency of 80% and PF 81% has inner diameter of stator 30cm and length 12cm. Estimate the diameter and length for a 50HP, 406V, 4pole, 50Hz induction motor to be designed for 84% efficiency and 85% power factor assuming same specific loadings as the previous motor.

e) Find the main dimension of a 100MVA, 11KV, 50HZ, 40 pole salient pole generator, assuming air gap flux density as 0.65wb/m^2 and ampere conductor as 40,000 per metre the peripheral speed should not exceed 60 m/sec assume kw = 0.955.

Q.5 Attempt any Two. **12**

a) Derive an expression for output equation of turbo alternator.

b) In the design of a 30HP, 3 phase, 440V, 960RPM, 50HZ delta connected induction motor, assume the specific electric loading of 25000ac/m, specific magnetic loading of 0.46wb/m^2 full load efficiency 86%, pf 0.87 and estimate the following:

i) Stator Core Dimensions
ii) Number of stator slots and winding turns

c) Calculate the length of air gap of a 15kw, 400V, 50HZ, delta connected 1440 rpm induction motor having both full efficiency and pf as 0.88 each Assume Bav = 0.45 Tesla, ac = 23000 amp cond/m, ratio of core length to pole pitch = 0.85, Assume kw = 0.966.

Seat No.	

Set R

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICALS ENGINEERING
Electrical Machine Design (BTN07601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Synchronous motors are generally not self-starting because _____.
a) the direction of rotation is not fixed
b) the direction of instantaneous torque reverses after half cycle
c) starters cannot be used on these machines
d) starting winding is not provided on the machines

2) Slip rings are usually made of _____.
a) Copper b) Carbon
c) Phosphor bronze d) Aluminium

3) Iron losses in a D.C. machine are independent of variations in _____.
a) speed b) load
c) voltage d) speed and voltage

4) What does the insulation and copper of the transformer depend on?
a) current rating
b) voltage rating
c) output power
d) voltage rating and output power

5) Laminations of core are generally made of _____.
a) case iron b) carbon
c) silicon steel d) stainless steel

6) The major consideration to develop a good design is _____.
a) Durability
b) Cost
c) Compliance with performance criteria as laid down in specifications
d) All of the above

7) The main areas of design are _____.
a) Magnetic circuit b) Electrical circuit
c) Installation d) All of the above

8) Hot rolled sheets have _____ permeability.
a) Zero b) Low
c) Unity d) Hight

9) What does the window space factor depend on?
a) it depends on the core
b) it depends on the armature
c) it depends on the insulation
d) it depends on the insulation and copper

10) Power transformers are designed to have maximum efficiency at _____.
a) Full load b) 50% load
c) 80% load d) no load

11) The value of flux involved in the emf equation of a transformer is _____.
a) rms value b) Average Value
c) Maximum value d) Instantaneous value

12) In a dc machine the peripheral speed should not exceed _____.
a) 15m/s b) 30m/s
c) 50m/s d) 60m/s

13) In a dc machine the diameter of an armature is governed by _____.
a) Pole pitch b) peripheral speed
c) core length d) Both (a) and (b)

14) The speed of synchronous Machine _____.
a) Increase with increase in load
b) Decrease with increase in load
c) Always remains constant
d) Varies with power factor

SLR-BD-594

Seat No.	

Set R

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICALS ENGINEERING
Electrical Machine Design (BTN07601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt any four. **16**

a) Derive the expression for output equation for single phase core type transformer.

b) Define:
i) Window Space Factor
ii) Stacking Factor

c) Explain the factors those affect size of rotating electrical machines.

d) Calculate the number of turns and the cross section of a conductor for a 100kva, 11000/400volts, 50hz, single phase core type transformer use 1.6A/mm^2 as current density, 0.070 wb as flux.

e) The ratio of the flux in weber to full load mmf in a 400KVA, 50hz, 1 phase core type transformer is $2.4x10^{-6}$ calculate the net iron area and window area of transformer, maximum flux density in the core is 1.3 wb/m^2, current density 2.7A/mm^2 window space factor is 0.26 also calculate the full load mmf.

Q.3 Attempt any Two. **12**

a) Explain in details how number of poles are selected in DC machine.

b) What are the different method of cooling in transformer. Explain with diagram.

c) Find the suitable number of poles and diameter of core of 400kw, 550V, 180 rpm dc generator having 92% efficiency. Assume an average flux density in the air gap of about 0.6wb/m^2 and ampere per metres to be 35000.

Section – II

Q.4 Attempt any four. **16**

a) Derive the output equation of three phase induction motor.

b) Explain the choice of specific magnetic loading for synchronous machine.

c) Discuss the effect of air gap length of 3 phase induction motor on following factor.

i) Power Factor
ii) Overload Capacity
iii) Pulsation loss and noise

d) A 15HP, 400V, 1430rpm, 3 phase induction motor with an efficiency of 80% and PF 81% has inner diameter of stator 30cm and length 12cm. Estimate the diameter and length for a 50HP, 406V, 4pole, 50Hz induction motor to be designed for 84% efficiency and 85% power factor assuming same specific loadings as the previous motor.

e) Find the main dimension of a 100MVA, 11KV, 50HZ, 40 pole salient pole generator, assuming air gap flux density as 0.65wb/m^2 and ampere conductor as 40,000 per metre the peripheral speed should not exceed 60 m/sec assume kw = 0.955.

Q.5 Attempt any Two. **12**

a) Derive an expression for output equation of turbo alternator.

b) In the design of a 30HP, 3 phase, 440V, 960RPM, 50HZ delta connected induction motor, assume the specific electric loading of 25000ac/m, specific magnetic loading of 0.46wb/m^2 full load efficiency 86%, pf 0.87 and estimate the following:

i) Stator Core Dimensions
ii) Number of stator slots and winding turns

c) Calculate the length of air gap of a 15kw, 400V, 50HZ, delta connected 1440 rpm induction motor having both full efficiency and pf as 0.88 each Assume Bav = 0.45 Tesla, ac = 23000 amp cond/m, ratio of core length to pole pitch = 0.85, Assume kw = 0.966.

Seat No.	

Set **S**

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICALS ENGINEERING
Electrical Machine Design (BTN07601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Power transformers are designed to have maximum efficiency at _____.
a) Full load b) 50% load
c) 80% load d) no load

2) The value of flux involved in the emf equation of a transformer is _____.
a) rms value b) Average Value
c) Maximum value d) Instantaneous value

3) In a dc machine the peripheral speed should not exceed _____.
a) 15m/s b) 30m/s
c) 50m/s d) 60m/s

4) In a dc machine the diameter of an armature is governed by _____.
a) Pole pitch b) peripheral speed
c) core length d) Both (a) and (b)

5) The speed of synchronous Machine _____.
a) Increase with increase in load
b) Decrease with increase in load
c) Always remains constant
d) Varies with power factor

6) Synchronous motors are generally not self-starting because _____.
a) the direction of rotation is not fixed
b) the direction of instantaneous torque reverses after half cycle
c) starters cannot be used on these machines
d) starting winding is not provided on the machines

7) Slip rings are usually made of _____.
a) Copper b) Carbon
c) Phosphor bronze d) Aluminium

8) Iron losses in a D.C. machine are independent of variations in _____.
a) speed b) load
c) voltage d) speed and voltage

9) What does the insulation and copper of the transformer depend on?
a) current rating
b) voltage rating
c) output power
d) voltage rating and output power

10) Laminations of core are generally made of _____.
a) case iron b) carbon
c) silicon steel d) stainless steel

11) The major consideration to develop a good design is _____.
a) Durability
b) Cost
c) Compliance with performance criteria as laid down in specifications
d) All of the above

12) The main areas of design are _____.
a) Magnetic circuit b) Electrical circuit
c) Installation d) All of the above

13) Hot rolled sheets have _____ permeability.
a) Zero b) Low
c) Unity d) Hight

14) What does the window space factor depend on?
a) it depends on the core
b) it depends on the armature
c) it depends on the insulation
d) it depends on the insulation and copper

SLR-BD-594

Seat No.		Set	S

T.Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICALS ENGINEERING
Electrical Machine Design (BTN07601)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt any four. **16**

a) Derive the expression for output equation for single phase core type transformer.

b) Define:
i) Window Space Factor
ii) Stacking Factor

c) Explain the factors those affect size of rotating electrical machines.

d) Calculate the number of turns and the cross section of a conductor for a 100kva, 11000/400volts, 50hz, single phase core type transformer use 1.6A/mm^2 as current density, 0.070 wb as flux.

e) The ratio of the flux in weber to full load mmf in a 400KVA, 50hz, 1 phase core type transformer is $2.4x10^{-6}$ calculate the net iron area and window area of transformer, maximum flux density in the core is 1.3 wb/m^2, current density 2.7A/mm^2 window space factor is 0.26 also calculate the full load mmf.

Q.3 Attempt any Two. **12**

a) Explain in details how number of poles are selected in DC machine.

b) What are the different method of cooling in transformer. Explain with diagram.

c) Find the suitable number of poles and diameter of core of 400kw, 550V, 180 rpm dc generator having 92% efficiency. Assume an average flux density in the air gap of about 0.6wb/m^2 and ampere per metres to be 35000.

Section – II

Q.4 Attempt any four. **16**

a) Derive the output equation of three phase induction motor.

b) Explain the choice of specific magnetic loading for synchronous machine.

c) Discuss the effect of air gap length of 3 phase induction motor on following factor.

i) Power Factor
ii) Overload Capacity
iii) Pulsation loss and noise

d) A 15HP, 400V, 1430rpm, 3 phase induction motor with an efficiency of 80% and PF 81% has inner diameter of stator 30cm and length 12cm. Estimate the diameter and length for a 50HP, 406V, 4pole, 50Hz induction motor to be designed for 84% efficiency and 85% power factor assuming same specific loadings as the previous motor.

e) Find the main dimension of a 100MVA, 11KV, 50HZ, 40 pole salient pole generator, assuming air gap flux density as 0.65wb/m^2 and ampere conductor as 40,000 per metre the peripheral speed should not exceed 60 m/sec assume kw = 0.955.

Q.5 Attempt any Two. **12**

a) Derive an expression for output equation of turbo alternator.

b) In the design of a 30HP, 3 phase, 440V, 960RPM, 50HZ delta connected induction motor, assume the specific electric loading of 25000ac/m, specific magnetic loading of 0.46wb/m^2 full load efficiency 86%, pf 0.87 and estimate the following:

i) Stator Core Dimensions
ii) Number of stator slots and winding turns

c) Calculate the length of air gap of a 15kw, 400V, 50HZ, delta connected 1440 rpm induction motor having both full efficiency and pf as 0.88 each Assume Bav = 0.45 Tesla, ac = 23000 amp cond/m, ratio of core length to pole pitch = 0.85, Assume kw = 0.966.

SLR-BD-595

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electrical Utilization (BTN07602)

Day & Date: Thursday 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Power supply frequency for 25 kV single phase system is _____.
a) 161 b) 25
c) 50 d) 60

2) The coefficient of adhesion is highest when _____.
a) The rails are dry b) The rails are oiled
c) The rails ark wet with dew d) The rails are dusty

3) When the speed of the train is estimated taking into account the time of stop at a station in addition to the actual running time between stops, is known as _____.
a) Average speed b) Schedule speed
c) Notching speed d) Free running speed

4) Quadrilateral speed-time curve is the closer approximation for _____.
a) Main line service b) Suburban service
c) Urban service d) Urban and suburban

5) Which motor has relatively wider range of speed control?
a) D.C. shunt motor b) Synchronous motor
c) Slip ring I.M. d) Squirrel cage I.M.

6) Change of frequency in the supply does not affect _____.
a) Dielectric heating b) Resistance heating
c) Induction heating d) microwave heating

7) Which method of heating is likely to give leading power factor?
a) Electric are heating b) Induction heating
c) Dielectric heating d) Resistance heating

8) In case of induction heating, which of the following parameter is of high value?
a) Frequency b) Current
c) Voltage d) Capacitance

9) For arc heating, the electrodes are made of _____.
a) Copper b) Aluminum
c) Graphite d) ACSR conductor

10) Radiant efficiency of the luminous source depends on _____.
a) Shape of the source b) temperature of the source
c) Wavelength of light rays d) all of the above

11) Carbon arc lamps are commonly used in _____.
a) Domestic lighting b) Street lighting
c) Cinema projectors d) Photography

12) The unit of luminous flux is _____.
a) Steradian b) Candela
c) Lumen d) Lux

13) The Act which has been enacted to provide for efficient use of energy and its conservation and for matters connected therewith is?
a) Indian Electricity Act 2003
b) Energy Conservation Act 2001
c) Indian Electricity Act 2010
d) Energy Conservation Act 2007

14) Which of the following is more energy efficient?
a) Incandescent Bulb b) Fluorescent Tube light
c) CFL d) None of these

SLR-BD-595

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electrical Utilization (BTN07602)

Day & Date: Thursday 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) Draw and explain speed time curve for main line services.
b) Desirable characteristic of traction motors.
c) Explain plugging breaking system in traction system.
d) Write short note on motor selection in textile industries.
e) A train is required to run between two stations 1.6 km apart at an average speed of 40 kmph. The run is to be made to a simplified quadrilateral speed-time curve. If the maximum speed is limited to 64 kmph, acceleration to 2.0 kmphps, coasting and braking retardation to 0.16 kmphps and 3.2 kmphps, determine the duration of acceleration, coasting and braking periods.

Q.3 Solve any two. **12**

a) Derive an expression for Trapezoidal Speed-Time Curve.
b) Explain series-parallel control of traction motors.
c) Write note on motor selection in sugar mills.

Section – II

Q.4 Solve any four. **16**

a) Comparison between tungsten filament lamps and fluorescent tubes.
b) State advantages and disadvantages electrical welding.
c) Describe with the help of a neat diagram the construction and working of a high pressure mercury vapour lamp.
d) Explain the laws of illumination.
e) Write a note on Energy Conservation in Transport.

Q.5 Solve any two. **12**

a) Explain flood lighting.
b) Explain Energy Conservation Planning.
c) Explain direct resistance and indirect resistance heating.

SLR-BD-595

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electrical Utilization (BTN07602)

Day & Date: Thursday 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) In case of induction heating, which of the following parameter is of high value?
a) Frequency b) Current
c) Voltage d) Capacitance

2) For arc heating, the electrodes are made of _____.
a) Copper b) Aluminum
c) Graphite d) ACSR conductor

3) Radiant efficiency of the luminous source depends on _____.
a) Shape of the source b) temperature of the source
c) Wavelength of light rays d) all of the above

4) Carbon arc lamps are commonly used in _____.
a) Domestic lighting b) Street lighting
c) Cinema projectors d) Photography

5) The unit of luminous flux is _____.
a) Steradian b) Candela
c) Lumen d) Lux

6) The Act which has been enacted to provide for efficient use of energy and its conservation and for matters connected therewith is?
a) Indian Electricity Act 2003
b) Energy Conservation Act 2001
c) Indian Electricity Act 2010
d) Energy Conservation Act 2007

7) Which of the following is more energy efficient?
a) Incandescent Bulb b) Fluorescent Tube light
c) CFL d) None of these

8) Power supply frequency for 25 kV single phase system is _____.
a) 161 b) 25
c) 50 d) 60

9) The coefficient of adhesion is highest when _____.
a) The rails are dry b) The rails are oiled
c) The rails ark wet with dew d) The rails are dusty

10) When the speed of the train is estimated taking into account the time of stop at a station in addition to the actual running time between stops, is known as _____.
a) Average speed b) Schedule speed
c) Notching speed d) Free running speed

11) Quadrilateral speed-time curve is the closer approximation for _____.
a) Main line service b) Suburban service
c) Urban service d) Urban and suburban

12) Which motor has relatively wider range of speed control?
a) D.C. shunt motor b) Synchronous motor
c) Slip ring I.M. d) Squirrel cage I.M.

13) Change of frequency in the supply does not affect _____.
a) Dielectric heating b) Resistance heating
c) Induction heating d) microwave heating

14) Which method of heating is likely to give leading power factor?
a) Electric are heating b) Induction heating
c) Dielectric heating d) Resistance heating

SLR-BD-595

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electrical Utilization (BTN07602)

Day & Date: Thursday 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) Draw and explain speed time curve for main line services.
b) Desirable characteristic of traction motors.
c) Explain plugging breaking system in traction system.
d) Write short note on motor selection in textile industries.
e) A train is required to run between two stations 1.6 km apart at an average speed of 40 kmph. The run is to be made to a simplified quadrilateral speed-time curve. If the maximum speed is limited to 64 kmph, acceleration to 2.0 kmphps, coasting and braking retardation to 0.16 kmphps and 3.2 kmphps, determine the duration of acceleration, coasting and braking periods.

Q.3 Solve any two. **12**

a) Derive an expression for Trapezoidal Speed-Time Curve.
b) Explain series-parallel control of traction motors.
c) Write note on motor selection in sugar mills.

Section – II

Q.4 Solve any four. **16**

a) Comparison between tungsten filament lamps and fluorescent tubes.
b) State advantages and disadvantages electrical welding.
c) Describe with the help of a neat diagram the construction and working of a high pressure mercury vapour lamp.
d) Explain the laws of illumination.
e) Write a note on Energy Conservation in Transport.

Q.5 Solve any two. **12**

a) Explain flood lighting.
b) Explain Energy Conservation Planning.
c) Explain direct resistance and indirect resistance heating.

SLR-BD-595

Seat No.	

Set R

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electrical Utilization (BTN07602)

Day & Date: Thursday 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Carbon arc lamps are commonly used in _____.
a) Domestic lighting b) Street lighting
c) Cinema projectors d) Photography

2) The unit of luminous flux is _____.
a) Steradian b) Candela
c) Lumen d) Lux

3) The Act which has been enacted to provide for efficient use of energy and its conservation and for matters connected therewith is?
a) Indian Electricity Act 2003
b) Energy Conservation Act 2001
c) Indian Electricity Act 2010
d) Energy Conservation Act 2007

4) Which of the following is more energy efficient?
a) Incandescent Bulb b) Fluorescent Tube light
c) CFL d) None of these

5) Power supply frequency for 25 kV single phase system is _____.
a) 161 b) 25
c) 50 d) 60

6) The coefficient of adhesion is highest when _____.
a) The rails are dry b) The rails are oiled
c) The rails ark wet with dew d) The rails are dusty

7) When the speed of the train is estimated taking into account the time of stop at a station in addition to the actual running time between stops, is known as _____.

a) Average speed b) Schedule speed
c) Notching speed d) Free running speed

8) Quadrilateral speed-time curve is the closer approximation for _____.

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c) Urban service d) Urban and suburban

9) Which motor has relatively wider range of speed control?

a) D.C. shunt motor b) Synchronous motor
c) Slip ring I.M. d) Squirrel cage I.M.

10) Change of frequency in the supply does not affect _____.

a) Dielectric heating b) Resistance heating
c) Induction heating d) microwave heating

11) Which method of heating is likely to give leading power factor?

a) Electric are heating b) Induction heating
c) Dielectric heating d) Resistance heating

12) In case of induction heating, which of the following parameter is of high value?

a) Frequency b) Current
c) Voltage d) Capacitance

13) For arc heating, the electrodes are made of _____.

a) Copper b) Aluminum
c) Graphite d) ACSR conductor

14) Radiant efficiency of the luminous source depends on _____.

a) Shape of the source b) temperature of the source
c) Wavelength of light rays d) all of the above

SLR-BD-595

Seat No.	

Set R

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electrical Utilization (BTN07602)

Day & Date: Thursday 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) Draw and explain speed time curve for main line services.
b) Desirable characteristic of traction motors.
c) Explain plugging breaking system in traction system.
d) Write short note on motor selection in textile industries.
e) A train is required to run between two stations 1.6 km apart at an average speed of 40 kmph. The run is to be made to a simplified quadrilateral speed-time curve. If the maximum speed is limited to 64 kmph, acceleration to 2.0 kmphps, coasting and braking retardation to 0.16 kmphps and 3.2 kmphps, determine the duration of acceleration, coasting and braking periods.

Q.3 Solve any two. **12**

a) Derive an expression for Trapezoidal Speed-Time Curve.
b) Explain series-parallel control of traction motors.
c) Write note on motor selection in sugar mills.

Section – II

Q.4 Solve any four. **16**

a) Comparison between tungsten filament lamps and fluorescent tubes.
b) State advantages and disadvantages electrical welding.
c) Describe with the help of a neat diagram the construction and working of a high pressure mercury vapour lamp.
d) Explain the laws of illumination.
e) Write a note on Energy Conservation in Transport.

Q.5 Solve any two. **12**

a) Explain flood lighting.
b) Explain Energy Conservation Planning.
c) Explain direct resistance and indirect resistance heating.

SLR-BD-595

Seat No.	

Set S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electrical Utilization (BTN07602)

Day & Date: Thursday 29-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Change of frequency in the supply does not affect _____.
a) Dielectric heating b) Resistance heating
c) Induction heating d) microwave heating

2) Which method of heating is likely to give leading power factor?
a) Electric are heating b) Induction heating
c) Dielectric heating d) Resistance heating

3) In case of induction heating, which of the following parameter is of high value?
a) Frequency b) Current
c) Voltage d) Capacitance

4) For arc heating, the electrodes are made of _____.
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5) Radiant efficiency of the luminous source depends on _____.
a) Shape of the source b) temperature of the source
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6) Carbon arc lamps are commonly used in _____.
a) Domestic lighting b) Street lighting
c) Cinema projectors d) Photography

7) The unit of luminous flux is _____.
a) Steradian b) Candela
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a) Indian Electricity Act 2003
b) Energy Conservation Act 2001
c) Indian Electricity Act 2010
d) Energy Conservation Act 2007

9) Which of the following is more energy efficient?
a) Incandescent Bulb
b) Fluorescent Tube light
c) CFL
d) None of these

10) Power supply frequency for 25 kV single phase system is _____.
a) 161
b) 25
c) 50
d) 60

11) The coefficient of adhesion is highest when _____.
a) The rails are dry
b) The rails are oiled
c) The rails ark wet with dew
d) The rails are dusty

12) When the speed of the train is estimated taking into account the time of stop at a station in addition to the actual running time between stops, is known as _____.
a) Average speed
b) Schedule speed
c) Notching speed
d) Free running speed

13) Quadrilateral speed-time curve is the closer approximation for _____.
a) Main line service
b) Suburban service
c) Urban service
d) Urban and suburban

14) Which motor has relatively wider range of speed control?
a) D.C. shunt motor
b) Synchronous motor
c) Slip ring I.M.
d) Squirrel cage I.M.

SLR-BD-595

Seat No.	

Set S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electrical Utilization (BTN07602)

Day & Date: Thursday 29-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) Draw and explain speed time curve for main line services.
b) Desirable characteristic of traction motors.
c) Explain plugging breaking system in traction system.
d) Write short note on motor selection in textile industries.
e) A train is required to run between two stations 1.6 km apart at an average speed of 40 kmph. The run is to be made to a simplified quadrilateral speed-time curve. If the maximum speed is limited to 64 kmph, acceleration to 2.0 kmphps, coasting and braking retardation to 0.16 kmphps and 3.2 kmphps, determine the duration of acceleration, coasting and braking periods.

Q.3 Solve any two. **12**

a) Derive an expression for Trapezoidal Speed-Time Curve.
b) Explain series-parallel control of traction motors.
c) Write note on motor selection in sugar mills.

Section – II

Q.4 Solve any four. **16**

a) Comparison between tungsten filament lamps and fluorescent tubes.
b) State advantages and disadvantages electrical welding.
c) Describe with the help of a neat diagram the construction and working of a high pressure mercury vapour lamp.
d) Explain the laws of illumination.
e) Write a note on Energy Conservation in Transport.

Q.5 Solve any two. **12**

a) Explain flood lighting.
b) Explain Energy Conservation Planning.
c) Explain direct resistance and indirect resistance heating.

SLR-BD-596

Seat No.	

Set P

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power Electronics & Industrial Drives (BTN07603)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) The thyristor turn-off requires that the anode current _____.
a) Falls below the holding current
b) Falls below the latching current
c) Rises above the holding current
d) Rises above the latching current

2) A type D chopper is a _____.
a) Two quadrant type-B chopper
b) Two quadrant type-A chopper
c) Two quadrant type-C chopper
d) None of the mentioned

3) The AC voltage controllers are used in _____ applications.
a) Power generation b) Electric heating
c) Conveyor belt motion d) Power transmission

4) The GTO can be turned off _____.
a) By a positive gate pulse
b) By a negative gate pulse
c) By a negative anode-cathode voltage
d) By removing the gate pulse

5) The angle at which SCR turns on is called _____.
a) On angle b) Conduction angle
c) Firing angle d) Extinction angle

6) The output of a single-phase half bridge inverter on R load is Ideally _____.
a) a sine wave b) a square wave
c) a triangular wave d) constant dc

7) TRIAC and DIAC are _____.
a) Bi-directional devices
b) Unidirectional devices
c) Can't decide
d) None of these

8) Reluctance motor is a _____.
a) Variable torque motor
b) Low torque variable speed motor
c) Self-starting type synchronous motor
d) Low noise, slow speed motor

9) The speed of a D.C. shunt motor more than its foil-load speed can be obtained by _____.
a) decreasing the field current
b) increasing the field current
c) decreasing the armature current
d) increasing the armature current

10) Stepper motor is popular for _____.
a) Speed control
b) Position control
c) Torque control
d) Both a and b

11) The field of an induction motor rotor rotates relative to the stator at _____.
a) Rotor speed
b) Synchronous speed
c) Slip speed
d) Very low speed

12) Speed control by variation of field flux results in _____.
a) Constant power drive
b) Constant torque drive
c) Variable power drive
d) None of the above

13) The equilibrium speed of a motor load system is obtained _____.
a) When motor torque equals the load torque
b) When motor torque is less than the load torque
c) When motor torque is more than the load torque
d) None of these

14) Which duty cycle is preferred if the load requires a constant power for short period of time and rest for sufficient longer duration?
a) Short Time duty
b) Intermittent duty
c) Intermittent duty with starting
d) Intermittent duty with starting and braking

Seat No.	

Set **P**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power Electronics & Industrial Drives (BTN07603)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four. **16**

a) What is the necessity of firing circuit? Explain RC firing circuit.
b) Draw and explain single phase full wave controlled rectifier with 'RL' load with proper wave form.
c) Draw and explain step up chopper with proper wave form.
d) Draw and explain single phase full bridge inverter with 'RL' load with proper wave.
e) Explain the on off type AC voltage controller.

Q.3 Solve any two. **12**

a) Draw and explain static V-I characteristics of SCR. Define latching and holding current.
b) Describe the classification of DC to dc converter? Draw and explain buck/boost regulator with waveform.
c) Draw a neat diagram & explain the 180 degree conduction mode of 3- phase inverter with proper wave.

Section – II

Q.4 Solve any four. **16**

a) Draw the block diagram of electrical drive system and explain.
b) Draw and explain single phase half controlled rectifier fed separately excited D.C. motor.
c) Explain the chopper fed DC separately excited motor in motoring mode.
d) Explain stator voltage control of an induction motor with speed torque characteristics.
e) With neat sketch explain VSI feed induction motor drive.

Q.5 Solve any two. **12**

a) Explain the closed loop speed control of Multimotor drives.
b) What is breaking? Give its types and explain any one type of electrical breaking in details.
c) Draw and explain switched reluctance motor drive. List advantages and disadvantages of it.

Seat No.	

Set **Q**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power Electronics & Industrial Drives (BTN07603)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) Reluctance motor is a _____.
a) Variable torque motor
b) Low torque variable speed motor
c) Self-starting type synchronous motor
d) Low noise, slow speed motor

2) The speed of a D.C. shunt motor more than its foil-load speed can be obtained by _____.
a) decreasing the field current
b) increasing the field current
c) decreasing the armature current
d) increasing the armature current

3) Stepper motor is popular for _____.
a) Speed control b) Position control
c) Torque control d) Both a and b

4) The field of an induction motor rotor rotates relative to the stator at _____.
a) Rotor speed b) Synchronous speed
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5) Speed control by variation of field flux results in _____.
a) Constant power drive b) Constant torque drive
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6) The equilibrium speed of a motor load system is obtained _____.
a) When motor torque equals the load torque
b) When motor torque is less than the load torque
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7) Which duty cycle is preferred if the load requires a constant power for short period of time and rest for sufficient longer duration?
a) Short Time duty
b) Intermittent duty
c) Intermittent duty with starting
d) Intermittent duty with starting and braking

8) The thyristor turn-off requires that the anode current _____.
a) Falls below the holding current
b) Falls below the latching current
c) Rises above the holding current
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9) A type D chopper is a _____.
a) Two quadrant type-B chopper
b) Two quadrant type-A chopper
c) Two quadrant type-C chopper
d) None of the mentioned

10) The AC voltage controllers are used in _____ applications.
a) Power generation
b) Electric heating
c) Conveyor belt motion
d) Power transmission

11) The GTO can be turned off _____.
a) By a positive gate pulse
b) By a negative gate pulse
c) By a negative anode-cathode voltage
d) By removing the gate pulse

12) The angle at which SCR turns on is called _____.
a) On angle
b) Conduction angle
c) Firing angle
d) Extinction angle

13) The output of a single-phase half bridge inverter on R load is Ideally _____.
a) a sine wave
b) a square wave
c) a triangular wave
d) constant dc

14) TRIAC and DIAC are _____.
a) Bi-directional devices
b) Unidirectional devices
c) Can't decide
d) None of these

SLR-BD-596

Seat No.	

Set Q

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power Electronics & Industrial Drives (BTN07603)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four. **16**

a) What is the necessity of firing circuit? Explain RC firing circuit.
b) Draw and explain single phase full wave controlled rectifier with 'RL' load with proper wave form.
c) Draw and explain step up chopper with proper wave form.
d) Draw and explain single phase full bridge inverter with 'RL' load with proper wave.
e) Explain the on off type AC voltage controller.

Q.3 Solve any two. **12**

a) Draw and explain static V-I characteristics of SCR. Define latching and holding current.
b) Describe the classification of DC to dc converter? Draw and explain buck/boost regulator with waveform.
c) Draw a neat diagram & explain the 180 degree conduction mode of 3- phase inverter with proper wave.

Section – II

Q.4 Solve any four. **16**

a) Draw the block diagram of electrical drive system and explain.
b) Draw and explain single phase half controlled rectifier fed separately excited D.C. motor.
c) Explain the chopper fed DC separately excited motor in motoring mode.
d) Explain stator voltage control of an induction motor with speed torque characteristics.
e) With neat sketch explain VSI feed induction motor drive.

Q.5 Solve any two. **12**

a) Explain the closed loop speed control of Multimotor drives.
b) What is breaking? Give its types and explain any one type of electrical breaking in details.
c) Draw and explain switched reluctance motor drive. List advantages and disadvantages of it.

Seat No.	

Set **R**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power Electronics & Industrial Drives (BTN07603)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) The field of an induction motor rotor rotates relative to the stator at _____.
a) Rotor speed b) Synchronous speed
c) Slip speed d) Very low speed

2) Speed control by variation of field flux results in _____.
a) Constant power drive b) Constant torque drive
c) Variable power drive d) None of the above

3) The equilibrium speed of a motor load system is obtained _____.
a) When motor torque equals the load torque
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c) When motor torque is more than the load torque
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4) Which duty cycle is preferred if the load requires a constant power for short period of time and rest for sufficient longer duration?
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c) Intermittent duty with starting
d) Intermittent duty with starting and braking

5) The thyristor turn-off requires that the anode current _____.
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d) Rises above the latching current

6) A type D chopper is a _____.
a) Two quadrant type-B chopper
b) Two quadrant type-A chopper
c) Two quadrant type-C chopper
d) None of the mentioned

7) The AC voltage controllers are used in _____ applications.
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8) The GTO can be turned off _____.
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b) By a negative gate pulse
c) By a negative anode-cathode voltage
d) By removing the gate pulse

9) The angle at which SCR turns on is called _____.
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10) The output of a single-phase half bridge inverter on R load is Ideally _____.
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c) a triangular wave d) constant dc

11) TRIAC and DIAC are _____.
a) Bi-directional devices b) Unidirectional devices
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12) Reluctance motor is a _____.
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c) decreasing the armature current
d) increasing the armature current

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Seat No.	

Set **R**

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power Electronics & Industrial Drives (BTN07603)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four. **16**

a) What is the necessity of firing circuit? Explain RC firing circuit.
b) Draw and explain single phase full wave controlled rectifier with 'RL' load with proper wave form.
c) Draw and explain step up chopper with proper wave form.
d) Draw and explain single phase full bridge inverter with 'RL' load with proper wave.
e) Explain the on off type AC voltage controller.

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a) Draw and explain static V-I characteristics of SCR. Define latching and holding current.
b) Describe the classification of DC to dc converter? Draw and explain buck/boost regulator with waveform.
c) Draw a neat diagram & explain the 180 degree conduction mode of 3- phase inverter with proper wave.

Section – II

Q.4 Solve any four. **16**

a) Draw the block diagram of electrical drive system and explain.
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c) Explain the chopper fed DC separately excited motor in motoring mode.
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e) With neat sketch explain VSI feed induction motor drive.

Q.5 Solve any two. **12**

a) Explain the closed loop speed control of Multimotor drives.
b) What is breaking? Give its types and explain any one type of electrical breaking in details.
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SLR-BD-596

Seat No.		Set	S

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power Electronics & Industrial Drives (BTN07603)

Day & Date: Monday 02-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) The output of a single-phase half bridge inverter on R load is Ideally _____.
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c) Can't decide d) None of these

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a) Two quadrant type-B chopper
b) Two quadrant type-A chopper
c) Two quadrant type-C chopper
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12) The AC voltage controllers are used in _____ applications.
a) Power generation
b) Electric heating
c) Conveyor belt motion
d) Power transmission

13) The GTO can be turned off _____.
a) By a positive gate pulse
b) By a negative gate pulse
c) By a negative anode-cathode voltage
d) By removing the gate pulse

14) The angle at which SCR turns on is called _____.
a) On angle
b) Conduction angle
c) Firing angle
d) Extinction angle

SLR-BD-596

Seat No.	

Set S

T. Y (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power Electronics & Industrial Drives (BTN07603)

Day & Date: Monday 02-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four. **16**

a) What is the necessity of firing circuit? Explain RC firing circuit.
b) Draw and explain single phase full wave controlled rectifier with 'RL' load with proper wave form.
c) Draw and explain step up chopper with proper wave form.
d) Draw and explain single phase full bridge inverter with 'RL' load with proper wave.
e) Explain the on off type AC voltage controller.

Q.3 Solve any two. **12**

a) Draw and explain static V-I characteristics of SCR. Define latching and holding current.
b) Describe the classification of DC to dc converter? Draw and explain buck/boost regulator with waveform.
c) Draw a neat diagram & explain the 180 degree conduction mode of 3- phase inverter with proper wave.

Section – II

Q.4 Solve any four. **16**

a) Draw the block diagram of electrical drive system and explain.
b) Draw and explain single phase half controlled rectifier fed separately excited D.C. motor.
c) Explain the chopper fed DC separately excited motor in motoring mode.
d) Explain stator voltage control of an induction motor with speed torque characteristics.
e) With neat sketch explain VSI feed induction motor drive.

Q.5 Solve any two. **12**

a) Explain the closed loop speed control of Multimotor drives.
b) What is breaking? Give its types and explain any one type of electrical breaking in details.
c) Draw and explain switched reluctance motor drive. List advantages and disadvantages of it.

SLR-BD-597

Seat No.	

Set P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Advanced Control Systems (BTN07604)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. 14

1) Differentiators are avoided in the system design as they _____.
a) Are costlier
b) Reduces the response of the system
c) Cannot be formed with capacitors and inductors
d) Develop noise and saturate the amplifier

2) For an nth-order system, the state equations will be of the order of ____.
a) n b) 1
c) $n/2$ d) $(n+1)/2$

3) In bode plot the gain cross-over frequency is the frequency at which ___.
a) $|G(jw)H(jw)| = 1$ b) $|G(jw)H(jw)| = 0$
c) $|G(jw)H(jw)| = \infty$ d) $\frac{1}{|G(jw)H(jw)|} = K$

4) The maximum phase shift can be provided by a lead compensator with transfer function $TF = G(s) = \frac{1+6s}{1+2s}$
a) 15^0 b) 30^0
c) 45^0 d) 60^0

5) A cascaded lag compensator used in linear control systems work as a _____.
a) low pass filter b) high pass filter
c) band stop filter d) band pass filter

6) The transfer function of a SISO system with the following state space representation is $\dot{X} = Ax + B\,u$ and $y = Cx + Du$

a) $B(sI - A)^{-1}C + D$ b) $C(sI - A)^{-1}B + D$

c) $D(sI - A)^{-1}B + D$ d) $A(sI - B)^{-1}C + D$

7) An existing control system with the satisfactory transient response but unsatisfactory steady-state response is to be compensated using a cascade compensator with the following open-loop $TF = \frac{s+z}{s+p}$, where $\frac{z}{p}$ ratio should be _____.

a) > 1 b) $= 1$

c) $= 0.707$ d) < 1

8) The points at which derivatives of all the state variables are zero are _____.

a) Singular points b) Nonsingular points

c) Poles d) Zeroes

9) The describing function N of a nonlinear control system is a function of _____.

a) amplitude of the input

b) frequency of the input

c) initial conditions of the output

d) both a and b

10) The necessary and sufficient condition to be satisfied for arbitrary pole placement is that the system should be completely _____.

a) State controllable

b) State observable

c) State controllable and state observable

d) Any of the above

11) The method of investigating the stability using Liapunov function as the _____.

a) Direct method b) Indirect method

c) Not determined d) Always unstable

12) The transfer function of zero order hold is _____.

a) $1 - e^{TS}$ b) $1 - e^{-TS}$

c) $\frac{1-e^{TS}}{s}$ d) $\frac{1-e^{-TS}}{s}$

13) The eigen values of the matrix (A-BK) are called _____.

a) open loop poles b) open loop zeros

c) regulator poles d) none of these

14) For a unity feedback system, the origin of the s-plane is mapped in the z-plane by transformation $z = e^{sT}$ to which one of the following?

a) Origin b) $1 + j0$

c) $-1 + j0$ d) $0 + j1$

Seat No.	

Set | P

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Advanced Control Systems (BTN07604)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Explain the design steps for Lag compensator by the Root Locus Technique.

b) Test the controllability of the system whose state equations are given as
$\dot{x}_1 = -2x_1 + 4x_2$
$\dot{x}_2 = 2x_1 - x_2 + u$ and output equation as $Y = [0 \quad 1]\begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$

c) Determine the Transfer matrix from the data given as below.
$A = \begin{bmatrix} -2 & -1 \\ -3 & -2 \end{bmatrix}$; $B = \begin{bmatrix} 3 \\ 4 \end{bmatrix}$; $C = [2 \quad 1]$ and $D = 0$

d) Write the properties of the state transition matrix.

e) Explain the realization of lead compensator.

f) Obtain state model for the system described in phase variable form.
$$\frac{d^3y}{dt^3} + 6\frac{d^2y}{dt^2} + 11\frac{dy}{dx} + 6y = u(t)$$

Q.3 Attempt any two of the following. **12**

a) Obtain state Transition matrix whose system matrix is given by
$A = \begin{bmatrix} -1 & 1 \\ 0 & 2 \end{bmatrix}$

b) The forward path TF of a unity feedback control system is given by
$G(s) = \frac{k}{s(s+2)(s+8)}$
Design a suitable lag compensator so that the system meets the following specifications.
i) Percentage overshoot $< 16\%$ for unit step input,
ii) steady state error ≤ 0.125 for unit ramp input.

c) A unity feedback type 1 system has OLTF $G(S) = k/s(1 + 2s)$. Design the suitable lag network for the system to meet following specifications.
i) $\boldsymbol{e_{ss}}$ for ramp input is less than or equal to 0.2 and
ii) $\mathrm{PM} = 40^{\circ}$

Section – II

Q.4 Attempt any four of the following. **16**

a) Explain different types of nonlinearities.

b) What are methods for determination of state feedback gain matrix K? Explain any one method.

c) Consider the system $\dot{x} = Ax + Bu, y = Cx$ with $A = \begin{bmatrix} 0 & 10 \\ 1 & 0 \end{bmatrix}, B = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$ and $C = [0 \quad 1]$. Design a full-order observer to implement the state feedback $u = -kx$ with eigenvalues of the observer to be at -10, 10.

d) Determine the kind of singularity for the following differential equation

$$\ddot{Y} - 8\dot{Y} + 17Y = 34$$

e) Explain in short mapping between s-plane and z-plane.

f) Explain the bilinear transformation for stability analysis of discrete-time control systems.

Q.5 Attempt any two of the following. **12**

a) A system is described by $\begin{bmatrix} \dot{x_1} \\ \dot{x_2} \\ \dot{x_3} \end{bmatrix} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -1 & -5 & -6 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} u(t)$

Using state feedback control $u = -Kx$, it is desired to have closed poles at $(-1 + j2), (-1 - j2)$, and (-10)

Find the state feedback matrix using Ackermann's formula.

b) Derive the describing function of the relay with hysteresis nonlinearity.

c) Check the stability of the sampled data control system represented by the equation using Juri's stability test

$$F(z) = z^4 - 1.7z^3 + 1.04z^2 - 0.268z + 0.024 = 0$$

Seat No.	

Set **Q**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Advanced Control Systems (BTN07604)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) The points at which derivatives of all the state variables are zero are _____.
a) Singular points b) Nonsingular points
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2) The describing function N of a nonlinear control system is a function of _____.
a) amplitude of the input
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3) The necessary and sufficient condition to be satisfied for arbitrary pole placement is that the system should be completely _____.
a) State controllable
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4) The method of investigating the stability using Liapunov function as the _____.
a) Direct method b) Indirect method
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5) The transfer function of zero order hold is _____.
a) $1 - e^{TS}$ b) $1 - e^{-TS}$
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d) Develop noise and saturate the amplifier

9) For an nth-order system, the state equations will be of the order of ____.

a) n
b) 1
c) $n/2$
d) $(n+1)/2$

10) In bode plot the gain cross-over frequency is the frequency at which ___.

a) $|G(jw)H(jw)| = 1$
b) $|G(jw)H(jw)| = 0$
c) $|G(jw)H(jw)| = \infty$
d) $\frac{1}{|G(jw)H(jw)|} = K$

11) The maximum phase shift can be provided by a lead compensator with transfer function $TF = G(s) = \frac{1+6s}{1+2s}$

a) 15^0
b) 30^0
c) 45^0
d) 60^0

12) A cascaded lag compensator used in linear control systems work as a _____.

a) low pass filter
b) high pass filter
c) band stop filter
d) band pass filter

13) The transfer function of a SISO system with the following state space representation is $\dot{X} = Ax + B\,u$ and $y = Cx + Du$

a) $B(sI - A)^{-1}C + D$
b) $C(sI - A)^{-1}B + D$
c) $D(sI - A)^{-1}B + D$
d) $A(sI - B)^{-1}C + D$

14) An existing control system with the satisfactory transient response but unsatisfactory steady-state response is to be compensated using a cascade compensator with the following open-loop $TF = \frac{s+z}{s+p}$, where $\frac{z}{p}$ ratio should be _____.

a) > 1
b) $= 1$
c) $= 0.707$
d) < 1

Seat No.	

Set **Q**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Advanced Control Systems (BTN07604)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Explain the design steps for Lag compensator by the Root Locus Technique.

b) Test the controllability of the system whose state equations are given as
$\dot{x}_1 = -2x_1 + 4x_2$
$\dot{x}_2 = 2x_1 - x_2 + u$ and output equation as $Y = [0 \quad 1]\begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$

c) Determine the Transfer matrix from the data given as below.
$A = \begin{bmatrix} -2 & -1 \\ -3 & -2 \end{bmatrix}$; $B = \begin{bmatrix} 3 \\ 4 \end{bmatrix}$; $C = [2 \quad 1]$ and $D = 0$

d) Write the properties of the state transition matrix.

e) Explain the realization of lead compensator.

f) Obtain state model for the system described in phase variable form.
$$\frac{d^3y}{dt^3} + 6\frac{d^2y}{dt^2} + 11\frac{dy}{dx} + 6y = u(t)$$

Q.3 Attempt any two of the following. **12**

a) Obtain state Transition matrix whose system matrix is given by
$A = \begin{bmatrix} -1 & 1 \\ 0 & 2 \end{bmatrix}$

b) The forward path TF of a unity feedback control system is given by
$G(s) = \frac{k}{s(s+2)(s+8)}$
Design a suitable lag compensator so that the system meets the following specifications.
i) Percentage overshoot $< 16\%$ for unit step input,
ii) steady state error ≤ 0.125 for unit ramp input.

c) A unity feedback type 1 system has OLTF $G(S) = k/s(1 + 2s)$. Design the suitable lag network for the system to meet following specifications.
i) $\boldsymbol{e_{ss}}$ for ramp input is less than or equal to 0.2 and
ii) $\mathrm{PM} = 40^{\circ}$

Section – II

Q.4 Attempt any four of the following. **16**

a) Explain different types of nonlinearities.

b) What are methods for determination of state feedback gain matrix K? Explain any one method.

c) Consider the system $\dot{x} = Ax + Bu, y = Cx$ with $A = \begin{bmatrix} 0 & 10 \\ 1 & 0 \end{bmatrix}, B = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$ and $C = [0 \quad 1]$. Design a full-order observer to implement the state feedback $u = -kx$ with eigenvalues of the observer to be at -10, 10.

d) Determine the kind of singularity for the following differential equation

$$\ddot{Y} - 8\dot{Y} + 17Y = 34$$

e) Explain in short mapping between s-plane and z-plane.

f) Explain the bilinear transformation for stability analysis of discrete-time control systems.

Q.5 Attempt any two of the following. **12**

a) A system is described by $\begin{bmatrix} \dot{x_1} \\ \dot{x_2} \\ \dot{x_3} \end{bmatrix} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -1 & -5 & -6 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} u(t)$

Using state feedback control $u = -Kx$, it is desired to have closed poles at $(-1 + j2), (-1 - j2)$, and (-10)

Find the state feedback matrix using Ackermann's formula.

b) Derive the describing function of the relay with hysteresis nonlinearity.

c) Check the stability of the sampled data control system represented by the equation using Juri's stability test

$$F(z) = z^4 - 1.7z^3 + 1.04z^2 - 0.268z + 0.024 = 0$$

Seat No.	

Set **R**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Advanced Control Systems (BTN07604)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) The method of investigating the stability using Liapunov function as the _____.
a) Direct method b) Indirect method
c) Not determined d) Always unstable

2) The transfer function of zero order hold is _____.
a) $1 - e^{TS}$ b) $1 - e^{-TS}$
c) $\frac{1-e^{TS}}{s}$ d) $\frac{1-e^{-TS}}{s}$

3) The eigen values of the matrix (A-BK) are called _____.
a) open loop poles b) open loop zeros
c) regulator poles d) none of these

4) For a unity feedback system, the origin of the s-plane is mapped in the z-plane by transformation $z = e^{sT}$ to which one of the following?
a) Origin b) $1 + j0$
c) $-1 + j0$ d) $0 + j1$

5) Differentiators are avoided in the system design as they _____.
a) Are costlier
b) Reduces the response of the system
c) Cannot be formed with capacitors and inductors
d) Develop noise and saturate the amplifier

6) For an nth-order system, the state equations will be of the order of ____.
a) n b) 1
c) $n/2$ d) $(n+1)/2$

7) In bode plot the gain cross-over frequency is the frequency at which ___.

a) $|G(jw)H(jw)| = 1$ b) $|G(jw)H(jw)| = 0$

c) $|G(jw)H(jw)| = \infty$ d) $\frac{1}{|G(jw)H(jw)|} = K$

8) The maximum phase shift can be provided by a lead compensator with transfer function $TF = G(s) = \frac{1+6s}{1+2s}$

a) 15^0 b) 30^0

c) 45^0 d) 60^0

9) A cascaded lag compensator used in linear control systems work as a _____.

a) low pass filter b) high pass filter

c) band stop filter d) band pass filter

10) The transfer function of a SISO system with the following state space representation is $\dot{X} = Ax + B\,u$ and $y = Cx + Du$

a) $B(sI - A)^{-1}C + D$ b) $C(sI - A)^{-1}B + D$

c) $D(sI - A)^{-1}B + D$ d) $A(sI - B)^{-1}C + D$

11) An existing control system with the satisfactory transient response but unsatisfactory steady-state response is to be compensated using a cascade compensator with the following open-loop $TF = \frac{s+z}{s+p}$, where $\frac{z}{p}$ ratio should be _____.

a) > 1 b) $= 1$

c) $= 0.707$ d) < 1

12) The points at which derivatives of all the state variables are zero are _____.

a) Singular points b) Nonsingular points

c) Poles d) Zeroes

13) The describing function N of a nonlinear control system is a function of _____.

a) amplitude of the input

b) frequency of the input

c) initial conditions of the output

d) both a and b

14) The necessary and sufficient condition to be satisfied for arbitrary pole placement is that the system should be completely _____.

a) State controllable

b) State observable

c) State controllable and state observable

d) Any of the above

Seat No.		Set	R

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Advanced Control Systems (BTN07604)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Explain the design steps for Lag compensator by the Root Locus Technique.

b) Test the controllability of the system whose state equations are given as
$\dot{x}_1 = -2x_1 + 4x_2$
$\dot{x}_2 = 2x_1 - x_2 + u$ and output equation as $Y = [0 \quad 1]\begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$

c) Determine the Transfer matrix from the data given as below.
$A = \begin{bmatrix} -2 & -1 \\ -3 & -2 \end{bmatrix}$; $B = \begin{bmatrix} 3 \\ 4 \end{bmatrix}$; $C = [2 \quad 1]$ and $D = 0$

d) Write the properties of the state transition matrix.

e) Explain the realization of lead compensator.

f) Obtain state model for the system described in phase variable form.
$$\frac{d^3y}{dt^3} + 6\frac{d^2y}{dt^2} + 11\frac{dy}{dx} + 6y = u(t)$$

Q.3 Attempt any two of the following. **12**

a) Obtain state Transition matrix whose system matrix is given by
$A = \begin{bmatrix} -1 & 1 \\ 0 & 2 \end{bmatrix}$

b) The forward path TF of a unity feedback control system is given by
$G(s) = \frac{k}{s(s+2)(s+8)}$
Design a suitable lag compensator so that the system meets the following specifications.
i) Percentage overshoot $< 16\%$ for unit step input,
ii) steady state error ≤ 0.125 for unit ramp input.

c) A unity feedback type 1 system has OLTF $G(S) = k/s(1 + 2s)$. Design the suitable lag network for the system to meet following specifications.
i) $\boldsymbol{e_{ss}}$ for ramp input is less than or equal to 0.2 and
ii) $\mathrm{PM} = 40^{\circ}$

Section – II

Q.4 Attempt any four of the following. **16**

a) Explain different types of nonlinearities.

b) What are methods for determination of state feedback gain matrix K? Explain any one method.

c) Consider the system $\dot{x} = Ax + Bu, y = Cx$ with $A = \begin{bmatrix} 0 & 10 \\ 1 & 0 \end{bmatrix}, B = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$ and $C = [0 \quad 1]$. Design a full-order observer to implement the state feedback $u = -kx$ with eigenvalues of the observer to be at -10, 10.

d) Determine the kind of singularity for the following differential equation

$$\ddot{Y} - 8\dot{Y} + 17Y = 34$$

e) Explain in short mapping between s-plane and z-plane.

f) Explain the bilinear transformation for stability analysis of discrete-time control systems.

Q.5 Attempt any two of the following. **12**

a) A system is described by $\begin{bmatrix} \dot{x_1} \\ \dot{x_2} \\ \dot{x_3} \end{bmatrix} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -1 & -5 & -6 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} u(t)$

Using state feedback control $u = -Kx$, it is desired to have closed poles at $(-1 + j2), (-1 - j2)$, and (-10)

Find the state feedback matrix using Ackermann's formula.

b) Derive the describing function of the relay with hysteresis nonlinearity.

c) Check the stability of the sampled data control system represented by the equation using Juri's stability test

$$F(z) = z^4 - 1.7z^3 + 1.04z^2 - 0.268z + 0.024 = 0$$

Seat No.	

Set **S**

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Advanced Control Systems (BTN07604)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) The transfer function of a SISO system with the following state space representation is $\dot{X} = Ax + B\,u$ and $y = Cx + Du$

a) $B(sI - A)^{-1}C + D$ b) $C(sI - A)^{-1}B + D$
c) $D(sI - A)^{-1}B + D$ d) $A(sI - B)^{-1}C + D$

2) An existing control system with the satisfactory transient response but unsatisfactory steady-state response is to be compensated using a cascade compensator with the following open-loop $TF = \frac{s+z}{s+p}$, where $\frac{z}{p}$ ratio should be _____.

a) > 1 b) $= 1$
c) $= 0.707$ d) < 1

3) The points at which derivatives of all the state variables are zero are _____.

a) Singular points b) Nonsingular points
c) Poles d) Zeroes

4) The describing function N of a nonlinear control system is a function of _____.

a) amplitude of the input
b) frequency of the input
c) initial conditions of the output
d) both a and b

5) The necessary and sufficient condition to be satisfied for arbitrary pole placement is that the system should be completely _____.
a) State controllable
b) State observable
c) State controllable and state observable
d) Any of the above

6) The method of investigating the stability using Liapunov function as the _____.
a) Direct method
b) Indirect method
c) Not determined
d) Always unstable

7) The transfer function of zero order hold is _____.
a) $1 - e^{TS}$
b) $1 - e^{-TS}$
c) $\frac{1-e^{TS}}{s}$
d) $\frac{1-e^{-TS}}{s}$

8) The eigen values of the matrix (A-BK) are called _____.
a) open loop poles
b) open loop zeros
c) regulator poles
d) none of these

9) For a unity feedback system, the origin of the s-plane is mapped in the z-plane by transformation $z = e^{sT}$ to which one of the following?
a) Origin
b) $1 + j0$
c) $-1 + j0$
d) $0 + j1$

10) Differentiators are avoided in the system design as they _____.
a) Are costlier
b) Reduces the response of the system
c) Cannot be formed with capacitors and inductors
d) Develop noise and saturate the amplifier

11) For an nth-order system, the state equations will be of the order of ____.
a) n
b) 1
c) $n/2$
d) $(n+1)/2$

12) In bode plot the gain cross-over frequency is the frequency at which ___.
a) $|G(jw)H(jw)| = 1$
b) $|G(jw)H(jw)| = 0$
c) $|G(jw)H(jw)| = \infty$
d) $\frac{1}{|G(jw)H(jw)|} = K$

13) The maximum phase shift can be provided by a lead compensator with transfer function $TF = G(s) = \frac{1+6s}{1+2s}$
a) 15^0
b) 30^0
c) 45^0
d) 60^0

14) A cascaded lag compensator used in linear control systems work as a _____.

a) low pass filter
b) high pass filter
c) band stop filter
d) band pass filter

Seat No.		Set	S

T. Y (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Advanced Control Systems (BTN07604)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Explain the design steps for Lag compensator by the Root Locus Technique.

b) Test the controllability of the system whose state equations are given as
$\dot{x}_1 = -2x_1 + 4x_2$
$\dot{x}_2 = 2x_1 - x_2 + u$ and output equation as $Y = [0 \quad 1]\begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$

c) Determine the Transfer matrix from the data given as below.
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d) Write the properties of the state transition matrix.

e) Explain the realization of lead compensator.

f) Obtain state model for the system described in phase variable form.
$$\frac{d^3y}{dt^3} + 6\frac{d^2y}{dt^2} + 11\frac{dy}{dx} + 6y = u(t)$$

Q.3 Attempt any two of the following. **12**

a) Obtain state Transition matrix whose system matrix is given by
$A = \begin{bmatrix} -1 & 1 \\ 0 & 2 \end{bmatrix}$

b) The forward path TF of a unity feedback control system is given by
$G(s) = \frac{k}{s(s+2)(s+8)}$
Design a suitable lag compensator so that the system meets the following specifications.
i) Percentage overshoot $< 16\%$ for unit step input,
ii) steady state error ≤ 0.125 for unit ramp input.

c) A unity feedback type 1 system has OLTF $G(S) = k/s(1 + 2s)$. Design the suitable lag network for the system to meet following specifications.
i) $\boldsymbol{e_{ss}}$ for ramp input is less than or equal to 0.2 and
ii) $\mathrm{PM} = 40^{\circ}$

Section – II

Q.4 Attempt any four of the following. **16**

a) Explain different types of nonlinearities.

b) What are methods for determination of state feedback gain matrix K? Explain any one method.

c) Consider the system $\dot{x} = Ax + Bu, y = Cx$ with $A = \begin{bmatrix} 0 & 10 \\ 1 & 0 \end{bmatrix}, B = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$ and $C = [0 \quad 1]$. Design a full-order observer to implement the state feedback $u = -kx$ with eigenvalues of the observer to be at -10, 10.

d) Determine the kind of singularity for the following differential equation

$$\ddot{Y} - 8\dot{Y} + 17Y = 34$$

e) Explain in short mapping between s-plane and z-plane.

f) Explain the bilinear transformation for stability analysis of discrete-time control systems.

Q.5 Attempt any two of the following. **12**

a) A system is described by $\begin{bmatrix} \dot{x_1} \\ \dot{x_2} \\ \dot{x_3} \end{bmatrix} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -1 & -5 & -6 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} u(t)$

Using state feedback control $u = -Kx$, it is desired to have closed poles at $(-1 + j2), (-1 - j2)$, and (-10)

Find the state feedback matrix using Ackermann's formula.

b) Derive the describing function of the relay with hysteresis nonlinearity.

c) Check the stability of the sampled data control system represented by the equation using Juri's stability test

$$F(z) = z^4 - 1.7z^3 + 1.04z^2 - 0.268z + 0.024 = 0$$

SLR-BD-598

Seat No.		Set	P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Operating Systems (BTN07606)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions **14**

1) A ____ operating system has well-defined, fixed time constraints.
a) Real-time b) Half real-time
c) Full real-time d) Null real-time

2) A _____ system guarantees that critical tasks complete on time.
a) hard real-time b) soft real-time
c) firm real-time d) all real-time

3) A program that is loaded into memory and is executing is commonly referred to as a _____.
a) process b) program
c) Primary Program d) Secondary Program

4) _____: The process is being created
a) New b) Running
c) Waiting d) Ready

5) _____: Instructions are being executed.
a) New b) Running
c) Waiting d) Ready

6) A CPU-bound program might have a few very ____ CPU bursts.
a) Long b) Short
c) Medium d) Perfect

7) When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, is called.
a) dynamic condition b) race condition
c) essential condition d) critical condition

8) The circular wait condition can be prevented by _____.
a) defining a linear ordering of resource types
b) using thread
c) using pipes
d) all of the mentioned

9) All unsafe states are:
a) deadlocks b) not deadlocks
c) fatal d) None of these

10) A system is in a safe state only if there exists a:
a) safe allocation b) safe resource
c) safe sequence d) All of these

11) The _____ must design and program the overlay structure.
a) programmer b) system architect
c) system designer d) None of these

12) The base register is also known as the:
a) basic register b) regular register
c) Relocation register d) delocation register

13) Swapping requires a _____.
a) motherboard b) keyboard
c) monitor d) backing store

14) The pager concerns with the _____.
a) individual page of a process b) entire process
c) entire thread d) First page of the process

SLR-BD-598

Seat No.	

Set P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Operating Systems (BTN07606)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Explain time sharing system.
b) Explain PCB with neat diagram.
c) Explain Petersons algorithm.
d) Explain critical section problem.

Q.3 Attempt any Two. **16**

a) Explain multilevel queue scheduling algorithm & Multilevel feedback queue scheduling.
b) Explain Inter process Communication in detail.
c) Explain personal computer system, parallel system.

Section – II

Q.4 Attempt any Three. **12**

a) Explain Resource allocation graph algorithm with example.
b) Explain Swapping with neat diagram.
c) Explain Contiguous Allocation.
d) Explain concept of thrashing.

Q.5 Attempt any Two. **16**

a) Explain deadlock detection algorithm for the multiple instances of resources.
b) Explain Banker's algorithm with example.
c) Explain page fault handling with neat diagram.

Seat No.		Set	Q

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Operating Systems (BTN07606)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions **14**

1) The circular wait condition can be prevented by _____.
a) defining a linear ordering of resource types
b) using thread
c) using pipes
d) all of the mentioned

2) All unsafe states are:
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4) The _____ must design and program the overlay structure.
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a) individual page of a process b) entire process
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8) A ____ operating system has well-defined, fixed time constraints.
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11) _____: The process is being created
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12) _____: Instructions are being executed.
a) New b) Running
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13) A CPU-bound program might have a few very ____ CPU bursts.
a) Long b) Short
c) Medium d) Perfect

14) When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, is called.
a) dynamic condition b) race condition
c) essential condition d) critical condition

SLR-BD-598

Seat No.	

Set Q

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Operating Systems (BTN07606)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Explain time sharing system.
b) Explain PCB with neat diagram.
c) Explain Petersons algorithm.
d) Explain critical section problem.

Q.3 Attempt any Two. **16**

a) Explain multilevel queue scheduling algorithm & Multilevel feedback queue scheduling.
b) Explain Inter process Communication in detail.
c) Explain personal computer system, parallel system.

Section – II

Q.4 Attempt any Three. **12**

a) Explain Resource allocation graph algorithm with example.
b) Explain Swapping with neat diagram.
c) Explain Contiguous Allocation.
d) Explain concept of thrashing.

Q.5 Attempt any Two. **16**

a) Explain deadlock detection algorithm for the multiple instances of resources.
b) Explain Banker's algorithm with example.
c) Explain page fault handling with neat diagram.

Seat No.		Set	R

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Operating Systems (BTN07606)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions **14**

1) The _____ must design and program the overlay structure.
a) programmer b) system architect
c) system designer d) None of these

2) The base register is also known as the:
a) basic register b) regular register
c) Relocation register d) delocation register

3) Swapping requires a _____.
a) motherboard b) keyboard
c) monitor d) backing store

4) The pager concerns with the _____.
a) individual page of a process b) entire process
c) entire thread d) First page of the process

5) A ____ operating system has well-defined, fixed time constraints.
a) Real-time b) Half real-time
c) Full real-time d) Null real-time

6) A _____ system guarantees that critical tasks complete on time.
a) hard real-time b) soft real-time
c) firm real-time d) all real-time

7) A program that is loaded into memory and is executing is commonly referred to as a _____.
a) process b) program
c) Primary Program d) Secondary Program

8) _____: The process is being created
a) New b) Running
c) Waiting d) Ready

9) _____: Instructions are being executed.

a) New b) Running
c) Waiting d) Ready

10) A CPU-bound program might have a few very ____ CPU bursts.

a) Long b) Short
c) Medium d) Perfect

11) When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, is called.

a) dynamic condition b) race condition
c) essential condition d) critical condition

12) The circular wait condition can be prevented by _____.

a) defining a linear ordering of resource types
b) using thread
c) using pipes
d) all of the mentioned

13) All unsafe states are:

a) deadlocks b) not deadlocks
c) fatal d) None of these

14) A system is in a safe state only if there exists a:

a) safe allocation b) safe resource
c) safe sequence d) All of these

SLR-BD-598

Seat No.	

Set R

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Operating Systems (BTN07606)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Explain time sharing system.
b) Explain PCB with neat diagram.
c) Explain Petersons algorithm.
d) Explain critical section problem.

Q.3 Attempt any Two. **16**

a) Explain multilevel queue scheduling algorithm & Multilevel feedback queue scheduling.
b) Explain Inter process Communication in detail.
c) Explain personal computer system, parallel system.

Section – II

Q.4 Attempt any Three. **12**

a) Explain Resource allocation graph algorithm with example.
b) Explain Swapping with neat diagram.
c) Explain Contiguous Allocation.
d) Explain concept of thrashing.

Q.5 Attempt any Two. **16**

a) Explain deadlock detection algorithm for the multiple instances of resources.
b) Explain Banker's algorithm with example.
c) Explain page fault handling with neat diagram.

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Operating Systems (BTN07606)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions **14**

1) A CPU-bound program might have a few very ____ CPU bursts.
a) Long b) Short
c) Medium d) Perfect

2) When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, is called.
a) dynamic condition b) race condition
c) essential condition d) critical condition

3) The circular wait condition can be prevented by _____.
a) defining a linear ordering of resource types
b) using thread
c) using pipes
d) all of the mentioned

4) All unsafe states are:
a) deadlocks b) not deadlocks
c) fatal d) None of these

5) A system is in a safe state only if there exists a:
a) safe allocation b) safe resource
c) safe sequence d) All of these

6) The _____ must design and program the overlay structure.
a) programmer b) system architect
c) system designer d) None of these

7) The base register is also known as the:
a) basic register b) regular register
c) Relocation register d) delocation register

8) Swapping requires a _____.

a) motherboard b) keyboard
c) monitor d) backing store

9) The pager concerns with the _____.

a) individual page of a process b) entire process
c) entire thread d) First page of the process

10) A ____ operating system has well-defined, fixed time constraints.

a) Real-time b) Half real-time
c) Full real-time d) Null real-time

11) A _____ system guarantees that critical tasks complete on time.

a) hard real-time b) soft real-time
c) firm real-time d) all real-time

12) A program that is loaded into memory and is executing is commonly referred to as a _____.

a) process b) program
c) Primary Program d) Secondary Program

13) _____: The process is being created

a) New b) Running
c) Waiting d) Ready

14) _____: Instructions are being executed.

a) New b) Running
c) Waiting d) Ready

SLR-BD-598

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Operating Systems (BTN07606)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Explain time sharing system.
b) Explain PCB with neat diagram.
c) Explain Petersons algorithm.
d) Explain critical section problem.

Q.3 Attempt any Two. **16**

a) Explain multilevel queue scheduling algorithm & Multilevel feedback queue scheduling.
b) Explain Inter process Communication in detail.
c) Explain personal computer system, parallel system.

Section – II

Q.4 Attempt any Three. **12**

a) Explain Resource allocation graph algorithm with example.
b) Explain Swapping with neat diagram.
c) Explain Contiguous Allocation.
d) Explain concept of thrashing.

Q.5 Attempt any Two. **16**

a) Explain deadlock detection algorithm for the multiple instances of resources.
b) Explain Banker's algorithm with example.
c) Explain page fault handling with neat diagram.

SLR-BD-599

Seat No.		Set	P

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Renewable Energy Sources (BTN07607)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The percentage of the incoming radiation reflected back to space by the earth is _____.
a) 10 % b) 20 %
c) 30 % d) 40 %

2) Terrestrial radiation has a wavelength in the range of _____.
a) 0.2 micro-meter to 4 micro-meter
b) 0.2 micro-meter to 0.5 micro-meter
c) 0.380 micro-meter to 0.760 micro-meter
d) 0.29 micro-meter to 2.3 micro-meter

3) A solar thermal collector _____.
a) Collects the solar energy and reflects it back
b) Absorbs the solar radiation and dissipates it to the ambient
c) Collects and converts the solar energy in to electrical energy
d) Collects and converts the solar energy in to thermal energy and delivers it to the next stage of the system

4) The value of concentration ratio of a flat-plate collector is _____.
a) 1 b) 10
c) 100 d) 1000

5) In solar ponds surface convective zone (SCZ) has a thickness of about _____.
a) half of the dept b) more than half of the dept
c) 10-20cm d) a or b

6) Ammonia-water absorption system is used for cooling duties upto _____.
a) 00 ^{c} b) -2300 ^{c}
c) -500 ^{c} d) -100 ^{c}

7) The range of wind speed suitable for wind power generator is _____.
a) 0 to 5 m/s
b) 5 to 25 m/s
c) 25 to 50 m/s
d) 50 to 75 m/s

8) A two-blade wind turbine produces maximum power when the tip speed ratio is equal to _____.
a) π
b) 2π
c) 3π
d) 0.593

9) The water content in anhydrous ethanol is _____.
a) 20%
b) 10%
c) 5%
d) 0.7%

10) The percentage of ethanol in blended petrol (gasohol) is _____.
a) 20%
b) 30%
c) 4%
d) 50%

11) The temperature at the inner core of the earth is about: _____.
a) 1000^{C}
b) 4000^{C}
c) 400000^{C}
d) 5000^{C}

12) The zone of likely geothermal sites corresponds roughly to: _____.
a) cold, hilly regions
b) hot, flat regions
c) Tropical regions
d) the regions of seismic and volcanic activities

13) OTEC stands for _____.
a) Ocean Thermal Energy Conversion
b) Ocean Thermal Energy Component
c) Ocean Thermodynamic Energy Conversion
d) Ocean Thermodynamic Energy Component

14) Two-basin tidal schemes _____.
a) Are more economical than single basin schemes
b) Operate on ebb cycles in both basins
c) Produce less uniform power
d) Produce more uniform power

Seat No.	

Set **P**

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Renewable Energy Sources (BTN07607)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Explain solar water heating system.
b) With the help of neat diagram explain terrestrial and an extra-terrestrial solar radiation.
c) With neat diagram explain classification of concentrating type collectors.
d) Different methods of solar energy storage.
e) Draw and describe horizontal axis windmills.
f) Define the terms:
i) Tip speed ratio
ii) Swept area
iii) Solidity
iv) cut-in, cut-out, and rated speed

Q.3 Attempt any two of the following. **12**

a) Explain savonious and durnes wind mill operation with diagram.
b) Draw and explain different zones of solar ponds. What are the applications of solar ponds?
c) Draw and explain the performance characteristics of wind mills.

Section – II

Q.4 Attempt any four of the following. **16**

a) Distinguish between fixed dome type and Floating drum type biogas plant.
b) With the help of bacterial reaction explain the principle of biogas generation.
c) Draw and describe the dry steam geothermal power plant.
d) Explain different types of geothermal resources.
e) Draw and describe the working of open cycle OTEC system.
f) Explain the need for DEC.

Q.5 Attempt any two of the following. **12**

a) Explain fixed drum type biogas plant.

b) Describe the working of closed cycle OTEC system and also explain the advantages and disadvantages of Tidal power.

c) Explain tidal energy conversion system with proper diagram.

Seat No.	

Set **Q**

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Renewable Energy Sources (BTN07607)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A two-blade wind turbine produces maximum power when the tip speed ratio is equal to _____.
a) π b) 2π
c) 3π d) 0.593

2) The water content in anhydrous ethanol is _____.
a) 20% b) 10%
c) 5% d) 0.7%

3) The percentage of ethanol in blended petrol (gasohol) is _____.
a) 20% b) 30%
c) 4% d) 50%

4) The temperature at the inner core of the earth is about: _____.
a) 1000^C b) 4000^C
c) 400000^C d) 5000^C

5) The zone of likely geothermal sites corresponds roughly to: _____.
a) cold, hilly regions
b) hot, flat regions
c) Tropical regions
d) the regions of seismic and volcanic activities

6) OTEC stands for _____.
a) Ocean Thermal Energy Conversion
b) Ocean Thermal Energy Component
c) Ocean Thermodynamic Energy Conversion
d) Ocean Thermodynamic Energy Component

7) Two-basin tidal schemes _____.
a) Are more economical than single basin schemes
b) Operate on ebb cycles in both basins
c) Produce less uniform power
d) Produce more uniform power

8) The percentage of the incoming radiation reflected back to space by the earth is _____.
a) 10 % b) 20 %
c) 30 % d) 40 %

9) Terrestrial radiation has a wavelength in the range of _____.
a) 0.2 micro-meter to 4 micro-meter
b) 0.2 micro-meter to 0.5 micro-meter
c) 0.380 micro-meter to 0.760 micro-meter
d) 0.29 micro-meter to 2.3 micro-meter

10) A solar thermal collector _____.
a) Collects the solar energy and reflects it back
b) Absorbs the solar radiation and dissipates it to the ambient
c) Collects and converts the solar energy in to electrical energy
d) Collects and converts the solar energy in to thermal energy and delivers it to the next stage of the system

11) The value of concentration ratio of a flat-plate collector is _____.
a) 1 b) 10
c) 100 d) 1000

12) In solar ponds surface convective zone (SCZ) has a thickness of about _____.
a) half of the dept b) more than half of the dept
c) 10-20cm d) a or b

13) Ammonia-water absorption system is used for cooling duties upto _____.
a) 00 ^{c} b) -2300 ^{c}
c) -500 ^{c} d) -100 ^{c}

14) The range of wind speed suitable for wind power generator is _____.
a) 0 to 5 m/s b) 5 to 25 m/s
c) 25 to 50 m/s d) 50 to 75 m/s

Seat No.	

Set **Q**

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Renewable Energy Sources (BTN07607)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Explain solar water heating system.
b) With the help of neat diagram explain terrestrial and an extra-terrestrial solar radiation.
c) With neat diagram explain classification of concentrating type collectors.
d) Different methods of solar energy storage.
e) Draw and describe horizontal axis windmills.
f) Define the terms:
i) Tip speed ratio
ii) Swept area
iii) Solidity
iv) cut-in, cut-out, and rated speed

Q.3 Attempt any two of the following. **12**

a) Explain savonious and durnes wind mill operation with diagram.
b) Draw and explain different zones of solar ponds. What are the applications of solar ponds?
c) Draw and explain the performance characteristics of wind mills.

Section – II

Q.4 Attempt any four of the following. **16**

a) Distinguish between fixed dome type and Floating drum type biogas plant.
b) With the help of bacterial reaction explain the principle of biogas generation.
c) Draw and describe the dry steam geothermal power plant.
d) Explain different types of geothermal resources.
e) Draw and describe the working of open cycle OTEC system.
f) Explain the need for DEC.

Q.5 Attempt any two of the following. **12**

a) Explain fixed drum type biogas plant.

b) Describe the working of closed cycle OTEC system and also explain the advantages and disadvantages of Tidal power.

c) Explain tidal energy conversion system with proper diagram.

Seat No.	

Set **R**

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Renewable Energy Sources (BTN07607)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The temperature at the inner core of the earth is about: _____.
a) 1000^C b) 4000^C
c) 400000^C d) 5000^C

2) The zone of likely geothermal sites corresponds roughly to: _____.
a) cold, hilly regions
b) hot, flat regions
c) Tropical regions
d) the regions of seismic and volcanic activities

3) OTEC stands for _____.
a) Ocean Thermal Energy Conversion
b) Ocean Thermal Energy Component
c) Ocean Thermodynamic Energy Conversion
d) Ocean Thermodynamic Energy Component

4) Two-basin tidal schemes _____.
a) Are more economical than single basin schemes
b) Operate on ebb cycles in both basins
c) Produce less uniform power
d) Produce more uniform power

5) The percentage of the incoming radiation reflected back to space by the earth is _____.
a) 10 % b) 20 %
c) 30 % d) 40 %

6) Terrestrial radiation has a wavelength in the range of _____.
a) 0.2 micro-meter to 4 micro-meter
b) 0.2 micro-meter to 0.5 micro-meter
c) 0.380 micro-meter to 0.760 micro-meter
d) 0.29 micro-meter to 2.3 micro-meter

7) A solar thermal collector _____.
a) Collects the solar energy and reflects it back
b) Absorbs the solar radiation and dissipates it to the ambient
c) Collects and converts the solar energy in to electrical energy
d) Collects and converts the solar energy in to thermal energy and delivers it to the next stage of the system

8) The value of concentration ratio of a flat-plate collector is _____.
a) 1 b) 10
c) 100 d) 1000

9) In solar ponds surface convective zone (SCZ) has a thickness of about _____.
a) half of the dept b) more than half of the dept
c) 10-20cm d) a or b

10) Ammonia-water absorption system is used for cooling duties upto _____.
a) 00 ^{c} b) -2300 ^{c}
c) -500 ^{c} d) -100 ^{c}

11) The range of wind speed suitable for wind power generator is _____.
a) 0 to 5 m/s b) 5 to 25 m/s
c) 25 to 50 m/s d) 50 to 75 m/s

12) A two-blade wind turbine produces maximum power when the tip speed ratio is equal to _____.
a) π b) 2π
c) 3π d) 0.593

13) The water content in anhydrous ethanol is _____.
a) 20% b) 10%
c) 5% d) 0.7%

14) The percentage of ethanol in blended petrol (gasohol) is _____.
a) 20% b) 30%
c) 4% d) 50%

Seat No.	

Set **R**

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Renewable Energy Sources (BTN07607)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Explain solar water heating system.
b) With the help of neat diagram explain terrestrial and an extra-terrestrial solar radiation.
c) With neat diagram explain classification of concentrating type collectors.
d) Different methods of solar energy storage.
e) Draw and describe horizontal axis windmills.
f) Define the terms:
i) Tip speed ratio
ii) Swept area
iii) Solidity
iv) cut-in, cut-out, and rated speed

Q.3 Attempt any two of the following. **12**

a) Explain savonious and durnes wind mill operation with diagram.
b) Draw and explain different zones of solar ponds. What are the applications of solar ponds?
c) Draw and explain the performance characteristics of wind mills.

Section – II

Q.4 Attempt any four of the following. **16**

a) Distinguish between fixed dome type and Floating drum type biogas plant.
b) With the help of bacterial reaction explain the principle of biogas generation.
c) Draw and describe the dry steam geothermal power plant.
d) Explain different types of geothermal resources.
e) Draw and describe the working of open cycle OTEC system.
f) Explain the need for DEC.

Q.5 Attempt any two of the following. **12**

a) Explain fixed drum type biogas plant.

b) Describe the working of closed cycle OTEC system and also explain the advantages and disadvantages of Tidal power.

c) Explain tidal energy conversion system with proper diagram.

Seat No.		Set	S

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Renewable Energy Sources (BTN07607)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) Ammonia-water absorption system is used for cooling duties upto _____.
a) 00 ^{c} b) -2300 ^{c}
c) -500 ^{c} d) -100 ^{c}

2) The range of wind speed suitable for wind power generator is _____.
a) 0 to 5 m/s b) 5 to 25 m/s
c) 25 to 50 m/s d) 50 to 75 m/s

3) A two-blade wind turbine produces maximum power when the tip speed ratio is equal to _____.
a) π b) 2π
c) 3π d) 0.593

4) The water content in anhydrous ethanol is _____.
a) 20% b) 10%
c) 5% d) 0.7%

5) The percentage of ethanol in blended petrol (gasohol) is _____.
a) 20% b) 30%
c) 4% d) 50%

6) The temperature at the inner core of the earth is about: _____.
a) 1000^{C} b) 4000^{C}
c) 400000^{C} d) 5000^{C}

7) The zone of likely geothermal sites corresponds roughly to: _____.
a) cold, hilly regions
b) hot, flat regions
c) Tropical regions
d) the regions of seismic and volcanic activities

8) OTEC stands for _____.
a) Ocean Thermal Energy Conversion
b) Ocean Thermal Energy Component
c) Ocean Thermodynamic Energy Conversion
d) Ocean Thermodynamic Energy Component

9) Two-basin tidal schemes _____.
a) Are more economical than single basin schemes
b) Operate on ebb cycles in both basins
c) Produce less uniform power
d) Produce more uniform power

10) The percentage of the incoming radiation reflected back to space by the earth is _____.
a) 10 % b) 20 %
c) 30 % d) 40 %

11) Terrestrial radiation has a wavelength in the range of _____.
a) 0.2 micro-meter to 4 micro-meter
b) 0.2 micro-meter to 0.5 micro-meter
c) 0.380 micro-meter to 0.760 micro-meter
d) 0.29 micro-meter to 2.3 micro-meter

12) A solar thermal collector _____.
a) Collects the solar energy and reflects it back
b) Absorbs the solar radiation and dissipates it to the ambient
c) Collects and converts the solar energy in to electrical energy
d) Collects and converts the solar energy in to thermal energy and delivers it to the next stage of the system

13) The value of concentration ratio of a flat-plate collector is _____.
a) 1 b) 10
c) 100 d) 1000

14) In solar ponds surface convective zone (SCZ) has a thickness of about _____.
a) half of the dept b) more than half of the dept
c) 10-20cm d) a or b

Seat No.		Set	S

T. Y. (B. Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Renewable Energy Sources (BTN07607)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Explain solar water heating system.
b) With the help of neat diagram explain terrestrial and an extra-terrestrial solar radiation.
c) With neat diagram explain classification of concentrating type collectors.
d) Different methods of solar energy storage.
e) Draw and describe horizontal axis windmills.
f) Define the terms:
i) Tip speed ratio
ii) Swept area
iii) Solidity
iv) cut-in, cut-out, and rated speed

Q.3 Attempt any two of the following. **12**

a) Explain savonious and durnes wind mill operation with diagram.
b) Draw and explain different zones of solar ponds. What are the applications of solar ponds?
c) Draw and explain the performance characteristics of wind mills.

Section – II

Q.4 Attempt any four of the following. **16**

a) Distinguish between fixed dome type and Floating drum type biogas plant.
b) With the help of bacterial reaction explain the principle of biogas generation.
c) Draw and describe the dry steam geothermal power plant.
d) Explain different types of geothermal resources.
e) Draw and describe the working of open cycle OTEC system.
f) Explain the need for DEC.

Q.5 Attempt any two of the following. **12**

a) Explain fixed drum type biogas plant.

b) Describe the working of closed cycle OTEC system and also explain the advantages and disadvantages of Tidal power.

c) Explain tidal energy conversion system with proper diagram.

SLR-BD-600

Seat No.		Set	P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Fiber Optic Communication (BTN07608)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A LASER means _____.
a) Light amplification some emit radiation
b) Light amplification by stimulated emission of radiation
c) Both a & b
d) Light activated stimulated emission of radiation

2) Optical fiber is the technology associated with data transmission using _____.
a) air b) light pulses
c) waves d) Both a & c

3) Optical fiber is used by telecommunications companies to transmit ____.
a) Telephone signals,
b) Telephone signals, Internet communication and cable television signals
c) Internet communication and cable television signals
d) None of the above

4) How do you measure bending losses in optical fiber?
a) By taking the logarithmic ratio of input power (P_i) to the output power (P_o).
b) By taking the logarithmic of Output power (P_o)
c) By taking the logarithmic of input power (P_i)
d) Only Power

5) DWDM Means _____.
a) Data wavelength-division multiplexing
b) Dense wavelength-division multiplexing
c) Dense wavelength-diverted multiplexing
d) Dense wavelength-division manager

6) A light-emitting diode (LED) is a semiconductor device that emit light when _____.
a) Output reaches saturation level
b) Current flows through it
c) Output will be a sine waveform
d) Output will be a non-sinusoidal waveform

7) Fiber optic Ethernet transmits data signals over _____.
a) Fiber cables rather than the copper cables of traditional Ethernet wiring
b) Copper cables
c) Wired Cable
d) All of the mentioned

8) In an optical network, which topologies are used?
a) Ring
b) Star
c) Bus
d) All of the above

9) Dense wavelength division multiplexing is a _____.
a) Wired communication technique
b) fiber-optic transmission technique
c) Mixing techniques
d) Protocol

10) A major consideration with all types of fiber, fiber connection is the ____.
a) optical loss encountered at the interface
b) air loss
c) hest loss
d) None of the above

11) Fiber splicing is the process of _____.
a) Temporary joining of two fibers
b) permanently joining two fibers together
c) permanent and temporary joint
d) None of the above

12) An optical amplifier is a device that amplifies _____.
a) Electrical signal
b) an optical signal
c) Both a and b
d) None of the above

13) Wavelength division multiplexing (WDM) is a _____.
a) Technique of multiplexing multiple optical carrier signals
b) Technique of multiplexing multiple ray
c) Both a & b
d) None of the above

14) Optical modulators are widely used with superior performance _____.

a) Only Laboratory
b) including optical communications, signal processing, and optical measurements
c) time Measurement
d) None of the above

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Fiber Optic Communication (BTN07608)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following. **16**

a) Draw the block diagram of generalized optical fiber communication system. Explain.
b) Write any 4 advantages & disadvantages of optical Fiber communication.
c) What is scattering losses? Enlist its types. Explain any one in details.
d) Explain optical emission in semiconductor.
e) What is light modulation? Explain Shortly.

Q.3 Attempt any two of the following. **12**

a) Explain the process of light amplification in a LASER.
b) Explain optical fiber waveguides.
c) Explain LED structure.

Section – II

Q.4 Attempt any four of the following. **16**

a) What is the requirement of optical detectors? Explain.
b) What is optical networking technology? Explain shortly.
c) Explain PIN photodiode with diagram.
d) Explain optical Ethernet.
e) What is optical network mode? Explain.

Q.5 Attempt any two of the following. **12**

a) Explain optical Transmitter Design in details.
b) Explain Fiber distributed data Interface in details.
c) What is optical detection principle? Explain in details.

Seat No.	

Set Q

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Fiber Optic Communication (BTN07608)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In an optical network, which topologies are used?
a) Ring b) Star
c) Bus d) All of the above

2) Dense wavelength division multiplexing is a _____.
a) Wired communication technique
b) fiber-optic transmission technique
c) Mixing techniques
d) Protocol

3) A major consideration with all types of fiber, fiber connection is the ____.
a) optical loss encountered at the interface
b) air loss
c) hest loss
d) None of the above

4) Fiber splicing is the process of _____.
a) Temporary joining of two fibers
b) permanently joining two fibers together
c) permanent and temporary joint
d) None of the above

5) An optical amplifier is a device that amplifies _____.
a) Electrical signal b) an optical signal
c) Both a and b d) None of the above

6) Wavelength division multiplexing (WDM) is a _____.
a) Technique of multiplexing multiple optical carrier signals
b) Technique of multiplexing multiple ray
c) Both a & b
d) None of the above

7) Optical modulators are widely used with superior performance _____.
   a) Only Laboratory
   b) including optical communications, signal processing, and optical measurements
   c) time Measurement
   d) None of the above

8) A LASER means _____.
   a) Light amplification some emit radiation
   b) Light amplification by stimulated emission of radiation
   c) Both a & b
   d) Light activated stimulated emission of radiation

9) Optical fiber is the technology associated with data transmission using _____.
   a) air
   b) light pulses
   c) waves
   d) Both a & c

10) Optical fiber is used by telecommunications companies to transmit ____.
   a) Telephone signals,
   b) Telephone signals, Internet communication and cable television signals
   c) Internet communication and cable television signals
   d) None of the above

11) How do you measure bending losses in optical fiber?
   a) By taking the logarithmic ratio of input power (P_i) to the output power (P_o).
   b) By taking the logarithmic of Output power (P_o)
   c) By taking the logarithmic of input power (P_i)
   d) Only Power

12) DWDM Means _____.
   a) Data wavelength-division multiplexing
   b) Dense wavelength-division multiplexing
   c) Dense wavelength-diverted multiplexing
   d) Dense wavelength-division manager

13) A light-emitting diode (LED) is a semiconductor device that emit light when _____.
   a) Output reaches saturation level
   b) Current flows through it
   c) Output will be a sine waveform
   d) Output will be a non-sinusoidal waveform

14) Fiber optic Ethernet transmits data signals over _____.

a) Fiber cables rather than the copper cables of traditional Ethernet wiring
b) Copper cables
c) Wired Cable
d) All of the mentioned

SLR-BD-600

Seat No.	

Set Q

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Fiber Optic Communication (BTN07608)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following. **16**

a) Draw the block diagram of generalized optical fiber communication system. Explain.
b) Write any 4 advantages & disadvantages of optical Fiber communication.
c) What is scattering losses? Enlist its types. Explain any one in details.
d) Explain optical emission in semiconductor.
e) What is light modulation? Explain Shortly.

Q.3 Attempt any two of the following. **12**

a) Explain the process of light amplification in a LASER.
b) Explain optical fiber waveguides.
c) Explain LED structure.

Section – II

Q.4 Attempt any four of the following. **16**

a) What is the requirement of optical detectors? Explain.
b) What is optical networking technology? Explain shortly.
c) Explain PIN photodiode with diagram.
d) Explain optical Ethernet.
e) What is optical network mode? Explain.

Q.5 Attempt any two of the following. **12**

a) Explain optical Transmitter Design in details.
b) Explain Fiber distributed data Interface in details.
c) What is optical detection principle? Explain in details.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Fiber Optic Communication (BTN07608)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Fiber splicing is the process of _____.
a) Temporary joining of two fibers
b) permanently joining two fibers together
c) permanent and temporary joint
d) None of the above

2) An optical amplifier is a device that amplifies _____.
a) Electrical signal b) an optical signal
c) Both a and b d) None of the above

3) Wavelength division multiplexing (WDM) is a _____.
a) Technique of multiplexing multiple optical carrier signals
b) Technique of multiplexing multiple ray
c) Both a & b
d) None of the above

4) Optical modulators are widely used with superior performance _____.
a) Only Laboratory
b) including optical communications, signal processing, and optical measurements
c) time Measurement
d) None of the above

5) A LASER means _____.
a) Light amplification some emit radiation
b) Light amplification by stimulated emission of radiation
c) Both a & b
d) Light activated stimulated emission of radiation

6) Optical fiber is the technology associated with data transmission using _____.

a) air
b) light pulses
c) waves
d) Both a & c

7) Optical fiber is used by telecommunications companies to transmit ____.

a) Telephone signals,
b) Telephone signals, Internet communication and cable television signals
c) Internet communication and cable television signals
d) None of the above

8) How do you measure bending losses in optical fiber?

a) By taking the logarithmic ratio of input power (P_i) to the output power (P_o).
b) By taking the logarithmic of Output power (P_o)
c) By taking the logarithmic of input power (P_i)
d) Only Power

9) DWDM Means _____.

a) Data wavelength-division multiplexing
b) Dense wavelength-division multiplexing
c) Dense wavelength-diverted multiplexing
d) Dense wavelength-division manager

10) A light-emitting diode (LED) is a semiconductor device that emit light when _____.

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b) Copper cables
c) Wired Cable
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12) In an optical network, which topologies are used?

a) Ring
b) Star
c) Bus
d) All of the above

13) Dense wavelength division multiplexing is a _____.

a) Wired communication technique
b) fiber-optic transmission technique
c) Mixing techniques
d) Protocol

14) A major consideration with all types of fiber, fiber connection is the ____.

a) optical loss encountered at the interface
b) air loss
c) hest loss
d) None of the above

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Fiber Optic Communication (BTN07608)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following. **16**

a) Draw the block diagram of generalized optical fiber communication system. Explain.
b) Write any 4 advantages & disadvantages of optical Fiber communication.
c) What is scattering losses? Enlist its types. Explain any one in details.
d) Explain optical emission in semiconductor.
e) What is light modulation? Explain Shortly.

Q.3 Attempt any two of the following. **12**

a) Explain the process of light amplification in a LASER.
b) Explain optical fiber waveguides.
c) Explain LED structure.

Section – II

Q.4 Attempt any four of the following. **16**

a) What is the requirement of optical detectors? Explain.
b) What is optical networking technology? Explain shortly.
c) Explain PIN photodiode with diagram.
d) Explain optical Ethernet.
e) What is optical network mode? Explain.

Q.5 Attempt any two of the following. **12**

a) Explain optical Transmitter Design in details.
b) Explain Fiber distributed data Interface in details.
c) What is optical detection principle? Explain in details.

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Fiber Optic Communication (BTN07608)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A light-emitting diode (LED) is a semiconductor device that emit light when _____.
a) Output reaches saturation level
b) Current flows through it
c) Output will be a sine waveform
d) Output will be a non-sinusoidal waveform

2) Fiber optic Ethernet transmits data signals over _____.
a) Fiber cables rather than the copper cables of traditional Ethernet wiring
b) Copper cables
c) Wired Cable
d) All of the mentioned

3) In an optical network, which topologies are used?
a) Ring b) Star
c) Bus d) All of the above

4) Dense wavelength division multiplexing is a _____.
a) Wired communication technique
b) fiber-optic transmission technique
c) Mixing techniques
d) Protocol

5) A major consideration with all types of fiber, fiber connection is the ____.
a) optical loss encountered at the interface
b) air loss
c) hest loss
d) None of the above

6) Fiber splicing is the process of _____.
a) Temporary joining of two fibers
b) permanently joining two fibers together
c) permanent and temporary joint
d) None of the above

7) An optical amplifier is a device that amplifies _____.
a) Electrical signal b) an optical signal
c) Both a and b d) None of the above

8) Wavelength division multiplexing (WDM) is a _____.
a) Technique of multiplexing multiple optical carrier signals
b) Technique of multiplexing multiple ray
c) Both a & b
d) None of the above

9) Optical modulators are widely used with superior performance _____.
a) Only Laboratory
b) including optical communications, signal processing, and optical measurements
c) time Measurement
d) None of the above

10) A LASER means _____.
a) Light amplification some emit radiation
b) Light amplification by stimulated emission of radiation
c) Both a & b
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11) Optical fiber is the technology associated with data transmission using _____.
a) air b) light pulses
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12) Optical fiber is used by telecommunications companies to transmit ____.
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b) Telephone signals, Internet communication and cable television signals
c) Internet communication and cable television signals
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13) How do you measure bending losses in optical fiber?
a) By taking the logarithmic ratio of input power (P_i) to the output power (P_o).
b) By taking the logarithmic of Output power (P_o)
c) By taking the logarithmic of input power (P_i)
d) Only Power

14) DWDM Means _____.

a) Data wavelength-division multiplexing
b) Dense wavelength-division multiplexing
c) Dense wavelength-diverted multiplexing
d) Dense wavelength-division manager

SLR-BD-600

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Fiber Optic Communication (BTN07608)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following. **16**

a) Draw the block diagram of generalized optical fiber communication system. Explain.
b) Write any 4 advantages & disadvantages of optical Fiber communication.
c) What is scattering losses? Enlist its types. Explain any one in details.
d) Explain optical emission in semiconductor.
e) What is light modulation? Explain Shortly.

Q.3 Attempt any two of the following. **12**

a) Explain the process of light amplification in a LASER.
b) Explain optical fiber waveguides.
c) Explain LED structure.

Section – II

Q.4 Attempt any four of the following. **16**

a) What is the requirement of optical detectors? Explain.
b) What is optical networking technology? Explain shortly.
c) Explain PIN photodiode with diagram.
d) Explain optical Ethernet.
e) What is optical network mode? Explain.

Q.5 Attempt any two of the following. **12**

a) Explain optical Transmitter Design in details.
b) Explain Fiber distributed data Interface in details.
c) What is optical detection principle? Explain in details.

SLR-BD-601

Seat No.		Set	P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Sensors & Applications (BTN07609)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Sound to electrical energy transducer _____.
a) Microphone b) AFR
c) Tactile sensor d) Pellistor

2) The sensors are classified on the basis of _____.
a) Functions b) Performance
c) Output d) All of the above

3) Which of the following represents the output of Hall Effect transducer?
a) Hall potential b) Emf
c) Applied voltage d) Lorentz Voltage

4) Piezoelectric effect is when materials produce electric charges when _____.
a) Voltage is applied b) Mechanical Stress is applied
c) Electric field is applied d) Magnetic field is applied

5) The smallest change which a sensor can detect is termed _____.
a) Accuracy b) Precision
c) Resolution d) Scale

6) A bridge circuit uses which method of measurement?
a) Absolute b) Relative
c) Differential d) Comparison

7) Which of the following method is employed for ADC?
a) Ladder network b) Successive approximation type
c) PWM type d) None of the mentioned

8) Potentiometer as a displacement sensor works on the principle of _____.

a) Mutual Inductance
b) Self Inductance
c) Variable Resistance Transduction
d) Hall Effect

9) Proximity sensor is a _____ type of position sensor.

a) contact b) non-contact
c) eddy current d) resistive

10) In wet etching material is removed by _____.

a) Absorption
b) Sublimation
c) Chemical reaction
d) The force exerted due to flow of solvent

11) What is the main principle of electroplating?

a) Hydrolysis b) Neutralization
c) Esterification d) Saturation

12) The force developed in hydraulic systems is high due to _____.

a) High pressure b) More oil
c) Less pressure d) Less oil

13) Which type of coil is a solenoid?

a) Electromagnetic b) Electrical
c) Mechanical d) Chemical

14) What is the function of the flow control valve?

a) Controls the direction of flow of air
b) The moisture is separated and removed
c) It converts the mechanical energy to hydraulic energy
d) It controls the rate of flow of compressed air

SLR-BD-601

Seat No.	

Set P

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Sensors & Applications (BTN07609)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following: **16**

a) Define and explain the sensor with one example.
b) Explain the principle of working of Hall effect sensor.
c) Explain the sensor interfacing bridge circuits.
d) Explain the light scattering Phenomenon in detail.
e) State and Explain the Modes of Heat transfer.

Q.3 Attempt any two of the following: **12**

a) Define and explain the any three Characteristics of sensor.
b) Explain the light measurement by using photometry and radiometry.
c) State different types of excitation circuits and explain any one of them in details.

Section – II

Q.4 Attempt any four of the following: **16**

a) State the different types of pressure sensor and explain any one of them.
b) State the sensors used for Velocity and Acceleration application and explain any one of them.
c) With neat sketch explain spin casting method of surface processing.
d) Explain the wet etching MEMS Technology.
e) Define the Actuator and give their classifications.

Q.5 Attempt any two of the following: **12**

a) State the different types of light detector and explain any one of them.
b) State and explain the different types of metal used for fabrication of sensor.
c) State and explain the principle of operation of Electromechanical Actuators with advantages and disadvantages.

Seat No.		Set	Q

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Sensors & Applications (BTN07609)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Potentiometer as a displacement sensor works on the principle of _____.
a) Mutual Inductance
b) Self Inductance
c) Variable Resistance Transduction
d) Hall Effect

2) Proximity sensor is a _____ type of position sensor.
a) contact b) non-contact
c) eddy current d) resistive

3) In wet etching material is removed by _____.
a) Absorption
b) Sublimation
c) Chemical reaction
d) The force exerted due to flow of solvent

4) What is the main principle of electroplating?
a) Hydrolysis b) Neutralization
c) Esterification d) Saturation

5) The force developed in hydraulic systems is high due to _____.
a) High pressure b) More oil
c) Less pressure d) Less oil

6) Which type of coil is a solenoid?
a) Electromagnetic b) Electrical
c) Mechanical d) Chemical

7) What is the function of the flow control valve?
a) Controls the direction of flow of air
b) The moisture is separated and removed
c) It converts the mechanical energy to hydraulic energy
d) It controls the rate of flow of compressed air

8) Sound to electrical energy transducer _____.
a) Microphone b) AFR
c) Tactile sensor d) Pellistor

9) The sensors are classified on the basis of _____.
a) Functions b) Performance
c) Output d) All of the above

10) Which of the following represents the output of Hall Effect transducer?
a) Hall potential b) Emf
c) Applied voltage d) Lorentz Voltage

11) Piezoelectric effect is when materials produce electric charges when _____.
a) Voltage is applied b) Mechanical Stress is applied
c) Electric field is applied d) Magnetic field is applied

12) The smallest change which a sensor can detect is termed _____.
a) Accuracy b) Precision
c) Resolution d) Scale

13) A bridge circuit uses which method of measurement?
a) Absolute b) Relative
c) Differential d) Comparison

14) Which of the following method is employed for ADC?
a) Ladder network b) Successive approximation type
c) PWM type d) None of the mentioned

SLR-BD-601

Seat No.	

Set Q

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Sensors & Applications (BTN07609)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any four of the following: **16**

a) Define and explain the sensor with one example.
b) Explain the principle of working of Hall effect sensor.
c) Explain the sensor interfacing bridge circuits.
d) Explain the light scattering Phenomenon in detail.
e) State and Explain the Modes of Heat transfer.

Q.3 Attempt any two of the following: **12**

a) Define and explain the any three Characteristics of sensor.
b) Explain the light measurement by using photometry and radiometry.
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Section – II

Q.4 Attempt any four of the following: **16**

a) State the different types of pressure sensor and explain any one of them.
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c) With neat sketch explain spin casting method of surface processing.
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e) Define the Actuator and give their classifications.

Q.5 Attempt any two of the following: **12**

a) State the different types of light detector and explain any one of them.
b) State and explain the different types of metal used for fabrication of sensor.
c) State and explain the principle of operation of Electromechanical Actuators with advantages and disadvantages.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Sensors & Applications (BTN07609)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the main principle of electroplating?
a) Hydrolysis b) Neutralization
c) Esterification d) Saturation

2) The force developed in hydraulic systems is high due to _____.
a) High pressure b) More oil
c) Less pressure d) Less oil

3) Which type of coil is a solenoid?
a) Electromagnetic b) Electrical
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4) What is the function of the flow control valve?
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5) Sound to electrical energy transducer _____.
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8) Piezoelectric effect is when materials produce electric charges when _____.

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b) Mechanical Stress is applied
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d) Magnetic field is applied

9) The smallest change which a sensor can detect is termed _____.

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b) Precision
c) Resolution
d) Scale

10) A bridge circuit uses which method of measurement?

a) Absolute
b) Relative
c) Differential
d) Comparison

11) Which of the following method is employed for ADC?

a) Ladder network
b) Successive approximation type
c) PWM type
d) None of the mentioned

12) Potentiometer as a displacement sensor works on the principle of _____.

a) Mutual Inductance
b) Self Inductance
c) Variable Resistance Transduction
d) Hall Effect

13) Proximity sensor is a _____ type of position sensor.

a) contact
b) non-contact
c) eddy current
d) resistive

14) In wet etching material is removed by _____.

a) Absorption
b) Sublimation
c) Chemical reaction
d) The force exerted due to flow of solvent

SLR-BD-601

Seat No.	

Set R

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Sensors & Applications (BTN07609)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following: **16**

a) Define and explain the sensor with one example.
b) Explain the principle of working of Hall effect sensor.
c) Explain the sensor interfacing bridge circuits.
d) Explain the light scattering Phenomenon in detail.
e) State and Explain the Modes of Heat transfer.

Q.3 Attempt any two of the following: **12**

a) Define and explain the any three Characteristics of sensor.
b) Explain the light measurement by using photometry and radiometry.
c) State different types of excitation circuits and explain any one of them in details.

Section – II

Q.4 Attempt any four of the following: **16**

a) State the different types of pressure sensor and explain any one of them.
b) State the sensors used for Velocity and Acceleration application and explain any one of them.
c) With neat sketch explain spin casting method of surface processing.
d) Explain the wet etching MEMS Technology.
e) Define the Actuator and give their classifications.

Q.5 Attempt any two of the following: **12**

a) State the different types of light detector and explain any one of them.
b) State and explain the different types of metal used for fabrication of sensor.
c) State and explain the principle of operation of Electromechanical Actuators with advantages and disadvantages.

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Sensors & Applications (BTN07609)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A bridge circuit uses which method of measurement?
a) Absolute b) Relative
c) Differential d) Comparison

2) Which of the following method is employed for ADC?
a) Ladder network b) Successive approximation type
c) PWM type d) None of the mentioned

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d) Hall Effect

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a) contact b) non-contact
c) eddy current d) resistive

5) In wet etching material is removed by _____.
a) Absorption
b) Sublimation
c) Chemical reaction
d) The force exerted due to flow of solvent

6) What is the main principle of electroplating?
a) Hydrolysis b) Neutralization
c) Esterification d) Saturation

7) The force developed in hydraulic systems is high due to _____.
a) High pressure b) More oil
c) Less pressure d) Less oil

8) Which type of coil is a solenoid?
a) Electromagnetic b) Electrical
c) Mechanical d) Chemical

9) What is the function of the flow control valve?
a) Controls the direction of flow of air
b) The moisture is separated and removed
c) It converts the mechanical energy to hydraulic energy
d) It controls the rate of flow of compressed air

10) Sound to electrical energy transducer _____.
a) Microphone b) AFR
c) Tactile sensor d) Pellistor

11) The sensors are classified on the basis of _____.
a) Functions b) Performance
c) Output d) All of the above

12) Which of the following represents the output of Hall Effect transducer?
a) Hall potential b) Emf
c) Applied voltage d) Lorentz Voltage

13) Piezoelectric effect is when materials produce electric charges when _____.
a) Voltage is applied b) Mechanical Stress is applied
c) Electric field is applied d) Magnetic field is applied

14) The smallest change which a sensor can detect is termed _____.
a) Accuracy b) Precision
c) Resolution d) Scale

SLR-BD-601

Seat No.		Set	S

T. Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Sensors & Applications (BTN07609)

Day & Date: Friday 06-June-2025 Max. Marks: 56
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Section – I

Q.2 Attempt any four of the following: **16**
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- **d)** Explain the light scattering Phenomenon in detail.
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Section – II

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- **c)** State and explain the principle of operation of Electromechanical Actuators with advantages and disadvantages.

SLR-BD-603

Seat No.		Set	P

T. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Electrical Safety (BTN07611)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options and rewrite the Sentence. **10**

1) _____ use caution when working near electricity.
a) Always b) Never
c) Rarely d) Sometimes

2) _____ is the flow of electrons around a circuit.
a) Current b) Electricity
c) Power d) Voltage

3) _____ workers have little or no training working on or near electricity.
a) Pipeline b) Qualified
c) Rescue d) Unqualified

4) Electrical hazards include shock, electrical arcs and blasts, and _____ or faulty equipment.
a) Broken b) Double-insulated
c) Polished d) Secure

5) _____ is a measurement of how much energy you are using each second.
a) Distance b) Power
c) Volume d) Weight

6) Avoid working in _____ conditions.
a) Cold b) Dry
c) Sunny d) Wet

7) _____ all electrical equipment before use.

a) Clean b) Inspect
c) Label d) Organize

8) _____ gives a stray current somewhere to go and keeps workers from becoming part of the circuit.

a) De-energizing b) Energizing
c) Grounding d) Guarding

9) _____ tools are encased in plastic and prevent the user from getting electrocuted if the tool develops a short circuit.

a) Corded b) Double-insulated
c) Green colored d) Grounded

10) Specially designed PPE for electrical work includes _____ insulating gloves, matting, blankets, and covers.

a) Plastic b) Rubber
c) Steel d) Wood

SLR-BD-603

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Electrical Safety (BTN07611)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Answer any five questions. **40**

a) Explain the procedure of permit to do the work on electrical equipment.
b) Explain the effect of electrical shock on human body.
c) Write the objectives of safety management.
d) Explain the safety precautions to be taken against electrical shock.
e) Explain the actions to be taken against in case of electrical fire.
f) What is electrical shock? Distinguish between primary shock and secondary shock.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Electrical Safety (BTN07611)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options and rewrite the Sentence. **10**

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b) Qualified
c) Rescue
d) Unqualified

9) Electrical hazards include shock, electrical arcs and blasts, and _____ or faulty equipment.

a) Broken
b) Double-insulated
c) Polished
d) Secure

10) _____ is a measurement of how much energy you are using each second.

a) Distance
b) Power
c) Volume
d) Weight

SLR-BD-603

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Electrical Safety (BTN07611)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

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a) Explain the procedure of permit to do the work on electrical equipment.
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d) Explain the safety precautions to be taken against electrical shock.
e) Explain the actions to be taken against in case of electrical fire.
f) What is electrical shock? Distinguish between primary shock and secondary shock.

Seat No.		Set	R

T. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Electrical Safety (BTN07611)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options and rewrite the Sentence. **10**

1) _____ tools are encased in plastic and prevent the user from getting electrocuted if the tool develops a short circuit.
a) Corded b) Double-insulated
c) Green colored d) Grounded

2) Specially designed PPE for electrical work includes _____ insulating gloves, matting, blankets, and covers.
a) Plastic b) Rubber
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a) Distance b) Power
c) Volume d) Weight

8) Avoid working in _____ conditions.

a) Cold b) Dry
c) Sunny d) Wet

9) _____ all electrical equipment before use.

a) Clean b) Inspect
c) Label d) Organize

10) _____ gives a stray current somewhere to go and keeps workers from becoming part of the circuit.

a) De-energizing b) Energizing
c) Grounding d) Guarding

SLR-BD-603

Seat No.	

Set R

T. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Electrical Safety (BTN07611)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

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2) Figures to the right indicate full marks.

Q.2 Answer any five questions. **40**

a) Explain the procedure of permit to do the work on electrical equipment.
b) Explain the effect of electrical shock on human body.
c) Write the objectives of safety management.
d) Explain the safety precautions to be taken against electrical shock.
e) Explain the actions to be taken against in case of electrical fire.
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SLR-BD-603

Seat No.		Set	S

T. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Electrical Safety (BTN07611)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options and rewrite the Sentence. 10

1) _____ workers have little or no training working on or near electricity.
a) Pipeline b) Qualified
c) Rescue d) Unqualified

2) Electrical hazards include shock, electrical arcs and blasts, and _____ or faulty equipment.
a) Broken b) Double-insulated
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3) _____ is a measurement of how much energy you are using each second.
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7) _____ tools are encased in plastic and prevent the user from getting electrocuted if the tool develops a short circuit.

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d) Grounded

8) Specially designed PPE for electrical work includes _____ insulating gloves, matting, blankets, and covers.

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b) Rubber
c) Steel
d) Wood

9) _____ use caution when working near electricity.

a) Always
b) Never
c) Rarely
d) Sometimes

10) _____ is the flow of electrons around a circuit.

a) Current
b) Electricity
c) Power
d) Voltage

SLR-BD-603

Seat No.	

Set S

T. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Electrical Safety (BTN07611)

Day & Date: Tuesday, 10-June-2025 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
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Q.2 Answer any five questions. **40**

a) Explain the procedure of permit to do the work on electrical equipment.
b) Explain the effect of electrical shock on human body.
c) Write the objectives of safety management.
d) Explain the safety precautions to be taken against electrical shock.
e) Explain the actions to be taken against in case of electrical fire.
f) What is electrical shock? Distinguish between primary shock and secondary shock.

SLR-BD-605

Seat No.		Set	P

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Energy Management System for Electric Vehicle (BTN07614)

Day & Date: Thursday, 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer **14**

1) What is the advantage of Li-ion batteries over other similar types of storage systems?
a) High power b) High energy density
c) Temperature sensitivity d) Life time > 10 years

2) Flywheel Energy Storage Systems store energy in the form of:
a) Chemical energy b) Kinetic energy
c) Potential energy d) Electrical energy

3) Which of the following is NOT the characteristics of Ultra capacitor?
a) maintenance free
b) operate over a wide temperature range
c) slower charge rate
d) charged and discharged at the same rate

4) Which parameter describes the amount of power a battery can deliver at a given time?
a) Voltage b) Current
c) Capacity d) Resistance

5) Performance-criteria for electric vehicle batteries may include:
a) Longevity b) Rapid charging capability
c) High energy density d) All of the above

6) What is a common approach to modeling batteries?
a) Using only theoretical equations
b) Utilizing experimental data exclusively
c) Combining theoretical equations and experimental data
d) Ignoring both theory and experimentation

7) In battery modelling, what does SOC stand for?
a) State of Capacity
b) State of Control
c) State of Charge
d) State of Consumption

8) Why is battery monitoring essential in EVs and HEVs?
a) To increase battery lifespan
b) To reduce vehicle speed
c) To decrease energy efficiency
d) To eliminate battery overheating

9) Which component of a Battery Management System (BMS) is responsible for interfacing with external devices or systems?
a) Power Module
b) Battery
c) DC/DC Converter
d) Communication channel

10) Which standard is commonly used for ensuring battery safety in electric vehicles?
a) ISO 9001
b) ASTM D6319
c) UN ECE R100
d) ANSI/IEEE C62.41

11) What is a common leakage path for batteries?
a) Through the positive terminal only
b) Through the negative terminal only
c) Through both terminals
d) Through the center of the battery

12) Which materials can be recovered during battery recycling?
a) cobalt
b) Plastics
c) Electrolytes
d) All of the above

13) What can trigger a thermal runaway in batteries?
a) Low discharge rates
b) Stable environmental conditions
c) High charging and discharging currents
d) Absence of safety vents

14) What contributes to gas generation in batteries, leading to potential leakages?
a) Overcharging
b) Undercharging
c) Storing in a vacuum
d) Immersion in water

Seat No.		Set	P

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Energy Management System for Electric Vehicle (BTN07614)

Day & Date: Thursday, 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain with chemical reactions charging process of a lead acid battery.
b) Explain in detail the flywheel energy storage element.
c) List and explain key electrical parameters used to describe battery performance.
d) Explain charging and discharging current with characteristics of a battery.
e) Explain in short nominal parameters of a battery.
f) Explain the concept of sensitivity analysis in the context of battery modelling.

Q.3 Solve any two **12**

a) Explain in details lithium-ion (Li-ion) and lithium-polymer (Li-poly) batteries and state the advancements and future trends in lithium-based battery technology.
b) Explain following regarding performance criteria for Electric Vehicles batteries:
i) Vehicle propulsion factors.
ii) Power and energy requirements of batteries
c) Develop a step-by-step explanation of the simulation model for a rechargeable NiCd battery.

Section -II

Q.4 Solve any four **16**

a) Explain in detail requirement of battery monitoring.
b) Explain the fundamentals of the battery pack design.
c) Describe the types of battery cell equalization methods.
d) Describes the EV Battery testing methods.
e) Write a short note on Battery Thermal Runway.
f) Describe the causes and consequences of gas generation in batteries.

Q.5 Solve any two **12**

a) Describe the voltage sensing in the battery management system.

b) Explain Environment and Human Health impact assessments of batteries.

c) Explain the Lithium-ion battery recycling process with a neat diagram.

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Energy Management System for Electric Vehicle (BTN07614)

Day & Date: Thursday, 12-June-2025 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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3) Which standard is commonly used for ensuring battery safety in electric vehicles?
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c) UN ECE R100 d) ANSI/IEEE C62.41

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13) What is a common approach to modeling batteries?

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d) Ignoring both theory and experimentation

14) In battery modelling, what does SOC stand for?

a) State of Capacity b) State of Control
c) State of Charge d) State of Consumption

SLR-BD-605

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Energy Management System for Electric Vehicle (BTN07614)

Day & Date: Thursday, 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four **16**

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c) List and explain key electrical parameters used to describe battery performance.
d) Explain charging and discharging current with characteristics of a battery.
e) Explain in short nominal parameters of a battery.
f) Explain the concept of sensitivity analysis in the context of battery modelling.

Q.3 Solve any two **12**

a) Explain in details lithium-ion (Li-ion) and lithium-polymer (Li-poly) batteries and state the advancements and future trends in lithium-based battery technology.
b) Explain following regarding performance criteria for Electric Vehicles batteries:
i) Vehicle propulsion factors.
ii) Power and energy requirements of batteries
c) Develop a step-by-step explanation of the simulation model for a rechargeable NiCd battery.

Section -II

Q.4 Solve any four **16**

a) Explain in detail requirement of battery monitoring.
b) Explain the fundamentals of the battery pack design.
c) Describe the types of battery cell equalization methods.
d) Describes the EV Battery testing methods.
e) Write a short note on Battery Thermal Runway.
f) Describe the causes and consequences of gas generation in batteries.

Q.5 Solve any two **12**

a) Describe the voltage sensing in the battery management system.

b) Explain Environment and Human Health impact assessments of batteries.

c) Explain the Lithium-ion battery recycling process with a neat diagram.

Seat No.	

Set R

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Energy Management System for Electric Vehicle (BTN07614)

Day & Date: Thursday, 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer **14**

1) What is a common leakage path for batteries?
a) Through the positive terminal only
b) Through the negative terminal only
c) Through both terminals
d) Through the center of the battery

2) Which materials can be recovered during battery recycling?
a) cobalt b) Plastics
c) Electrolytes d) All of the above

3) What can trigger a thermal runaway in batteries?
a) Low discharge rates
b) Stable environmental conditions
c) High charging and discharging currents
d) Absence of safety vents

4) What contributes to gas generation in batteries, leading to potential leakages?
a) Overcharging b) Undercharging
c) Storing in a vacuum d) Immersion in water

5) What is the advantage of Li-ion batteries over other similar types of storage systems?
a) High power b) High energy density
c) Temperature sensitivity d) Life time > 10 years

6) Flywheel Energy Storage Systems store energy in the form of:
a) Chemical energy b) Kinetic energy
c) Potential energy d) Electrical energy

7) Which of the following is NOT the characteristics of Ultra capacitor?
a) maintenance free
b) operate over a wide temperature range
c) slower charge rate
d) charged and discharged at the same rate

8) Which parameter describes the amount of power a battery can deliver at a given time?
a) Voltage
b) Current
c) Capacity
d) Resistance

9) Performance-criteria for electric vehicle batteries may include:
a) Longevity
b) Rapid charging capability
c) High energy density
d) All of the above

10) What is a common approach to modeling batteries?
a) Using only theoretical equations
b) Utilizing experimental data exclusively
c) Combining theoretical equations and experimental data
d) Ignoring both theory and experimentation

11) In battery modelling, what does SOC stand for?
a) State of Capacity
b) State of Control
c) State of Charge
d) State of Consumption

12) Why is battery monitoring essential in EVs and HEVs?
a) To increase battery lifespan
b) To reduce vehicle speed
c) To decrease energy efficiency
d) To eliminate battery overheating

13) Which component of a Battery Management System (BMS) is responsible for interfacing with external devices or systems?
a) Power Module
b) Battery
c) DC/DC Converter
d) Communication channel

14) Which standard is commonly used for ensuring battery safety in electric vehicles?
a) ISO 9001
b) ASTM D6319
c) UN ECE R100
d) ANSI/IEEE C62.41

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Energy Management System for Electric Vehicle (BTN07614)

Day & Date: Thursday, 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain with chemical reactions charging process of a lead acid battery.
b) Explain in detail the flywheel energy storage element.
c) List and explain key electrical parameters used to describe battery performance.
d) Explain charging and discharging current with characteristics of a battery.
e) Explain in short nominal parameters of a battery.
f) Explain the concept of sensitivity analysis in the context of battery modelling.

Q.3 Solve any two **12**

a) Explain in details lithium-ion (Li-ion) and lithium-polymer (Li-poly) batteries and state the advancements and future trends in lithium-based battery technology.
b) Explain following regarding performance criteria for Electric Vehicles batteries:
i) Vehicle propulsion factors.
ii) Power and energy requirements of batteries
c) Develop a step-by-step explanation of the simulation model for a rechargeable NiCd battery.

Section -II

Q.4 Solve any four **16**

a) Explain in detail requirement of battery monitoring.
b) Explain the fundamentals of the battery pack design.
c) Describe the types of battery cell equalization methods.
d) Describes the EV Battery testing methods.
e) Write a short note on Battery Thermal Runway.
f) Describe the causes and consequences of gas generation in batteries.

Q.5 Solve any two **12**

a) Describe the voltage sensing in the battery management system.

b) Explain Environment and Human Health impact assessments of batteries.

c) Explain the Lithium-ion battery recycling process with a neat diagram.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Energy Management System for Electric Vehicle (BTN07614)

Day & Date: Thursday, 12-June-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer **14**

1) What is a common approach to modeling batteries?
a) Using only theoretical equations
b) Utilizing experimental data exclusively
c) Combining theoretical equations and experimental data
d) Ignoring both theory and experimentation

2) In battery modelling, what does SOC stand for?
a) State of Capacity b) State of Control
c) State of Charge d) State of Consumption

3) Why is battery monitoring essential in EVs and HEVs?
a) To increase battery lifespan
b) To reduce vehicle speed
c) To decrease energy efficiency
d) To eliminate battery overheating

4) Which component of a Battery Management System (BMS) is responsible for interfacing with external devices or systems?
a) Power Module b) Battery
c) DC/DC Converter d) Communication channel

5) Which standard is commonly used for ensuring battery safety in electric vehicles?
a) ISO 9001 b) ASTM D6319
c) UN ECE R100 d) ANSI/IEEE C62.41

6) What is a common leakage path for batteries?
a) Through the positive terminal only
b) Through the negative terminal only
c) Through both terminals
d) Through the center of the battery

7) Which materials can be recovered during battery recycling?
a) cobalt b) Plastics
c) Electrolytes d) All of the above

8) What can trigger a thermal runaway in batteries?
a) Low discharge rates
b) Stable environmental conditions
c) High charging and discharging currents
d) Absence of safety vents

9) What contributes to gas generation in batteries, leading to potential leakages?
a) Overcharging b) Undercharging
c) Storing in a vacuum d) Immersion in water

10) What is the advantage of Li-ion batteries over other similar types of storage systems?
a) High power b) High energy density
c) Temperature sensitivity d) Life time > 10 years

11) Flywheel Energy Storage Systems store energy in the form of:
a) Chemical energy b) Kinetic energy
c) Potential energy d) Electrical energy

12) Which of the following is NOT the characteristics of Ultra capacitor?
a) maintenance free
b) operate over a wide temperature range
c) slower charge rate
d) charged and discharged at the same rate

13) Which parameter describes the amount of power a battery can deliver at a given time?
a) Voltage b) Current
c) Capacity d) Resistance

14) Performance-criteria for electric vehicle batteries may include:
a) Longevity b) Rapid charging capability
c) High energy density d) All of the above

SLR-BD-605

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Energy Management System for Electric Vehicle (BTN07614)

Day & Date: Thursday, 12-June-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain with chemical reactions charging process of a lead acid battery.
b) Explain in detail the flywheel energy storage element.
c) List and explain key electrical parameters used to describe battery performance.
d) Explain charging and discharging current with characteristics of a battery.
e) Explain in short nominal parameters of a battery.
f) Explain the concept of sensitivity analysis in the context of battery modelling.

Q.3 Solve any two **12**

a) Explain in details lithium-ion (Li-ion) and lithium-polymer (Li-poly) batteries and state the advancements and future trends in lithium-based battery technology.
b) Explain following regarding performance criteria for Electric Vehicles batteries:
i) Vehicle propulsion factors.
ii) Power and energy requirements of batteries
c) Develop a step-by-step explanation of the simulation model for a rechargeable NiCd battery.

Section -II

Q.4 Solve any four **16**

a) Explain in detail requirement of battery monitoring.
b) Explain the fundamentals of the battery pack design.
c) Describe the types of battery cell equalization methods.
d) Describes the EV Battery testing methods.
e) Write a short note on Battery Thermal Runway.
f) Describe the causes and consequences of gas generation in batteries.

Q.5 Solve any two **12**

a) Describe the voltage sensing in the battery management system.

b) Explain Environment and Human Health impact assessments of batteries.

c) Explain the Lithium-ion battery recycling process with a neat diagram.

SLR-BD-607

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Electrical Utilization (197045602)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Power supply frequency for 25 kV single phase system is _____
a) 161 b) 25
c) 50 d) 60

2) The coefficient of adhesion is highest when _____
a) The rails are dry b) The rails are oiled
c) The rails ark wet with dew d) The rails are dusty

3) When the speed of the train is estimated taking into account the time of stop at a station in addition to the actual running lime between stops, is known as _____
a) Average speed b) Schedule speed
c) Notching speed d) Free running speed.

4) Quadrilateral speed-time curve is the closer approximation for _____
a) Main line service b) Suburban service
c) Urban service d) Urban and suburban

5) Which motor has relatively wider range of speed control?
a) D.C. shunt motor b) Synchronous motor
c) Slip ring I.M. d) Squirrel cage I.M.

6) Change of frequency in the supply does not affect _____
a) Dielectric heating b) Resistance heating
c) Induction heating d) microwave heating

7) Which method of heating is likely to give leading power factor?
a) Electric are heating b) Induction heating
c) Dielectric heating d) Resistance heating

8) A single-phase induction motor is _____

a) Frequency b) Current
c) Voltage d) Capacitance

9) For are healing, the electrodes are made of _____

a) Copper b) Aluminum
c) Graphite d) ACSR conductor

10) Radiant efficiency of the luminous source depends on _____

a) Shape of the source b) temperature of the source
c) Wavelength of light rays d) all of the above.

11) Carbon arc lamps are commonly used in _____

a) Domestic lighting b) street lighting
c) Cinema projectors d) Photography.

12) The unit of luminous flux is _____

a) Steradian b) Candela
c) Lumen d) lux.

13) The Act which has been enacted to provide for efficient use of energy and its conservation and for matters connected therewith is?

a) Indian Electricity Act 2003
b) Energy Conservation Act 2001
c) Indian Electricity Act 2010
d) Energy Conservation Act 2007

14) Which of the following is more energy efficient?

a) Incandescent Bulb b) Fluorescent Tube light
c) CFL d) None of these

SLR-BD-607

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Electrical Utilization (197045602)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Solve any four. **16**

a) Draw and explain speed time curve for main line services.
b) Desirable characteristic of traction motors.
c) Explain plugging breaking system in traction system.
d) Write short note on motor selection in textile industries.
e) A train is required to run between two stations 1.6 km apart at an average speed of 40 kmph. I he run is to be made to a simplified quadrilateral speed-time curve. If the maximum speed is limited to 64 kmph. Acceleration to 2.0 kmphps. Coasting and braking retardation to 0.16 kmphps and 3.2 kmphps. determine the duration of acceleration, coasting and braking periods.

Q.3 Solve any two. **12**

a) Derive an expression for Trapezoidal Speed-Time Curve.
b) Explain series-parallel control of traction motors.
c) Write note on motor selection in sugar mills.

Section – II

Q.4 Solve any four. **16**

a) Comparison between tungsten filament lamps and fluorescent tubes
b) Stale advantages and disadvantages electrical welding.
c) Describe with the help of a neat diagram the construction and working of a high pressure mercury vapour lamp.
d) Explain the laws of illumination.
e) Write a note on Energy Conservation in Transport.

Q.5 Solve any two **12**

a) Explain flood lighting.
b) Explain Energy Conservation Planning.
c) Explain direct resistance and indirect resistance heating.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Electrical Utilization (197045602)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) A single-phase induction motor is _____
a) Frequency b) Current
c) Voltage d) Capacitance

2) For are healing, the electrodes are made of _____
a) Copper b) Aluminum
c) Graphite d) ACSR conductor

3) Radiant efficiency of the luminous source depends on _____
a) Shape of the source b) temperature of the source
c) Wavelength of light rays d) all of the above.

4) Carbon arc lamps are commonly used in _____
a) Domestic lighting b) street lighting
c) Cinema projectors d) Photography.

5) The unit of luminous flux is _____
a) Steradian b) Candela
c) Lumen d) lux.

6) The Act which has been enacted to provide for efficient use of energy and its conservation and for matters connected therewith is?
a) Indian Electricity Act 2003
b) Energy Conservation Act 2001
c) Indian Electricity Act 2010
d) Energy Conservation Act 2007

7) Which of the following is more energy efficient?
a) Incandescent Bulb b) Fluorescent Tube light
c) CFL d) None of these

8) Power supply frequency for 25 kV single phase system is _____
a) 161 b) 25
c) 50 d) 60

9) The coefficient of adhesion is highest when _____
a) The rails are dry b) The rails are oiled
c) The rails ark wet with dew d) The rails are dusty

10) When the speed of the train is estimated taking into account the time of stop at a station in addition to the actual running lime between stops, is known as _____
a) Average speed b) Schedule speed
c) Notching speed d) Free running speed.

11) Quadrilateral speed-time curve is the closer approximation for _____
a) Main line service b) Suburban service
c) Urban service d) Urban and suburban

12) Which motor has relatively wider range of speed control?
a) D.C. shunt motor b) Synchronous motor
c) Slip ring I.M. d) Squirrel cage I.M.

13) Change of frequency in the supply does not affect _____
a) Dielectric heating b) Resistance heating
c) Induction heating d) microwave heating

14) Which method of heating is likely to give leading power factor?
a) Electric are heating b) Induction heating
c) Dielectric heating d) Resistance heating

SLR-BD-607

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Electrical Utilization (197045602)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Solve any four. **16**

a) Draw and explain speed time curve for main line services.
b) Desirable characteristic of traction motors.
c) Explain plugging breaking system in traction system.
d) Write short note on motor selection in textile industries.
e) A train is required to run between two stations 1.6 km apart at an average speed of 40 kmph. I he run is to be made to a simplified quadrilateral speed-time curve. If the maximum speed is limited to 64 kmph. Acceleration to 2.0 kmphps. Coasting and braking retardation to 0.16 kmphps and 3.2 kmphps. determine the duration of acceleration, coasting and braking periods.

Q.3 Solve any two. **12**

a) Derive an expression for Trapezoidal Speed-Time Curve.
b) Explain series-parallel control of traction motors.
c) Write note on motor selection in sugar mills.

Section – II

Q.4 Solve any four. **16**

a) Comparison between tungsten filament lamps and fluorescent tubes
b) Stale advantages and disadvantages electrical welding.
c) Describe with the help of a neat diagram the construction and working of a high pressure mercury vapour lamp.
d) Explain the laws of illumination.
e) Write a note on Energy Conservation in Transport.

Q.5 Solve any two **12**

a) Explain flood lighting.
b) Explain Energy Conservation Planning.
c) Explain direct resistance and indirect resistance heating.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Electrical Utilization (197045602)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Carbon arc lamps are commonly used in _____
a) Domestic lighting b) street lighting
c) Cinema projectors d) Photography.

2) The unit of luminous flux is _____
a) Steradian b) Candela
c) Lumen d) lux.

3) The Act which has been enacted to provide for efficient use of energy and its conservation and for matters connected therewith is?
a) Indian Electricity Act 2003
b) Energy Conservation Act 2001
c) Indian Electricity Act 2010
d) Energy Conservation Act 2007

4) Which of the following is more energy efficient?
a) Incandescent Bulb b) Fluorescent Tube light
c) CFL d) None of these

5) Power supply frequency for 25 kV single phase system is _____
a) 161 b) 25
c) 50 d) 60

6) The coefficient of adhesion is highest when _____
a) The rails are dry b) The rails are oiled
c) The rails ark wet with dew d) The rails are dusty

7) When the speed of the train is estimated taking into account the time of stop at a station in addition to the actual running lime between stops, is known as _____

a) Average speed b) Schedule speed
c) Notching speed d) Free running speed.

8) Quadrilateral speed-time curve is the closer approximation for _____

a) Main line service b) Suburban service
c) Urban service d) Urban and suburban

9) Which motor has relatively wider range of speed control?

a) D.C. shunt motor b) Synchronous motor
c) Slip ring I.M. d) Squirrel cage I.M.

10) Change of frequency in the supply does not affect _____

a) Dielectric heating b) Resistance heating
c) Induction heating d) microwave heating

11) Which method of heating is likely to give leading power factor?

a) Electric are heating b) Induction heating
c) Dielectric heating d) Resistance heating

12) A single-phase induction motor is _____

a) Frequency b) Current
c) Voltage d) Capacitance

13) For are healing, the electrodes are made of _____

a) Copper b) Aluminum
c) Graphite d) ACSR conductor

14) Radiant efficiency of the luminous source depends on _____

a) Shape of the source b) temperature of the source
c) Wavelength of light rays d) all of the above.

SLR-BD-607

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Electrical Utilization (197045602)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Solve any four. **16**

a) Draw and explain speed time curve for main line services.
b) Desirable characteristic of traction motors.
c) Explain plugging breaking system in traction system.
d) Write short note on motor selection in textile industries.
e) A train is required to run between two stations 1.6 km apart at an average speed of 40 kmph. I he run is to be made to a simplified quadrilateral speed-time curve. If the maximum speed is limited to 64 kmph. Acceleration to 2.0 kmphps. Coasting and braking retardation to 0.16 kmphps and 3.2 kmphps. determine the duration of acceleration, coasting and braking periods.

Q.3 Solve any two. **12**

a) Derive an expression for Trapezoidal Speed-Time Curve.
b) Explain series-parallel control of traction motors.
c) Write note on motor selection in sugar mills.

Section – II

Q.4 Solve any four. **16**

a) Comparison between tungsten filament lamps and fluorescent tubes
b) Stale advantages and disadvantages electrical welding.
c) Describe with the help of a neat diagram the construction and working of a high pressure mercury vapour lamp.
d) Explain the laws of illumination.
e) Write a note on Energy Conservation in Transport.

Q.5 Solve any two **12**

a) Explain flood lighting.
b) Explain Energy Conservation Planning.
c) Explain direct resistance and indirect resistance heating.

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Electrical Utilization (197045602)

Day & Date: Tuesday 27-05-2025 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Change of frequency in the supply does not affect _____
a) Dielectric heating b) Resistance heating
c) Induction heating d) microwave heating

2) Which method of heating is likely to give leading power factor?
a) Electric are heating b) Induction heating
c) Dielectric heating d) Resistance heating

3) A single-phase induction motor is _____
a) Frequency b) Current
c) Voltage d) Capacitance

4) For are healing, the electrodes are made of _____
a) Copper b) Aluminum
c) Graphite d) ACSR conductor

5) Radiant efficiency of the luminous source depends on _____
a) Shape of the source b) temperature of the source
c) Wavelength of light rays d) all of the above.

6) Carbon arc lamps are commonly used in _____
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7) The unit of luminous flux is _____
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8) The Act which has been enacted to provide for efficient use of energy and its conservation and for matters connected therewith is?
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b) Energy Conservation Act 2001
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9) Which of the following is more energy efficient?
a) Incandescent Bulb b) Fluorescent Tube light
c) CFL d) None of these

10) Power supply frequency for 25 kV single phase system is _____
a) 161 b) 25
c) 50 d) 60

11) The coefficient of adhesion is highest when _____
a) The rails are dry b) The rails are oiled
c) The rails ark wet with dew d) The rails are dusty

12) When the speed of the train is estimated taking into account the time of stop at a station in addition to the actual running lime between stops, is known as _____
a) Average speed b) Schedule speed
c) Notching speed d) Free running speed.

13) Quadrilateral speed-time curve is the closer approximation for _____
a) Main line service b) Suburban service
c) Urban service d) Urban and suburban

14) Which motor has relatively wider range of speed control?
a) D.C. shunt motor b) Synchronous motor
c) Slip ring I.M. d) Squirrel cage I.M.

SLR-BD-607

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (CBCS) Examination: March/April-2025
MECHANICAL ENGINEERING
Electrical Utilization (197045602)

Day & Date: Tuesday 27-05-2025 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Solve any four. **16**

a) Draw and explain speed time curve for main line services.
b) Desirable characteristic of traction motors.
c) Explain plugging breaking system in traction system.
d) Write short note on motor selection in textile industries.
e) A train is required to run between two stations 1.6 km apart at an average speed of 40 kmph. I he run is to be made to a simplified quadrilateral speed-time curve. If the maximum speed is limited to 64 kmph. Acceleration to 2.0 kmphps. Coasting and braking retardation to 0.16 kmphps and 3.2 kmphps. determine the duration of acceleration, coasting and braking periods.

Q.3 Solve any two. **12**

a) Derive an expression for Trapezoidal Speed-Time Curve.
b) Explain series-parallel control of traction motors.
c) Write note on motor selection in sugar mills.

Section – II

Q.4 Solve any four. **16**

a) Comparison between tungsten filament lamps and fluorescent tubes
b) Stale advantages and disadvantages electrical welding.
c) Describe with the help of a neat diagram the construction and working of a high pressure mercury vapour lamp.
d) Explain the laws of illumination.
e) Write a note on Energy Conservation in Transport.

Q.5 Solve any two **12**

a) Explain flood lighting.
b) Explain Energy Conservation Planning.
c) Explain direct resistance and indirect resistance heating.

SLR-BD-608

Seat No.	

Set P

Fourth. Y (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power Quality and FACTS (BTN07701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select appropriate options. **14**

1) Voltage fluctuation is an _____ phenomenon.
a) Electric b) Electromagnetic
c) Magnetic d) None

2) Voltage imbalance is a condition in which the three -phase voltage differ in _____.
a) Amplitude b) Angle
c) Both d) None

3) Oscillatory transient is _____ in polarity.
a) Bidirectional b) Unidirectional
c) Both d) None

4) In which IEEE standards recommended practices and requirements for harmonic control in electrical power system is given _____.
a) IEEE 519 b) IEEE 1159
c) IEEE 518 d) IEEE 241

5) Harmonics can be eliminated by introducing which of the following _____.
a) Resonant circuit b) High Impedance
c) Filters d) Low Impedance path

6) Transient disturbance is produced in a circuit whenever _____.
a) it is suddenly connected or disconnected from the supply
b) it is shorted
c) it's applied voltage is changed suddenly
d) all of the above

7) There are no transients in pure resistive circuit because they are _____.
a) offer high resistance
b) Obey Ohm's Law
c) have no stored energy
d) are linear circuits

8) Shunt compensation does _____.
a) not provide end of line voltage support to prevent voltage instability
b) provide only mid of line voltage support to prevent voltage instability
c) provide end of line voltage support to prevent voltage instability
d) may or may not provide end of line voltage support to prevent voltage instability

9) Shunt connected, fixed or switched reactors are applied to _____.
a) Minimize line overvoltage under light load conditions
b) Minimize line overvoltage under heavy load conditions
c) Maximize line overvoltage under light load conditions
d) Maximize line overvoltage under heavy load conditions

10) The voltage Stability limit _____.
a) Increases with inductive loads and decreases with capacitive loads
b) Decreases with inductive loads and increases with capacitive loads
c) Decreases with inductive loads and capacitive loads
d) Increases with inductive loads and capacitive loads

11) FACTS devices used in _____.
a) Generation
b) AC Transmission
c) DC Transmission
d) None

12) Which are the shunt compensation devices?
a) TCSC
b) SSSC
c) UPFC
d) SVC

13) UPFC can control _____.
a) Voltage
b) Impedance
c) Phase angle
d) All above

14) Transmission Interconnections is done for _____.
a) Economic reasons
b) To reduce the cost of electricity
c) To improve reliability of power supply
d) All of the above

SLR-BD-608

Seat No.	

Set P

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power Quality and FACTS (BTN07701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary.

Section – I

Q.2 Solve Any Four. **16**

a) Explain various effects of harmonics in the power system.
b) Explain International standards of power quality.
c) Explain Long duration voltage variations with its causes.
d) Compare the terms Sag and Swell.
e) Which are the different types of power quality measurement equipment?

Q.3 Solve Any Two. **12**

a) Define and write equations of following harmonic indices.
i) Individual Harmonic Distortion,
ii) Total Harmonic Distortion
iii) Total Demand Distortion
b) Explain Spectrum Analyzers and harmonic Analyzers.
c) Explain Transients:
i) Impulsive and
ii) Oscillatory

Section – II

Q.4 Solve Any Four. **16**

a) Explain construction and working of FC-TCR.
b) Explain the objective of midpoint compensation for shunt compensation.
c) Explain working of SSSC.
d) What are the objectives of Voltage and phase angle Regulator?
e) Explain V-I characteristics of STATCOM and SVC.

Q.5 Solve Any Two. **12**

a) Explain working principal of GCSC and TSSC.
b) Explain the control structure and applications of IPFC System.
c) What are the different types of FACTS devices and also its importance in Transmission network?

Seat No.	

Set **Q**

Fourth. Y (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power Quality and FACTS (BTN07701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select appropriate options. **14**

1) Shunt compensation does _____.
a) not provide end of line voltage support to prevent voltage instability
b) provide only mid of line voltage support to prevent voltage instability
c) provide end of line voltage support to prevent voltage instability
d) may or may not provide end of line voltage support to prevent voltage instability

2) Shunt connected, fixed or switched reactors are applied to _____.
a) Minimize line overvoltage under light load conditions
b) Minimize line overvoltage under heavy load conditions
c) Maximize line overvoltage under light load conditions
d) Maximize line overvoltage under heavy load conditions

3) The voltage Stability limit _____.
a) Increases with inductive loads and decreases with capacitive loads
b) Decreases with inductive loads and increases with capacitive loads
c) Decreases with inductive loads and capacitive loads
d) Increases with inductive loads and capacitive loads

4) FACTS devices used in _____.
a) Generation b) AC Transmission
c) DC Transmission d) None

5) Which are the shunt compensation devices?
a) TCSC b) SSSC
c) UPFC d) SVC

6) UPFC can control _____.
a) Voltage b) Impedance
c) Phase angle d) All above

7) Transmission Interconnections is done for _____.
a) Economic reasons
b) To reduce the cost of electricity
c) To improve reliability of power supply
d) All of the above

8) Voltage fluctuation is an _____ phenomenon.
a) Electric
b) Electromagnetic
c) Magnetic
d) None

9) Voltage imbalance is a condition in which the three -phase voltage differ in _____.
a) Amplitude
b) Angle
c) Both
d) None

10) Oscillatory transient is _____ in polarity.
a) Bidirectional
b) Unidirectional
c) Both
d) None

11) In which IEEE standards recommended practices and requirements for harmonic control in electrical power system is given _____.
a) IEEE 519
b) IEEE 1159
c) IEEE 518
d) IEEE 241

12) Harmonics can be eliminated by introducing which of the following _____.
a) Resonant circuit
b) High Impedance
c) Filters
d) Low Impedance path

13) Transient disturbance is produced in a circuit whenever _____.
a) it is suddenly connected or disconnected from the supply
b) it is shorted
c) it's applied voltage is changed suddenly
d) all of the above

14) There are no transients in pure resistive circuit because they are _____.
a) offer high resistance
b) Obey Ohm's Law
c) have no stored energy
d) are linear circuits

SLR-BD-608

Seat No.	

Set Q

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power Quality and FACTS (BTN07701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary.

Section – I

Q.2 Solve Any Four. **16**

a) Explain various effects of harmonics in the power system.
b) Explain International standards of power quality.
c) Explain Long duration voltage variations with its causes.
d) Compare the terms Sag and Swell.
e) Which are the different types of power quality measurement equipment?

Q.3 Solve Any Two. **12**

a) Define and write equations of following harmonic indices.
i) Individual Harmonic Distortion,
ii) Total Harmonic Distortion
iii) Total Demand Distortion
b) Explain Spectrum Analyzers and harmonic Analyzers.
c) Explain Transients:
i) Impulsive and
ii) Oscillatory

Section – II

Q.4 Solve Any Four. **16**

a) Explain construction and working of FC-TCR.
b) Explain the objective of midpoint compensation for shunt compensation.
c) Explain working of SSSC.
d) What are the objectives of Voltage and phase angle Regulator?
e) Explain V-I characteristics of STATCOM and SVC.

Q.5 Solve Any Two. **12**

a) Explain working principal of GCSC and TSSC.
b) Explain the control structure and applications of IPFC System.
c) What are the different types of FACTS devices and also its importance in Transmission network?

Seat No.	

Set **R**

Fourth. Y (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power Quality and FACTS (BTN07701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select appropriate options. **14**

1) FACTS devices used in _____.
a) Generation b) AC Transmission
c) DC Transmission d) None

2) Which are the shunt compensation devices?
a) TCSC b) SSSC
c) UPFC d) SVC

3) UPFC can control _____.
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b) To reduce the cost of electricity
c) To improve reliability of power supply
d) All of the above

5) Voltage fluctuation is an _____ phenomenon.
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c) Magnetic d) None

6) Voltage imbalance is a condition in which the three -phase voltage differ in _____.
a) Amplitude b) Angle
c) Both d) None

7) Oscillatory transient is _____ in polarity.
a) Bidirectional b) Unidirectional
c) Both d) None

8) In which IEEE standards recommended practices and requirements for harmonic control in electrical power system is given _____.

a) IEEE 519 b) IEEE 1159
c) IEEE 518 d) IEEE 241

9) Harmonics can be eliminated by introducing which of the following _____.

a) Resonant circuit b) High Impedance
c) Filters d) Low Impedance path

10) Transient disturbance is produced in a circuit whenever _____.

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b) it is shorted
c) it's applied voltage is changed suddenly
d) all of the above

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12) Shunt compensation does _____.

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b) provide only mid of line voltage support to prevent voltage instability
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d) may or may not provide end of line voltage support to prevent voltage instability

13) Shunt connected, fixed or switched reactors are applied to _____.

a) Minimize line overvoltage under light load conditions
b) Minimize line overvoltage under heavy load conditions
c) Maximize line overvoltage under light load conditions
d) Maximize line overvoltage under heavy load conditions

14) The voltage Stability limit _____.

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c) Decreases with inductive loads and capacitive loads
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SLR-BD-608

Seat No.	

Set R

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power Quality and FACTS (BTN07701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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3) Make suitable assumptions if necessary.

Section – I

Q.2 Solve Any Four. **16**

a) Explain various effects of harmonics in the power system.
b) Explain International standards of power quality.
c) Explain Long duration voltage variations with its causes.
d) Compare the terms Sag and Swell.
e) Which are the different types of power quality measurement equipment?

Q.3 Solve Any Two. **12**

a) Define and write equations of following harmonic indices.
i) Individual Harmonic Distortion,
ii) Total Harmonic Distortion
iii) Total Demand Distortion
b) Explain Spectrum Analyzers and harmonic Analyzers.
c) Explain Transients:
i) Impulsive and
ii) Oscillatory

Section – II

Q.4 Solve Any Four. **16**

a) Explain construction and working of FC-TCR.
b) Explain the objective of midpoint compensation for shunt compensation.
c) Explain working of SSSC.
d) What are the objectives of Voltage and phase angle Regulator?
e) Explain V-I characteristics of STATCOM and SVC.

Q.5 Solve Any Two. **12**

a) Explain working principal of GCSC and TSSC.
b) Explain the control structure and applications of IPFC System.
c) What are the different types of FACTS devices and also its importance in Transmission network?

SLR-BD-608

Seat No.		Set	S

Fourth. Y (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power Quality and FACTS (BTN07701)

Day & Date: Monday, 02-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select appropriate options. **14**

1) Transient disturbance is produced in a circuit whenever _____.
a) it is suddenly connected or disconnected from the supply
b) it is shorted
c) it's applied voltage is changed suddenly
d) all of the above

2) There are no transients in pure resistive circuit because they are _____.
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c) have no stored energy d) are linear circuits

3) Shunt compensation does _____.
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b) provide only mid of line voltage support to prevent voltage instability
c) provide end of line voltage support to prevent voltage instability
d) may or may not provide end of line voltage support to prevent voltage instability

4) Shunt connected, fixed or switched reactors are applied to _____.
a) Minimize line overvoltage under light load conditions
b) Minimize line overvoltage under heavy load conditions
c) Maximize line overvoltage under light load conditions
d) Maximize line overvoltage under heavy load conditions

5) The voltage Stability limit _____.
a) Increases with inductive loads and decreases with capacitive loads
b) Decreases with inductive loads and increases with capacitive loads
c) Decreases with inductive loads and capacitive loads
d) Increases with inductive loads and capacitive loads

6) FACTS devices used in _____.
a) Generation b) AC Transmission
c) DC Transmission d) None

7) Which are the shunt compensation devices?
a) TCSC b) SSSC
c) UPFC d) SVC

8) UPFC can control _____.
a) Voltage b) Impedance
c) Phase angle d) All above

9) Transmission Interconnections is done for _____.
a) Economic reasons
b) To reduce the cost of electricity
c) To improve reliability of power supply
d) All of the above

10) Voltage fluctuation is an _____ phenomenon.
a) Electric b) Electromagnetic
c) Magnetic d) None

11) Voltage imbalance is a condition in which the three -phase voltage differ in _____.
a) Amplitude b) Angle
c) Both d) None

12) Oscillatory transient is _____ in polarity.
a) Bidirectional b) Unidirectional
c) Both d) None

13) In which IEEE standards recommended practices and requirements for harmonic control in electrical power system is given _____.
a) IEEE 519 b) IEEE 1159
c) IEEE 518 d) IEEE 241

14) Harmonics can be eliminated by introducing which of the following _____.
a) Resonant circuit b) High Impedance
c) Filters d) Low Impedance path

SLR-BD-608

Seat No.	

Set S

Fourth. Y (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power Quality and FACTS (BTN07701)

Day & Date: Monday, 02-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary.

Section – I

Q.2 Solve Any Four. **16**

a) Explain various effects of harmonics in the power system.
b) Explain International standards of power quality.
c) Explain Long duration voltage variations with its causes.
d) Compare the terms Sag and Swell.
e) Which are the different types of power quality measurement equipment?

Q.3 Solve Any Two. **12**

a) Define and write equations of following harmonic indices.
i) Individual Harmonic Distortion,
ii) Total Harmonic Distortion
iii) Total Demand Distortion
b) Explain Spectrum Analyzers and harmonic Analyzers.
c) Explain Transients:
i) Impulsive and
ii) Oscillatory

Section – II

Q.4 Solve Any Four. **16**

a) Explain construction and working of FC-TCR.
b) Explain the objective of midpoint compensation for shunt compensation.
c) Explain working of SSSC.
d) What are the objectives of Voltage and phase angle Regulator?
e) Explain V-I characteristics of STATCOM and SVC.

Q.5 Solve Any Two. **12**

a) Explain working principal of GCSC and TSSC.
b) Explain the control structure and applications of IPFC System.
c) What are the different types of FACTS devices and also its importance in Transmission network?

SLR-BD-609

Seat No.	

Set P

Fourth. Y (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Signals and System (BTN07702)

Day & Date: Tuesday, 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice question. **14**

1) Convolution is use to find _____.
a) The impulse response of an LTI System
b) Frequency response of a System
c) The time response of a LTI system
d) The phase response of a LTI system

2) The trigonometric Fourier series of an even function of time does not have _____.
a) The dc term
b) Cosine terms
c) Sine terms
d) Odd harmonic terms

3) Find the value of $h[n]^{*}\delta[n-1], \delta[n]$ being the Delta function _____.
a) $h[n-2]$
b) $h[n]$
c) $h[n-1]$
d) $h[n+1]$

4) Does the system $h(t) = \exp(-7t)$ correspond to a stable system?
a) Yes
b) No
c) Marginally Stable
d) No one of the above

5) All energy signals will have an average power _____.
a) Infinite
b) Zero
c) Positive
d) Cannot be calculated

6) The even part to fa signal $x(t)$ is _____.
a) $x(t) + x(-t)$
b) $x(t) - x(-t)$
c) $(1/2)^{*}\,(x(t) + x(-t))$
d) $(1/2)^{*}\,(x(t) - x(-t))$

7) If sequence $y(n) = x(-n)$ then it is _____.
a) Causal
b) Non-causal
c) Depends on $x(-n)$
d) None

8) Two discrete time systems with impulse responses $h_1[n] = \delta[n-1]$and $h_2[n] = \delta[n-2]$ are connected in cascade. The overall impulse response of the cascaded system is _____.
a) $\delta[n-1] + \delta[n-2]$
b) $\delta[n-4]$
c) $\delta[n-3]$
d) $\delta[n-1]^{*}\delta[n-2]$

9) If $x(z) = \{1, 2, 1, 2, 3\}$ ROC is _____.
a) Entire z- plane
b) Entire z-plane except $z = \infty$
c) Entire z-plane except $z = 0, z = \infty$
d) Entire z-plane except $z = 0$

10) The ROC must be _____.
a) Divided region
b) Connected region
c) Partly connected & partly divided
d) None

11) In DIF FFT algorithm input sequence is _____.
a) In natural order
b) bit reversed order
c) in ascending order
d) descending order

12) In DIT FFT algorithm, the number of complex multiplications is given by _____.
a) $N\log_2 (N/2)$
b) $N\log_2 (N/3)$
c) $(N/2)\log_2 N$
d) $N\log_2(N)$

13) In DIF FFT algorithm, Exponent repeat factor (ERF) is given by _____.
a) 2^{M-m}
b) 2^{M-1}
c) 2^{m-M}
d) 2^{m-1}

14) For an N-point FFT algorithm with $N = 2m$, which one of the following statements is TRUE?
a) It is not possible to construct is signal flow graph with both input and output in normal order.
b) The number of butterflies in the mth state is N/m
c) In-place computation requires storage of only $2N$ node data
d) Computation of a butterfly requires only one complex multiplication.

Seat No.	

Set **P**

Fourth. Y (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Signals and System (BTN07702)

Day & Date: Tuesday, 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any four of the following. **16**

a) Define the terms w.r.t. signals.
i) Causal and Non-causal signal
ii) Energy signal, Power signal
iii) Even signal, Odd signal

b) Determine the energy and power of the signal.
$x(n) = (1/5)^n \, .u(n)$

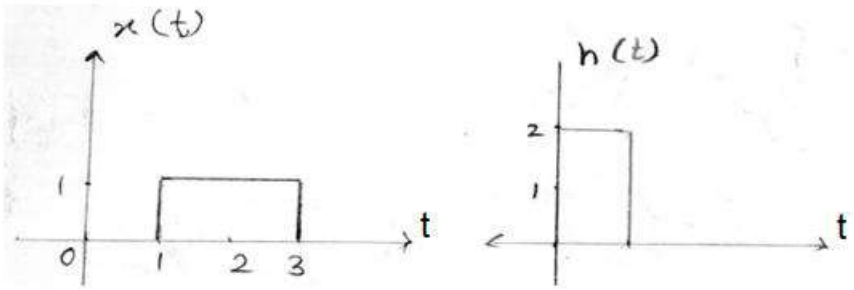
c) Find the impulse response of DT-LTI system with input $x[n]$ and impulse response $h[n]$ as given below
$x[n] = 2n, \quad -1 \leq n \geq 2$
$h[n] = n^2, \quad 0 \leq n \geq 3$

d) Derive the expression for even & odd components of a CT signal.

e) Check the following property of signal
i) Stable, unstable
ii) Invertible, Non Invertible
If, $Y(t) = x(t) + x(t+3)$

Q.3 Attempt any two of the following. **12**

a) Find the convolution of two signal as shown in below.



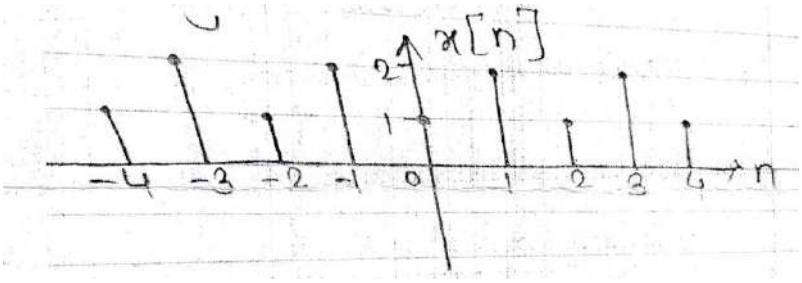
b) Explain properties of DT-LTI system.

c) A DT sequence $X[n]$ is shown below; sketch and label the following signals.

i) $X[n+2]$

ii) $X[n-4]$

iii) $X[2n]$



Section – II

Q.4 Attempt any four of the following. **16**

a) Find the Z-Transform and ROC of given signal
$x(n) = a^n.u(n)$

b) Determine the discrete time signal $x(n)$ whose Fourier transform is,
$X(e^{j\omega}) = 1 \quad -\omega_c < \omega < \omega_c$
$= 0 \quad -\omega_c < |\omega| < \pi$

c) Explain the time scaling property of Fourier transform and hence find the Fourier transform of
$f(t) = e^{-0.5t}u(t)$

d) Explain the Continuous time Fourier series for a periodic signal.

e) Explain Complex exponential Fourier series.

Q.5 Attempt any two of the following. **12**

a) State the properties of *Z* Transform and explain any two.

b) Compute 8 point DFT of sequence using DIF FFT algorithm.
$x(n) = 1 \quad \text{for } 0 \le n \le 7$
$= 0 \quad \text{otherwise}$

c) List properties of DFT and explain any two.

SLR-BD-609

Seat No.	

Set Q

Fourth. Y (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Signals and System (BTN07702)

Day & Date: Tuesday, 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice question. **14**

1) Two discrete time systems with impulse responses $h_1[n] = \delta[n-1]$and $h_2[n] = \delta[n-2]$ are connected in cascade. The overall impulse response of the cascaded system is _____.
a) $\delta[n-1] + \delta[n-2]$ b) $\delta[n-4]$
c) $\delta[n-3]$ d) $\delta[n-1]^{*}\delta[n-2]$

2) If $x(z) = \{1, 2, 1, 2, 3\}$ ROC is _____.
a) Entire z- plane
b) Entire z-plane except $z = \infty$
c) Entire z-plane except $z = 0, z = \infty$
d) Entire z-plane except $z = 0$

3) The ROC must be _____.
a) Divided region
b) Connected region
c) Partly connected & partly divided
d) None

4) In DIF FFT algorithm input sequence is _____.
a) In natural order b) bit reversed order
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5) In DIT FFT algorithm, the number of complex multiplications is given by _____.
a) $N\log_2 (N/2)$ b) $N\log_2 (N/3)$
c) $(N/2)\log_2 N$ d) $N\log_2(N)$

6) In DIF FFT algorithm, Exponent repeat factor (ERF) is given by _____.

a) 2^{M-m} b) 2^{M-1}

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7) For an N-point FFT algorithm with $N = 2m$, which one of the following statements is TRUE?

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c) In-place computation requires storage of only $2N$ node data

d) Computation of a butterfly requires only one complex multiplication.

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9) The trigonometric Fourier series of an even function of time does not have _____.

a) The dc term b) Cosine terms

c) Sine terms d) Odd harmonic terms

10) Find the value of $h[n]^{*}\delta[n-1], \delta[n]$ being the Delta function _____.

a) $h[n-2]$ b) $h[n]$

c) $h[n-1]$ d) $h[n+1]$

11) Does the system $h(t) = \exp(-7t)$ correspond to a stable system?

a) Yes b) No

c) Marginally Stable d) No one of the above

12) All energy signals will have an average power _____.

a) Infinite b) Zero

c) Positive d) Cannot be calculated

13) The even part to fa signal $x(t)$ is _____.

a) $x(t) + x(-t)$ b) $x(t) - x(-t)$

c) $(1/2)^{*}\,(x(t) + x(-t))$ d) $(1/2)^{*}\,(x(t) - x(-t))$

14) If sequence $y(n) = x(-n)$ then it is _____.

a) Causal b) Non-causal

c) Depends on $x(-n)$ d) None

Seat No.	

Set **Q**

Fourth. Y (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Signals and System (BTN07702)

Day & Date: Tuesday, 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any four of the following. **16**

a) Define the terms w.r.t. signals.
i) Causal and Non-causal signal
ii) Energy signal, Power signal
iii) Even signal, Odd signal

b) Determine the energy and power of the signal.
$x(n) = (1/5)^n \, .u(n)$

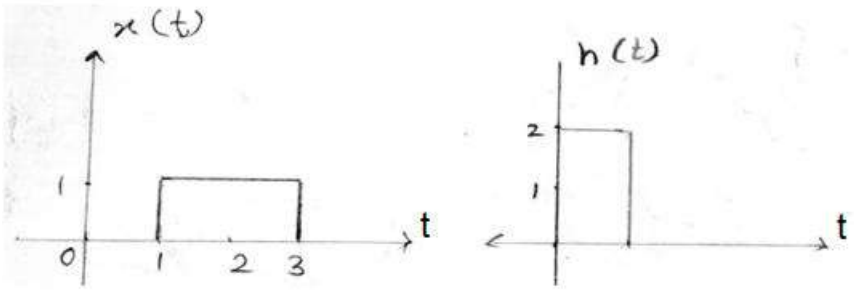
c) Find the impulse response of DT-LTI system with input $x[n]$ and impulse response $h[n]$ as given below
$x[n] = 2n, \quad -1 \leq n \geq 2$
$h[n] = n^2, \quad 0 \leq n \geq 3$

d) Derive the expression for even & odd components of a CT signal.

e) Check the following property of signal
i) Stable, unstable
ii) Invertible, Non Invertible
If, $Y(t) = x(t) + x(t+3)$

Q.3 Attempt any two of the following. **12**

a) Find the convolution of two signal as shown in below.



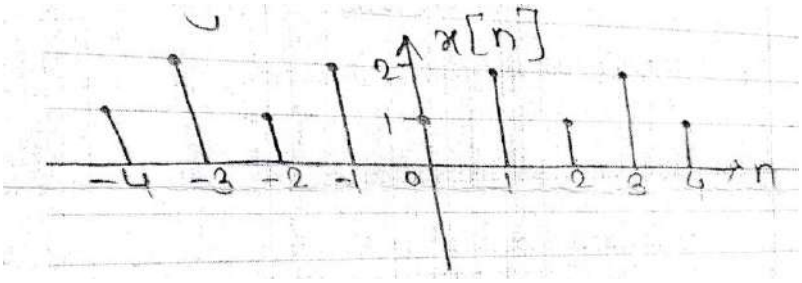
b) Explain properties of DT-LTI system.

c) A DT sequence $X[n]$ is shown below; sketch and label the following signals.

i) $X[n+2]$

ii) $X[n-4]$

iii) $X[2n]$



Section – II

Q.4 Attempt any four of the following. **16**

a) Find the Z-Transform and ROC of given signal
$x(n) = a^n.u(n)$

b) Determine the discrete time signal $x(n)$ whose Fourier transform is,
$X(e^{j\omega}) = 1 \quad -\omega_c < \omega < \omega_c$
$= 0 \quad -\omega_c < |\omega| < \pi$

c) Explain the time scaling property of Fourier transform and hence find the Fourier transform of
$f(t) = e^{-0.5t}u(t)$

d) Explain the Continuous time Fourier series for a periodic signal.

e) Explain Complex exponential Fourier series.

Q.5 Attempt any two of the following. **12**

a) State the properties of *Z* Transform and explain any two.

b) Compute 8 point DFT of sequence using DIF FFT algorithm.
$x(n) = 1 \quad \text{for } 0 \le n \le 7$
$= 0 \quad \text{otherwise}$

c) List properties of DFT and explain any two.

Seat No.	

Set R

Fourth. Y (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Signals and System (BTN07702)

Day & Date: Tuesday, 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice question. **14**

1) In DIF FFT algorithm input sequence is _____.
a) In natural order b) bit reversed order
c) in ascending order d) descending order

2) In DIT FFT algorithm, the number of complex multiplications is given by _____.
a) $N\log_2 (N/2)$ b) $N\log_2 (N/3)$
c) $(N/2)\log_2 N$ d) $N\log_2(N)$

3) In DIF FFT algorithm, Exponent repeat factor (ERF) is given by _____.
a) 2^{M-m} b) 2^{M-1}
c) 2^{m-M} d) 2^{m-1}

4) For an N-point FFT algorithm with $N = 2m$, which one of the following statements is TRUE?
a) It is not possible to construct is signal flow graph with both input and output in normal order.
b) The number of butterflies in the mth state is N/m
c) In-place computation requires storage of only $2N$ node data
d) Computation of a butterfly requires only one complex multiplication.

5) Convolution is use to find _____.
a) The impulse response of an LTI System
b) Frequency response of a System
c) The time response of a LTI system
d) The phase response of a LTI system

6) The trigonometric Fourier series of an even function of time does not have _____.

a) The dc term
b) Cosine terms
c) Sine terms
d) Odd harmonic terms

7) Find the value of $h[n]^{*}\delta[n-1], \delta[n]$ being the Delta function _____.

a) $h[n-2]$
b) $h[n]$
c) $h[n-1]$
d) $h[n+1]$

8) Does the system $h(t) = \exp(-7t)$ correspond to a stable system?

a) Yes
b) No
c) Marginally Stable
d) No one of the above

9) All energy signals will have an average power _____.

a) Infinite
b) Zero
c) Positive
d) Cannot be calculated

10) The even part to fa signal $x(t)$ is _____.

a) $x(t) + x(-t)$
b) $x(t) - x(-t)$
c) $(1/2)^{*}\,(x(t) + x(-t))$
d) $(1/2)^{*}\,(x(t) - x(-t))$

11) If sequence $y(n) = x(-n)$ then it is _____.

a) Causal
b) Non-causal
c) Depends on $x(-n)$
d) None

12) Two discrete time systems with impulse responses $h_1[n] = \delta[n-1]$and $h_2[n] = \delta[n-2]$ are connected in cascade. The overall impulse response of the cascaded system is _____.

a) $\delta[n-1] + \delta[n-2]$
b) $\delta[n-4]$
c) $\delta[n-3]$
d) $\delta[n-1]^{*}\delta[n-2]$

13) If $x(z) = \{1, 2, 1, 2, 3\}$ ROC is _____.

a) Entire z- plane
b) Entire z-plane except $z = \infty$
c) Entire z-plane except $z = 0, z = \infty$
d) Entire z-plane except $z = 0$

14) The ROC must be _____.

a) Divided region
b) Connected region
c) Partly connected & partly divided
d) None

Seat No.	

Set **R**

Fourth. Y (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Signals and System (BTN07702)

Day & Date: Tuesday, 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any four of the following. **16**

a) Define the terms w.r.t. signals.
i) Causal and Non-causal signal
ii) Energy signal, Power signal
iii) Even signal, Odd signal

b) Determine the energy and power of the signal.
$x(n) = (1/5)^n \, .u(n)$

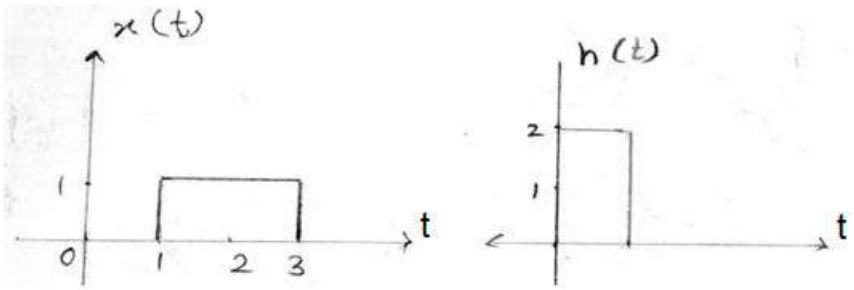
c) Find the impulse response of DT-LTI system with input $x[n]$ and impulse response $h[n]$ as given below
$x[n] = 2n, \quad -1 \leq n \geq 2$
$h[n] = n^2, \quad 0 \leq n \geq 3$

d) Derive the expression for even & odd components of a CT signal.

e) Check the following property of signal
i) Stable, unstable
ii) Invertible, Non Invertible
If, $Y(t) = x(t) + x(t+3)$

Q.3 Attempt any two of the following. **12**

a) Find the convolution of two signal as shown in below.



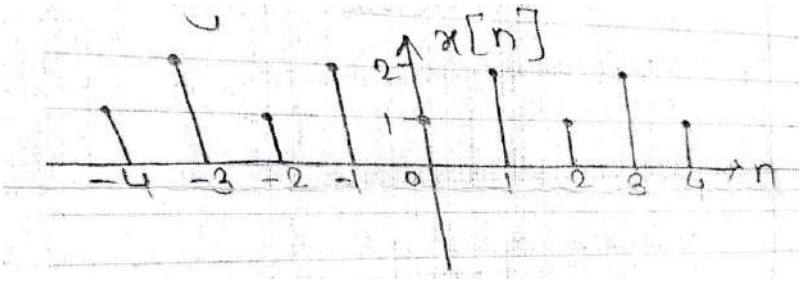
b) Explain properties of DT-LTI system.

c) A DT sequence $X[n]$ is shown below; sketch and label the following signals.

i) $X[n+2]$

ii) $X[n-4]$

iii) $X[2n]$



Section – II

Q.4 Attempt any four of the following. **16**

a) Find the Z-Transform and ROC of given signal
$x(n) = a^n.u(n)$

b) Determine the discrete time signal $x(n)$ whose Fourier transform is,
$X(e^{j\omega}) = 1 \quad -\omega_c < \omega < \omega_c$
$= 0 \quad -\omega_c < |\omega| < \pi$

c) Explain the time scaling property of Fourier transform and hence find the Fourier transform of
$f(t) = e^{-0.5t}u(t)$

d) Explain the Continuous time Fourier series for a periodic signal.

e) Explain Complex exponential Fourier series.

Q.5 Attempt any two of the following. **12**

a) State the properties of *Z* Transform and explain any two.

b) Compute 8 point DFT of sequence using DIF FFT algorithm.
$x(n) = 1 \quad \text{for } 0 \le n \le 7$
$= 0 \quad \text{otherwise}$

c) List properties of DFT and explain any two.

Seat No.		Set	S

Fourth. Y (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Signals and System (BTN07702)

Day & Date: Tuesday, 03-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Multiple choice question. **14**

1) The even part to fa signal $x(t)$ is _____.
a) $x(t)+x(-t)$ b) $x(t)-x(-t)$
c) $(1/2)^{*}\,(x(t)+x(-t))$ d) $(1/2)^{*}\,(x(t)-x(-t))$

2) If sequence $y(n)=x(-n)$ then it is _____.
a) Causal b) Non-causal
c) Depends on $x(-n)$ d) None

3) Two discrete time systems with impulse responses $h_1[n]=\delta[n-1]$and $h_2[n]=\delta[n-2]$ are connected in cascade. The overall impulse response of the cascaded system is _____.
a) $\delta[n-1]+\delta[n-2]$ b) $\delta[n-4]$
c) $\delta[n-3]$ d) $\delta[n-1]^{*}\delta[n-2]$

4) If $x(z)=\{1,2,1,2,3\}$ ROC is _____.
↑
a) Entire z- plane
b) Entire z-plane except $z=\infty$
c) Entire z-plane except $z=0, z=\infty$
d) Entire z-plane except $z=0$

5) The ROC must be _____.
a) Divided region
b) Connected region
c) Partly connected & partly divided
d) None

6) In DIF FFT algorithm input sequence is _____.
a) In natural order
b) bit reversed order
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7) In DIT FFT algorithm, the number of complex multiplications is given by _____.
a) $N\log_2 (N/2)$
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c) $(N/2)\log_2 N$
d) $N\log_2(N)$

8) In DIF FFT algorithm, Exponent repeat factor (ERF) is given by _____.
a) 2^{M-m}
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c) 2^{m-M}
d) 2^{m-1}

9) For an N-point FFT algorithm with $N = 2m$, which one of the following statements is TRUE?
a) It is not possible to construct is signal flow graph with both input and output in normal order.
b) The number of butterflies in the mth state is N/m
c) In-place computation requires storage of only $2N$ node data
d) Computation of a butterfly requires only one complex multiplication.

10) Convolution is use to find _____.
a) The impulse response of an LTI System
b) Frequency response of a System
c) The time response of a LTI system
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11) The trigonometric Fourier series of an even function of time does not have _____.
a) The dc term
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12) Find the value of $h[n]^*\delta[n-1], \delta[n]$ being the Delta function _____.
a) $h[n-2]$
b) $h[n]$
c) $h[n-1]$
d) $h[n+1]$

13) Does the system $h(t) = \exp(-7t)$ correspond to a stable system?
a) Yes
b) No
c) Marginally Stable
d) No one of the above

14) All energy signals will have an average power _____.
a) Infinite
b) Zero
c) Positive
d) Cannot be calculated

SLR-BD-609

Seat No.		Set	S

Fourth. Y (B.Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Signals and System (BTN07702)

Day & Date: Tuesday, 03-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section – I

Q.2 Attempt any four of the following. **16**

a) Define the terms w.r.t. signals.
i) Causal and Non-causal signal
ii) Energy signal, Power signal
iii) Even signal, Odd signal

b) Determine the energy and power of the signal.
$x(n) = (1/5)^n \, .u(n)$

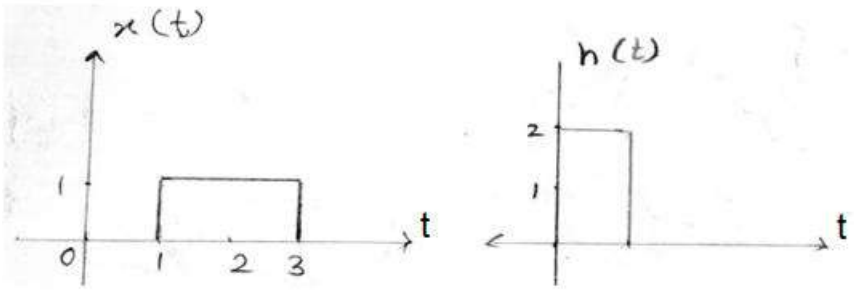
c) Find the impulse response of DT-LTI system with input $x[n]$ and impulse response $h[n]$ as given below
$x[n] = 2n, \quad -1 \leq n \geq 2$
$h[n] = n^2, \quad 0 \leq n \geq 3$

d) Derive the expression for even & odd components of a CT signal.

e) Check the following property of signal
i) Stable, unstable
ii) Invertible, Non Invertible
If, $Y(t) = x(t) + x(t+3)$

Q.3 Attempt any two of the following. **12**

a) Find the convolution of two signal as shown in below.



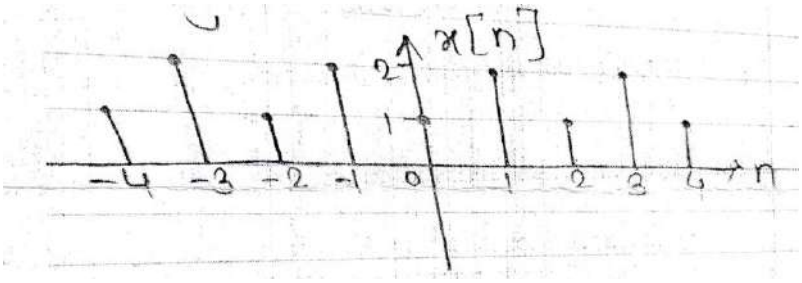
b) Explain properties of DT-LTI system.

c) A DT sequence $X[n]$ is shown below; sketch and label the following signals.

i) $X[n+2]$

ii) $X[n-4]$

iii) $X[2n]$



Section – II

Q.4 Attempt any four of the following. **16**

a) Find the Z-Transform and ROC of given signal
$x(n) = a^n.u(n)$

b) Determine the discrete time signal $x(n)$ whose Fourier transform is,
$X(e^{j\omega}) = 1 \quad -\omega_c < \omega < \omega_c$
$= 0 \quad -\omega_c < |\omega| < \pi$

c) Explain the time scaling property of Fourier transform and hence find the Fourier transform of
$f(t) = e^{-0.5t}u(t)$

d) Explain the Continuous time Fourier series for a periodic signal.

e) Explain Complex exponential Fourier series.

Q.5 Attempt any two of the following. **12**

a) State the properties of *Z* Transform and explain any two.

b) Compute 8 point DFT of sequence using DIF FFT algorithm.
$x(n) = 1 \quad \text{for } 0 \le n \le 7$
$= 0 \quad \text{otherwise}$

c) List properties of DFT and explain any two.

SLR-BD-610

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Switchgear and Protection (BTN07703)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. 14

1) A relay is used to _____.
a) Break the fault current
b) Sense the current
c) Sense the fault and direct to trip the circuit breaker
d) All of these

2) Discrimination between main and back up protection is provided by which of the following relays _____.
a) Fact b) Sensitive
c) Slow d) None of the above

3) Differential relays are used for protection of equipment's against _____.
a) Internal faults b) Over current
c) Reverse current d) Reverse power

4) By which of the following methods major portion of the heat generated in a H.R.C. fuse is dissipated?
a) Radiation b) Convection
c) Conduction d) All of the above

5) The Circuit Breaker Rating in terms of _____.
a) Current b) Voltage
c) VAR d) KVA

6) Which of the following relay has inherent directional characteristic?
a) Mho b) Reactance
c) Impedance d) None of the above

7) For ground fault, which of the relay is preferred?
a) Plain impedance relay b) Directional relay
c) Reactance relay d) Overcurrent relay

8) For which of the following protection from negative sequence currents is provided?
a) Generators b) Motors
c) Transmission line d) Transformers

9) To limit short-circuit current in a power system are used _____.
a) Earth wires b) Isolators
c) H.R.C. fuses d) Reactors

10) Why is it difficult to interrupt a capacitive circuit?
a) The current has a leading power factor
b) The restriking voltage can be high
c) Current magnitude is very small
d) Stored energy in the capacitor is very high

11) Which circuit breaker is preferred to be installed in extra high voltage ac system?
a) Bulk oil type circuit breaker b) Air blast circuit breaker
c) Vacuum circuit breaker d) SF6 circuit breaker

12) Protection by fuses is generally not used beyond _____.
a) 20 A b) 200 A
c) 100 A d) 50 A

13) What is the main purpose of oil in oil circuit breakers?
a) Provide insulation b) Quenching arc
c) Provide cooling of contacts d) None of the above

14) Surge absorber _____ the energy of travelling waves.
a) Absorbs
b) Reflects
c) Diverts
d) Partly absorbs and partly diverts

SLR-BD-610

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination:
March/April - 2025
ELECTRICAL ENGINEERING
Switchgear and Protection (BTN07703)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) What are the desirable qualities of a protective scheme?
b) Define the following.
i) Plug setting Multiplier ii) Time setting Multiplier
c) Explain out of step blocking scheme.
d) Write the application of fuse and selection of fuse.
e) What is primary and back up protection of relay?
f) Define the following.
i) Pick up current ii) Current setting relay
iii) fuse iv) Rewirable fuse

Q.3 Solve any two. **12**

a) Derive torque equation for induction relay in detail.
b) Explain Percentage differential relay with neat sketch.
c) What are the types of distance relay? Explain Admittance relay in detail.

Section – II

Q.4 Solve any four. **16**

a) With a neat sketch explain Buchholz Relay.
b) Explain the phenomenon of current chopping.
c) Briefly describe MCB and MCCB.
d) With neat sketch explain metal oxide ZnO arrestors.
e) Explain current zero interruption methods.
f) Explain air blast circuit breakers.

Q.5 Solve any two. **12**

a) With suitable diagram explain construction & operation of SF6 circuit breaker. Also state its advantages and disadvantages.
b) Derive an expression for Rate of Rise of Restriking Voltage (RRRV).
c) What is the phenomenon of arcing in circuit breaker? Explain the methods of arc extinction in detail.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Switchgear and Protection (BTN07703)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) For which of the following protection from negative sequence currents is provided?
a) Generators b) Motors
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2) To limit short-circuit current in a power system are used _____.
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a) Current
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13) Which of the following relay has inherent directional characteristic?
a) Mho
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c) Impedance
d) None of the above

14) For ground fault, which of the relay is preferred?
a) Plain impedance relay
b) Directional relay
c) Reactance relay
d) Overcurrent relay

SLR-BD-610

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Switchgear and Protection (BTN07703)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four. **16**

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b) Define the following.
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Section – II

Q.4 Solve any four. **16**

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f) Explain air blast circuit breakers.

Q.5 Solve any two. **12**

a) With suitable diagram explain construction & operation of SF6 circuit breaker. Also state its advantages and disadvantages.
b) Derive an expression for Rate of Rise of Restriking Voltage (RRRV).
c) What is the phenomenon of arcing in circuit breaker? Explain the methods of arc extinction in detail.

SLR-BD-610

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Switchgear and Protection (BTN07703)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) Which circuit breaker is preferred to be installed in extra high voltage ac system?
a) Bulk oil type circuit breaker b) Air blast circuit breaker
c) Vacuum circuit breaker d) SF6 circuit breaker

2) Protection by fuses is generally not used beyond _____.
a) 20 A b) 200 A
c) 100 A d) 50 A

3) What is the main purpose of oil in oil circuit breakers?
a) Provide insulation b) Quenching arc
c) Provide cooling of contacts d) None of the above

4) Surge absorber _____ the energy of travelling waves.
a) Absorbs
b) Reflects
c) Diverts
d) Partly absorbs and partly diverts

5) A relay is used to _____.
a) Break the fault current
b) Sense the current
c) Sense the fault and direct to trip the circuit breaker
d) All of these

6) Discrimination between main and back up protection is provided by which of the following relays _____.
a) Fact b) Sensitive
c) Slow d) None of the above

7) Differential relays are used for protection of equipment's against _____.
a) Internal faults b) Over current
c) Reverse current d) Reverse power

8) By which of the following methods major portion of the heat generated in a H.R.C. fuse is dissipated?
a) Radiation b) Convection
c) Conduction d) All of the above

9) The Circuit Breaker Rating in terms of _____.
a) Current b) Voltage
c) VAR d) KVA

10) Which of the following relay has inherent directional characteristic?
a) Mho b) Reactance
c) Impedance d) None of the above

11) For ground fault, which of the relay is preferred?
a) Plain impedance relay b) Directional relay
c) Reactance relay d) Overcurrent relay

12) For which of the following protection from negative sequence currents is provided?
a) Generators b) Motors
c) Transmission line d) Transformers

13) To limit short-circuit current in a power system are used _____.
a) Earth wires b) Isolators
c) H.R.C. fuses d) Reactors

14) Why is it difficult to interrupt a capacitive circuit?
a) The current has a leading power factor
b) The restriking voltage can be high
c) Current magnitude is very small
d) Stored energy in the capacitor is very high

SLR-BD-610

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination:
March/April - 2025
ELECTRICAL ENGINEERING
Switchgear and Protection (BTN07703)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) What are the desirable qualities of a protective scheme?
b) Define the following.
i) Plug setting Multiplier ii) Time setting Multiplier
c) Explain out of step blocking scheme.
d) Write the application of fuse and selection of fuse.
e) What is primary and back up protection of relay?
f) Define the following.
i) Pick up current ii) Current setting relay
iii) fuse iv) Rewirable fuse

Q.3 Solve any two. **12**

a) Derive torque equation for induction relay in detail.
b) Explain Percentage differential relay with neat sketch.
c) What are the types of distance relay? Explain Admittance relay in detail.

Section – II

Q.4 Solve any four. **16**

a) With a neat sketch explain Buchholz Relay.
b) Explain the phenomenon of current chopping.
c) Briefly describe MCB and MCCB.
d) With neat sketch explain metal oxide ZnO arrestors.
e) Explain current zero interruption methods.
f) Explain air blast circuit breakers.

Q.5 Solve any two. **12**

a) With suitable diagram explain construction & operation of SF6 circuit breaker. Also state its advantages and disadvantages.
b) Derive an expression for Rate of Rise of Restriking Voltage (RRRV).
c) What is the phenomenon of arcing in circuit breaker? Explain the methods of arc extinction in detail.

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
Switchgear and Protection (BTN07703)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) Which of the following relay has inherent directional characteristic?
a) Mho b) Reactance
c) Impedance d) None of the above

2) For ground fault, which of the relay is preferred?
a) Plain impedance relay b) Directional relay
c) Reactance relay d) Overcurrent relay

3) For which of the following protection from negative sequence currents is provided?
a) Generators b) Motors
c) Transmission line d) Transformers

4) To limit short-circuit current in a power system are used _____.
a) Earth wires b) Isolators
c) H.R.C. fuses d) Reactors

5) Why is it difficult to interrupt a capacitive circuit?
a) The current has a leading power factor
b) The restriking voltage can be high
c) Current magnitude is very small
d) Stored energy in the capacitor is very high

6) Which circuit breaker is preferred to be installed in extra high voltage ac system?
a) Bulk oil type circuit breaker b) Air blast circuit breaker
c) Vacuum circuit breaker d) SF6 circuit breaker

7) Protection by fuses is generally not used beyond _____.
a) 20 A b) 200 A
c) 100 A d) 50 A

8) What is the main purpose of oil in oil circuit breakers?
a) Provide insulation b) Quenching arc
c) Provide cooling of contacts d) None of the above

9) Surge absorber _____ the energy of travelling waves.
a) Absorbs
b) Reflects
c) Diverts
d) Partly absorbs and partly diverts

10) A relay is used to _____.
a) Break the fault current
b) Sense the current
c) Sense the fault and direct to trip the circuit breaker
d) All of these

11) Discrimination between main and back up protection is provided by which of the following relays _____.
a) Fact b) Sensitive
c) Slow d) None of the above

12) Differential relays are used for protection of equipment's against _____.
a) Internal faults b) Over current
c) Reverse current d) Reverse power

13) By which of the following methods major portion of the heat generated in a H.R.C. fuse is dissipated?
a) Radiation b) Convection
c) Conduction d) All of the above

14) The Circuit Breaker Rating in terms of _____.
a) Current b) Voltage
c) VAR d) KVA

SLR-BD-610

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination:
March/April - 2025
ELECTRICAL ENGINEERING
Switchgear and Protection (BTN07703)

Day & Date: Wednesday, 04-06-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) What are the desirable qualities of a protective scheme?
b) Define the following.
i) Plug setting Multiplier ii) Time setting Multiplier
c) Explain out of step blocking scheme.
d) Write the application of fuse and selection of fuse.
e) What is primary and back up protection of relay?
f) Define the following.
i) Pick up current ii) Current setting relay
iii) fuse iv) Rewirable fuse

Q.3 Solve any two. **12**

a) Derive torque equation for induction relay in detail.
b) Explain Percentage differential relay with neat sketch.
c) What are the types of distance relay? Explain Admittance relay in detail.

Section – II

Q.4 Solve any four. **16**

a) With a neat sketch explain Buchholz Relay.
b) Explain the phenomenon of current chopping.
c) Briefly describe MCB and MCCB.
d) With neat sketch explain metal oxide ZnO arrestors.
e) Explain current zero interruption methods.
f) Explain air blast circuit breakers.

Q.5 Solve any two. **12**

a) With suitable diagram explain construction & operation of SF6 circuit breaker. Also state its advantages and disadvantages.
b) Derive an expression for Rate of Rise of Restriking Voltage (RRRV).
c) What is the phenomenon of arcing in circuit breaker? Explain the methods of arc extinction in detail.

Seat No.	

Set **P**

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power System and Operation Control (BTN07707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve All MCQ Questions **14**

1) Economic dispatch problem _____
a) To minimize the operating cost
b) To minimize fuel cost only
c) To minimize the load demand
d) To minimize the cost of transportation

2) What is the unit of transmission loss coefficient?
a) MW b) $(MW)^{-1}$
c) Unit less d) $(MW)^{2}$

3) The main economic factor in power system operation is _____
a) The cost of reactive power consumption
b) The cost of power generation
c) The cost of operation and maintenance
d) The cost of power transmission

4) The most efficient unit is loaded first then the less efficient unit follow, is called _____
a) Priority ordering b) Dynamic Programming
c) Patton's Security d) None of these

5) A unit when scheduled when scheduled for connection tod to be the system is said _____
a) Loaded b) Committed
c) Disconnected d) All of these

6) Which of the VAR compensators can be used for both heavy and light load conditions _____

a) SVC b) Shunt Reactor
c) Series Capacitor d) None of the above

7) A security analysis program uses _____

a) AC load flow b) DC load flow
c) Both AC and DC load flow d) None

8) Power system static security level are _____

a) 4 b) 5
c) 6 d) 2

9) Voltage stability problem normally occurs _____

a) Heavily stressed system b) Medium stressed system
c) Low stressed system d) None of these

10) Voltage stability is basically _____

a) Generator stability b) Load stability
c) Transformer stability d) None

11) Security assessment involves _____

a) System monitoring b) Contingency analysis
c) Both of above d) Not divided

12) Thermal unit constraint considered in unit commitment problem is ____

a) Minimum up-down time b) Crew constraint
c) Start up cost d) All of these

13) Power balance equation is _____ constraint

a) Equality b) Inequality
c) Security d) Branch transfer capacity

14) The penalty factor ____

a) Is always less than 1 b) Is always more than 1
c) May be more or less than 1 d) Is equal to or less than 1

Seat No.	

Set **P**

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power System and Operation Control (BTN07707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain with a mathematical formulation, optimum generation allocation without transmission losses
b) Explain the different thermal unit constrains.
c) What do you understand by production cost of power generated?
d) What is mean by spinning reserve?
e) Explain speed governing system with neat sketch.

Q.3 Solve any two. **12**

a) What are methods of unit commitment? With a suitable example explain Dynamic Programming method of unit commitment.
b) The fuel input per hour of plant 1 & plant 2 are given as follows
$F_1 = 0.2P_1^2 + 40P_1 + 120$ Rs/hr
$F_2 = 0.25P_2^2 + 30P_2 + 150$ Rs/hr
Determine the economic operating schedule and corresponding cost of generation if the maximum & minimum loading on each unit is 100MW & 25MW. The shared by both units demand is 180MW and transmission losses neglected. If load is equally shared by both units, determine saving obtained by loading the units as per equal incremental production cost.
c) Explain with illustrative transfer function of the load frequency control of two area system. Draw the block diagram for two area system.

Section – II

Q.4 Solve any four. **16**

a) Explain system state classification with neat diagram.
b) Explain the different methods of improving voltage stability.
c) Explain specifications of load compensator.
d) Explain the difference between voltage angle and voltage stability.
e) Explain the necessity of reactive power compensation.

Q.5 Solve any two **12**

a) Write the advantages and dis-advantages of different types of compensating equipment for transmission system.

b) Explain the necessity of power system security.

c) Explain effective counter measures to prevent voltage instability & methods of improving voltage stability.

Seat No.	

Set **Q**

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power System and Operation Control (BTN07707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve All MCQ Questions **14**

1) Power system static security level are _____
a) 4 b) 5
c) 6 d) 2

2) Voltage stability problem normally occurs _____
a) Heavily stressed system b) Medium stressed system
c) Low stressed system d) None of these

3) Voltage stability is basically _____
a) Generator stability b) Load stability
c) Transformer stability d) None

4) Security assessment involves _____
a) System monitoring b) Contingency analysis
c) Both of above d) Not divided

5) Thermal unit constraint considered in unit commitment problem is ____
a) Minimum up-down time b) Crew constraint
c) Start up cost d) All of these

6) Power balance equation is _____ constraint
a) Equality b) Inequality
c) Security d) Branch transfer capacity

7) The penalty factor ____
a) Is always less than 1 b) Is always more than 1
c) May be more or less than 1 d) Is equal to or less than 1

8) Economic dispatch problem _____
a) To minimize the operating cost
b) To minimize fuel cost only
c) To minimize the load demand
d) To minimize the cost of transportation

9) What is the unit of transmission loss coefficient?
a) MW b) $(MW)^{-1}$
c) Unit less d) $(MW)^{2}$

10) The main economic factor in power system operation is _____
a) The cost of reactive power consumption
b) The cost of power generation
c) The cost of operation and maintenance
d) The cost of power transmission

11) The most efficient unit is loaded first then the less efficient unit follow, is called _____
a) Priority ordering b) Dynamic Programming
c) Patton's Security d) None of these

12) A unit when scheduled when scheduled for connection tod to be the system is said _____
a) Loaded b) Committed
c) Disconnected d) All of these

13) Which of the VAR compensators can be used for both heavy and light load conditions _____
a) SVC b) Shunt Reactor
c) Series Capacitor d) None of the above

14) A security analysis program uses _____
a) AC load flow b) DC load flow
c) Both AC and DC load flow d) None

Seat No.	

Set **Q**

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power System and Operation Control (BTN07707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain with a mathematical formulation, optimum generation allocation without transmission losses
b) Explain the different thermal unit constrains.
c) What do you understand by production cost of power generated?
d) What is mean by spinning reserve?
e) Explain speed governing system with neat sketch.

Q.3 Solve any two. **12**

a) What are methods of unit commitment? With a suitable example explain Dynamic Programming method of unit commitment.
b) The fuel input per hour of plant 1 & plant 2 are given as follows
$F_1 = 0.2P_1^2 + 40P_1 + 120$ Rs/hr
$F_2 = 0.25P_2^2 + 30P_2 + 150$ Rs/hr
Determine the economic operating schedule and corresponding cost of generation if the maximum & minimum loading on each unit is 100MW & 25MW. The shared by both units demand is 180MW and transmission losses neglected. If load is equally shared by both units, determine saving obtained by loading the units as per equal incremental production cost.
c) Explain with illustrative transfer function of the load frequency control of two area system. Draw the block diagram for two area system.

Section – II

Q.4 Solve any four. **16**

a) Explain system state classification with neat diagram.
b) Explain the different methods of improving voltage stability.
c) Explain specifications of load compensator.
d) Explain the difference between voltage angle and voltage stability.
e) Explain the necessity of reactive power compensation.

Q.5 Solve any two **12**

a) Write the advantages and dis-advantages of different types of compensating equipment for transmission system.

b) Explain the necessity of power system security.

c) Explain effective counter measures to prevent voltage instability & methods of improving voltage stability.

Seat No.	

Set R

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power System and Operation Control (BTN07707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve All MCQ Questions **14**

1) Security assessment involves _____
a) System monitoring b) Contingency analysis
c) Both of above d) Not divided

2) Thermal unit constraint considered in unit commitment problem is ____
a) Minimum up-down time b) Crew constraint
c) Start up cost d) All of these

3) Power balance equation is _____ constraint
a) Equality b) Inequality
c) Security d) Branch transfer capacity

4) The penalty factor ____
a) Is always less than 1 b) Is always more than 1
c) May be more or less than 1 d) Is equal to or less than 1

5) Economic dispatch problem _____
a) To minimize the operating cost
b) To minimize fuel cost only
c) To minimize the load demand
d) To minimize the cost of transportation

6) What is the unit of transmission loss coefficient?
a) MW b) $(MW)^{-1}$
c) Unit less d) $(MW)^{2}$

7) The main economic factor in power system operation is _____

a) The cost of reactive power consumption
b) The cost of power generation
c) The cost of operation and maintenance
d) The cost of power transmission

8) The most efficient unit is loaded first then the less efficient unit follow, is called _____

a) Priority ordering
b) Dynamic Programming
c) Patton's Security
d) None of these

9) A unit when scheduled when scheduled for connection tod to be the system is said _____

a) Loaded
b) Committed
c) Disconnected
d) All of these

10) Which of the VAR compensators can be used for both heavy and light load conditions _____

a) SVC
b) Shunt Reactor
c) Series Capacitor
d) None of the above

11) A security analysis program uses _____

a) AC load flow
b) DC load flow
c) Both AC and DC load flow
d) None

12) Power system static security level are _____

a) 4
b) 5
c) 6
d) 2

13) Voltage stability problem normally occurs _____

a) Heavily stressed system
b) Medium stressed system
c) Low stressed system
d) None of these

14) Voltage stability is basically _____

a) Generator stability
b) Load stability
c) Transformer stability
d) None

SLR-BD-612

Seat No.	

Set R

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power System and Operation Control (BTN07707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain with a mathematical formulation, optimum generation allocation without transmission losses
b) Explain the different thermal unit constrains.
c) What do you understand by production cost of power generated?
d) What is mean by spinning reserve?
e) Explain speed governing system with neat sketch.

Q.3 Solve any two. **12**

a) What are methods of unit commitment? With a suitable example explain Dynamic Programming method of unit commitment.
b) The fuel input per hour of plant 1 & plant 2 are given as follows
$F_1 = 0.2P_1^2 + 40P_1 + 120$ Rs/hr
$F_2 = 0.25P_2^2 + 30P_2 + 150$ Rs/hr
Determine the economic operating schedule and corresponding cost of generation if the maximum & minimum loading on each unit is 100MW & 25MW. The shared by both units demand is 180MW and transmission losses neglected. If load is equally shared by both units, determine saving obtained by loading the units as per equal incremental production cost.
c) Explain with illustrative transfer function of the load frequency control of two area system. Draw the block diagram for two area system.

Section – II

Q.4 Solve any four. **16**

a) Explain system state classification with neat diagram.
b) Explain the different methods of improving voltage stability.
c) Explain specifications of load compensator.
d) Explain the difference between voltage angle and voltage stability.
e) Explain the necessity of reactive power compensation.

Q.5 Solve any two **12**

a) Write the advantages and dis-advantages of different types of compensating equipment for transmission system.

b) Explain the necessity of power system security.

c) Explain effective counter measures to prevent voltage instability & methods of improving voltage stability.

Seat No.	

Set **S**

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power System and Operation Control (BTN07707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve All MCQ Questions **14**

1) Which of the VAR compensators can be used for both heavy and light load conditions _____
a) SVC b) Shunt Reactor
c) Series Capacitor d) None of the above

2) A security analysis program uses _____
a) AC load flow b) DC load flow
c) Both AC and DC load flow d) None

3) Power system static security level are _____
a) 4 b) 5
c) 6 d) 2

4) Voltage stability problem normally occurs _____
a) Heavily stressed system b) Medium stressed system
c) Low stressed system d) None of these

5) Voltage stability is basically _____
a) Generator stability b) Load stability
c) Transformer stability d) None

6) Security assessment involves _____
a) System monitoring b) Contingency analysis
c) Both of above d) Not divided

7) Thermal unit constraint considered in unit commitment problem is ____
a) Minimum up-down time b) Crew constraint
c) Start up cost d) All of these

8) Power balance equation is _____ constraint

a) Equality b) Inequality
c) Security d) Branch transfer capacity

9) The penalty factor ____

a) Is always less than 1 b) Is always more than 1
c) May be more or less than 1 d) Is equal to or less than 1

10) Economic dispatch problem _____

a) To minimize the operating cost
b) To minimize fuel cost only
c) To minimize the load demand
d) To minimize the cost of transportation

11) What is the unit of transmission loss coefficient?

a) MW b) $(MW)^{-1}$
c) Unit less d) $(MW)^{2}$

12) The main economic factor in power system operation is _____

a) The cost of reactive power consumption
b) The cost of power generation
c) The cost of operation and maintenance
d) The cost of power transmission

13) The most efficient unit is loaded first then the less efficient unit follow, is called _____

a) Priority ordering b) Dynamic Programming
c) Patton's Security d) None of these

14) A unit when scheduled when scheduled for connection tod to be the system is said _____

a) Loaded b) Committed
c) Disconnected d) All of these

Seat No.		Set	S

Fourth.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power System and Operation Control (BTN07707)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain with a mathematical formulation, optimum generation allocation without transmission losses
b) Explain the different thermal unit constrains.
c) What do you understand by production cost of power generated?
d) What is mean by spinning reserve?
e) Explain speed governing system with neat sketch.

Q.3 Solve any two. **12**

a) What are methods of unit commitment? With a suitable example explain Dynamic Programming method of unit commitment.
b) The fuel input per hour of plant 1 & plant 2 are given as follows
$F_1 = 0.2P_1^2 + 40P_1 + 120$ Rs/hr
$F_2 = 0.25P_2^2 + 30P_2 + 150$ Rs/hr
Determine the economic operating schedule and corresponding cost of generation if the maximum & minimum loading on each unit is 100MW & 25MW. The shared by both units demand is 180MW and transmission losses neglected. If load is equally shared by both units, determine saving obtained by loading the units as per equal incremental production cost.
c) Explain with illustrative transfer function of the load frequency control of two area system. Draw the block diagram for two area system.

Section – II

Q.4 Solve any four. **16**

a) Explain system state classification with neat diagram.
b) Explain the different methods of improving voltage stability.
c) Explain specifications of load compensator.
d) Explain the difference between voltage angle and voltage stability.
e) Explain the necessity of reactive power compensation.

Q.5 Solve any two **12**

a) Write the advantages and dis-advantages of different types of compensating equipment for transmission system.

b) Explain the necessity of power system security.

c) Explain effective counter measures to prevent voltage instability & methods of improving voltage stability.

Seat No.	

Set **P**

Fourth Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Smart Grid Technology (BTN07721)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following is not the characteristic of the existing grid?
a) Manual Monitoring b) Failures and Blackout
c) Self-healing d) One way communication

2) Which of the following is not the characteristic of the existing grid?
a) Automated Metering Instrument
b) Alternate Metering Instrument
c) Advance Metering Infrastructure
d) Advance Metering Instrument

3) Which of the following types of loading pattern are prone to cause voltage Instability in the micro grid?
a) Constant power loads
b) Voltage dependent loads
c) Frequency dependent loads
d) All of the above

4) The control of Micro grid is performed by the ____.
a) SCADA System b) PLC System
c) Smart grid System d) None of the above

5) The data retrieval from smart meters and decision making should be as quick as possible by using which software?
a) ETAP b) EMS
c) SCADA d) PWA

6) The following types of inverters may not be suitable for grid connected mode ____.
a) Grid feeding converters b) Grid forming converters
c) Grid supporting converters d) None of the above

7) Smart Grid goals include all but the following:
a) Potentially Reducing Our Carbon Foot-print
b) Introducing advancements and efficiencies yet to be envisioned
c) Assimilate all cultures to become American
d) Maintaining Grid Affordability

8) The transmission network is typically operated by ____.
a) Load Dispatch Centers
b) Distribution Company
c) Regional Load Dispatch Center
d) Generation Company

9) The Main difference between Conventional Grid & Smart Grid is ____.
a) Unidirectional Flow of Power
b) Unidirectional and bidirectional flow of power and information respectively
c) Bidirectional flow of information
d) Bidirectional & Unidirectional flow of power

10) Energy Services Interface (ESI) communicates with other domain via: ____.
a) AMI infrastructure or Internet
b) Home Area Network
c) Local Area Network
d) None of the above

11) How much power is lost in the grid due to resistance?
a) 2-5% b) 7-10%
c) 11-14% d) 15-18%

12) The simplest form of conventional grid is ____.
a) Smart grid b) Radial grid
c) Linear grid d) Interconnected grid

13) PQM stands for ____.
a) Power Quantity Management b) Power Quality Management
c) Power Quantity Measurement d) Power Quality Measurement

14) Smart meter is an important element in building the smart grid. These advanced meters ____.
a) Measure electricity usage in real time
b) Can send data to and from electric companies and their customers
c) Allows companies to give customers more information about their electricity usage and communicate current electricity prices
d) All of the above

SLR-BD-616

Seat No.	

Set P

Fourth Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Smart Grid Technology (BTN07721)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION - I

Q.2 Solve the following: (Any Four) **16**

a) Define Smart Grid and give its functions.
b) Explain Working of IED with diagram.
c) Explain PMU and its importance in Smart Grid.
d) What Is the Challenge Being faced for electrifying India's rural Community?
e) What are the Six Key Component of Smart Grid.

Q.3 Solve the following: (Any Two) **12**

a) What is a Virtual Power Plant? How can a virtual power plant system contribute to a more sustainable world?
b) What is Geographic Information System (GIS)? Explain the components of GIS.
c) Describe the opportunities and challenges relate to smart grid.

SECTION - II

Q.4 Attempt the following: (Any Four) **16**

a) Describe the power quality issues of grid connected renewable energy resources.
b) Write a note on 'Web based Power Quality Monitoring'.
c) What is difference between OMS and DMS?
d) Why power electronics technology is important in the grid connected system?
e) What are the methods of energy management?

Q.5 Attempt the following: (Any Two) **12**

a) What are the Visualization Techniques used in Smart Grid system.
b) What is the difference between smart grid and power grid?
c) Describe the concept of power quality conditioners related to smart grid.

Seat No.	

Set **Q**

Fourth Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Smart Grid Technology (BTN07721)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The transmission network is typically operated by ____.
a) Load Dispatch Centers
b) Distribution Company
c) Regional Load Dispatch Center
d) Generation Company

2) The Main difference between Conventional Grid & Smart Grid is ____.
a) Unidirectional Flow of Power
b) Unidirectional and bidirectional flow of power and information respectively
c) Bidirectional flow of information
d) Bidirectional & Unidirectional flow of power

3) Energy Services Interface (ESI) communicates with other domain via: ____.
a) AMI infrastructure or Internet
b) Home Area Network
c) Local Area Network
d) None of the above

4) How much power is lost in the grid due to resistance?
a) 2-5% b) 7-10%
c) 11-14% d) 15-18%

5) The simplest form of conventional grid is ____.
a) Smart grid b) Radial grid
c) Linear grid d) Interconnected grid

6) PQM stands for ____.
a) Power Quantity Management b) Power Quality Management
c) Power Quantity Measurement d) Power Quality Measurement

7) Smart meter is an important element in building the smart grid. These advanced meters ____.
a) Measure electricity usage in real time
b) Can send data to and from electric companies and their customers
c) Allows companies to give customers more information about their electricity usage and communicate current electricity prices
d) All of the above

8) Which of the following is not the characteristic of the existing grid?
a) Manual Monitoring
b) Failures and Blackout
c) Self-healing
d) One way communication

9) Which of the following is not the characteristic of the existing grid?
a) Automated Metering Instrument
b) Alternate Metering Instrument
c) Advance Metering Infrastructure
d) Advance Metering Instrument

10) Which of the following types of loading pattern are prone to cause voltage Instability in the micro grid?
a) Constant power loads
b) Voltage dependent loads
c) Frequency dependent loads
d) All of the above

11) The control of Micro grid is performed by the ____.
a) SCADA System
b) PLC System
c) Smart grid System
d) None of the above

12) The data retrieval from smart meters and decision making should be as quick as possible by using which software?
a) ETAP
b) EMS
c) SCADA
d) PWA

13) The following types of inverters may not be suitable for grid connected mode ____.
a) Grid feeding converters
b) Grid forming converters
c) Grid supporting converters
d) None of the above

14) Smart Grid goals include all but the following:
a) Potentially Reducing Our Carbon Foot-print
b) Introducing advancements and efficiencies yet to be envisioned
c) Assimilate all cultures to become American
d) Maintaining Grid Affordability

Seat No.	

Set **Q**

Fourth Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Smart Grid Technology (BTN07721)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION - I

Q.2 Solve the following: (Any Four) **16**

a) Define Smart Grid and give its functions.
b) Explain Working of IED with diagram.
c) Explain PMU and its importance in Smart Grid.
d) What Is the Challenge Being faced for electrifying India's rural Community?
e) What are the Six Key Component of Smart Grid.

Q.3 Solve the following: (Any Two) **12**

a) What is a Virtual Power Plant? How can a virtual power plant system contribute to a more sustainable world?
b) What is Geographic Information System (GIS)? Explain the components of GIS.
c) Describe the opportunities and challenges relate to smart grid.

SECTION - II

Q.4 Attempt the following: (Any Four) **16**

a) Describe the power quality issues of grid connected renewable energy resources.
b) Write a note on 'Web based Power Quality Monitoring'.
c) What is difference between OMS and DMS?
d) Why power electronics technology is important in the grid connected system?
e) What are the methods of energy management?

Q.5 Attempt the following: (Any Two) **12**

a) What are the Visualization Techniques used in Smart Grid system.
b) What is the difference between smart grid and power grid?
c) Describe the concept of power quality conditioners related to smart grid.

Seat No.	

Set **R**

Fourth Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Smart Grid Technology (BTN07721)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) How much power is lost in the grid due to resistance?
a) 2-5% b) 7-10%
c) 11-14% d) 15-18%

2) The simplest form of conventional grid is _____.
a) Smart grid b) Radial grid
c) Linear grid d) Interconnected grid

3) PQM stands for _____.
a) Power Quantity Management b) Power Quality Management
c) Power Quantity Measurement d) Power Quality Measurement

4) Smart meter is an important element in building the smart grid. These advanced meters _____.
a) Measure electricity usage in real time
b) Can send data to and from electric companies and their customers
c) Allows companies to give customers more information about their electricity usage and communicate current electricity prices
d) All of the above

5) Which of the following is not the characteristic of the existing grid?
a) Manual Monitoring b) Failures and Blackout
c) Self-healing d) One way communication

6) Which of the following is not the characteristic of the existing grid?
a) Automated Metering Instrument
b) Alternate Metering Instrument
c) Advance Metering Infrastructure
d) Advance Metering Instrument

7) Which of the following types of loading pattern are prone to cause voltage Instability in the micro grid?
a) Constant power loads
b) Voltage dependent loads
c) Frequency dependent loads
d) All of the above

8) The control of Micro grid is performed by the ____.
a) SCADA System
b) PLC System
c) Smart grid System
d) None of the above

9) The data retrieval from smart meters and decision making should be as quick as possible by using which software?
a) ETAP
b) EMS
c) SCADA
d) PWA

10) The following types of inverters may not be suitable for grid connected mode ____.
a) Grid feeding converters
b) Grid forming converters
c) Grid supporting converters
d) None of the above

11) Smart Grid goals include all but the following:
a) Potentially Reducing Our Carbon Foot-print
b) Introducing advancements and efficiencies yet to be envisioned
c) Assimilate all cultures to become American
d) Maintaining Grid Affordability

12) The transmission network is typically operated by ____.
a) Load Dispatch Centers
b) Distribution Company
c) Regional Load Dispatch Center
d) Generation Company

13) The Main difference between Conventional Grid & Smart Grid is ____.
a) Unidirectional Flow of Power
b) Unidirectional and bidirectional flow of power and information respectively
c) Bidirectional flow of information
d) Bidirectional & Unidirectional flow of power

14) Energy Services Interface (ESI) communicates with other domain via: ____.
a) AMI infrastructure or Internet
b) Home Area Network
c) Local Area Network
d) None of the above

Seat No.	

Set **R**

Fourth Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Smart Grid Technology (BTN07721)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION - I

Q.2 Solve the following: (Any Four) **16**

a) Define Smart Grid and give its functions.
b) Explain Working of IED with diagram.
c) Explain PMU and its importance in Smart Grid.
d) What Is the Challenge Being faced for electrifying India's rural Community?
e) What are the Six Key Component of Smart Grid.

Q.3 Solve the following: (Any Two) **12**

a) What is a Virtual Power Plant? How can a virtual power plant system contribute to a more sustainable world?
b) What is Geographic Information System (GIS)? Explain the components of GIS.
c) Describe the opportunities and challenges relate to smart grid.

SECTION - II

Q.4 Attempt the following: (Any Four) **16**

a) Describe the power quality issues of grid connected renewable energy resources.
b) Write a note on 'Web based Power Quality Monitoring'.
c) What is difference between OMS and DMS?
d) Why power electronics technology is important in the grid connected system?
e) What are the methods of energy management?

Q.5 Attempt the following: (Any Two) **12**

a) What are the Visualization Techniques used in Smart Grid system.
b) What is the difference between smart grid and power grid?
c) Describe the concept of power quality conditioners related to smart grid.

Seat No.	

Set **S**

Fourth Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Smart Grid Technology (BTN07721)

Day & Date: Thursday, 05-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The following types of inverters may not be suitable for grid connected mode ____.
a) Grid feeding converters
b) Grid forming converters
c) Grid supporting converters
d) None of the above

2) Smart Grid goals include all but the following:
a) Potentially Reducing Our Carbon Foot-print
b) Introducing advancements and efficiencies yet to be envisioned
c) Assimilate all cultures to become American
d) Maintaining Grid Affordability

3) The transmission network is typically operated by ____.
a) Load Dispatch Centers
b) Distribution Company
c) Regional Load Dispatch Center
d) Generation Company

4) The Main difference between Conventional Grid & Smart Grid is ____.
a) Unidirectional Flow of Power
b) Unidirectional and bidirectional flow of power and information respectively
c) Bidirectional flow of information
d) Bidirectional & Unidirectional flow of power

5) Energy Services Interface (ESI) communicates with other domain via: ____.
a) AMI infrastructure or Internet
b) Home Area Network
c) Local Area Network
d) None of the above

6) How much power is lost in the grid due to resistance?
a) 2-5% b) 7-10%
c) 11-14% d) 15-18%

7) The simplest form of conventional grid is ____.
a) Smart grid b) Radial grid
c) Linear grid d) Interconnected grid

8) PQM stands for ____.
a) Power Quantity Management b) Power Quality Management
c) Power Quantity Measurement d) Power Quality Measurement

9) Smart meter is an important element in building the smart grid. These advanced meters ____.
a) Measure electricity usage in real time
b) Can send data to and from electric companies and their customers
c) Allows companies to give customers more information about their electricity usage and communicate current electricity prices
d) All of the above

10) Which of the following is not the characteristic of the existing grid?
a) Manual Monitoring b) Failures and Blackout
c) Self-healing d) One way communication

11) Which of the following is not the characteristic of the existing grid?
a) Automated Metering Instrument
b) Alternate Metering Instrument
c) Advance Metering Infrastructure
d) Advance Metering Instrument

12) Which of the following types of loading pattern are prone to cause voltage Instability in the micro grid?
a) Constant power loads
b) Voltage dependent loads
c) Frequency dependent loads
d) All of the above

13) The control of Micro grid is performed by the ____.
a) SCADA System b) PLC System
c) Smart grid System d) None of the above

14) The data retrieval from smart meters and decision making should be as quick as possible by using which software?
a) ETAP b) EMS
c) SCADA d) PWA

Seat No.	

Set **S**

Fourth Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Smart Grid Technology (BTN07721)

Day & Date: Thursday, 05-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION - I

Q.2 Solve the following: (Any Four) **16**

a) Define Smart Grid and give its functions.
b) Explain Working of IED with diagram.
c) Explain PMU and its importance in Smart Grid.
d) What Is the Challenge Being faced for electrifying India's rural Community?
e) What are the Six Key Component of Smart Grid.

Q.3 Solve the following: (Any Two) **12**

a) What is a Virtual Power Plant? How can a virtual power plant system contribute to a more sustainable world?
b) What is Geographic Information System (GIS)? Explain the components of GIS.
c) Describe the opportunities and challenges relate to smart grid.

SECTION - II

Q.4 Attempt the following: (Any Four) **16**

a) Describe the power quality issues of grid connected renewable energy resources.
b) Write a note on 'Web based Power Quality Monitoring'.
c) What is difference between OMS and DMS?
d) Why power electronics technology is important in the grid connected system?
e) What are the methods of energy management?

Q.5 Attempt the following: (Any Two) **12**

a) What are the Visualization Techniques used in Smart Grid system.
b) What is the difference between smart grid and power grid?
c) Describe the concept of power quality conditioners related to smart grid.

SLR-BD-617

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power System Planning (BTN07711)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Distribution automation (DA) is a family of technologies, including _____.
a) sensors,
b) processors,
c) information and communication networks
d) all of above

2) Short term regular variations related to the calendar or time of day is known as _____.
a) Trend b) Seasonality
c) Cycles d) Random Variations

3) The extrapolation method is based on the _____.
a) Curve fitting to present data
b) Extrapolation of pastdata
c) Extrapolation of present data
d) Curve fitting to previous data available

4) Factors affecting load forecasting are _____.
a) Weather condition b) Time factors
c) Special events d) All of these

5) In order to have a lower cost of electrical energy generation _____.
a) The load factor and diversity factor should be low
b) The load factor should be low but diversity factor should be high
c) The load factor should be high but diversity factor should be low
d) The load factor and diversity factor should be high

6) Distribution SCADA means _____.
   a) data acquisition
   b) man - machine interface
   c) data archiving
   d) all of the above

7) For Long term planning time period is _____.
   a) 0-2 years
   b) 2-5 years
   c) 5-10 years
   d) All above

8) The main objective of energy management is to _____.
   a) Minimize energy cost
   b) Minimum environmental effects
   c) Maintain optimum energy procurement and utilization
   d) All of these

9) The reduction of utility load primarily during peak demand is known as _____.
   a) Peak clipping
   b) Load shifting
   c) Valley filling
   d) MTP analysis

10) The demand side management can be achieved by the technique of _____.
   a) Time of day pricing and metering
   b) Multi - utility power exchange model
   c) Load management
   d) All of these

11) The transmission planning effort includes _____.
   a) technical aspects of transmission studies
   b) clarifying study assumptions
   c) undertaking technical analysis, documenting study results
   d) All above

12) Transmission efficiency of line increases with the _____.
   a) Decrease in power factor and voltage
   b) Increase in power factor and voltage
   c) Increase in power factor but Decrease in voltage
   d) Increase in Voltage but Decrease in power factor

13) Energy conservation Usually requires _____.
   a) New investment in more efficient equipments
   b) Replace old instruments
   c) Small decrease in convenience or comfort also tolerated
   d) All above

14) Demand side management is required to _____.
   a) Reduce overall cost of installed capacity
   b) Reduce needs of peaking stations
   c) Ensure quality and equity of supply
   d) All above

SLR-BD-617

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power System Planning (BTN07711)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following: **16**

a) Give the classification of load and Explain load growth characteristics for various loads.
b) Describe different methodologies used for load forecasting.
c) Elaborate weather load model and explain how to get peak demand forecasting?
d) Write a short note on generation sources.
e) Explain Long term Planning.

Q.3 Attempt any two of the following: **12**

a) Explain the objectives of generation planning.
b) Write note on Cost Analysis.
c) What do you mean by Distribution Automation? Explain tools of distribution automation.

Section – II

Q.4 Attempt any four of the following: **16**

a) Explain the Objectives of Transmission Planning.
b) What do you mean by Energy audit?
c) Write short note on listing of energy conservation opportunities (ECOs).
d) Explain the network reconfiguration.
e) Discuss energy conservation measures for industries.

Q.5 Attempt any TWO. **12**

a) Explain the concept of Demand Side Management. Discuss the steps involved in DSM Management.
b) Explain New algorithms and methods relating to power system planning.
c) Describe the following terms of load control
1) Peak clipping
2) Valley filling
3) Load shedding
4) Strategic energy conservation

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power System Planning (BTN07711)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The main objective of energy management is to _____.
a) Minimize energy cost
b) Minimum environmental effects
c) Maintain optimum energy procurement and utilization
d) All of these

2) The reduction of utility load primarily during peak demand is known as _____.
a) Peak clipping b) Load shifting
c) Valley filling d) MTP analysis

3) The demand side management can be achieved by the technique of _____.
a) Time of day pricing and metering
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c) Load management
d) All of these

4) The transmission planning effort includes _____.
a) technical aspects of transmission studies
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5) Transmission efficiency of line increases with the _____.
a) Decrease in power factor and voltage
b) Increase in power factor and voltage
c) Increase in power factor but Decrease in voltage
d) Increase in Voltage but Decrease in power factor

6) Energy conservation Usually requires _____.
   a) New investment in more efficient equipments
   b) Replace old instruments
   c) Small decrease in convenience or comfort also tolerated
   d) All above

7) Demand side management is required to _____.
   a) Reduce overall cost of installed capacity
   b) Reduce needs of peaking stations
   c) Ensure quality and equity of supply
   d) All above

8) Distribution automation (DA) is a family of technologies, including _____.
   a) sensors,
   b) processors,
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   a) Trend b) Seasonality
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11) Factors affecting load forecasting are _____.
   a) Weather condition b) Time factors
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12) In order to have a lower cost of electrical energy generation _____.
   a) The load factor and diversity factor should be low
   b) The load factor should be low but diversity factor should be high
   c) The load factor should be high but diversity factor should be low
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13) Distribution SCADA means _____.
   a) data acquisition b) man - machine interface
   c) data archiving d) all of the above

14) For Long term planning time period is _____.
   a) 0-2 years b) 2-5 years
   c) 5-10 years d) All above

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power System Planning (BTN07711)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following: **16**

a) Give the classification of load and Explain load growth characteristics for various loads.
b) Describe different methodologies used for load forecasting.
c) Elaborate weather load model and explain how to get peak demand forecasting?
d) Write a short note on generation sources.
e) Explain Long term Planning.

Q.3 Attempt any two of the following: **12**

a) Explain the objectives of generation planning.
b) Write note on Cost Analysis.
c) What do you mean by Distribution Automation? Explain tools of distribution automation.

Section – II

Q.4 Attempt any four of the following: **16**

a) Explain the Objectives of Transmission Planning.
b) What do you mean by Energy audit?
c) Write short note on listing of energy conservation opportunities (ECOs).
d) Explain the network reconfiguration.
e) Discuss energy conservation measures for industries.

Q.5 Attempt any TWO. **12**

a) Explain the concept of Demand Side Management. Discuss the steps involved in DSM Management.
b) Explain New algorithms and methods relating to power system planning.
c) Describe the following terms of load control
1) Peak clipping
2) Valley filling
3) Load shedding
4) Strategic energy conservation

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power System Planning (BTN07711)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The transmission planning effort includes _____.
a) technical aspects of transmission studies
b) clarifying study assumptions
c) undertaking technical analysis, documenting study results
d) All above

2) Transmission efficiency of line increases with the _____.
a) Decrease in power factor and voltage
b) Increase in power factor and voltage
c) Increase in power factor but Decrease in voltage
d) Increase in Voltage but Decrease in power factor

3) Energy conservation Usually requires _____.
a) New investment in more efficient equipments
b) Replace old instruments
c) Small decrease in convenience or comfort also tolerated
d) All above

4) Demand side management is required to _____.
a) Reduce overall cost of installed capacity
b) Reduce needs of peaking stations
c) Ensure quality and equity of supply
d) All above

5) Distribution automation (DA) is a family of technologies, including _____.
a) sensors,
b) processors,
c) information and communication networks
d) all of above

6) Short term regular variations related to the calendar or time of day is known as _____.
   a) Trend
   b) Seasonality
   c) Cycles
   d) Random Variations

7) The extrapolation method is based on the _____.
   a) Curve fitting to present data
   b) Extrapolation of pastdata
   c) Extrapolation of present data
   d) Curve fitting to previous data available

8) Factors affecting load forecasting are _____.
   a) Weather condition
   b) Time factors
   c) Special events
   d) All of these

9) In order to have a lower cost of electrical energy generation _____.
   a) The load factor and diversity factor should be low
   b) The load factor should be low but diversity factor should be high
   c) The load factor should be high but diversity factor should be low
   d) The load factor and diversity factor should be high

10) Distribution SCADA means _____.
   a) data acquisition
   b) man - machine interface
   c) data archiving
   d) all of the above

11) For Long term planning time period is _____.
   a) 0-2 years
   b) 2-5 years
   c) 5-10 years
   d) All above

12) The main objective of energy management is to _____.
   a) Minimize energy cost
   b) Minimum environmental effects
   c) Maintain optimum energy procurement and utilization
   d) All of these

13) The reduction of utility load primarily during peak demand is known as _____.
   a) Peak clipping
   b) Load shifting
   c) Valley filling
   d) MTP analysis

14) The demand side management can be achieved by the technique of _____.
   a) Time of day pricing and metering
   b) Multi - utility power exchange model
   c) Load management
   d) All of these

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power System Planning (BTN07711)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following: **16**

a) Give the classification of load and Explain load growth characteristics for various loads.
b) Describe different methodologies used for load forecasting.
c) Elaborate weather load model and explain how to get peak demand forecasting?
d) Write a short note on generation sources.
e) Explain Long term Planning.

Q.3 Attempt any two of the following: **12**

a) Explain the objectives of generation planning.
b) Write note on Cost Analysis.
c) What do you mean by Distribution Automation? Explain tools of distribution automation.

Section – II

Q.4 Attempt any four of the following: **16**

a) Explain the Objectives of Transmission Planning.
b) What do you mean by Energy audit?
c) Write short note on listing of energy conservation opportunities (ECOs).
d) Explain the network reconfiguration.
e) Discuss energy conservation measures for industries.

Q.5 Attempt any TWO. **12**

a) Explain the concept of Demand Side Management. Discuss the steps involved in DSM Management.
b) Explain New algorithms and methods relating to power system planning.
c) Describe the following terms of load control
1) Peak clipping
2) Valley filling
3) Load shedding
4) Strategic energy conservation

Seat No.	

Set **S**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power System Planning (BTN07711)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Distribution SCADA means _____.
a) data acquisition b) man - machine interface
c) data archiving d) all of the above

2) For Long term planning time period is _____.
a) 0-2 years b) 2-5 years
c) 5-10 years d) All above

3) The main objective of energy management is to _____.
a) Minimize energy cost
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c) Maintain optimum energy procurement and utilization
d) All of these

4) The reduction of utility load primarily during peak demand is known as _____.
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5) The demand side management can be achieved by the technique of _____.
a) Time of day pricing and metering
b) Multi - utility power exchange model
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6) The transmission planning effort includes _____.
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7) Transmission efficiency of line increases with the _____.
   a) Decrease in power factor and voltage
   b) Increase in power factor and voltage
   c) Increase in power factor but Decrease in voltage
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8) Energy conservation Usually requires _____.
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   b) Replace old instruments
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9) Demand side management is required to _____.
   a) Reduce overall cost of installed capacity
   b) Reduce needs of peaking stations
   c) Ensure quality and equity of supply
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10) Distribution automation (DA) is a family of technologies, including _____.
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11) Short term regular variations related to the calendar or time of day is known as _____.
   a) Trend
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   c) Cycles
   d) Random Variations

12) The extrapolation method is based on the _____.
   a) Curve fitting to present data
   b) Extrapolation of pastdata
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13) Factors affecting load forecasting are _____.
   a) Weather condition
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   c) Special events
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14) In order to have a lower cost of electrical energy generation _____.
   a) The load factor and diversity factor should be low
   b) The load factor should be low but diversity factor should be high
   c) The load factor should be high but diversity factor should be low
   d) The load factor and diversity factor should be high

SLR-BD-617

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Power System Planning (BTN07711)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following: **16**

a) Give the classification of load and Explain load growth characteristics for various loads.
b) Describe different methodologies used for load forecasting.
c) Elaborate weather load model and explain how to get peak demand forecasting?
d) Write a short note on generation sources.
e) Explain Long term Planning.

Q.3 Attempt any two of the following: **12**

a) Explain the objectives of generation planning.
b) Write note on Cost Analysis.
c) What do you mean by Distribution Automation? Explain tools of distribution automation.

Section – II

Q.4 Attempt any four of the following: **16**

a) Explain the Objectives of Transmission Planning.
b) What do you mean by Energy audit?
c) Write short note on listing of energy conservation opportunities (ECOs).
d) Explain the network reconfiguration.
e) Discuss energy conservation measures for industries.

Q.5 Attempt any TWO. **12**

a) Explain the concept of Demand Side Management. Discuss the steps involved in DSM Management.
b) Explain New algorithms and methods relating to power system planning.
c) Describe the following terms of load control
1) Peak clipping
2) Valley filling
3) Load shedding
4) Strategic energy conservation

SLR-BD-618

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (BTN07712)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Third mode of propagation is called as _____.
a) Line to ground b) Phase to phase
c) Homopolar d) Inter-phase

2) For Aeolian vibration the frequency of vibration is usually limited to _____ Hz and the amplitudes less than _____cm.
a) 20 Hz, 2.5 cm b) 25 Hz, 2.5 cm
c) 50 Hz, 2.5 cm d) 50 Hz, 3.5 cm

3) The positive sequence reactance per phase in ohms/km in 750 kV transmission line is _____.
a) 0.272 b) 0.227
c) 0.722 d) None of these

4) Operating 750 KV line gives AN at a level of _____.
a) 50 dB b) 55.4 dB
c) 52 dB d) 58.5 dB

5) The allowable noise level at one MHz is _____.
a) 22 dB b) 26 dB
c) 30 dB d) 32 dB

6) Voltage gradient on a transmission line conductor is highest _____.
a) at the surface of the conductor
b) at the centre of the conductor
c) at the distance of one radius from the surface
d) none of these

7) Refraction coefficient of current (J_T) is given by _____.

a) $\frac{2z_0}{z_0 + z_t}$ b) $\frac{z_0 - z_t}{z_0 + z_t}$

c) $\frac{2z_t}{z_0 + z_t}$ d) $\frac{z_t - z_0}{z_0 + z_t}$

8) Refraction coefficient of voltage (K_T) for open ended line _____.

a) +2 b) 1

c) -1 d) 0

9) Voltage control in a power transmission line is achieved by _____.

a) Booster transformer b) Tap-changing transformer

c) Injection of reactive power d) All of these

10) The over-voltage surges in power systems may be caused by _____.

a) lightning b) switching

c) resonance d) any of the above

11) The entire line performance can be determined by _____.

a) Sending end power circle diagram

b) Receiving end power circle diagram

c) Universal power circle diagram

d) a or c

12) The dimensions of constants B and C are respectively _____ and _____.

a) Ohm, Siemens b) Mho, Siemens

c) Both are dimensionless d) Siemens, Ohm

13) Why are the conductors used for higher voltage transmission stranded?

a) Ease of handling b) Cheaper cost

c) Reduced resistivity d) Increase in tensile strength

14) Insulation of the modern EHV lines is designed based on _____.

a) Lighting voltage b) Switching voltage

c) Corona d) RI

SLR-BD-618

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (BTN07712)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following: 16

a) Explain in detail advantages and disadvantages of high voltage.
b) Explain the relation between temperature rise and current carrying capacity of EHVAC line.
c) Explain the limits for radio interference.
d) Derive expression for distribution of voltage gradient on sub-conductors of bundle.
e) Explain reflection and refraction of travelling waves.
f) Derive equation for line energization with trapped charge voltage.

Q.3 Attempt any two of the following: 12

a) Explain the different mechanical considerations in EHV line performance?
b) What is standing wave? Derive equation for open ended line double exponential response.
c) Derive the charge potential relations of multi-conductor lines.

Section – II

Q.4 Attempt any four of the following: 16

a) Explain the ferro-resonance over voltages.
b) State and explain sources of over voltages.
c) Describe static reactive compensating system.
d) Explain the term power circle diagram and its use.
e) Explain conductor-tower, conductor-ground and conductor-conductor clearances.
f) Explain the factors under steady state in design of EHV lines.

Q.5 Attempt any Two. 12

a) Explain the term sinusoidal excitation lumped parameter circuit.
b) A 100 MVA 230kV 50 Hz transformer has x_t = 12% and is connected to a line 200 km long which has an inductance of 1 mH/km. The filter, connected to the LV 33 kV side of the transformer, is required to suppress the 5^{th} harmonic generated by the TCR to 1% of I_n. Calculate the value of filter capacitor if the filter inductance used is 2mH.
c) Explain line insulation design based upon transient over voltages in detail.

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (BTN07712)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Refraction coefficient of voltage (K_T) for open ended line _____.
a) +2 b) 1
c) -1 d) 0

2) Voltage control in a power transmission line is achieved by _____.
a) Booster transformer b) Tap-changing transformer
c) Injection of reactive power d) All of these

3) The over-voltage surges in power systems may be caused by _____.
a) lightning b) switching
c) resonance d) any of the above

4) The entire line performance can be determined by _____.
a) Sending end power circle diagram
b) Receiving end power circle diagram
c) Universal power circle diagram
d) a or c

5) The dimensions of constants B and C are respectively _____ and _____.
a) Ohm, Siemens b) Mho, Siemens
c) Both are dimensionless d) Siemens, Ohm

6) Why are the conductors used for higher voltage transmission stranded?
a) Ease of handling b) Cheaper cost
c) Reduced resistivity d) Increase in tensile strength

7) Insulation of the modern EHV lines is designed based on _____.
a) Lighting voltage b) Switching voltage
c) Corona d) RI

8) Third mode of propagation is called as _____.
a) Line to ground
b) Phase to phase
c) Homopolar
d) Inter-phase

9) For Aeolian vibration the frequency of vibration is usually limited to _____ Hz and the amplitudes less than _____cm.
a) 20 Hz, 2.5 cm
b) 25 Hz, 2.5 cm
c) 50 Hz, 2.5 cm
d) 50 Hz, 3.5 cm

10) The positive sequence reactance per phase in ohms/km in 750 kV transmission line is _____.
a) 0.272
b) 0.227
c) 0.722
d) None of these

11) Operating 750 KV line gives AN at a level of _____.
a) 50 dB
b) 55.4 dB
c) 52 dB
d) 58.5 dB

12) The allowable noise level at one MHz is _____.
a) 22 dB
b) 26 dB
c) 30 dB
d) 32 dB

13) Voltage gradient on a transmission line conductor is highest _____.
a) at the surface of the conductor
b) at the centre of the conductor
c) at the distance of one radius from the surface
d) none of these

14) Refraction coefficient of current (J_T) is given by _____.
a) $\frac{2z_0}{z_0 + z_t}$
b) $\frac{z_0 - z_t}{z_0 + z_t}$
c) $\frac{2z_t}{z_0 + z_t}$
d) $\frac{z_t - z_0}{z_0 + z_t}$

SLR-BD-618

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (BTN07712)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following: 16

a) Explain in detail advantages and disadvantages of high voltage.
b) Explain the relation between temperature rise and current carrying capacity of EHVAC line.
c) Explain the limits for radio interference.
d) Derive expression for distribution of voltage gradient on sub-conductors of bundle.
e) Explain reflection and refraction of travelling waves.
f) Derive equation for line energization with trapped charge voltage.

Q.3 Attempt any two of the following: 12

a) Explain the different mechanical considerations in EHV line performance?
b) What is standing wave? Derive equation for open ended line double exponential response.
c) Derive the charge potential relations of multi-conductor lines.

Section – II

Q.4 Attempt any four of the following: 16

a) Explain the ferro-resonance over voltages.
b) State and explain sources of over voltages.
c) Describe static reactive compensating system.
d) Explain the term power circle diagram and its use.
e) Explain conductor-tower, conductor-ground and conductor-conductor clearances.
f) Explain the factors under steady state in design of EHV lines.

Q.5 Attempt any Two. 12

a) Explain the term sinusoidal excitation lumped parameter circuit.
b) A 100 MVA 230kV 50 Hz transformer has x_t = 12% and is connected to a line 200 km long which has an inductance of 1 mH/km. The filter, connected to the LV 33 kV side of the transformer, is required to suppress the 5^{th} harmonic generated by the TCR to 1% of I_n. Calculate the value of filter capacitor if the filter inductance used is 2mH.
c) Explain line insulation design based upon transient over voltages in detail.

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (BTN07712)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The entire line performance can be determined by _____.
a) Sending end power circle diagram
b) Receiving end power circle diagram
c) Universal power circle diagram
d) a or c

2) The dimensions of constants B and C are respectively _____ and _____.
a) Ohm, Siemens b) Mho, Siemens
c) Both are dimensionless d) Siemens, Ohm

3) Why are the conductors used for higher voltage transmission stranded?
a) Ease of handling b) Cheaper cost
c) Reduced resistivity d) Increase in tensile strength

4) Insulation of the modern EHV lines is designed based on _____.
a) Lighting voltage b) Switching voltage
c) Corona d) RI

5) Third mode of propagation is called as _____.
a) Line to ground b) Phase to phase
c) Homopolar d) Inter-phase

6) For Aeolian vibration the frequency of vibration is usually limited to _____ Hz and the amplitudes less than _____cm.
a) 20 Hz, 2.5 cm b) 25 Hz, 2.5 cm
c) 50 Hz, 2.5 cm d) 50 Hz, 3.5 cm

7) The positive sequence reactance per phase in ohms/km in 750 kV transmission line is _____.
a) 0.272 b) 0.227
c) 0.722 d) None of these

8) Operating 750 KV line gives AN at a level of _____.
a) 50 dB b) 55.4 dB
c) 52 dB d) 58.5 dB

9) The allowable noise level at one MHz is _____.
a) 22 dB b) 26 dB
c) 30 dB d) 32 dB

10) Voltage gradient on a transmission line conductor is highest _____.
a) at the surface of the conductor
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11) Refraction coefficient of current (J_T) is given by _____.
a) $\frac{2z_0}{z_0 + z_t}$ b) $\frac{z_0 - z_t}{z_0 + z_t}$
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12) Refraction coefficient of voltage (K_T) for open ended line _____.
a) +2 b) 1
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a) Booster transformer b) Tap-changing transformer
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14) The over-voltage surges in power systems may be caused by _____.
a) lightning b) switching
c) resonance d) any of the above

SLR-BD-618

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (BTN07712)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following: 16

a) Explain in detail advantages and disadvantages of high voltage.
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Q.3 Attempt any two of the following: 12

a) Explain the different mechanical considerations in EHV line performance?
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Section – II

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Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (BTN07712)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

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c) -1 d) 0

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c) Both are dimensionless
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d) RI

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b) 26 dB
c) 30 dB
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SLR-BD-618

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (BTN07712)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following: 16

a) Explain in detail advantages and disadvantages of high voltage.
b) Explain the relation between temperature rise and current carrying capacity of EHVAC line.
c) Explain the limits for radio interference.
d) Derive expression for distribution of voltage gradient on sub-conductors of bundle.
e) Explain reflection and refraction of travelling waves.
f) Derive equation for line energization with trapped charge voltage.

Q.3 Attempt any two of the following: 12

a) Explain the different mechanical considerations in EHV line performance?
b) What is standing wave? Derive equation for open ended line double exponential response.
c) Derive the charge potential relations of multi-conductor lines.

Section – II

Q.4 Attempt any four of the following: 16

a) Explain the ferro-resonance over voltages.
b) State and explain sources of over voltages.
c) Describe static reactive compensating system.
d) Explain the term power circle diagram and its use.
e) Explain conductor-tower, conductor-ground and conductor-conductor clearances.
f) Explain the factors under steady state in design of EHV lines.

Q.5 Attempt any Two. 12

a) Explain the term sinusoidal excitation lumped parameter circuit.
b) A 100 MVA 230kV 50 Hz transformer has x_t = 12% and is connected to a line 200 km long which has an inductance of 1 mH/km. The filter, connected to the LV 33 kV side of the transformer, is required to suppress the 5^{th} harmonic generated by the TCR to 1% of I_n. Calculate the value of filter capacitor if the filter inductance used is 2mH.
c) Explain line insulation design based upon transient over voltages in detail.

SLR-BD-620

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Electrical Drives (BTN07714)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) For high frequency choppers the device that is preferred is _____.
a) Thyristor b) TRIAC
c) Transistor d) GTO

2) A four quadrant operation requires _____.
a) Two full converters in series
b) Two full converters connected in parallel
c) Two full converter connected in back to back
d) Two semi converters connected in back to back

3) The operating speed of a synchronous motor can be changed to new fixed value by _____.
a) Changing the load b) Changing the supply voltage
c) Changing frequency d) Using brakes

4) Which duty cycle is preferred if the load requires a constant power for short period of time and rest for sufficient longer duration?
a) Short Time duty
b) Intermittent duty
c) Intermittent duty with starting
d) Intermittent duty with starting and braking

5) During the starting of a slip ring induction motor using rotor resistance starter, the insertion of resistance in the rotor circuit causes: _____.
a) Stator current to increase and torque to decrease
b) Stator current to decrease and torque to increase
c) Stators current to increase and power factor to decrease
d) Power factor to decrease and torque to increase

6) The slip of an induction motor normally does not depends on _____.
a) rotor speed b) synchronous speed
c) shaft torque d) core loss component

7) Speed control by variation of field flux results in _____.
a) Constant power drive b) Constant torque drive
c) Variable power drive d) None of the above

8) Efficiency by using rotor resistance control in IM is _____.
a) High b) Low
c) Very high d) Very low

9) Full-converter can be used in DC motor for regenerative braking in _____.
a) Constant Operation b) Variable Operation
c) Inversion Operation d) Opposite Operation

10) Reluctance motor is a _____.
a) Variable torque motor
b) Low torque variable speed motor
c) Self starting type synchronous motor
d) Low noise, slow speed motor

11) Cycloconverter drive has applications in _____.
a) Low power and low speed operations
b) High power and high speed operations
c) Low power and high speed operations
d) High power and low speed operations

12) Which of the following method is employed when regenerative braking is necessary?
a) DC Chopper b) Variable Resistor
c) Inverter Rectifier d) Motor-generator

13) Applications of dc motor is restricted to a few load speed applications because of _____.
a) cost of motor is high
b) mechanical commutation problems
c) maintenance problem
d) all of above

14) Stepper motor is popular for _____.
a) Speed control b) Position control
c) Torque control d) Both a and b

SLR-BD-620

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Electrical Drives (BTN07714)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following: **16**

a) Describe in details Characteristics of DC motors.
b) Describe in details dynamics of Electric Drives.
c) Explain the working of phase controlled converter fed DC drives.
d) Explain the chopper fed DC separately excited motor in motoring mode.
e) Explain stator voltage control of an induction motor with speed torque characteristics.

Q.3 Attempt any two of the following: **12**

a) Explain the static Kramer method and static schrebius method of speed control of three phase induction motor.
b) Derive fundamental torque equations and components of load torque.
c) Describe in details dual-converter control of DC drive.

Section – II

Q.4 Attempt any four of the following: **16**

a) Draw and explain variable frequency control for synchronous motors.
b) Explain Losses in electrical drive system.
c) Explain with circuit diagram converter circuit for switched reluctance motor.
d) Describe in details Energy efficient operation of drives.
e) Explain drive circuit for stepper motor with neat sketch.

Q.5 Attempt any Two. **12**

a) With neat sketch explain VSI feed induction motor drive also draw block diagram for closed loop control.
b) Draw a neat diagram & explain the Cycloconverter control for synchronous motors.
c) Describe in details improvement of power factor and quality of supply.

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Electrical Drives (BTN07714)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Efficiency by using rotor resistance control in IM is _____.
a) High b) Low
c) Very high d) Very low

2) Full-converter can be used in DC motor for regenerative braking in _____.
a) Constant Operation b) Variable Operation
c) Inversion Operation d) Opposite Operation

3) Reluctance motor is a _____.
a) Variable torque motor
b) Low torque variable speed motor
c) Self starting type synchronous motor
d) Low noise, slow speed motor

4) Cycloconverter drive has applications in _____.
a) Low power and low speed operations
b) High power and high speed operations
c) Low power and high speed operations
d) High power and low speed operations

5) Which of the following method is employed when regenerative braking is necessary?
a) DC Chopper b) Variable Resistor
c) Inverter Rectifier d) Motor-generator

6) Applications of dc motor is restricted to a few load speed applications because of _____.
   a) cost of motor is high
   b) mechanical commutation problems
   c) maintenance problem
   d) all of above

7) Stepper motor is popular for _____.
   a) Speed control b) Position control
   c) Torque control d) Both a and b

8) For high frequency choppers the device that is preferred is _____.
   a) Thyristor b) TRIAC
   c) Transistor d) GTO

9) A four quadrant operation requires _____.
   a) Two full converters in series
   b) Two full converters connected in parallel
   c) Two full converter connected in back to back
   d) Two semi converters connected in back to back

10) The operating speed of a synchronous motor can be changed to new fixed value by _____.
   a) Changing the load b) Changing the supply voltage
   c) Changing frequency d) Using brakes

11) Which duty cycle is preferred if the load requires a constant power for short period of time and rest for sufficient longer duration?
   a) Short Time duty
   b) Intermittent duty
   c) Intermittent duty with starting
   d) Intermittent duty with starting and braking

12) During the starting of a slip ring induction motor using rotor resistance starter, the insertion of resistance in the rotor circuit causes: _____.
   a) Stator current to increase and torque to decrease
   b) Stator current to decrease and torque to increase
   c) Stators current to increase and power factor to decrease
   d) Power factor to decrease and torque to increase

13) The slip of an induction motor normally does not depends on _____.
   a) rotor speed b) synchronous speed
   c) shaft torque d) core loss component

14) Speed control by variation of field flux results in _____.
   a) Constant power drive b) Constant torque drive
   c) Variable power drive d) None of the above

SLR-BD-620

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Electrical Drives (BTN07714)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following: **16**

a) Describe in details Characteristics of DC motors.
b) Describe in details dynamics of Electric Drives.
c) Explain the working of phase controlled converter fed DC drives.
d) Explain the chopper fed DC separately excited motor in motoring mode.
e) Explain stator voltage control of an induction motor with speed torque characteristics.

Q.3 Attempt any two of the following: **12**

a) Explain the static Kramer method and static schrebius method of speed control of three phase induction motor.
b) Derive fundamental torque equations and components of load torque.
c) Describe in details dual-converter control of DC drive.

Section – II

Q.4 Attempt any four of the following: **16**

a) Draw and explain variable frequency control for synchronous motors.
b) Explain Losses in electrical drive system.
c) Explain with circuit diagram converter circuit for switched reluctance motor.
d) Describe in details Energy efficient operation of drives.
e) Explain drive circuit for stepper motor with neat sketch.

Q.5 Attempt any Two. **12**

a) With neat sketch explain VSI feed induction motor drive also draw block diagram for closed loop control.
b) Draw a neat diagram & explain the Cycloconverter control for synchronous motors.
c) Describe in details improvement of power factor and quality of supply.

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Electrical Drives (BTN07714)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Cycloconverter drive has applications in _____.
a) Low power and low speed operations
b) High power and high speed operations
c) Low power and high speed operations
d) High power and low speed operations

2) Which of the following method is employed when regenerative braking is necessary?
a) DC Chopper b) Variable Resistor
c) Inverter Rectifier d) Motor-generator

3) Applications of dc motor is restricted to a few load speed applications because of _____.
a) cost of motor is high
b) mechanical commutation problems
c) maintenance problem
d) all of above

4) Stepper motor is popular for _____.
a) Speed control b) Position control
c) Torque control d) Both a and b

5) For high frequency choppers the device that is preferred is _____.
a) Thyristor b) TRIAC
c) Transistor d) GTO

6) A four quadrant operation requires _____.
a) Two full converters in series
b) Two full converters connected in parallel
c) Two full converter connected in back to back
d) Two semi converters connected in back to back

7) The operating speed of a synchronous motor can be changed to new fixed value by _____.

a) Changing the load
b) Changing the supply voltage
c) Changing frequency
d) Using brakes

8) Which duty cycle is preferred if the load requires a constant power for short period of time and rest for sufficient longer duration?

a) Short Time duty
b) Intermittent duty
c) Intermittent duty with starting
d) Intermittent duty with starting and braking

9) During the starting of a slip ring induction motor using rotor resistance starter, the insertion of resistance in the rotor circuit causes: _____.

a) Stator current to increase and torque to decrease
b) Stator current to decrease and torque to increase
c) Stators current to increase and power factor to decrease
d) Power factor to decrease and torque to increase

10) The slip of an induction motor normally does not depends on _____.

a) rotor speed
b) synchronous speed
c) shaft torque
d) core loss component

11) Speed control by variation of field flux results in _____.

a) Constant power drive
b) Constant torque drive
c) Variable power drive
d) None of the above

12) Efficiency by using rotor resistance control in IM is _____.

a) High
b) Low
c) Very high
d) Very low

13) Full-converter can be used in DC motor for regenerative braking in _____.

a) Constant Operation
b) Variable Operation
c) Inversion Operation
d) Opposite Operation

14) Reluctance motor is a _____.

a) Variable torque motor
b) Low torque variable speed motor
c) Self starting type synchronous motor
d) Low noise, slow speed motor

SLR-BD-620

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Electrical Drives (BTN07714)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following: **16**

a) Describe in details Characteristics of DC motors.
b) Describe in details dynamics of Electric Drives.
c) Explain the working of phase controlled converter fed DC drives.
d) Explain the chopper fed DC separately excited motor in motoring mode.
e) Explain stator voltage control of an induction motor with speed torque characteristics.

Q.3 Attempt any two of the following: **12**

a) Explain the static Kramer method and static schrebius method of speed control of three phase induction motor.
b) Derive fundamental torque equations and components of load torque.
c) Describe in details dual-converter control of DC drive.

Section – II

Q.4 Attempt any four of the following: **16**

a) Draw and explain variable frequency control for synchronous motors.
b) Explain Losses in electrical drive system.
c) Explain with circuit diagram converter circuit for switched reluctance motor.
d) Describe in details Energy efficient operation of drives.
e) Explain drive circuit for stepper motor with neat sketch.

Q.5 Attempt any Two. **12**

a) With neat sketch explain VSI feed induction motor drive also draw block diagram for closed loop control.
b) Draw a neat diagram & explain the Cycloconverter control for synchronous motors.
c) Describe in details improvement of power factor and quality of supply.

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Electrical Drives (BTN07714)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) The slip of an induction motor normally does not depends on _____.
a) rotor speed b) synchronous speed
c) shaft torque d) core loss component

2) Speed control by variation of field flux results in _____.
a) Constant power drive b) Constant torque drive
c) Variable power drive d) None of the above

3) Efficiency by using rotor resistance control in IM is _____.
a) High b) Low
c) Very high d) Very low

4) Full-converter can be used in DC motor for regenerative braking in _____.
a) Constant Operation b) Variable Operation
c) Inversion Operation d) Opposite Operation

5) Reluctance motor is a _____.
a) Variable torque motor
b) Low torque variable speed motor
c) Self starting type synchronous motor
d) Low noise, slow speed motor

6) Cycloconverter drive has applications in _____.
a) Low power and low speed operations
b) High power and high speed operations
c) Low power and high speed operations
d) High power and low speed operations

7) Which of the following method is employed when regenerative braking is necessary?
   a) DC Chopper
   b) Variable Resistor
   c) Inverter Rectifier
   d) Motor-generator

8) Applications of dc motor is restricted to a few load speed applications because of _____.
   a) cost of motor is high
   b) mechanical commutation problems
   c) maintenance problem
   d) all of above

9) Stepper motor is popular for _____.
   a) Speed control
   b) Position control
   c) Torque control
   d) Both a and b

10) For high frequency choppers the device that is preferred is _____.
   a) Thyristor
   b) TRIAC
   c) Transistor
   d) GTO

11) A four quadrant operation requires _____.
   a) Two full converters in series
   b) Two full converters connected in parallel
   c) Two full converter connected in back to back
   d) Two semi converters connected in back to back

12) The operating speed of a synchronous motor can be changed to new fixed value by _____.
   a) Changing the load
   b) Changing the supply voltage
   c) Changing frequency
   d) Using brakes

13) Which duty cycle is preferred if the load requires a constant power for short period of time and rest for sufficient longer duration?
   a) Short Time duty
   b) Intermittent duty
   c) Intermittent duty with starting
   d) Intermittent duty with starting and braking

14) During the starting of a slip ring induction motor using rotor resistance starter, the insertion of resistance in the rotor circuit causes: _____.
   a) Stator current to increase and torque to decrease
   b) Stator current to decrease and torque to increase
   c) Stators current to increase and power factor to decrease
   d) Power factor to decrease and torque to increase

SLR-BD-620

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Electrical Drives (BTN07714)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following: **16**

a) Describe in details Characteristics of DC motors.
b) Describe in details dynamics of Electric Drives.
c) Explain the working of phase controlled converter fed DC drives.
d) Explain the chopper fed DC separately excited motor in motoring mode.
e) Explain stator voltage control of an induction motor with speed torque characteristics.

Q.3 Attempt any two of the following: **12**

a) Explain the static Kramer method and static schrebius method of speed control of three phase induction motor.
b) Derive fundamental torque equations and components of load torque.
c) Describe in details dual-converter control of DC drive.

Section – II

Q.4 Attempt any four of the following: **16**

a) Draw and explain variable frequency control for synchronous motors.
b) Explain Losses in electrical drive system.
c) Explain with circuit diagram converter circuit for switched reluctance motor.
d) Describe in details Energy efficient operation of drives.
e) Explain drive circuit for stepper motor with neat sketch.

Q.5 Attempt any Two. **12**

a) With neat sketch explain VSI feed induction motor drive also draw block diagram for closed loop control.
b) Draw a neat diagram & explain the Cycloconverter control for synchronous motors.
c) Describe in details improvement of power factor and quality of supply.

SLR-BD-621

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Applications in Solar Energy Technology (BTN07715)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the primary advantage of passive solar heating systems over active solar systems?
a) Lower installation cost b) Higher efficiency
c) Greater reliability d) No reliance on sunlight

2) What is the purpose of thermal mass in passive solar design?
a) To block sunlight b) To store and release heat
c) To reflect solar radiation d) To enhance air circulation

3) What is the primary driving force behind natural circulation in a water heating system?
a) Centrifugal force b) Gravitational force
c) Electromagnetic force d) Frictional force

4) Which of the following is NOT a typical component of a standalone solar PV system?
a) Inverter b) Charge controller
c) Grid connection d) Battery bank

5) What is the purpose of an inverter in a solar power system?
a) To store excess energy
b) To convert DC to AC
c) To regulate panel temperature
d) To track the sun's movement

6) How does scaling affect the efficiency of a water heating system?
a) Increases efficiency b) No impact on efficiency
c) Decreases efficiency d) Improves heat transfer

7) What impact does shading have on the performance of a rooftop solar system?

a) No impact
b) Improved efficiency
c) Reduced efficiency
d) Increased battery life

8) What is Triethylene Glycol primarily used for?

a) As a refrigerant to cool the air.
b) As a fuel to generate heat.
c) As an absorbent to capture heat from the solar collectors.
d) As a coolant for the solar panels.

9) What is the role of the desiccant material?

a) To heat the incoming air
b) To absorb and remove moisture from the incoming air
c) To cool the indoor air
d) To filter the air

10) How does a wick-type solar still function?

a) By using mirrors to concentrate sunlight
b) By absorbing sunlight with photovoltaic cells
c) By using a wick to transport water for evaporation
d) By converting sunlight into heat directly

11) What is the primary benefit of using solar desalination in arid regions?

a) Increased soil fertility
b) Reduction in water salinity
c) Generation of electricity
d) Freshwater production in remote areas

12) What is the primary factor that influences the efficiency of a solar drying system?

a) Wind speed
b) Ambient temperature
c) Moon phase
d) Soil composition

13) What role do vents play in a greenhouse drying system?

a) Trap heat inside the greenhouse
b) Increase humidity levels
c) Enhance air circulation
d) Block sunlight

14) What is the primary purpose of a solar swimming pool heating system?

a) Water purification
b) Increasing water circulation
c) Heating the pool water
d) Enhancing pool lighting

SLR-BD-621

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Applications in Solar Energy Technology (BTN07715)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three: **12**

a) Explain
1) Freezing
2) Boiling

b) Describe the "Direct Gain" in passive solar design.

c) Explain the concept of "Solar Vapour Compression Refrigeration."

d) Discuss with neat diagram working of Trombe wall.

Q.3 Attempt any two of the following: **16**

a) Explain swimming pool heating with its advantages.

b) Explain any two methods of passive heating of building.

c) What is Intermittent absorption refrigeration system?

Section – II

Q.4 Attempt any three. **12**

a) Explain simple solar still.

b) Describe Box type solar dryer.

c) What is net metering in rooftop system?

d) What hybrid dryer?

Q.5 Attempt any Two. **16**

a) Explain concept of wick type solar still & active solar still.

b) Explain Bin type grain dryer & solar timber drying.

c) Describe the concept of solar PV street lighting system with its advantages.

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Applications in Solar Energy Technology (BTN07715)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is Triethylene Glycol primarily used for?
a) As a refrigerant to cool the air.
b) As a fuel to generate heat.
c) As an absorbent to capture heat from the solar collectors.
d) As a coolant for the solar panels.

2) What is the role of the desiccant material?
a) To heat the incoming air
b) To absorb and remove moisture from the incoming air
c) To cool the indoor air
d) To filter the air

3) How does a wick-type solar still function?
a) By using mirrors to concentrate sunlight
b) By absorbing sunlight with photovoltaic cells
c) By using a wick to transport water for evaporation
d) By converting sunlight into heat directly

4) What is the primary benefit of using solar desalination in arid regions?
a) Increased soil fertility
b) Reduction in water salinity
c) Generation of electricity
d) Freshwater production in remote areas

5) What is the primary factor that influences the efficiency of a solar drying system?
a) Wind speed
b) Ambient temperature
c) Moon phase
d) Soil composition

6) What role do vents play in a greenhouse drying system?
a) Trap heat inside the greenhouse
b) Increase humidity levels
c) Enhance air circulation
d) Block sunlight

7) What is the primary purpose of a solar swimming pool heating system?
a) Water purification
b) Increasing water circulation
c) Heating the pool water
d) Enhancing pool lighting

8) What is the primary advantage of passive solar heating systems over active solar systems?
a) Lower installation cost
b) Higher efficiency
c) Greater reliability
d) No reliance on sunlight

9) What is the purpose of thermal mass in passive solar design?
a) To block sunlight
b) To store and release heat
c) To reflect solar radiation
d) To enhance air circulation

10) What is the primary driving force behind natural circulation in a water heating system?
a) Centrifugal force
b) Gravitational force
c) Electromagnetic force
d) Frictional force

11) Which of the following is NOT a typical component of a standalone solar PV system?
a) Inverter
b) Charge controller
c) Grid connection
d) Battery bank

12) What is the purpose of an inverter in a solar power system?
a) To store excess energy
b) To convert DC to AC
c) To regulate panel temperature
d) To track the sun's movement

13) How does scaling affect the efficiency of a water heating system?
a) Increases efficiency
b) No impact on efficiency
c) Decreases efficiency
d) Improves heat transfer

14) What impact does shading have on the performance of a rooftop solar system?
a) No impact
b) Improved efficiency
c) Reduced efficiency
d) Increased battery life

SLR-BD-621

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Applications in Solar Energy Technology (BTN07715)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three: **12**

a) Explain
1) Freezing
2) Boiling

b) Describe the "Direct Gain" in passive solar design.

c) Explain the concept of "Solar Vapour Compression Refrigeration."

d) Discuss with neat diagram working of Trombe wall.

Q.3 Attempt any two of the following: **16**

a) Explain swimming pool heating with its advantages.

b) Explain any two methods of passive heating of building.

c) What is Intermittent absorption refrigeration system?

Section – II

Q.4 Attempt any three. **12**

a) Explain simple solar still.

b) Describe Box type solar dryer.

c) What is net metering in rooftop system?

d) What hybrid dryer?

Q.5 Attempt any Two. **16**

a) Explain concept of wick type solar still & active solar still.

b) Explain Bin type grain dryer & solar timber drying.

c) Describe the concept of solar PV street lighting system with its advantages.

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Applications in Solar Energy Technology (BTN07715)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) What is the primary benefit of using solar desalination in arid regions?
a) Increased soil fertility
b) Reduction in water salinity
c) Generation of electricity
d) Freshwater production in remote areas

2) What is the primary factor that influences the efficiency of a solar drying system?
a) Wind speed b) Ambient temperature
c) Moon phase d) Soil composition

3) What role do vents play in a greenhouse drying system?
a) Trap heat inside the greenhouse
b) Increase humidity levels
c) Enhance air circulation
d) Block sunlight

4) What is the primary purpose of a solar swimming pool heating system?
a) Water purification b) Increasing water circulation
c) Heating the pool water d) Enhancing pool lighting

5) What is the primary advantage of passive solar heating systems over active solar systems?
a) Lower installation cost b) Higher efficiency
c) Greater reliability d) No reliance on sunlight

6) What is the purpose of thermal mass in passive solar design?
a) To block sunlight b) To store and release heat
c) To reflect solar radiation d) To enhance air circulation

7) What is the primary driving force behind natural circulation in a water heating system?
   a) Centrifugal force
   b) Gravitational force
   c) Electromagnetic force
   d) Frictional force

8) Which of the following is NOT a typical component of a standalone solar PV system?
   a) Inverter
   b) Charge controller
   c) Grid connection
   d) Battery bank

9) What is the purpose of an inverter in a solar power system?
   a) To store excess energy
   b) To convert DC to AC
   c) To regulate panel temperature
   d) To track the sun's movement

10) How does scaling affect the efficiency of a water heating system?
   a) Increases efficiency
   b) No impact on efficiency
   c) Decreases efficiency
   d) Improves heat transfer

11) What impact does shading have on the performance of a rooftop solar system?
   a) No impact
   b) Improved efficiency
   c) Reduced efficiency
   d) Increased battery life

12) What is Triethylene Glycol primarily used for?
   a) As a refrigerant to cool the air.
   b) As a fuel to generate heat.
   c) As an absorbent to capture heat from the solar collectors.
   d) As a coolant for the solar panels.

13) What is the role of the desiccant material?
   a) To heat the incoming air
   b) To absorb and remove moisture from the incoming air
   c) To cool the indoor air
   d) To filter the air

14) How does a wick-type solar still function?
   a) By using mirrors to concentrate sunlight
   b) By absorbing sunlight with photovoltaic cells
   c) By using a wick to transport water for evaporation
   d) By converting sunlight into heat directly

SLR-BD-621

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Applications in Solar Energy Technology (BTN07715)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three: **12**

a) Explain
1) Freezing
2) Boiling

b) Describe the "Direct Gain" in passive solar design.

c) Explain the concept of "Solar Vapour Compression Refrigeration."

d) Discuss with neat diagram working of Trombe wall.

Q.3 Attempt any two of the following: **16**

a) Explain swimming pool heating with its advantages.

b) Explain any two methods of passive heating of building.

c) What is Intermittent absorption refrigeration system?

Section – II

Q.4 Attempt any three. **12**

a) Explain simple solar still.

b) Describe Box type solar dryer.

c) What is net metering in rooftop system?

d) What hybrid dryer?

Q.5 Attempt any Two. **16**

a) Explain concept of wick type solar still & active solar still.

b) Explain Bin type grain dryer & solar timber drying.

c) Describe the concept of solar PV street lighting system with its advantages.

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Applications in Solar Energy Technology (BTN07715)

Day & Date: Friday 06-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) How does scaling affect the efficiency of a water heating system?
a) Increases efficiency b) No impact on efficiency
c) Decreases efficiency d) Improves heat transfer

2) What impact does shading have on the performance of a rooftop solar system?
a) No impact b) Improved efficiency
c) Reduced efficiency d) Increased battery life

3) What is Triethylene Glycol primarily used for?
a) As a refrigerant to cool the air.
b) As a fuel to generate heat.
c) As an absorbent to capture heat from the solar collectors.
d) As a coolant for the solar panels.

4) What is the role of the desiccant material?
a) To heat the incoming air
b) To absorb and remove moisture from the incoming air
c) To cool the indoor air
d) To filter the air

5) How does a wick-type solar still function?
a) By using mirrors to concentrate sunlight
b) By absorbing sunlight with photovoltaic cells
c) By using a wick to transport water for evaporation
d) By converting sunlight into heat directly

6) What is the primary benefit of using solar desalination in arid regions?
a) Increased soil fertility
b) Reduction in water salinity
c) Generation of electricity
d) Freshwater production in remote areas

7) What is the primary factor that influences the efficiency of a solar drying system?
a) Wind speed
b) Ambient temperature
c) Moon phase
d) Soil composition

8) What role do vents play in a greenhouse drying system?
a) Trap heat inside the greenhouse
b) Increase humidity levels
c) Enhance air circulation
d) Block sunlight

9) What is the primary purpose of a solar swimming pool heating system?
a) Water purification
b) Increasing water circulation
c) Heating the pool water
d) Enhancing pool lighting

10) What is the primary advantage of passive solar heating systems over active solar systems?
a) Lower installation cost
b) Higher efficiency
c) Greater reliability
d) No reliance on sunlight

11) What is the purpose of thermal mass in passive solar design?
a) To block sunlight
b) To store and release heat
c) To reflect solar radiation
d) To enhance air circulation

12) What is the primary driving force behind natural circulation in a water heating system?
a) Centrifugal force
b) Gravitational force
c) Electromagnetic force
d) Frictional force

13) Which of the following is NOT a typical component of a standalone solar PV system?
a) Inverter
b) Charge controller
c) Grid connection
d) Battery bank

14) What is the purpose of an inverter in a solar power system?
a) To store excess energy
b) To convert DC to AC
c) To regulate panel temperature
d) To track the sun's movement

SLR-BD-621

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Advanced Applications in Solar Energy Technology (BTN07715)

Day & Date: Friday 06-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three: **12**

a) Explain
1) Freezing
2) Boiling

b) Describe the "Direct Gain" in passive solar design.

c) Explain the concept of "Solar Vapour Compression Refrigeration."

d) Discuss with neat diagram working of Trombe wall.

Q.3 Attempt any two of the following: **16**

a) Explain swimming pool heating with its advantages.

b) Explain any two methods of passive heating of building.

c) What is Intermittent absorption refrigeration system?

Section – II

Q.4 Attempt any three. **12**

a) Explain simple solar still.

b) Describe Box type solar dryer.

c) What is net metering in rooftop system?

d) What hybrid dryer?

Q.5 Attempt any Two. **16**

a) Explain concept of wick type solar still & active solar still.

b) Explain Bin type grain dryer & solar timber drying.

c) Describe the concept of solar PV street lighting system with its advantages.

Seat No.	

Set **P**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Testing & Certification of Electric & Hybrid vehicles (BTN07719)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The function of anti-lock brake system (ABS) is ____.
a) Reduces the stopping distance
b) Minimizes the brake fade
c) Maintains directional control during braking by preventing the wheels from locking
d) Prevents nose dives during braking and thereby postpones locking of the wheels

2) What is an Automobile?
a) self-propelled vehicle
b) used for carrying passengers and goods on the ground
c) contains the power source for its propulsion
d) All of the mentioned

3) The force that opposes the motion of a vehicle is ____.
a) Rolling resistance b) Gradient resistance
c) Wind or air resistance d) All of the mentioned

4) The central portion of the wheel is called ____.
a) Rim b) Scale
c) Hub d) Axle

5) What is the function of the electronic control unit in Anti-lock braking system?
a) Monitoring the speed of the wheel
b) Decreases the stopping distance
c) Provides electronic stability control
d) Maintaining the tractive force

6) Vehicles having at least four wheels and used for the carriage of passengers, this category of vehicle is ____.

a) L b) M
c) N d) O

7) The torque available at the contact between driving wheels and road is known as ____.

a) Brake effort b) Tractive effort
c) Clutch effort d) None of these

8) The main task of battery in an automobile is to ____.

a) Supply electricity to the alternator
b) Act as a reservoir or stabilizer of electricity
c) Supply electricity to the vehicle's electrical system at all times while the engine is running
d) Supply a large amount of power to turn the starter motor when the engine is being started

9) The parking brake generally acts on ____.

a) Front wheels b) Rear wheels
c) Front and rear wheels d) Propeller shaft

10) The clutch is located between the transmission and the ____.

a) Engine b) Rear axle
c) Propeller shaft d) Differential

11) What is the primary objective of ECE regulations?

a) Promoting economic integration in North America
b) Standardizing vehicle regulations globally
c) Regulating vehicle safety in Europe
d) Encouraging the use of electric vehicles

12) What type of test track is designed to assess a vehicle's performance at high speeds and aerodynamics?

a) Off-road test track b) Handling test track
c) High-speed test track d) Noise test track

13) What is the primary purpose of Hardware-in-the-Loop (HiL) testing in the context of EVs and HEVs?

a) Testing physical hardware components of vehicles
b) Simulating vehicle behavior in a virtual environment
c) Charging the vehicle's battery
d) Conducting emissions testing

14) What is the primary purpose of a Type. Approval Scheme?

a) To provide insurance coverage for products
b) To regulate product pricing
c) To certify that products meet specified standards and regulations
d) To promote product advertising

Seat No.	

Set **P**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Testing & Certification of Electric & Hybrid vehicles (BTN07719)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt the following questions: (Any Four) **16**

a) Explain the types of homologations. Also state the benefits and challenges of homologation.
b) State and explain classification of vehicles in detail.
c) Explain the arrangement of foot controls for M1 type vehicle.
d) Explain Energy consumption calculation of electric vehicle.
e) Explain grade ability test of vehicle in detail.
f) What is dynamic testing of vehicle? Explain the factors affecting dynamic testing.

Q.3 Attempt the following questions: (Any Two) **12**

a) State the required instruments for testing of vehicles. Also explain any four types of test tracks.
b) Explain the requirement of temporary cabin for Drive-Away-Chassis.
c) What do you understand by interior noise in a vehicle? Discuss some interior noise reduction strategies.

Section – II

Q.4 Attempt the following questions: (Any Four) **16**

a) Explain horn testing of vehicle.
b) Describe hinges and latches test of vehicle.
c) Describe windscreen laminated and toughened safety glass test of vehicle.
d) Describe air bag testing process in detail.
e) Explain the tests for electric propulsion kit intended for conversion.
f) Describe the requirements of Electric Vehicle Conductive AC Charging System.

Q.5 Attempt the following questions: (Any Two) **12**

a) Explain fuel tank test of vehicle.
b) Describe the requirements of Electric Vehicle Conductive DC Charging System.
c) Explain tests for Hybrid Electric System Intended for Retro-fitment on Vehicles of M and N Category (GVW < 3500 kg).

Seat No.	

Set **Q**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Testing & Certification of Electric & Hybrid vehicles (BTN07719)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) The main task of battery in an automobile is to ____.
a) Supply electricity to the alternator
b) Act as a reservoir or stabilizer of electricity
c) Supply electricity to the vehicle's electrical system at all times while the engine is running
d) Supply a large amount of power to turn the starter motor when the engine is being started

2) The parking brake generally acts on ____.
a) Front wheels b) Rear wheels
c) Front and rear wheels d) Propeller shaft

3) The clutch is located between the transmission and the ____.
a) Engine b) Rear axle
c) Propeller shaft d) Differential

4) What is the primary objective of ECE regulations?
a) Promoting economic integration in North America
b) Standardizing vehicle regulations globally
c) Regulating vehicle safety in Europe
d) Encouraging the use of electric vehicles

5) What type of test track is designed to assess a vehicle's performance at high speeds and aerodynamics?
a) Off-road test track b) Handling test track
c) High-speed test track d) Noise test track

6) What is the primary purpose of Hardware-in-the-Loop (HiL) testing in the context of EVs and HEVs?
   a) Testing physical hardware components of vehicles
   b) Simulating vehicle behavior in a virtual environment
   c) Charging the vehicle's battery
   d) Conducting emissions testing

7) What is the primary purpose of a Type. Approval Scheme?
   a) To provide insurance coverage for products
   b) To regulate product pricing
   c) To certify that products meet specified standards and regulations
   d) To promote product advertising

8) The function of anti-lock brake system (ABS) is ____.
   a) Reduces the stopping distance
   b) Minimizes the brake fade
   c) Maintains directional control during braking by preventing the wheels from locking
   d) Prevents nose dives during braking and thereby postpones locking of the wheels

9) What is an Automobile?
   a) self-propelled vehicle
   b) used for carrying passengers and goods on the ground
   c) contains the power source for its propulsion
   d) All of the mentioned

10) The force that opposes the motion of a vehicle is ____.
   a) Rolling resistance
   b) Gradient resistance
   c) Wind or air resistance
   d) All of the mentioned

11) The central portion of the wheel is called ____.
   a) Rim
   b) Scale
   c) Hub
   d) Axle

12) What is the function of the electronic control unit in Anti-lock braking system?
   a) Monitoring the speed of the wheel
   b) Decreases the stopping distance
   c) Provides electronic stability control
   d) Maintaining the tractive force

13) Vehicles having at least four wheels and used for the carriage of passengers, this category of vehicle is ____.
   a) L
   b) M
   c) N
   d) O

14) The torque available at the contact between driving wheels and road is known as ____.

a) Brake effort
b) Tractive effort
c) Clutch effort
d) None of these

Seat No.	

Set **Q**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Testing & Certification of Electric & Hybrid vehicles (BTN07719)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt the following questions: (Any Four) **16**

a) Explain the types of homologations. Also state the benefits and challenges of homologation.
b) State and explain classification of vehicles in detail.
c) Explain the arrangement of foot controls for M1 type vehicle.
d) Explain Energy consumption calculation of electric vehicle.
e) Explain grade ability test of vehicle in detail.
f) What is dynamic testing of vehicle? Explain the factors affecting dynamic testing.

Q.3 Attempt the following questions: (Any Two) **12**

a) State the required instruments for testing of vehicles. Also explain any four types of test tracks.
b) Explain the requirement of temporary cabin for Drive-Away-Chassis.
c) What do you understand by interior noise in a vehicle? Discuss some interior noise reduction strategies.

Section – II

Q.4 Attempt the following questions: (Any Four) **16**

a) Explain horn testing of vehicle.
b) Describe hinges and latches test of vehicle.
c) Describe windscreen laminated and toughened safety glass test of vehicle.
d) Describe air bag testing process in detail.
e) Explain the tests for electric propulsion kit intended for conversion.
f) Describe the requirements of Electric Vehicle Conductive AC Charging System.

Q.5 Attempt the following questions: (Any Two) **12**

a) Explain fuel tank test of vehicle.
b) Describe the requirements of Electric Vehicle Conductive DC Charging System.
c) Explain tests for Hybrid Electric System Intended for Retro-fitment on Vehicles of M and N Category (GVW < 3500 kg).

Seat No.	

Set **R**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Testing & Certification of Electric & Hybrid vehicles (BTN07719)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) What is the primary objective of ECE regulations?
a) Promoting economic integration in North America
b) Standardizing vehicle regulations globally
c) Regulating vehicle safety in Europe
d) Encouraging the use of electric vehicles

2) What type of test track is designed to assess a vehicle's performance at high speeds and aerodynamics?
a) Off-road test track b) Handling test track
c) High-speed test track d) Noise test track

3) What is the primary purpose of Hardware-in-the-Loop (HiL) testing in the context of EVs and HEVs?
a) Testing physical hardware components of vehicles
b) Simulating vehicle behavior in a virtual environment
c) Charging the vehicle's battery
d) Conducting emissions testing

4) What is the primary purpose of a Type. Approval Scheme?
a) To provide insurance coverage for products
b) To regulate product pricing
c) To certify that products meet specified standards and regulations
d) To promote product advertising

5) The function of anti-lock brake system (ABS) is ____.
a) Reduces the stopping distance
b) Minimizes the brake fade
c) Maintains directional control during braking by preventing the wheels from locking
d) Prevents nose dives during braking and thereby postpones locking of the wheels

6) What is an Automobile?
a) self-propelled vehicle
b) used for carrying passengers and goods on the ground
c) contains the power source for its propulsion
d) All of the mentioned

7) The force that opposes the motion of a vehicle is ____.
a) Rolling resistance
b) Gradient resistance
c) Wind or air resistance
d) All of the mentioned

8) The central portion of the wheel is called ____.
a) Rim
b) Scale
c) Hub
d) Axle

9) What is the function of the electronic control unit in Anti-lock braking system?
a) Monitoring the speed of the wheel
b) Decreases the stopping distance
c) Provides electronic stability control
d) Maintaining the tractive force

10) Vehicles having at least four wheels and used for the carriage of passengers, this category of vehicle is ____.
a) L
b) M
c) N
d) O

11) The torque available at the contact between driving wheels and road is known as ____.
a) Brake effort
b) Tractive effort
c) Clutch effort
d) None of these

12) The main task of battery in an automobile is to ____.
a) Supply electricity to the alternator
b) Act as a reservoir or stabilizer of electricity
c) Supply electricity to the vehicle's electrical system at all times while the engine is running
d) Supply a large amount of power to turn the starter motor when the engine is being started

13) The parking brake generally acts on ____.
a) Front wheels
b) Rear wheels
c) Front and rear wheels
d) Propeller shaft

14) The clutch is located between the transmission and the ____.
a) Engine
b) Rear axle
c) Propeller shaft
d) Differential

Seat No.	

Set **R**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Testing & Certification of Electric & Hybrid vehicles (BTN07719)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt the following questions: (Any Four) **16**

a) Explain the types of homologations. Also state the benefits and challenges of homologation.
b) State and explain classification of vehicles in detail.
c) Explain the arrangement of foot controls for M1 type vehicle.
d) Explain Energy consumption calculation of electric vehicle.
e) Explain grade ability test of vehicle in detail.
f) What is dynamic testing of vehicle? Explain the factors affecting dynamic testing.

Q.3 Attempt the following questions: (Any Two) **12**

a) State the required instruments for testing of vehicles. Also explain any four types of test tracks.
b) Explain the requirement of temporary cabin for Drive-Away-Chassis.
c) What do you understand by interior noise in a vehicle? Discuss some interior noise reduction strategies.

Section – II

Q.4 Attempt the following questions: (Any Four) **16**

a) Explain horn testing of vehicle.
b) Describe hinges and latches test of vehicle.
c) Describe windscreen laminated and toughened safety glass test of vehicle.
d) Describe air bag testing process in detail.
e) Explain the tests for electric propulsion kit intended for conversion.
f) Describe the requirements of Electric Vehicle Conductive AC Charging System.

Q.5 Attempt the following questions: (Any Two) **12**

a) Explain fuel tank test of vehicle.
b) Describe the requirements of Electric Vehicle Conductive DC Charging System.
c) Explain tests for Hybrid Electric System Intended for Retro-fitment on Vehicles of M and N Category (GVW < 3500 kg).

Seat No.	

Set **S**

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Testing & Certification of Electric & Hybrid vehicles (BTN07719)

Day & Date: Monday, 09-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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

1) Vehicles having at least four wheels and used for the carriage of passengers, this category of vehicle is ____.
a) L b) M
c) N d) O

2) The torque available at the contact between driving wheels and road is known as ____.
a) Brake effort b) Tractive effort
c) Clutch effort d) None of these

3) The main task of battery in an automobile is to ____.
a) Supply electricity to the alternator
b) Act as a reservoir or stabilizer of electricity
c) Supply electricity to the vehicle's electrical system at all times while the engine is running
d) Supply a large amount of power to turn the starter motor when the engine is being started

4) The parking brake generally acts on ____.
a) Front wheels b) Rear wheels
c) Front and rear wheels d) Propeller shaft

5) The clutch is located between the transmission and the ____.
a) Engine b) Rear axle
c) Propeller shaft d) Differential

6) What is the primary objective of ECE regulations?
a) Promoting economic integration in North America
b) Standardizing vehicle regulations globally
c) Regulating vehicle safety in Europe
d) Encouraging the use of electric vehicles

7) What type of test track is designed to assess a vehicle's performance at high speeds and aerodynamics?

a) Off-road test track
b) Handling test track
c) High-speed test track
d) Noise test track

8) What is the primary purpose of Hardware-in-the-Loop (HiL) testing in the context of EVs and HEVs?

a) Testing physical hardware components of vehicles
b) Simulating vehicle behavior in a virtual environment
c) Charging the vehicle's battery
d) Conducting emissions testing

9) What is the primary purpose of a Type. Approval Scheme?

a) To provide insurance coverage for products
b) To regulate product pricing
c) To certify that products meet specified standards and regulations
d) To promote product advertising

10) The function of anti-lock brake system (ABS) is ____.

a) Reduces the stopping distance
b) Minimizes the brake fade
c) Maintains directional control during braking by preventing the wheels from locking
d) Prevents nose dives during braking and thereby postpones locking of the wheels

11) What is an Automobile?

a) self-propelled vehicle
b) used for carrying passengers and goods on the ground
c) contains the power source for its propulsion
d) All of the mentioned

12) The force that opposes the motion of a vehicle is ____.

a) Rolling resistance
b) Gradient resistance
c) Wind or air resistance
d) All of the mentioned

13) The central portion of the wheel is called ____.

a) Rim
b) Scale
c) Hub
d) Axle

14) What is the function of the electronic control unit in Anti-lock braking system?

a) Monitoring the speed of the wheel
b) Decreases the stopping distance
c) Provides electronic stability control
d) Maintaining the tractive force

Seat No.		Set	S

Fourth. Y. (B. Tech.) (Sem-I) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Testing & Certification of Electric & Hybrid vehicles (BTN07719)

Day & Date: Monday, 09-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt the following questions: (Any Four) **16**

a) Explain the types of homologations. Also state the benefits and challenges of homologation.
b) State and explain classification of vehicles in detail.
c) Explain the arrangement of foot controls for M1 type vehicle.
d) Explain Energy consumption calculation of electric vehicle.
e) Explain grade ability test of vehicle in detail.
f) What is dynamic testing of vehicle? Explain the factors affecting dynamic testing.

Q.3 Attempt the following questions: (Any Two) **12**

a) State the required instruments for testing of vehicles. Also explain any four types of test tracks.
b) Explain the requirement of temporary cabin for Drive-Away-Chassis.
c) What do you understand by interior noise in a vehicle? Discuss some interior noise reduction strategies.

Section – II

Q.4 Attempt the following questions: (Any Four) **16**

a) Explain horn testing of vehicle.
b) Describe hinges and latches test of vehicle.
c) Describe windscreen laminated and toughened safety glass test of vehicle.
d) Describe air bag testing process in detail.
e) Explain the tests for electric propulsion kit intended for conversion.
f) Describe the requirements of Electric Vehicle Conductive AC Charging System.

Q.5 Attempt the following questions: (Any Two) **12**

a) Explain fuel tank test of vehicle.
b) Describe the requirements of Electric Vehicle Conductive DC Charging System.
c) Explain tests for Hybrid Electric System Intended for Retro-fitment on Vehicles of M and N Category (GVW < 3500 kg).

SLR-BD-625

Seat No.	

Set P

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electrical Estimation, Installation, and Testing (BTN07802)

Day & Date: Monday, 26-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which of the following methods providing artificial respiration?
a) Schafer's prone pressure method
b) Silvester's method
c) Both a & b
d) Narcol Method

2) Do's and Don'ts are observed carefully in safety precautions as per _____.
a) IS 5216-1962 b) IS 5216-1964
c) IS 5216-1966 d) IS 5216-1969

3) What should be the insulation resistance in case of PVC wires?
a) 12.5 MΩ / number of outlet
b) 82.5 MΩ / number of outlet
c) 2.5 MΩ / number of outlet
d) 10.5 MΩ / number of outlet

4) If the measured insulation value is more than unity what value should be taken as the maximum working value?
a) 0.75 MΩ b) One MΩ
c) 0.5 MΩ d) One ohm

5) Brake test is _____ method of testing machine.
a) Regenerative b) Direct
c) Indirect d) All of these

6) Swinburn test is conducted on machine at

a) No load b) Full load
c) Fractional load d) All of these

7) When motor arranged in the same line as that of driven machine this coupling is also called as

a) Direct coupling b) Indirect coupling
c) Both a and b d) None of these

8) Depth of foundation is dependent on

a) Cost of equipment b) Frequency
c) H.P. rating d) None of these

9) Which of the following factors affects on life of insulating material?

a) Temperature b) Deposition of dust
c) Impurities d) All of these

10) In insulation resistance test of 132 kv transformer, minimum insulation resistance is

a) 250MΩ b) 500MΩ
c) 750MΩ d) 1000MΩ

Seat No.	

Set **P**

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electrical Estimation, Installation, and Testing (BTN07802)

Day & Date: Monday, 26-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Q.2 Attempt Any Five:

a) State different factors on which severity of electric shock depends. Briefly explain every factor. **08**

b) The main circuit wire in a house is required to carry a current of 45 amperes when connected to single phase a.c. supply. Determine the size of the wire if the length of the circuit is 40 metres. **08**

c) Explain the use of: **08**
i) Growler
ii) Filler gauges
iii) Dial Indicator
iv) Earth tester
v) Megger

d) Explain any two methods of measurement of winding resistance in case of transformer. **08**

e) Explain in details the effects of misalignment in case of directly coupled drives and indirectly coupled drives. **08**

f) Explain with neat sketch back-to-back test on transformer. **08**

g) State and explain properties of good transformer oil. Also State factors on which life of insulation depends. **08**

Seat No.	

Set **Q**

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electrical Estimation, Installation, and Testing (BTN07802)

Day & Date: Monday, 26-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Swinburn test is conducted on machine at
a) No load b) Full load
c) Fractional load d) All of these

2) When motor arranged in the same line as that of driven machine this coupling is also called as
a) Direct coupling b) Indirect coupling
c) Both a and b d) None of these

3) Depth of foundation is dependent on
a) Cost of equipment b) Frequency
c) H.P. rating d) None of these

4) Which of the following factors affects on life of insulating material?
a) Temperature b) Deposition of dust
c) Impurities d) All of these

5) In insulation resistance test of 132 kv transformer, minimum insulation resistance is
a) 250MΩ b) 500MΩ
c) 750MΩ d) 1000MΩ

6) Which of the following methods providing artificial respiration?
a) Schafer's prone pressure method
b) Silvester's method
c) Both a & b
d) Narcol Method

7) Do's and Don'ts are observed carefully in safety precautions as per _____.

a) IS 5216-1962
b) IS 5216-1964
c) IS 5216-1966
d) IS 5216-1969

8) What should be the insulation resistance in case of PVC wires?

a) 12.5 MΩ / number of outlet
b) 82.5 MΩ / number of outlet
c) 2.5 MΩ / number of outlet
d) 10.5 MΩ / number of outlet

9) If the measured insulation value is more than unity what value should be taken as the maximum working value?

a) 0.75 MΩ
b) One MΩ
c) 0.5 MΩ
d) One ohm

10) Brake test is _____ method of testing machine.

a) Regenerative
b) Direct
c) Indirect
d) All of these

Seat No.	

Set **Q**

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electrical Estimation, Installation, and Testing (BTN07802)

Day & Date: Monday, 26-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Q.2 Attempt Any Five:

a) State different factors on which severity of electric shock depends. Briefly explain every factor. **08**

b) The main circuit wire in a house is required to carry a current of 45 amperes when connected to single phase a.c. supply. Determine the size of the wire if the length of the circuit is 40 metres. **08**

c) Explain the use of: **08**
i) Growler
ii) Filler gauges
iii) Dial Indicator
iv) Earth tester
v) Megger

d) Explain any two methods of measurement of winding resistance in case of transformer. **08**

e) Explain in details the effects of misalignment in case of directly coupled drives and indirectly coupled drives. **08**

f) Explain with neat sketch back-to-back test on transformer. **08**

g) State and explain properties of good transformer oil. Also State factors on which life of insulation depends. **08**

Seat No.	

Set **R**

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electrical Estimation, Installation, and Testing (BTN07802)

Day & Date: Monday, 26-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which of the following factors affects on life of insulating material?
a) Temperature b) Deposition of dust
c) Impurities d) All of these

2) In insulation resistance test of 132 kv transformer, minimum insulation resistance is
a) 250MΩ b) 500MΩ
c) 750MΩ d) 1000MΩ

3) Which of the following methods providing artificial respiration?
a) Schafer's prone pressure method
b) Silvester's method
c) Both a & b
d) Narcol Method

4) Do's and Don'ts are observed carefully in safety precautions as per _____.
a) IS 5216-1962 b) IS 5216-1964
c) IS 5216-1966 d) IS 5216-1969

5) What should be the insulation resistance in case of PVC wires?
a) 12.5 MΩ / number of outlet
b) 82.5 MΩ / number of outlet
c) 2.5 MΩ / number of outlet
d) 10.5 MΩ / number of outlet

6) If the measured insulation value is more than unity what value should be taken as the maximum working value?
a) 0.75 MΩ b) One MΩ
c) 0.5 MΩ d) One ohm

7) Brake test is _____ method of testing machine.
a) Regenerative b) Direct
c) Indirect d) All of these

8) Swinburn test is conducted on machine at
a) No load b) Full load
c) Fractional load d) All of these

9) When motor arranged in the same line as that of driven machine this coupling is also called as
a) Direct coupling b) Indirect coupling
c) Both a and b d) None of these

10) Depth of foundation is dependent on
a) Cost of equipment b) Frequency
c) H.P. rating d) None of these

Seat No.	

Set **R**

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electrical Estimation, Installation, and Testing (BTN07802)

Day & Date: Monday, 26-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Q.2 Attempt Any Five:

a) State different factors on which severity of electric shock depends. Briefly explain every factor. **08**

b) The main circuit wire in a house is required to carry a current of 45 amperes when connected to single phase a.c. supply. Determine the size of the wire if the length of the circuit is 40 metres. **08**

c) Explain the use of: **08**
i) Growler
ii) Filler gauges
iii) Dial Indicator
iv) Earth tester
v) Megger

d) Explain any two methods of measurement of winding resistance in case of transformer. **08**

e) Explain in details the effects of misalignment in case of directly coupled drives and indirectly coupled drives. **08**

f) Explain with neat sketch back-to-back test on transformer. **08**

g) State and explain properties of good transformer oil. Also State factors on which life of insulation depends. **08**

SLR-BD-625

Seat No.	

Set S

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electrical Estimation, Installation, and Testing (BTN07802)

Day & Date: Monday, 26-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) What should be the insulation resistance in case of PVC wires?
a) 12.5 MΩ / number of outlet
b) 82.5 MΩ / number of outlet
c) 2.5 MΩ / number of outlet
d) 10.5 MΩ / number of outlet

2) If the measured insulation value is more than unity what value should be taken as the maximum working value?
a) 0.75 MΩ b) One MΩ
c) 0.5 MΩ d) One ohm

3) Brake test is _____ method of testing machine.
a) Regenerative b) Direct
c) Indirect d) All of these

4) Swinburn test is conducted on machine at
a) No load b) Full load
c) Fractional load d) All of these

5) When motor arranged in the same line as that of driven machine this coupling is also called as
a) Direct coupling b) Indirect coupling
c) Both a and b d) None of these

6) Depth of foundation is dependent on
a) Cost of equipment b) Frequency
c) H.P. rating d) None of these

7) Which of the following factors affects on life of insulating material?
a) Temperature b) Deposition of dust
c) Impurities d) All of these

8) In insulation resistance test of 132 kv transformer, minimum insulation resistance is
a) 250MΩ b) 500MΩ
c) 750MΩ d) 1000MΩ

9) Which of the following methods providing artificial respiration?
a) Schafer's prone pressure method
b) Silvester's method
c) Both a & b
d) Narcol Method

10) Do's and Don'ts are observed carefully in safety precautions as per _____.
a) IS 5216-1962 b) IS 5216-1964
c) IS 5216-1966 d) IS 5216-1969

Seat No.	

Set **S**

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Electrical Estimation, Installation, and Testing (BTN07802)

Day & Date: Monday, 26-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Q.2 Attempt Any Five:

a) State different factors on which severity of electric shock depends. Briefly explain every factor. **08**

b) The main circuit wire in a house is required to carry a current of 45 amperes when connected to single phase a.c. supply. Determine the size of the wire if the length of the circuit is 40 metres. **08**

c) Explain the use of: **08**
i) Growler
ii) Filler gauges
iii) Dial Indicator
iv) Earth tester
v) Megger

d) Explain any two methods of measurement of winding resistance in case of transformer. **08**

e) Explain in details the effects of misalignment in case of directly coupled drives and indirectly coupled drives. **08**

f) Explain with neat sketch back-to-back test on transformer. **08**

g) State and explain properties of good transformer oil. Also State factors on which life of insulation depends. **08**

Seat No.	

Set **P**

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Alternate Energy Systems (BTN07804)

Day & Date: Monday, 26-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which parameter is commonly used to characterize the availability of solar radiation on a tilted surface?
a) Solar constant b) Solar declination
c) Solar insolation d) Solar irradiance

2) Which technology in concentrating solar power (CSP) plants utilizes flat mirrors to reflect sunlight onto a receiver located at a high point?
a) Parabolic troughs b) Linear Fresnel reflector
c) Parabolic Dish d) Solar towers

3) What are the primary components of a PV system?
a) Solar panels and inverters
b) Batteries and charge controllers
c) Solar panels, inverters, and mounting structures
d) Solar panels, inverters, batteries, and charge controllers

4) In which application is tracking commonly employed in solar PV systems?
a) Residential b) Commercial
c) Industrial d) All of the above

5) Which characteristic defines the relationship between torque and rotational speed for a wind turbine?
a) Power-speed characteristics
b) Torque-speed characteristics
c) Wind turbine efficiency curve
d) Wind speed distribution curve

6) Which parameter is used to select a suitable site for wind turbine installation?
a) Wind capacity factor
b) Wind energy density
c) Turbine efficiency
d) Power-speed characteristics

7) What is the primary advantage of using biomass as a renewable energy source?
a) Reduced greenhouse gas emissions
b) Unlimited availability
c) Low cost of production
d) Ease of storage and transportation

8) Which technology is used for power generation from municipal solid waste?
a) Biomass gasification
b) Anaerobic digestion
c) Incineration
d) Ethanol fermentation

9) What term refers to the process of connecting renewable energy sources (RES) to the existing electricity grid while maintaining stability and reliability?
a) Grid integration
b) Renewable energy conversion
c) Transmission optimization
d) Load shedding

10) What does the term "levelized cost of energy" (LCOE) refer to?
a) The total cost of installing a renewable energy system.
b) The average annual cost of energy production over the lifetime of a renewable energy project.
c) The upfront cost of purchasing renewable energy equipment.
d) The total cost of energy production over the lifetime of a renewable energy project, normalized to the total energy produced.

Seat No.	

Set **P**

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Alternate Energy Systems (BTN07804)

Day & Date: Monday, 26-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Solve any Two: **08**

a) Write Short note on concentrating solar power (CSP) plants.
b) What are the advantages and limitations of using parabolic dish technology in CSP systems?
c) Describe the role of maximum power point tracking (MPPT) in optimizing the performance of solar energy systems.

Q.3 Solve any Two: **12**

a) Discuss the key concepts related to solar radiation at the Earth's surface.
b) Discuss the key differences in the design considerations for photovoltaic (PV) systems in residential, commercial, and industrial applications.
c) Explain the concept of power contained in wind and how it is converted into usable energy in wind turbine systems.

SECTION – II

Q.4 Solve any Two: **08**

a) Discuss the power-speed characteristics and torque-speed characteristics of wind turbines.
b) Discuss the factors affecting biogas production in biogas technologies.
c) What is co-generation? How co-generation leads to energy conservation.

Q.5 Solve any Two: **12**

a) Discuss the classification of biomass and the different types of biomass resources available for energy production. What are the factors influencing their energy potential?
b) Describe the different types of biomass gasifiers, what are their advantages, disadvantages, and applications.
c) Discuss the challenges and benefits of integrating renewable energy sources (RES) with the existing electrical grid.

Seat No.	

Set **Q**

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Alternate Energy Systems (BTN07804)

Day & Date: Monday, 26-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Which parameter is used to select a suitable site for wind turbine installation?
a) Wind capacity factor
b) Wind energy density
c) Turbine efficiency
d) Power-speed characteristics

2) What is the primary advantage of using biomass as a renewable energy source?
a) Reduced greenhouse gas emissions
b) Unlimited availability
c) Low cost of production
d) Ease of storage and transportation

3) Which technology is used for power generation from municipal solid waste?
a) Biomass gasification b) Anaerobic digestion
c) Incineration d) Ethanol fermentation

4) What term refers to the process of connecting renewable energy sources (RES) to the existing electricity grid while maintaining stability and reliability?
a) Grid integration
b) Renewable energy conversion
c) Transmission optimization
d) Load shedding

5) What does the term "levelized cost of energy" (LCOE) refer to?
a) The total cost of installing a renewable energy system.
b) The average annual cost of energy production over the lifetime of a renewable energy project.
c) The upfront cost of purchasing renewable energy equipment.
d) The total cost of energy production over the lifetime of a renewable energy project, normalized to the total energy produced.

6) Which parameter is commonly used to characterize the availability of solar radiation on a tilted surface?
a) Solar constant
b) Solar declination
c) Solar insolation
d) Solar irradiance

7) Which technology in concentrating solar power (CSP) plants utilizes flat mirrors to reflect sunlight onto a receiver located at a high point?
a) Parabolic troughs
b) Linear Fresnel reflector
c) Parabolic Dish
d) Solar towers

8) What are the primary components of a PV system?
a) Solar panels and inverters
b) Batteries and charge controllers
c) Solar panels, inverters, and mounting structures
d) Solar panels, inverters, batteries, and charge controllers

9) In which application is tracking commonly employed in solar PV systems?
a) Residential
b) Commercial
c) Industrial
d) All of the above

10) Which characteristic defines the relationship between torque and rotational speed for a wind turbine?
a) Power-speed characteristics
b) Torque-speed characteristics
c) Wind turbine efficiency curve
d) Wind speed distribution curve

Seat No.	

Set **Q**

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Alternate Energy Systems (BTN07804)

Day & Date: Monday, 26-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Solve any Two: **08**

a) Write Short note on concentrating solar power (CSP) plants.
b) What are the advantages and limitations of using parabolic dish technology in CSP systems?
c) Describe the role of maximum power point tracking (MPPT) in optimizing the performance of solar energy systems.

Q.3 Solve any Two: **12**

a) Discuss the key concepts related to solar radiation at the Earth's surface.
b) Discuss the key differences in the design considerations for photovoltaic (PV) systems in residential, commercial, and industrial applications.
c) Explain the concept of power contained in wind and how it is converted into usable energy in wind turbine systems.

SECTION – II

Q.4 Solve any Two: **08**

a) Discuss the power-speed characteristics and torque-speed characteristics of wind turbines.
b) Discuss the factors affecting biogas production in biogas technologies.
c) What is co-generation? How co-generation leads to energy conservation.

Q.5 Solve any Two: **12**

a) Discuss the classification of biomass and the different types of biomass resources available for energy production. What are the factors influencing their energy potential?
b) Describe the different types of biomass gasifiers, what are their advantages, disadvantages, and applications.
c) Discuss the challenges and benefits of integrating renewable energy sources (RES) with the existing electrical grid.

Seat No.	

Set **R**

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Alternate Energy Systems (BTN07804)

Day & Date: Monday, 26-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) What term refers to the process of connecting renewable energy sources (RES) to the existing electricity grid while maintaining stability and reliability?
a) Grid integration
b) Renewable energy conversion
c) Transmission optimization
d) Load shedding

2) What does the term "levelized cost of energy" (LCOE) refer to?
a) The total cost of installing a renewable energy system.
b) The average annual cost of energy production over the lifetime of a renewable energy project.
c) The upfront cost of purchasing renewable energy equipment.
d) The total cost of energy production over the lifetime of a renewable energy project, normalized to the total energy produced.

3) Which parameter is commonly used to characterize the availability of solar radiation on a tilted surface?
a) Solar constant b) Solar declination
c) Solar insolation d) Solar irradiance

4) Which technology in concentrating solar power (CSP) plants utilizes flat mirrors to reflect sunlight onto a receiver located at a high point?
a) Parabolic troughs b) Linear Fresnel reflector
c) Parabolic Dish d) Solar towers

5) What are the primary components of a PV system?
a) Solar panels and inverters
b) Batteries and charge controllers
c) Solar panels, inverters, and mounting structures
d) Solar panels, inverters, batteries, and charge controllers

6) In which application is tracking commonly employed in solar PV systems?
a) Residential
b) Commercial
c) Industrial
d) All of the above

7) Which characteristic defines the relationship between torque and rotational speed for a wind turbine?
a) Power-speed characteristics
b) Torque-speed characteristics
c) Wind turbine efficiency curve
d) Wind speed distribution curve

8) Which parameter is used to select a suitable site for wind turbine installation?
a) Wind capacity factor
b) Wind energy density
c) Turbine efficiency
d) Power-speed characteristics

9) What is the primary advantage of using biomass as a renewable energy source?
a) Reduced greenhouse gas emissions
b) Unlimited availability
c) Low cost of production
d) Ease of storage and transportation

10) Which technology is used for power generation from municipal solid waste?
a) Biomass gasification
b) Anaerobic digestion
c) Incineration
d) Ethanol fermentation

Seat No.	

Set **R**

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Alternate Energy Systems (BTN07804)

Day & Date: Monday, 26-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Solve any Two: **08**

a) Write Short note on concentrating solar power (CSP) plants.
b) What are the advantages and limitations of using parabolic dish technology in CSP systems?
c) Describe the role of maximum power point tracking (MPPT) in optimizing the performance of solar energy systems.

Q.3 Solve any Two: **12**

a) Discuss the key concepts related to solar radiation at the Earth's surface.
b) Discuss the key differences in the design considerations for photovoltaic (PV) systems in residential, commercial, and industrial applications.
c) Explain the concept of power contained in wind and how it is converted into usable energy in wind turbine systems.

SECTION – II

Q.4 Solve any Two: **08**

a) Discuss the power-speed characteristics and torque-speed characteristics of wind turbines.
b) Discuss the factors affecting biogas production in biogas technologies.
c) What is co-generation? How co-generation leads to energy conservation.

Q.5 Solve any Two: **12**

a) Discuss the classification of biomass and the different types of biomass resources available for energy production. What are the factors influencing their energy potential?
b) Describe the different types of biomass gasifiers, what are their advantages, disadvantages, and applications.
c) Discuss the challenges and benefits of integrating renewable energy sources (RES) with the existing electrical grid.

SLR-BD-627

Seat No.	

Set S

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Alternate Energy Systems (BTN07804)

Day & Date: Monday, 26-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) What are the primary components of a PV system?
a) Solar panels and inverters
b) Batteries and charge controllers
c) Solar panels, inverters, and mounting structures
d) Solar panels, inverters, batteries, and charge controllers

2) In which application is tracking commonly employed in solar PV systems?
a) Residential b) Commercial
c) Industrial d) All of the above

3) Which characteristic defines the relationship between torque and rotational speed for a wind turbine?
a) Power-speed characteristics
b) Torque-speed characteristics
c) Wind turbine efficiency curve
d) Wind speed distribution curve

4) Which parameter is used to select a suitable site for wind turbine installation?
a) Wind capacity factor
b) Wind energy density
c) Turbine efficiency
d) Power-speed characteristics

5) What is the primary advantage of using biomass as a renewable energy source?
a) Reduced greenhouse gas emissions
b) Unlimited availability
c) Low cost of production
d) Ease of storage and transportation

6) Which technology is used for power generation from municipal solid waste?
a) Biomass gasification
b) Anaerobic digestion
c) Incineration
d) Ethanol fermentation

7) What term refers to the process of connecting renewable energy sources (RES) to the existing electricity grid while maintaining stability and reliability?
a) Grid integration
b) Renewable energy conversion
c) Transmission optimization
d) Load shedding

8) What does the term "levelized cost of energy" (LCOE) refer to?
a) The total cost of installing a renewable energy system.
b) The average annual cost of energy production over the lifetime of a renewable energy project.
c) The upfront cost of purchasing renewable energy equipment.
d) The total cost of energy production over the lifetime of a renewable energy project, normalized to the total energy produced.

9) Which parameter is commonly used to characterize the availability of solar radiation on a tilted surface?
a) Solar constant
b) Solar declination
c) Solar insolation
d) Solar irradiance

10) Which technology in concentrating solar power (CSP) plants utilizes flat mirrors to reflect sunlight onto a receiver located at a high point?
a) Parabolic troughs
b) Linear Fresnel reflector
c) Parabolic Dish
d) Solar towers

SLR-BD-627

Seat No.	

Set S

Fourth.Y. (B. Tech) (Sem-II) (New) (CBCS) Examination: March/April-2025
ELECTRICAL ENGINEERING
Alternate Energy Systems (BTN07804)

Day & Date: Monday, 26-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

SECTION – I

Q.2 Solve any Two: **08**

a) Write Short note on concentrating solar power (CSP) plants.
b) What are the advantages and limitations of using parabolic dish technology in CSP systems?
c) Describe the role of maximum power point tracking (MPPT) in optimizing the performance of solar energy systems.

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a) Discuss the key concepts related to solar radiation at the Earth's surface.
b) Discuss the key differences in the design considerations for photovoltaic (PV) systems in residential, commercial, and industrial applications.
c) Explain the concept of power contained in wind and how it is converted into usable energy in wind turbine systems.

SECTION – II

Q.4 Solve any Two: **08**

a) Discuss the power-speed characteristics and torque-speed characteristics of wind turbines.
b) Discuss the factors affecting biogas production in biogas technologies.
c) What is co-generation? How co-generation leads to energy conservation.

Q.5 Solve any Two: **12**

a) Discuss the classification of biomass and the different types of biomass resources available for energy production. What are the factors influencing their energy potential?
b) Describe the different types of biomass gasifiers, what are their advantages, disadvantages, and applications.
c) Discuss the challenges and benefits of integrating renewable energy sources (RES) with the existing electrical grid.

SLR-BD-628

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Electrical Energy Audit and Management (BTN07805)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Which of the following is commercial energy source?
a) Electricity b) Coal
c) Oil d) All the above

2) The various types of the instruments, which requires during audit need to be ____.
a) Easy to carry b) Easy to operate
c) Inexpensive d) All of above

3) Energy manger should be well versed with ____.
a) Manufacturing and processing skills
b) Managerial and technical skills
c) Technical and marketing skills
d) Managerial and commercial skills

4) Lux meter is used to measure ____.
a) Illumination level
b) Sound intensity and illumination level
c) Harmonics
d) Speed

5) The objective of energy management includes ____.
a) Minimizing energy costs
b) Minimizing waste
c) Minimizing environmental degradation
d) All the above

6) Inexhaustible energy sources are known as ____.

a) commercial Energy b) renewable Energy
c) primary energy d) secondary energy

7) Non-contact speed measurements can be carried out by ____.

a) Tachometer b) Stroboscope
c) Oscilloscope d) Speedometer

8) The tool used for performance assessment and logical evaluation of avenues for improvement in Energy management and audit is ____.

a) Fuel substitution
b) Monitoring and verification
c) Energy pricing
d) Bench marking

9) An energy audit team is formed during ____.

a) post audit phase b) audit phase
c) pre-audit phase d) the time of study

10) The energy sources that are either found or stored in nature are ____.

a) Secondary Energy Sources b) Primary Energy Sources
c) both (a) and (b) d) none of the above

Seat No.	

Set **P**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Electrical Energy Audit and Management (BTN07805)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION-I

Q.2 Solve the following: (Any Four) **20**

1) Explain the Indian Electricity Act, 2003.
2) Explain salient features of Energy Conservation Act 2001.
3) Write short note on key elements in energy management
4) Write a note on supply side management.
5) Explain Role of renewable energy sources in energy management.
6) Discuss the Concept of Green Building.

Q.3 Solve the following: (Any Four) **20**

1) Write a short note on CUSUM techniques with diagram
2) Explain the types of Energy audit.
3) Explain the opportunities for energy conservation in illumination.
4) Explain the opportunities for energy conservation in Cogeneration and waste heat recovery systems.
5) Explain various instruments with function of each used to carryout energy audit.
6) Discuss the concept of least square method in Energy Audit.

SLR-BD-628

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Electrical Energy Audit and Management (BTN07805)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Inexhaustible energy sources are known as ____.
a) commercial Energy b) renewable Energy
c) primary energy d) secondary energy

2) Non-contact speed measurements can be carried out by ____.
a) Tachometer b) Stroboscope
c) Oscilloscope d) Speedometer

3) The tool used for performance assessment and logical evaluation of avenues for improvement in Energy management and audit is ____.
a) Fuel substitution
b) Monitoring and verification
c) Energy pricing
d) Bench marking

4) An energy audit team is formed during ____.
a) post audit phase b) audit phase
c) pre-audit phase d) the time of study

5) The energy sources that are either found or stored in nature are ____.
a) Secondary Energy Sources b) Primary Energy Sources
c) both (a) and (b) d) none of the above

6) Which of the following is commercial energy source?
a) Electricity b) Coal
c) Oil d) All the above

7) The various types of the instruments, which requires during audit need to be ____.

a) Easy to carry
b) Easy to operate
c) Inexpensive
d) All of above

8) Energy manger should be well versed with ____.

a) Manufacturing and processing skills
b) Managerial and technical skills
c) Technical and marketing skills
d) Managerial and commercial skills

9) Lux meter is used to measure ____.

a) Illumination level
b) Sound intensity and illumination level
c) Harmonics
d) Speed

10) The objective of energy management includes ____.

a) Minimizing energy costs
b) Minimizing waste
c) Minimizing environmental degradation
d) All the above

SLR-BD-628

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Electrical Energy Audit and Management (BTN07805)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION-I

Q.2 Solve the following: (Any Four) **20**

1) Explain the Indian Electricity Act, 2003.
2) Explain salient features of Energy Conservation Act 2001.
3) Write short note on key elements in energy management
4) Write a note on supply side management.
5) Explain Role of renewable energy sources in energy management.
6) Discuss the Concept of Green Building.

Q.3 Solve the following: (Any Four) **20**

1) Write a short note on CUSUM techniques with diagram
2) Explain the types of Energy audit.
3) Explain the opportunities for energy conservation in illumination.
4) Explain the opportunities for energy conservation in Cogeneration and waste heat recovery systems.
5) Explain various instruments with function of each used to carryout energy audit.
6) Discuss the concept of least square method in Energy Audit.

SLR-BD-628

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Electrical Energy Audit and Management (BTN07805)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) An energy audit team is formed during ____.
a) post audit phase b) audit phase
c) pre-audit phase d) the time of study

2) The energy sources that are either found or stored in nature are ____.
a) Secondary Energy Sources b) Primary Energy Sources
c) both (a) and (b) d) none of the above

3) Which of the following is commercial energy source?
a) Electricity b) Coal
c) Oil d) All the above

4) The various types of the instruments, which requires during audit need to be ____.
a) Easy to carry b) Easy to operate
c) Inexpensive d) All of above

5) Energy manger should be well versed with ____.
a) Manufacturing and processing skills
b) Managerial and technical skills
c) Technical and marketing skills
d) Managerial and commercial skills

6) Lux meter is used to measure ____.
a) Illumination level
b) Sound intensity and illumination level
c) Harmonics
d) Speed

7) The objective of energy management includes ____.
a) Minimizing energy costs
b) Minimizing waste
c) Minimizing environmental degradation
d) All the above

8) Inexhaustible energy sources are known as ____.
a) commercial Energy b) renewable Energy
c) primary energy d) secondary energy

9) Non-contact speed measurements can be carried out by ____.
a) Tachometer b) Stroboscope
c) Oscilloscope d) Speedometer

10) The tool used for performance assessment and logical evaluation of avenues for improvement in Energy management and audit is ____.
a) Fuel substitution
b) Monitoring and verification
c) Energy pricing
d) Bench marking

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Electrical Energy Audit and Management (BTN07805)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION-I

Q.2 Solve the following: (Any Four) **20**

1) Explain the Indian Electricity Act, 2003.
2) Explain salient features of Energy Conservation Act 2001.
3) Write short note on key elements in energy management
4) Write a note on supply side management.
5) Explain Role of renewable energy sources in energy management.
6) Discuss the Concept of Green Building.

Q.3 Solve the following: (Any Four) **20**

1) Write a short note on CUSUM techniques with diagram
2) Explain the types of Energy audit.
3) Explain the opportunities for energy conservation in illumination.
4) Explain the opportunities for energy conservation in Cogeneration and waste heat recovery systems.
5) Explain various instruments with function of each used to carryout energy audit.
6) Discuss the concept of least square method in Energy Audit.

SLR-BD-628

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Electrical Energy Audit and Management (BTN07805)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Energy manger should be well versed with ____.
a) Manufacturing and processing skills
b) Managerial and technical skills
c) Technical and marketing skills
d) Managerial and commercial skills

2) Lux meter is used to measure ____.
a) Illumination level
b) Sound intensity and illumination level
c) Harmonics
d) Speed

3) The objective of energy management includes ____.
a) Minimizing energy costs
b) Minimizing waste
c) Minimizing environmental degradation
d) All the above

4) Inexhaustible energy sources are known as ____.
a) commercial Energy b) renewable Energy
c) primary energy d) secondary energy

5) Non-contact speed measurements can be carried out by ____.
a) Tachometer b) Stroboscope
c) Oscilloscope d) Speedometer

6) The tool used for performance assessment and logical evaluation of avenues for improvement in Energy management and audit is ____.

a) Fuel substitution
b) Monitoring and verification
c) Energy pricing
d) Bench marking

7) An energy audit team is formed during ____.

a) post audit phase
b) audit phase
c) pre-audit phase
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8) The energy sources that are either found or stored in nature are ____.

a) Secondary Energy Sources
b) Primary Energy Sources
c) both (a) and (b)
d) none of the above

9) Which of the following is commercial energy source?

a) Electricity
b) Coal
c) Oil
d) All the above

10) The various types of the instruments, which requires during audit need to be ____.

a) Easy to carry
b) Easy to operate
c) Inexpensive
d) All of above

SLR-BD-628

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: March/April – 2025
ELECTRICAL ENGINEERING
Electrical Energy Audit and Management (BTN07805)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION-I

Q.2 Solve the following: (Any Four) **20**

1) Explain the Indian Electricity Act, 2003.
2) Explain salient features of Energy Conservation Act 2001.
3) Write short note on key elements in energy management
4) Write a note on supply side management.
5) Explain Role of renewable energy sources in energy management.
6) Discuss the Concept of Green Building.

Q.3 Solve the following: (Any Four) **20**

1) Write a short note on CUSUM techniques with diagram
2) Explain the types of Energy audit.
3) Explain the opportunities for energy conservation in illumination.
4) Explain the opportunities for energy conservation in Cogeneration and waste heat recovery systems.
5) Explain various instruments with function of each used to carryout energy audit.
6) Discuss the concept of least square method in Energy Audit.

SLR-BD-629

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Semester - II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
High Voltage DC Transmission (BTN07806)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options. 10

1) The rating of monopolar HVDC system is _____ to that of bipolar HVDC system.
a) $1/2$ b) $\sqrt{2}$
c) 2 d) $\sqrt{3}$

2) The two conductor in the Homo polar HVDC system is _____.
a) Positive polarity b) Negative polarity
c) Same polarity d) Any of the above

3) The main advantage of HVDC-VSC schemes is _____.
a) both active and reactive powers can be controlled
b) does not require DC filters
c) can be used for very high power more than 1500 MW
d) all of the above

4) A thyristor valve conducts when _____.
a) anode is positive
b) anode is negative
c) anode is positive with positive gate pulse
d) anode is positive with negative gate pulse

5) In HVDC link with CC control _____.
a) power loss is more b) short circuit current is limited
c) both (a) and (b) d) none of the above

6) Fault current level is highest in the following types of faults _____.
a) converter internal fault b) DC line fault
c) commutation failure d) lightning stroke on lines

7) Multiterminal systems are _____.
a) series connected b) parallel connected
c) ring connected d) all of the above

8) Most of the MTDC systems that are in operation and feasible are _____.
a) series connected b) parallel connected
c) ring connected d) all of the above

9) A back to back HVDC link can be advantageous compared to AC primarily because _____.
a) It is cheaper b) Of stability considerations
c) Of controlled power glow d) None of these

10) High Voltage de transmission requires filters for _____.
a) Line commuted converters
b) Voltage sourced converters
c) Both of these
d) None of these

Seat No.	

Set **P**

Fourth. Y. (B.Tech.) (Semester - II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
High Voltage DC Transmission (BTN07806)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section - I

Q.2 Solve any four of the following. **20**

a) Justify the need for control in a DC link. Hence, analyze the problems in a DC link associated with power reversal.
b) Write a short note on Importance of evaluating the economics associated with different ride-through techniques in view of smooth converter operation of HVDC systems.
c) Discuss series-parallel multi-terminal HVDC system and its control.
d) Explain the disturbances due to over voltages on DC side.
e) Explain the basic conversion principles with neat circuit diagrams.

Section - II

Q.3 Solve any two of the following. **20**

a) Illustrate the circuit model for a simple six pulse voltage source converter (VSC) module and explain its working with the help of correct gate firing sequence.
b) Explain the interaction between HVAC & DC systems.
c) Explain the rectifier and inverter operation of a power converter and also write the equivalent circuit of converter?

SLR-BD-629

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Semester - II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
High Voltage DC Transmission (BTN07806)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options. 10

1) Fault current level is highest in the following types of faults _____.
a) converter internal fault b) DC line fault
c) commutation failure d) lightning stroke on lines

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4) A back to back HVDC link can be advantageous compared to AC primarily because _____.
a) It is cheaper b) Of stability considerations
c) Of controlled power glow d) None of these

5) High Voltage de transmission requires filters for _____.
a) Line commuted converters
b) Voltage sourced converters
c) Both of these
d) None of these

6) The rating of monopolar HVDC system is _____ to that of bipolar HVDC system.
a) $1/2$ b) $\sqrt{2}$
c) 2 d) $\sqrt{3}$

7) The two conductor in the Homo polar HVDC system is _____.
a) Positive polarity b) Negative polarity
c) Same polarity d) Any of the above

8) The main advantage of HVDC-VSC schemes is _____.
a) both active and reactive powers can be controlled
b) does not require DC filters
c) can be used for very high power more than 1500 MW
d) all of the above

9) A thyristor valve conducts when _____.
a) anode is positive
b) anode is negative
c) anode is positive with positive gate pulse
d) anode is positive with negative gate pulse

10) In HVDC link with CC control _____.
a) power loss is more b) short circuit current is limited
c) both (a) and (b) d) none of the above

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Semester - II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
High Voltage DC Transmission (BTN07806)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section - I

Q.2 Solve any four of the following. **20**

a) Justify the need for control in a DC link. Hence, analyze the problems in a DC link associated with power reversal.
b) Write a short note on Importance of evaluating the economics associated with different ride-through techniques in view of smooth converter operation of HVDC systems.
c) Discuss series-parallel multi-terminal HVDC system and its control.
d) Explain the disturbances due to over voltages on DC side.
e) Explain the basic conversion principles with neat circuit diagrams.

Section - II

Q.3 Solve any two of the following. **20**

a) Illustrate the circuit model for a simple six pulse voltage source converter (VSC) module and explain its working with the help of correct gate firing sequence.
b) Explain the interaction between HVAC & DC systems.
c) Explain the rectifier and inverter operation of a power converter and also write the equivalent circuit of converter?

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Semester - II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
High Voltage DC Transmission (BTN07806)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options. 10

1) A back to back HVDC link can be advantageous compared to AC primarily because _____.
a) It is cheaper b) Of stability considerations
c) Of controlled power glow d) None of these

2) High Voltage de transmission requires filters for _____.
a) Line commuted converters
b) Voltage sourced converters
c) Both of these
d) None of these

3) The rating of monopolar HVDC system is _____ to that of bipolar HVDC system.
a) $1/2$ b) $\sqrt{2}$
c) 2 d) $\sqrt{3}$

4) The two conductor in the Homo polar HVDC system is _____.
a) Positive polarity b) Negative polarity
c) Same polarity d) Any of the above

5) The main advantage of HVDC-VSC schemes is _____.
a) both active and reactive powers can be controlled
b) does not require DC filters
c) can be used for very high power more than 1500 MW
d) all of the above

6) A thyristor valve conducts when _____.
a) anode is positive
b) anode is negative
c) anode is positive with positive gate pulse
d) anode is positive with negative gate pulse

7) In HVDC link with CC control _____.
a) power loss is more b) short circuit current is limited
c) both (a) and (b) d) none of the above

8) Fault current level is highest in the following types of faults _____.
a) converter internal fault b) DC line fault
c) commutation failure d) lightning stroke on lines

9) Multiterminal systems are _____.
a) series connected b) parallel connected
c) ring connected d) all of the above

10) Most of the MTDC systems that are in operation and feasible are _____.
a) series connected b) parallel connected
c) ring connected d) all of the above

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Semester - II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
High Voltage DC Transmission (BTN07806)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section - I

Q.2 Solve any four of the following. **20**

a) Justify the need for control in a DC link. Hence, analyze the problems in a DC link associated with power reversal.
b) Write a short note on Importance of evaluating the economics associated with different ride-through techniques in view of smooth converter operation of HVDC systems.
c) Discuss series-parallel multi-terminal HVDC system and its control.
d) Explain the disturbances due to over voltages on DC side.
e) Explain the basic conversion principles with neat circuit diagrams.

Section - II

Q.3 Solve any two of the following. **20**

a) Illustrate the circuit model for a simple six pulse voltage source converter (VSC) module and explain its working with the help of correct gate firing sequence.
b) Explain the interaction between HVAC & DC systems.
c) Explain the rectifier and inverter operation of a power converter and also write the equivalent circuit of converter?

SLR-BD-629

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Semester - II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
High Voltage DC Transmission (BTN07806)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 50
Time: 03:00 PM To 06:00 PM

Instructions:1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer bookPage no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options. 10

1) The main advantage of HVDC-VSC schemes is _____.
a) both active and reactive powers can be controlled
b) does not require DC filters
c) can be used for very high power more than 1500 MW
d) all of the above

2) A thyristor valve conducts when _____.
a) anode is positive
b) anode is negative
c) anode is positive with positive gate pulse
d) anode is positive with negative gate pulse

3) In HVDC link with CC control _____.
a) power loss is more b) short circuit current is limited
c) both (a) and (b) d) none of the above

4) Fault current level is highest in the following types of faults _____.
a) converter internal fault b) DC line fault
c) commutation failure d) lightning stroke on lines

5) Multiterminal systems are _____.
a) series connected b) parallel connected
c) ring connected d) all of the above

6) Most of the MTDC systems that are in operation and feasible are _____.
a) series connected b) parallel connected
c) ring connected d) all of the above

7) A back to back HVDC link can be advantageous compared to AC primarily because _____.

a) It is cheaper
b) Of stability considerations
c) Of controlled power glow
d) None of these

8) High Voltage de transmission requires filters for _____.

a) Line commuted converters
b) Voltage sourced converters
c) Both of these
d) None of these

9) The rating of monopolar HVDC system is _____ to that of bipolar HVDC system.

a) $1/2$
b) $\sqrt{2}$
c) 2
d) $\sqrt{3}$

10) The two conductor in the Homo polar HVDC system is _____.

a) Positive polarity
b) Negative polarity
c) Same polarity
d) Any of the above

SLR-BD-629

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Semester - II) (New) (CBCS) Examination: March/April - 2025
ELECTRICAL ENGINEERING
High Voltage DC Transmission (BTN07806)

Day & Date: Wednesday, 28-05-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions (if necessary and state them clearly).

Section - I

Q.2 Solve any four of the following. **20**

a) Justify the need for control in a DC link. Hence, analyze the problems in a DC link associated with power reversal.
b) Write a short note on Importance of evaluating the economics associated with different ride-through techniques in view of smooth converter operation of HVDC systems.
c) Discuss series-parallel multi-terminal HVDC system and its control.
d) Explain the disturbances due to over voltages on DC side.
e) Explain the basic conversion principles with neat circuit diagrams.

Section - II

Q.3 Solve any two of the following. **20**

a) Illustrate the circuit model for a simple six pulse voltage source converter (VSC) module and explain its working with the help of correct gate firing sequence.
b) Explain the interaction between HVAC & DC systems.
c) Explain the rectifier and inverter operation of a power converter and also write the equivalent circuit of converter?

SLR-BD-637

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-II) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Economic Policies in India (197042802)

Day & Date: Monday, 02-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct Answer. **14**

1) What was the policy of British rulers in India for industrialization?
a) The British rulers wanted to make India an importer of both primary and finished goods.
b) The British rulers wanted to make India an exporter of both primary and finished goods.
c) The British rulers wanted to make India an importer of primary goods from Britain and an exporter of finished goods to Britain.
d) The British rulers wanted to make India an exporter of primary goods to Britain and an importer of finished goods from Britain.

2) What was one of the major contributions of the Britishers to the Indian economy?
a) The British rule in India saw the construction of several all-weather roads.
b) The British rule in India saw the introduction of the railway network.
c) The British rule in India saw the development of the inland trade and sea lanes.
d) All of these.

3) Which of the following is a method to measure the National Income?
a) Expenditure method b) Income method
c) Product method d) All of the above

4) Which of the following scenarios explain economic development?
a) Improvement in the distribution system
b) Improvement in the technology
c) Improvement in the production
d) All of the above

5) The purchasing power of money varies _____.
a) Directly with the volume of employment
b) Inversely with the price level
c) Directly with the interest rate
d) Directly with the price level

6) Which of the following activities is not included in the calculation of the national income of a country?
a) A maid working for a family on a full-time basis
b) A lawyer conducting their law practice
c) A housewife performing housework
d) A dispensary rendering medical services

7) Which of the following is not a characteristic of the Indian economy on the eve of India's independence?
a) Small and fragmented land holdings
b) Use of outdated and old technology
c) Commercial farming
d) Low level of productivity

8) The industrial license was abolished for most industries except_____ during the 1991 reforms.
a) Steel
b) Food processing
c) Liquor
d) All of the above

9) Elasticity of demand is a tendency of demand to____.
a) Increase or decrease on the change of price
b) Increase on the rising of price
c) Decrease on the falling on price
d) Consistency of demand on rising and falling prices

10) Shares with a fixed rate of dividend that entitle their holders to priority payment over those who hold ordinary shares of a company are called
a) Preference shares
b) Bull
c) Bear
d) Shareholder

11) The poverty line has been defined in the____.
a) Seventh Five-Year Plan
b) Sixth Five-Year Plan
c) Eighth Five-Year Plan
d) Fifth Five-Year Plan

12) Value Added Tax (VAT) is_____.

a) Indirect tax levied at each stage of production and distribution, from the primary produce to the retailer.
b) Tax calculated on the selling price, but in declaring the liability to the government, the seller is allowed to deduct any tax paid by him when he bought the goods.
c) Both (a) and (b)
d) None of these

13) Planning Commission was constituted in_____.

a) June 1949
b) October 1951
c) March 1950
d) None of these

14) Which of the following sectors of the economy is state-owned and its service sector is a public enterprise?

a) Mining
b) Education
c) Transportation
d) None of these

Seat No.	

Set **P**

Fourth. Y. (B. Tech) (Sem-II) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Economic Policies in India (197042802)

Day & Date: Monday, 02-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions remaining of the questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions.
3) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following questions.
- **a)** Write a note on the Economic condition of India before the colonial government. **04**
- **b)** Explain the effect of economic reformation on Indian economy. **04**
- **c)** Write in detail about causes, effect and remedies of poverty in India. **04**

Q.3 Attempt the following questions.
- **a)** Explain the issues related to agriculture production and market conditions in India. **04**
- **b)** Explain in detail about rural market and urban market. **04**

Q.4 Attempt the following questions.
- **a)** Write a note on Economic condition of India During the colonial government. **04**
- **b)** Explain in detail about economic reforms in India. **04**

Q.5 Attempt the following questions.
- **a)** Explain the role of Government in development of Agricultural sector in India **04**
- **b)** What is role of government in rural credit system? **04**

Section – II

Q.6 Attempt the following questions.
- **a)** What is mean by SEBI? Explain in detail. **05**
- **b)** Write short note on 12^{th} finance commission. **05**

Q.7 Attempt the following questions.
- **a)** Describe Parallel Economy and explain in detail. **05**
- **b)** What is multinational corporations? What are different types of multinational corporations? **04**

Q.8 Attempt the following questions.

a) What is mean by FDI? Explain in detail. **05**

b) Explain in detail performance of industrial sector before the economic reform period. **04**

Q.9 Attempt the following questions.

a) What is role of Panchayat and Pressure groups in implementation of economic policies? **05**

b) How the taxes are collected in federalism? **04**

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-II) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Economic Policies in India (197042802)

Day & Date: Monday, 02-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct Answer. **14**

1) The industrial license was abolished for most industries except_____ during the 1991 reforms.
a) Steel b) Food processing
c) Liquor d) All of the above

2) Elasticity of demand is a tendency of demand to____.
a) Increase or decrease on the change of price
b) Increase on the rising of price
c) Decrease on the falling on price
d) Consistency of demand on rising and falling prices

3) Shares with a fixed rate of dividend that entitle their holders to priority payment over those who hold ordinary shares of a company are called
a) Preference shares b) Bull
c) Bear d) Shareholder

4) The poverty line has been defined in the____.
a) Seventh Five-Year Plan
b) Sixth Five-Year Plan
c) Eighth Five-Year Plan
d) Fifth Five-Year Plan

5) Value Added Tax (VAT) is_____.

a) Indirect tax levied at each stage of production and distribution, from the primary produce to the retailer.
b) Tax calculated on the selling price, but in declaring the liability to the government, the seller is allowed to deduct any tax paid by him when he bought the goods.
c) Both (a) and (b)
d) None of these

6) Planning Commission was constituted in_____.

a) June 1949 b) October 1951
c) March 1950 d) None of these

7) Which of the following sectors of the economy is state-owned and its service sector is a public enterprise?

a) Mining b) Education
c) Transportation d) None of these

8) What was the policy of British rulers in India for industrialization?

a) The British rulers wanted to make India an importer of both primary and finished goods.
b) The British rulers wanted to make India an exporter of both primary and finished goods.
c) The British rulers wanted to make India an importer of primary goods from Britain and an exporter of finished goods to Britain.
d) The British rulers wanted to make India an exporter of primary goods to Britain and an importer of finished goods from Britain.

9) What was one of the major contributions of the Britishers to the Indian economy?

a) The British rule in India saw the construction of several all-weather roads.
b) The British rule in India saw the introduction of the railway network.
c) The British rule in India saw the development of the inland trade and sea lanes.
d) All of these.

10) Which of the following is a method to measure the National Income?

a) Expenditure method b) Income method
c) Product method d) All of the above

11) Which of the following scenarios explain economic development?

a) Improvement in the distribution system
b) Improvement in the technology
c) Improvement in the production
d) All of the above

12) The purchasing power of money varies _____.
a) Directly with the volume of employment
b) Inversely with the price level
c) Directly with the interest rate
d) Directly with the price level

13) Which of the following activities is not included in the calculation of the national income of a country?
a) A maid working for a family on a full-time basis
b) A lawyer conducting their law practice
c) A housewife performing housework
d) A dispensary rendering medical services

14) Which of the following is not a characteristic of the Indian economy on the eve of India's independence?
a) Small and fragmented land holdings
b) Use of outdated and old technology
c) Commercial farming
d) Low level of productivity

SLR-BD-637

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem-II) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Economic Policies in India (197042802)

Day & Date: Monday, 02-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions remaining of the questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions.
3) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following questions.
a) Write a note on the Economic condition of India before the colonial government. **04**
b) Explain the effect of economic reformation on Indian economy. **04**
c) Write in detail about causes, effect and remedies of poverty in India. **04**

Q.3 Attempt the following questions.
a) Explain the issues related to agriculture production and market conditions in India. **04**
b) Explain in detail about rural market and urban market. **04**

Q.4 Attempt the following questions.
a) Write a note on Economic condition of India During the colonial government. **04**
b) Explain in detail about economic reforms in India. **04**

Q.5 Attempt the following questions.
a) Explain the role of Government in development of Agricultural sector in India **04**
b) What is role of government in rural credit system? **04**

Section – II

Q.6 Attempt the following questions.
a) What is mean by SEBI? Explain in detail. **05**
b) Write short note on 12^{th} finance commission. **05**

Q.7 Attempt the following questions.
a) Describe Parallel Economy and explain in detail. **05**
b) What is multinational corporations? What are different types of multinational corporations? **04**

Q.8 Attempt the following questions.

a) What is mean by FDI? Explain in detail. **05**

b) Explain in detail performance of industrial sector before the economic reform period. **04**

Q.9 Attempt the following questions.

a) What is role of Panchayat and Pressure groups in implementation of economic policies? **05**

b) How the taxes are collected in federalism? **04**

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem-II) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Economic Policies in India (197042802)

Day & Date: Monday, 02-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct Answer. **14**

1) The poverty line has been defined in the____.
a) Seventh Five-Year Plan
b) Sixth Five-Year Plan
c) Eighth Five-Year Plan
d) Fifth Five-Year Plan

2) Value Added Tax (VAT) is_____.
a) Indirect tax levied at each stage of production and distribution, from the primary produce to the retailer.
b) Tax calculated on the selling price, but in declaring the liability to the government, the seller is allowed to deduct any tax paid by him when he bought the goods.
c) Both (a) and (b)
d) None of these

3) Planning Commission was constituted in_____.
a) June 1949 b) October 1951
c) March 1950 d) None of these

4) Which of the following sectors of the economy is state-owned and its service sector is a public enterprise?
a) Mining b) Education
c) Transportation d) None of these

5) What was the policy of British rulers in India for industrialization?
a) The British rulers wanted to make India an importer of both primary and finished goods.
b) The British rulers wanted to make India an exporter of both primary and finished goods.
c) The British rulers wanted to make India an importer of primary goods from Britain and an exporter of finished goods to Britain.
d) The British rulers wanted to make India an exporter of primary goods to Britain and an importer of finished goods from Britain.

6) What was one of the major contributions of the Britishers to the Indian economy?
a) The British rule in India saw the construction of several all-weather roads.
b) The British rule in India saw the introduction of the railway network.
c) The British rule in India saw the development of the inland trade and sea lanes.
d) All of these.

7) Which of the following is a method to measure the National Income?
a) Expenditure method b) Income method
c) Product method d) All of the above

8) Which of the following scenarios explain economic development?
a) Improvement in the distribution system
b) Improvement in the technology
c) Improvement in the production
d) All of the above

9) The purchasing power of money varies _____.
a) Directly with the volume of employment
b) Inversely with the price level
c) Directly with the interest rate
d) Directly with the price level

10) Which of the following activities is not included in the calculation of the national income of a country?
a) A maid working for a family on a full-time basis
b) A lawyer conducting their law practice
c) A housewife performing housework
d) A dispensary rendering medical services

11) Which of the following is not a characteristic of the Indian economy on the eve of India's independence?
a) Small and fragmented land holdings
b) Use of outdated and old technology
c) Commercial farming
d) Low level of productivity

12) The industrial license was abolished for most industries except_____ during the 1991 reforms.

a) Steel
b) Food processing
c) Liquor
d) All of the above

13) Elasticity of demand is a tendency of demand to____.

a) Increase or decrease on the change of price
b) Increase on the rising of price
c) Decrease on the falling on price
d) Consistency of demand on rising and falling prices

14) Shares with a fixed rate of dividend that entitle their holders to priority payment over those who hold ordinary shares of a company are called

a) Preference shares
b) Bull
c) Bear
d) Shareholder

SLR-BD-637

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem-II) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Economic Policies in India (197042802)

Day & Date: Monday, 02-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions remaining of the questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions.
3) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following questions.
a) Write a note on the Economic condition of India before the colonial government. **04**
b) Explain the effect of economic reformation on Indian economy. **04**
c) Write in detail about causes, effect and remedies of poverty in India. **04**

Q.3 Attempt the following questions.
a) Explain the issues related to agriculture production and market conditions in India. **04**
b) Explain in detail about rural market and urban market. **04**

Q.4 Attempt the following questions.
a) Write a note on Economic condition of India During the colonial government. **04**
b) Explain in detail about economic reforms in India. **04**

Q.5 Attempt the following questions.
a) Explain the role of Government in development of Agricultural sector in India **04**
b) What is role of government in rural credit system? **04**

Section – II

Q.6 Attempt the following questions.
a) What is mean by SEBI? Explain in detail. **05**
b) Write short note on 12^{th} finance commission. **05**

Q.7 Attempt the following questions.
a) Describe Parallel Economy and explain in detail. **05**
b) What is multinational corporations? What are different types of multinational corporations? **04**

Q.8 Attempt the following questions.

a) What is mean by FDI? Explain in detail. **05**

b) Explain in detail performance of industrial sector before the economic reform period. **04**

Q.9 Attempt the following questions.

a) What is role of Panchayat and Pressure groups in implementation of economic policies? **05**

b) How the taxes are collected in federalism? **04**

Seat No.	

Set **S**

Fourth. Y. (B. Tech) (Sem-II) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Economic Policies in India (197042802)

Day & Date: Monday, 02-June-2025 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct Answer. **14**

1) Which of the following activities is not included in the calculation of the national income of a country?
a) A maid working for a family on a full-time basis
b) A lawyer conducting their law practice
c) A housewife performing housework
d) A dispensary rendering medical services

2) Which of the following is not a characteristic of the Indian economy on the eve of India's independence?
a) Small and fragmented land holdings
b) Use of outdated and old technology
c) Commercial farming
d) Low level of productivity

3) The industrial license was abolished for most industries except_____ during the 1991 reforms.
a) Steel b) Food processing
c) Liquor d) All of the above

4) Elasticity of demand is a tendency of demand to____.
a) Increase or decrease on the change of price
b) Increase on the rising of price
c) Decrease on the falling on price
d) Consistency of demand on rising and falling prices

5) Shares with a fixed rate of dividend that entitle their holders to priority payment over those who hold ordinary shares of a company are called
a) Preference shares b) Bull
c) Bear d) Shareholder

6) The poverty line has been defined in the____.
a) Seventh Five-Year Plan
b) Sixth Five-Year Plan
c) Eighth Five-Year Plan
d) Fifth Five-Year Plan

7) Value Added Tax (VAT) is_____.
a) Indirect tax levied at each stage of production and distribution, from the primary produce to the retailer.
b) Tax calculated on the selling price, but in declaring the liability to the government, the seller is allowed to deduct any tax paid by him when he bought the goods.
c) Both (a) and (b)
d) None of these

8) Planning Commission was constituted in_____.
a) June 1949 b) October 1951
c) March 1950 d) None of these

9) Which of the following sectors of the economy is state-owned and its service sector is a public enterprise?
a) Mining b) Education
c) Transportation d) None of these

10) What was the policy of British rulers in India for industrialization?
a) The British rulers wanted to make India an importer of both primary and finished goods.
b) The British rulers wanted to make India an exporter of both primary and finished goods.
c) The British rulers wanted to make India an importer of primary goods from Britain and an exporter of finished goods to Britain.
d) The British rulers wanted to make India an exporter of primary goods to Britain and an importer of finished goods from Britain.

11) What was one of the major contributions of the Britishers to the Indian economy?
a) The British rule in India saw the construction of several all-weather roads.
b) The British rule in India saw the introduction of the railway network.
c) The British rule in India saw the development of the inland trade and sea lanes.
d) All of these.

12) Which of the following is a method to measure the National Income?
a) Expenditure method b) Income method
c) Product method d) All of the above

13) Which of the following scenarios explain economic development?
a) Improvement in the distribution system
b) Improvement in the technology
c) Improvement in the production
d) All of the above

14) The purchasing power of money varies _____.
a) Directly with the volume of employment
b) Inversely with the price level
c) Directly with the interest rate
d) Directly with the price level

Seat No.	

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Fourth. Y. (B. Tech) (Sem-II) (CBCS) Examination: March/April-2025
CIVIL ENGINEERING
Economic Policies in India (197042802)

Day & Date: Monday, 02-June-2025 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions remaining of the questions.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions remaining of the questions.
3) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following questions.
- **a)** Write a note on the Economic condition of India before the colonial government. **04**
- **b)** Explain the effect of economic reformation on Indian economy. **04**
- **c)** Write in detail about causes, effect and remedies of poverty in India. **04**

Q.3 Attempt the following questions.
- **a)** Explain the issues related to agriculture production and market conditions in India. **04**
- **b)** Explain in detail about rural market and urban market. **04**

Q.4 Attempt the following questions.
- **a)** Write a note on Economic condition of India During the colonial government. **04**
- **b)** Explain in detail about economic reforms in India. **04**

Q.5 Attempt the following questions.
- **a)** Explain the role of Government in development of Agricultural sector in India **04**
- **b)** What is role of government in rural credit system? **04**

Section – II

Q.6 Attempt the following questions.
- **a)** What is mean by SEBI? Explain in detail. **05**
- **b)** Write short note on 12^{th} finance commission. **05**

Q.7 Attempt the following questions.
- **a)** Describe Parallel Economy and explain in detail. **05**
- **b)** What is multinational corporations? What are different types of multinational corporations? **04**

Q.8 Attempt the following questions.

a) What is mean by FDI? Explain in detail. **05**

b) Explain in detail performance of industrial sector before the economic reform period. **04**

Q.9 Attempt the following questions.

a) What is role of Panchayat and Pressure groups in implementation of economic policies? **05**

b) How the taxes are collected in federalism? **04**