SLR-QE-1

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester – I) (New) (CBCS) Examination: March/April-2023
ENGLISH (COMPULSORY)
Literary Voyage (ECS1101)

Day & Date: Tuesday, 18-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

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

Q.1 Multiple choice questions: **08**

1) What has been at the back of every speech Gandhi has delivered _____.
   a) Religion b) Abstinence
   c) Teetotalism d) Missionaries

2) How did the author travel to school in the city _____.
   a) Car b) on foot
   c) Bicycle d) Motor bus

3) What is necessary to win freedom?
   a) Battles b) Freedom movement
   c) Patience d) Allies

4) Which flowers competed for the title?
   a) Lily and daisy b) Rose and daisy
   c) Lily and rose d) Rose and tulip

5) What kind of coins did the father discover?
   a) Copper b) Gold
   c) Silver d) Nickel

6) Sarita is best _____ (play) in the team. (use suitable affix)
   a) er b) ed
   c) playing d) none

7) Secularism has a broad range of meaning. (identify underlined parts of speech)
   a) Noun b) Verb
   c) Adjective d) Pronoun

8) The school was attached to _____.
   a) College b) Temple
   c) Library d) Hospital

Q.2 Answer any four of the following. **12**

1) How is the subject of the essay crucial in understanding Gandhi as a leader?
2) What kind of relationship did the author have with his grandmother?
3) Discuss the poet's state of mind in the poem. Let Me Not Pray to be sheltered from Dangers?
4) Why did the poet focus on the Lotus flower in the poem?
5) Discuss the theme of guilt in the poem 'The Toys'.
6) How would you describe the character of the grandmother?

Q.3 Write a note on the principles of effective communication. **10**

OR

What is communication? And discuss the elements of communication.

Q.4 What is intrapersonal communication? How to improve to it? **10**

SLR-QE-2

Seat No.	

Set P

B.Sc. (E.C.S) (Semester - I) (New) (CBCS) Examination: March/April-2023
Fundamental of Computer (ECS1102)

Day & Date: Wednesday, 19-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

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

Q.1 Choose the correct alternatives from the options. **08**

1) EPROM stands for _____
- a) Erasable Programmable Read Only Memory
- b) Electrically Erasable Programmable Read Only Memory
- c) Programmable Read Only Memory
- d) None of these

2) _____ is most common input device used in computer.
- a) Keyboard
- b) Light pen
- c) Scanner
- d) Joystick

3) Mnemonic a memory trick is used in which of the following language?
- a) Machine language
- b) Assembly language
- c) High level language
- d) None of above

4) What is the full form of CPU?
- a) Computer Processing Unit
- b) Computer Principle Unit
- c) Central Processing Unit
- d) Control Processing Unit

5) The binary equivalent of the decimal number 10 is _____
- a) 0010
- b) 10
- c) 1010
- d) 010

6) Computer is free from tiredness we call it _____
- a) Accuracy
- b) Automatic
- c) Diligence
- d) Versatility

7) Which one of these is characteristic of RAID 5?
- a) Distributed parity
- b) No Parity
- c) All parity in a single disk
- d) Double Parity

8) The octal equivalent of 1100101.001010 is _____.
- a) 624.12
- b) 145.12
- c) 154.12
- d) 145.21

Q.2 Answer any four of the following **08**

a) Define Interpreter.
b) What is application of MICR?
c) Define serial port and parallel port.
d) What is a volatile and non-volatile memory?
e) Define Computer.
f) List out characteristics of the computers.

Q.3 Write short notes on any two of the following **08**

a) Explain block diagram of computer in detail.
b) What is Printer? Explain types of Printers in detail.
c) What is Primary Memory? Explain its types in detail.

Q.4 Answer any Two of the following **08**

a) Solve the followings:
  i) $(101011.110)_8 = (?)_{10}$
  ii) $(1B.2D)_{16} = (?)_{10}$
  iii) $(128.36)_{10} = (?)_2$
  iv) $(11.10)_{10} = (?)_{16}$
b) What is scanner? Explain types of scanner.
c) Explain Motherboard in detail.

Q.5 Answer any one of the following **08**

a) Explain classification of computer based on size and purpose.
b) Explain RAID and its levels 0, 1, 5, 6 and 10.

SLR-QE-3

Seat No.	

Set P

B.Sc. (E.C.S) (Semester – I) (New) (CBCS) Examination: March/April-2023
Basics of Operating System (ECS1103)

Day & Date: Thursday, 20-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Draw neat diagrams and give equations wherever necessary.
3) Figures to the right indicate full marks.
4) Use of logarithmic table and calculator is allowed.
(At. Wts.: H=1, C=12, 0=16, N= 14, Na =23, Cl = 35.5)

Q.1 Multiple choice questions: **08**

1) 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

2) FCFS scheduling falls under the category of _____.
   a) Non-preemptive scheduling b) preemptive scheduling
   c) all of the mentioned d) none of the mentioned

3) Programs are executed on the basis of jobs in a _____.
   a) time sharing b) multiprogramming
   c) batch processing system d) none of these

4) The number of processes completed per unit time is known as _____.
   a) Output b) Throughput
   c) Efficiency d) Capacity

5) The wait operation of the semaphore basically works on the basic _____ system call.
   a) stop() b) wait()
   c) hold() d) block()

6) A system call is a routine built into the kernel and performs a basic function.
   a) True b) False

7) The bounded buffer problem is also known as _____.
   a) Readers - Writers problem b) Dining - Philosophers problem
   c) Producer - Consumer problem d) None of the mentioned

8) In priority scheduling algorithm _____.
   a) CPU is allocated to the process with highest priority
   b) CPU is allocated to the process with lowest priority
   c) Equal priority processes cannot be scheduled
   d) None of the mentioned

Q.2 Answer any four of the following. **08**

a) Time Sharing OS
b) Mutual exclusion
c) Context Switching
d) System Call
e) Threads
f) FCFS

Q.3 Write short notes on any two of the following **08**

a) Explain OS Services in detail.
b) Explain Semaphores in detail with example.
c) Explain PCB in detail.

Q.4 Answer any Two of the following. **08**

a) Explain Reader-Writer Problem.
b) Explain Scheduling criteria.
c) Explain Process States in detail.

Q.5 Answer any one of the following **08**

a) What is Operating System? Explain Batch OS and Multiprogramming OS in detail.
b) Solve given problem using Priority Based Scheduling algorithm.

Process	P1	P2	P3	P4	P5
Arrival Time	3	0	2	7	5
CPU Burst	4	7	9	2	10
Priority	0	4	2	8	5

Prepare Gantt chart and calculate Average Turnaround Time and Average Waiting Time.

SLR-QE-4

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - I) (New) (CBCS) Examination: March/April-2023
Programming using 'C (ECS1104)

Day & Date: Friday, 21-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Draw neat diagrams and give equations wherever necessary.
3) Figures to the right indicate full marks.
4) Use of logarithmic table and calculator is allowed.

Q.1 Choose correct alternatives. (MCQ) **08**

1) Size of () is a _____?
a) Function b) Variable
c) Both a and b d) Operator

2) break statement is used for?
a) Quit a program b) Quit the current iteration
c) Both a and b d) None of these

3) What is the default value of a local variable?
a) 0 b) 1
c) Garbage d) Null

4) Prototype of a function means?
a) Name of a function b) Parameter of a function
c) Declaration of a function d) All of these

5) float a [15], what is the size of array?
a) 60 b) 64
c) 16 d) 17

6) Which pre-defined function is used for comparing two strings?
a) strcpy() b) strcat()
c) strrev() d) strcmp()

7) Which of the following is the correct statement?
a) ** comment ** b) */ comment */
c) /* comment */ d) { comment }

8) C programs are converted into machine language with the help of
a) An editor b) A compiler
c) An operating system d) None of these

Q.2 Answer any four of the following. **08**

a) State the features of 'C' language.
b) What is the use of break statement?
c) Write the syntax of do while loop. Give an example.
d) What is the use of strcat () function?
e) State the types of user defined function.
f) Define pseudocode.

Q.3 Write short notes on any two of the following. **08**

a) Errors in ‘C’ program.
b) Rules of variable declaration.
c) Role of a pointer with example.

Q.4 Answer any two of the following. **08**

a) What is the history of ‘C’ language?
b) Explain the steps to add user defined funcation in a program
c) Write a program to reverse a given number

Q.5 Answer any one of the following. **08**

a) Explain bitwise operators in 'C' language with example.
b) Write a program to create a menu driven program for a matrix and perform the following operations
   i) Transpose of a matrix
   ii) Diagonal elements of a matrix

SLR-QE-5

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - I) (New) (CBCS) Examination: March/April-2023
PYTHON – I (ECS1105)

Day & Date: Saturday, 22-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

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

Q.1 Multiple choice questions. **08**

1) What is the maximum length of a Python identifier?
   a) 32 b) 16
   c) 64 d) No Fixed Length is Specified

2) How is a code block indicated in Python?
   a) Brackets b) Indentation
   c) Key d) None of the above

3) Which of the following concepts is not a part of Python?
   a) Pointers b) Loops
   c) Dynamic Typing d) All of the above

4) _____ types of loops are not supported in Python?
   a) For b) While
   c) do-while d) None of the above

5) Which of the following functions converts date to corresponding time in Python?
   a) strptime() b) strftime()
   c) Both A and B d) None of the above

6) As what datatype are the *kwargs stored, when passed into a function?
   a) Lists b) Tuples
   c) Dictionary d) None of the above

7) Which of the following is not a valid set operation in python?
   a) Union b) Intersection
   c) Difference d) None of the above

8) Which of the following are valid string manipulation functions in Python?
   a) Count() b) upper()
   c) strip() d) All of the above

Q.2 Answer any four of the following. **08**

a) Define the Python.
b) What is mean by Dictionary?
c) Define Garbage collection in python.
d) Define constants and Identifiers in python.
e) Define the term Tuple and Set in python.
f) Define term List in python.

Q.3 Write short notes on any two of the following. **08**

a) Python virtual machine.
b) Indexing and slicing on arrays.
c) Command-line arguments.

Q.4 Answer any Two of the following. **08**

a) Explain different loops available in python with suitable example.
b) Explain the use of any four methods of tuple in python.
c) Explain pass, continue and break statements in python.

Q.5 Answer any one of the following. **08**

a) What is Array in python? Explain Different types of Array and Advantages of Array.
b) Explain different features of python?

SLR-QE-6

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - I) (New) (CBCS) Examination: March/April-2023
Numerical Methods (ECS1106)

Day & Date: Sunday, 23-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable scientific calculator is allowed.

Q.1 Choose the correct alternative from the following options. 08

1) While performing multiplication of two numbers in normalized floating point notation, mantissas should be _____ and exponents should be _____ respectively,

a) added and multiplied b) multiplied and added
c) made equal and multiplied d) multiplied and made equal

2) If actual value (A) is 9.0021458 and the value obtained by performing calculations (A') is 9.0125886 then absolute error occurred in the calculation is _____.

a) - 0.0104428 b) 0.0104428
c) 0.104428 d) can not be calculated

3) By putting n = 3 in general quadrature formula for equidistant ordinates we get _____ rule.

b) Newton Quotes b) Trapezoidal
c) Simpson's $(1/3)^{rd}$ d) Simpson's $(3/8)^{th}$

4) Simpson's $(1/3)^{rd}$ rule for integration for the 6 entries $y_0, y_1, y_2, y_3, y_4, y_5$ is

a) $\frac{h}{2}[(y_0 + y_5) + 2(y_1 + y_2 + y_3 + y_4)]$

b) $\frac{h}{3}[(y_0 + y_5) + 2(y_1 + y_3) + 4(y_2 + y_4)]$

c) $\frac{h}{2}[(y_0 + y_5) + 4(y_1 + y_3) + 2(y_2 + y_4)]$

d) $\frac{h}{3}[(y_0 + y_5) + 4(y_1 + y_3) + 2(y_2 + y_4)]$

5) If $x_0 = 300, x1 = 304$ and $f(x_0) = 2.4771, f(x_1) = 2.4829$ then the first order divided difference $[x_0, x1] =$ _____.

a) 0.0015 b) 0.0058
c) -0.0015 d) -0.0058

6) $\Delta[\, f\,(x)\, g\,(x)\,] =$

a) $f\,(x).\Delta\, g\,(x) + g\,(x).\Delta\, f\,(x)$

b) $f\,(x+h\,).\Delta\, g\,(x) + g\,(x+h).\Delta\, f\,(x)$

c) $f\,(x+h).\Delta\, g\,(x) + g\,(x).\Delta\, f\,(x)$

d) $f\,(x).\Delta\, g\,(x) + g\,(x+h).\Delta\, f\,(x)$

7) The differential equation $x.y'' + y^2.y' + y''' = 2y + 3$ is _____ equation.

a) Second order, first degree
b) First order, Second degree
c) Third order, first degree
d) First order, Third degree

8) _____ method is one step method to solve Ordinary Differential Equation.

a) Euler's
b) Runge – Kutta
c) Taylor's
d) None of these

Q.2 Answer any four of the following questions. **08**

a) State Simpson's (1/3)rd rule for integration.

b) Prepare Forward Difference table for the following data.

X	5	10	15	20	25
Y=f(x)	25.8952	85.4587	128.8758	140.5445	200.9512

c) Define relative error and percentage error.

d) State Runge - Kutta fourth order method formulae for K_1, K_2, K_3, and K_4.

e) State Lagrange's interpolation formula for the following data.

X	X_0	X_1	X_2	X_3
Y=f(x)	$f(X_0)$	$f(X_1)$	$f(X_2)$	$f(X_3)$

f) For a certain differential equation it is given that $x_0 = 1, y_0 = 2.8, K_1 = 3.088, K_2 = 4.6889, h = 0.2$ then find the numerical value of y_1 i.e. y at $x = 1.2$ by using Runge Kutta second order method.

Q.3 Answer any two of the following questions. **08**

a) Find numerical value of f (25.5) by using Newton's Forward Difference Interpolation formula for the data given below

X	21	31	41	51
Y=f(x)	56	78	92	104

b) Estimate value of y at $x = 4$ by using Euler's method.
Given that $\frac{dy}{dx} = x^2 + y$ with $x_0 = 3.2$, $y_0 = 1.2$ and $h = 0.2$

c) Evaluate $\int_2^6 \frac{1}{1+x}\, dx$ by using Simpson's (3/8)th rule by dividing the interval into 8 equal parts.

Q.4 Answer any two of the following. **08**

a) Solve the following and write the final answer in normalized floating point notation.

1) 125.4589 E 105 × 55.1478 E 200
2) 23.4567 E - 22 ÷ 456.78 E -30
3) 0.0007895 E 4 + 75.3214 E 2
4) 8124.4862 E - 7 - 5478.58 E -5

b) Evaluate $\left(\frac{\Delta^2}{E}\right) x^3$ by taking $h = 1$

c) Evaluate $\int_2^4 x.e^x\, dx$ by dividing the interval into 10 equal parts by using Trapezoidal rule.

Q.5 Answer any one of the following questions. **08**

a) State General Quadrature Formula for Equidistant Ordinates. Hence derive Trapezoidal rule for integration.

b) Define order and degree of the differential equation.
Find numerical value of y at $x = 2.5$ by using Runge - Kutta Fourth order method for the differential equation $\frac{dy}{dx} = e^x + y$ with initial conditions $x_0 = 2, y_0 = 0.8, h = 0.5$

SLR-QE-7

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - I) (New) (CBCS) Examination: March/April-2023
Graph Theory (ECS1107)

Day & Date: Sunday, 24-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of Calculator is allowed.

Q.1 Choose the correct alternative for each of the following. **08**

1) If a graph G has 4 vertices and 6 edges then order of it's adjacency matrix and incidence matrix is _____ and _____ respectively.
a) 4 X 6 and 4 X 4 b) 4 X 4 and 4 X 6
c) 4 X 4 and 6 X 6 d) 4 X 6 and 6 X 4

2) The total degree of K_6 complete graph on 6 vertices is _____.
a) 30 b) 15
c) 6 d) 36

3) Let $G_1 (V_1, E_1)$ & $G_2 (V_2, E_2)$ be any two graphs then he vertex set and edge set of graph $G_1 \cup G_2$ is _____ &_____ Respectively.
a) $V_1 \oplus V_2$ & $E_1 \oplus E_2$ b) $V_1 \cap V_2$ & $E_1 \oplus E_2$
c) $V_1 \cup V_2$ & $E_1 \oplus E_2$ d) $V_1 \cup V_2$ & $E_1 \cup E_2$

4) If a simple graph G_1 has 4 vertices and 5 edges and simple graph G_2 has 5 vertices and 4 edges the number of edges in the product graph $G_1 X G_2$ are _____.
a) 41 b) 40
c) 18 d) None of these

5) A closed path which covers all the vertices of connected graph G, each vertex exactly once is called as _____.
a) Hamiltonian path b) Eulerian path
c) Eulerian circuit d) Hamiltonian circuit

6) In a binary tree a vertex of degree 2 is called as _____.
a) binary vertex b) intermediate vertex
c) Root d) internal vertex

7) Travelling Salesman Problem is a particular case of _____ graph.
a) Eulerian b) Hamiltonian
c) Koningberg's d) Complete

8) _____ Algorithm is used to find shortest distance between any two vertices of given weighted connected graph.
a) Kruskal's b) Warshall's
c) Dijkstra's d) none of these

Q.2 Answer any FOUR of the following **08**

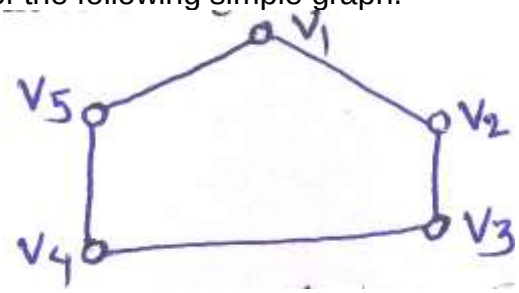
1) Define intersection of two graphs.

2) Draw the graph $K_{2,4}$ and K_5.

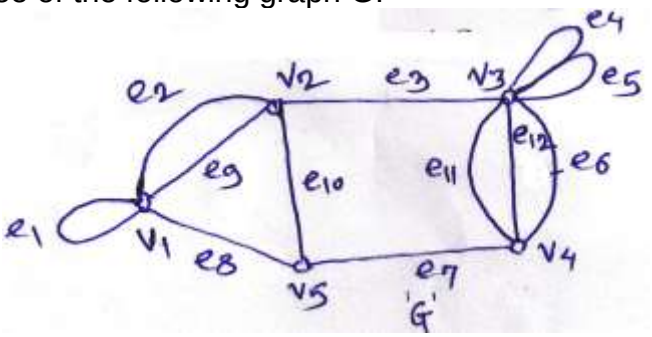
3) Define Eulerian trail and Hamiltonian path.

4) Define simple graph and multi graph with suitable example.

5) Draw complement of the following simple graph.



6) Find total degree of the following graph G.

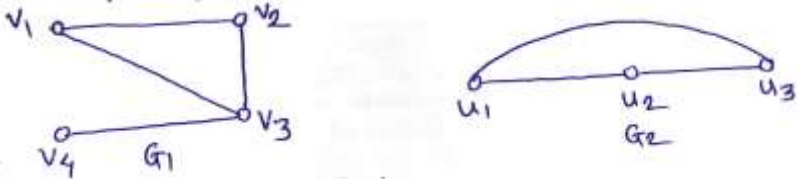


Q.3 Answer any two of the following questions. **08**

1) Write a note on Travelling Salesman Problem.

2) State and prove shaking hand lemma.

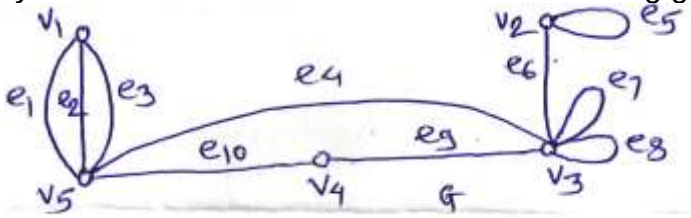
3) Draw the product graph $G_1 X G_2$ from the following graphs G_1 and G_2



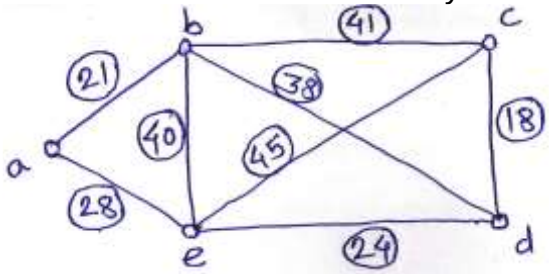
Q.4 Answer any TWO of the following. **08**

1) Define regular graph, complete graph, path, connected graph with suitable examples.

2) Write adjacency matrix and incidence matrix for the following graph.

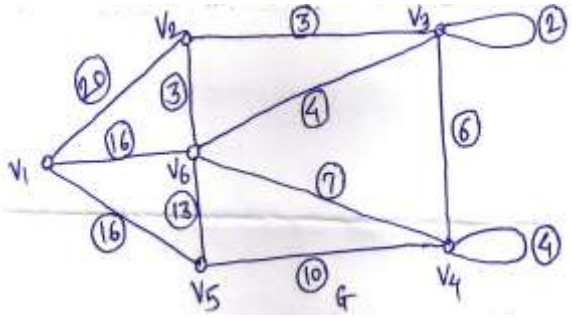


3) Solve the following Traveling Salesman Problem with head quarter at vertex 'a' and find the total minimum distance travelled by the salesman.

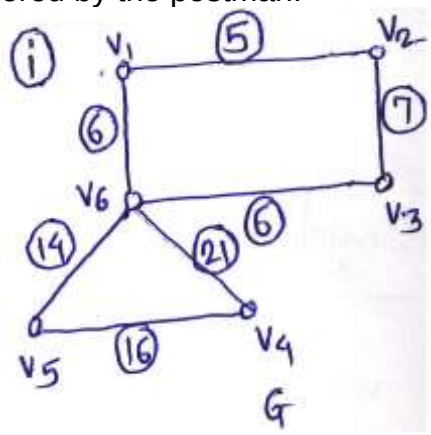


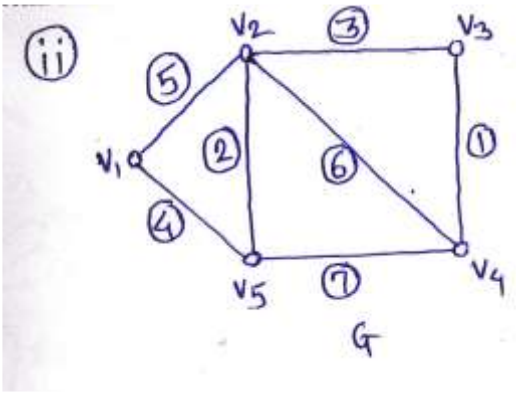
Q.5 Answer any ONE of the following. **08**

1) Define shortest spanning tree. Hence find the shortest spanning tree and it's weight for the following weighted connected graph G by using Kruskal's algorithm.



2) Solve the following Chinese Postman Problem. Hence find total distance covered by the postman.





SLR-QE-8

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - I) (New) (CBCS) Examination: March/April-2023
Basic Electronics Paper - I (ECS1108)

Day & Date: Tuesday, 25-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Draw neat diagrams and give equations wherever necessary.
3) Figures to the right indicate full marks.
4) Use of logarithmic table and calculator is allowed.

Q.1 Multiple choice questions. **08**

1) Actual physical size of resistor indicates _____ rating.
a) Resistance b) Current
c) Power d) Voltage

2) The process of adding impurities to a pure semiconductor is called _____.
a) mixing b) Doping
c) Diffusing d) Refining

3) In a step down transformer secondary current is _____ the primary current.
a) more than b) less than
c) equal to d) Zero

4) The electrons present in the outermost orbit are called _____ electrons.
a) Free b) Valence
c) Bound d) none of above

5) Barrier potential for Silicon is _____.
a) 0.7 eV b) 1.12 eV
c) 1.6 eV d) 0.3 eV

6) FETs are _____ controlled.
a) Current b) Voltage
c) Power d) none of above

7) Inductor is _____ component.
a) active b) Passive
c) both a and b d) none of above

8) In SMPS, transistor works as _____.
a) Amplifier b) oscillator
c) switch d) Rectifier

Q.2 Answer any four of the following. **08**

1) State the specifications and units of resistors.
2) Write color code for resistors - 470kΩ 5% tolerance, 10kΩ 10% tolerance.
3) Define capacitance. State its units and draw symbol.
4) Define a semiconductor. Give two examples.
5) Draw symbols of two types of BJT.
6) What are two types of transformer depending upon secondary voltage? Draw their diagrams.

Q.3 Write short notes on any two of the following. **08**

a) Write a note on variable capacitors with neat diagram /symbol.
b) Write a note on N-type semiconductor.
c) Write a note on SMPS.

Q.4 Answer any Two of the following. **08**

a) Give the classification of components (tree chart).
b) Draw block diagram of regulated power supply and explain its working.
c) Draw and explain construction and working of JFET.

Q.5 Answer any one of the following. **08**

a) What is rectifier? Draw and explain circuit diagram of CT full wave rectifier. Also draw input /output waveforms. Why it is called full wave?
b) Draw and block diagram of inverter and explain function of each block.

SLR-QE-9

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - I) (New) (CBCS) Examination: March/April-2023
Advanced Electronics (Paper – II) (ECS1109)

Day & Date: Wednesday, 26-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Draw neat diagrams and give equations wherever necessary.
3) Figures to the right indicate full marks.
4) Use of logarithmic table and calculator is allowed.

Q.1 Choose correct alternative for the following **08**

1) During photolithographic process the wafer is coated with _____.
a) SiO_2 b) polysilicon
c) photosensitive emulsion d) mask

2) The bottom layer of IC serves as _____ layer.
a) connector b) insulating
c) substrate d) none of above

3) The inter connections are made during _____ process.
a) emitter diffusion b) photolithography
c) epitaxial growth d) metallization

4) In LDR, when intensity of light is less, its resistance value becomes _____.
a) less b) high
c) zero d) infinity

5) The LEDs ad their display devices require a voltage of _____ and current.
a) 2.5 V,20mA b) 1.2 V, 100mA
c) 2.5 V,100mA d) 1.2 V, 20 mA

6) _____ technique is used to etch away all undesired aluminium areas.
a) Oxidation b) Polishing
c) Diffusion d) Photo resist

7) The components placed on the PCB are soldered on _____.
a) traces b) planes
c) metal pads d) regions

8) In optocoupler, _____ and _____ are combined in a single package.
a) LED, LDR b) LED, photodiode
c) LDR, photodiode d) none of above

Q.2 Answer any four of the following **08**

a) Define linear and digital ICs.
b) What is PCB design?
c) Draw symbol of LDR. Write it's working.
d) What is mean by epitaxial growth?
e) What are types of IC families?
f) What do you mean by monolithic ICs?

Q.3 Write short notes on any two of the following **08**

a) Write a note on LCD display. (construction, working)

b) Write a note on SMD and SMT.

c) Write a note on Thermistor.

Q.4 Answer any Two of the following **08**

a) Explain with neat diagram photolithography (masking and etching) process in IC fabrication.

b) Explain single layer and multi layer PCB technology.

c) State applications of different types of sensors.

Q.5 Answer any one of the following **08**

a) What are steps of IC fabrication process? Explain diffusion (doping or ion implantation) and isolation process with neat diagrams.

b) What are types of 7 segment display? Draw neat diagrams and explain their working.

SLR-QE-10

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester – I) (Old) (CBCS) Examination: March/April-2023
ENGLISH (COMPULSORY)
Literary Voyage (ECS0101 / ECS20101)

Day & Date: Tuesday, 18-07-2023 Max. Marks: 80
Time: 09:00 AM To 12:00 PM

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

Q.1 A) Choose the correct alternatives from the given options. **10**

1) What percentage of the population in India was poverty stricken at the time of the essay?
   a) one - third b) one - fourth
   c) one - tenth d) one - sixth

2) What is the name of the river island where Payeng began his work?
   a) Miling b) Mishing
   c) Malang d) None of these

3) The school was attached to _____.
   a) a hospital and the nurses taught them
   b) a public library and the librarian taught them
   c) a bigger school and the teachers there taught them
   d) a temple and the priest of the temple taught them

4) The poet is in _____ state of mind when he wrote this poem “Let Me Not pray to be sheltered from Dangers”
   a) a doubtful b) a horrid
   c) a dangerous d) a confident

5) The conflict for the honour of _____ between rose and lily.
   a) as the king of flowers b) the queen of nature
   c) the queen of flowers d) the stateliest flower

6) The boy in the poem “The Toys” is _____.
   a) the speaker of the poem b) a motherless child
   c) on adamant child d) a naughty little fellow

7) The last component of any successful communication is _____.
   a) Receiving b) Decoding
   c) Acknowledging d) Feedback

8) Which of the following is a communication channel?
   a) Mobile technology b) Zoom conferencing
   c) Courier service d) All the above

9) Please wait _____ me _____ the bus stop.
   (Use appropriate preposition to complete the sentence)
   a) for, in b) for, at
   c) for, with d) at, for

10) Green team ways _____ (numbered) by Blue team [use suitable prefixes with the words]
   a) unnumbered b) out numbered
   c) disnumbered d) none of the Above

B) Answer the following questions in one sentence. **06**

1) What is the relation between economics and religion in the essay 'The Birth of Khadi'?
2) In which year, Jadav Payeng got the country's highest civilian award 'Padma shri'?
3) What did the grandmother desire to do on her deathbed?
4) In which year Tagore's ground breaking work 'Gitanjali' was published?
5) Who sung praises for the flowers in the poem 'The Lotus'?
6) What kind of coins did the father discover?

Q.2 Answer the following questions in brief 30-40 words. (8 out of 12) **16**

1) What is the importance of khadi in the context of the freedom struggle?
2) How is environmental conservation crucial for the future?
3) Draw, a character sketch of 'grandmother' in the essay 'The portrait of a Lady'?
4) Discuss the poet's state of mind in the poem. 'Let Me Not pray to be sheltered from Dangers'?
5) Write down the summary of poem "The Lotus".
6) What is the significance of the toys in the poem?
7) Explain Gandhi's talk on religion.
8) Draw a character sketch of Jadav Payeng and his grand work.
9) What is the significance of sparrows in the story "The Portrait of a Lady"?
10) Write a note on the principles of effective communication.
11) What is communication? Explain.
12) Explain the soft skill 'Intrapersonal skill'

Q.3 A) Write down the answer of any two of the following. **10**

1) How is untouchability related to the essay "The Birth of Khadi"?
2) What were some of the problems faced by Jadav?
3) What is the significance of the sparrows?

B) Write short notes **06**

Write down the summary 'The Toys'.

Q.4 A) Write down the answers of any two of the following. **08**

1) What is the receiver's role in the process of communication.
2) What are the barriers of communication breakdown?
3) Explain the concept of 'Intrapersonal skills'.

B) Prepare a narrative essay on your first day experience of college. **08**

Q.5 Write down the answers of any two of the following. **16**

a) Prepare a descriptive essay on a Local Park.
b) How would you improve your communication and make it effective?
c) What is 'message' in a communication process?

SLR-QE-11

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination: March/April-2023
Fundamentals of Programming using C and C++ – I (ECS0102)

Day & Date: Wednesday, 19-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw necessary diagrams whenever necessary.

Q.1 Choose the correct alternatives from the options. **08**

1) The format identifier '%i' is also used for _____ data type.
   a) char b) int
   c) float d) double

2) Which of the following statement is false?
   a) Constant variables need not be defined as they are declared and can be defined later
   b) Global constant variables are initialized to zero
   c) const keyword is used to define constant values
   d) You cannot reassign a value to a constant variable

3) Which of the following is a User-defined data type?
   a) typedef int Boolean;
   b) typedef enum {Mon, Tue, Wed, Thu, Fri} Workdays;
   c) struct {char name[10], int age};
   d) all of the mentioned

4) What are the advantages of arrays?
   a) Objects of mixed data types can be stored
   b) Elements in an array cannot be sorted
   c) Index of first element of an array is 1
   d) Easier to store elements of same data type

5) Relational operators cannot be used on _____.
   a) structure b) long
   c) strings d) float

6) Which among the following is Copying function for string?
   a) memcpy() b) strcpy()
   c) memcopy() d) strxcpy()

7) How do you initialize an array in C?
   a) int arr[3] = (1,2,3); b) int arr(3) = {1,2,3};
   c) int arr[3] = {1,2,3}; d) int arr(3) = (1,2,3);

8) What is the precedence of arithmetic operators (from highest to lowest)?
   a) %,*,/,+, - b) %,+,/,*,-
   c) +,-,%,*,/ d) %,+,-,*,/

Q.2 Answers any four of the following. **08**

a) List out various keyword used in c language.
b) Write down syntax of scanf() & printf() function.
c) List out various data types in c++ language.
d) Write rules for variable declaration.
e) Define pointer with example.
f) Define constant with example.

Q.3 Write short notes on any two of the following. **08**

a) Explain switch case statement.
b) Explain bitwise operators.
c) Explain forward jump and backward jump in jumping statement.

Q.4 Answer any two of the following. **08**

a) Differentiate call by value and call by reference
b) Explain concept of pointer to pointer.
c) Define array. Write a program for addition of 2X2 matrix.

Q.5 Answer any one of the following. **08**

a) Define function. Explain various types of user defined function.
b) Define structure. Write a program by using structure to display information of five students.

SLR-QE-12

Seat No.	

Set P

B.Sc. (E.C.S) (Semester – I) (Old) (CBCS) Examination: March/April-2023
Fundamentals of Programming Using C and C++ – II (ECS0103)

Day & Date: Thursday, 20-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

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

Q.1 Multiple choice questions: **08**

1) Which of the following is not a type of Constructor in C++?
   a) Default constructor b) Parameterized constructor
   c) Copy constructor d) Friend constructor

2) Which of the following approach is used by C++?
   a) Left-right b) Right-left
   c) Bottom-up d) Top-down

3) Which of the following is the address operator?
   a) @ b) #
   c) & d) %

4) _____ and _____ are ternary operators.
   a) ? ! b) ? :
   c) ? , d) ? /

5) A _____ is an identifier assigned to memory location where data is stored.
   a) Operator b) Variable
   c) Masking d) both b and c

6) The programming language that has the ability to create new data types is called _____.
   a) Overloaded b) Encapsulated
   c) Reprehensible d) Extensible

7) Array index starts from _____.
   a) 0 b) 1 2
   c) 2 d) Any number

8) Which of the following is the correct syntax to read the single character to console in the C++ language?
   a) Read ch() b) Getline vh()
   c) get(ch) d) Scanf(ch)

Q.2 Answer any four of the following. **08**

a) Explain difference between Procedure Oriented Programming and Object Oriented Programming.
b) What is a pure virtual function?
c) Give the difference between local and global variables.
d) What do you mean by function overloading?
e) What is meant by Exception?
f) What are the differences between structure and union?

Q.3 Write short notes on any two of the following **08**

a) Explain access specifiers used in C++.

b) What is friend function? Write a program to show the use of friend function.

c) Explain Pointers in C++.

Q.4 Answer any Two of the following. **08**

a) What is constructor? Explain the use of constructor with suitable program.

b) Explain different parameter passing techniques in C++.

c) Explain object oriented programming principles.

Q.5 Answer any one of the following **08**

a) Write a program for constructor overloading.

b) What is polymorphism? How it is achieved in C++?

SLR-QE-13

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination: March/April-2023
Computer System Architecture – I (ECS0104)

Day & Date: Friday, 21-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Draw neat diagrams and give equations wherever necessary.
2) Figures to the right indicate full marks.

Q.1 Multiple choice questions. **08**

1) IC 7432 is _____ Logic Gate.
   a) AND b) NOT
   c) OR d) EX-OR

2) _____ is Inverter Gate
   a) AND b) NOT
   c) OR d) EX-OR

3) Many input single output is called as _____
   a) MUX b) DEMUX
   c) Encoder d) Decoder

4) A+A= _____
   a) 1 b) 0
   c) A d) None of these

5) Program counter is _____ Bit.
   a) 8 b) 16
   c) 12 d) 64

6) Flip flop has _____ Stable States.
   a) 1 b) 2
   c) 3 d) 4

7) _____ is Universal Gate
   a) AND b) NOT
   c) OR d) NAND

8) Base of the Hexadecimal Number system is _____
   a) 8 b) 16
   c) 10 d) 2

Q.2 Answer any four of the following. **08**

a) Define Bus?
b) Define Flip flop?
c) Define Encoder?
d) Define Decoder?
e) Define Counter?
f) Define Instruction Cycle?

Q.3 Write short notes on any two of the following. **08**

a) Write Short Note on Binary Decoder?
b) Write Short Note on Buses in Computer System?
c) Convert Decimal to Binary i) 125 ii) 0.824

Q.4 Answer any Two of the following. **08**

a) Explain Demorgans Theorem?

b) Draw and Explain R-S flip Flop?

c) Draw and Explain 3 bit Asynchronous Counter?

Q.5 Answer any one of the following. **08**

a) What is mean by Logic Gates? Draw and Explain with symbol and Truth table of Logic Gates?

b) What is mean by Instruction? Explain Different types of Instructions with Example?

SLR-QE-14

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination: March/April-2023
Computer System Architecture - II (ECS0105)

Day & Date: Saturday, 22-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Draw neat diagram and give equations wherever necessary.
3) Figures to the right indicate full marks**.**

Q.1 Multiple choice questions. **08**

1) CPU has _____ general purpose registers.
   a) 2 b) 3
   c) 6 d) 7

2) Control word for R2= R1+R3 _____.
   a) 00101101000010 b) 00010001001
   c) 0010101010 d) 01011010110

3) Stack is defined as _____.
   a) LIFO b) FIFO
   c) FILO d) None of these

4) Peripheral devices is also called as _____ Devices.
   a) Input b) Output
   c) Input and Output d) None of these

5) CPU Register Memory is also called as _____ Memory.
   a) Internal b) External
   c) Main d) Secondary

6) Isolated I/O is also called as _____.
   a) I/O Mapped I/O b) Memory Mapped
   c) Programmed d) None of these

7) DMA stands for _____.
   a) Direct Main Access b) Direct Memory Access
   c) Direct Manual Access d) None of these

8) Bus Request is also called as _____.
   a) Bus HOLD b) BUS HLDA
   c) BUS EN d) None of these

Q.2 Answer any four of the following. **08**

a) Define peripheral devices?
b) Define I/O mapped I/O?
c) Define INTR?
d) Define DMA Acknowledge?
e) Define memory?
f) Define Input output Module?

Q.3 Write short notes on any two of the following. **08**

a) Write note on addressing modes?
b) Write note on Cache Memory?
c) Write note on memory mapped I/O and isolated I/O?

Q.4 Answer any Two of the following. **08**

a) Draw and explain general register organization?
b) Write down difference between RISC and CISC architecture
c) Draw and explain set Associative mapping?

Q.5 Answer any one of the following. **08**

a) Draw and Explain DMA Transfer?
b) Explain stack organization in brief?

SLR-QE-5

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination: March/April-2023
Fundamental of Computer system - I (ECS0106)

Day & Date: Sunday, 23-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

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

Q.1 Multiple choice questions. **08**

1) _____ is most common input device used in computer.
   a) Keyboard b) Light pen
   c) Scanner d) Joystick

2) The main electronic component used in first generation computers was ____.
   a) Transistors b) Vacuum Tubes
   c) Integrated Circuits d) None of above

3) Computer is free from tiredness we call it _____.
   a) accuracy b) automatic
   c) diligence d) versatility

4) Mnemonic a memory trick is used in which of the following language?
   a) Machine language b) Assembly language
   c) High level language d) None of above

5) UNIVAC is _____.
   a) Universal Automatic Computer b) Universal Array Computer
   c) Unique Automatic Computer d) Unvalued Automatic Computer

6) Which of the following is not a type of computer on the basis of operation?
   a) Digital b) Analog
   c) Hybrid d) Remote

7) The generation based on VLSI microprocessor.
   a) 1st b) 2nd
   c) 3rd d) 4th

8) A program that reads each of the instructions in mnemonic form and translates it into the machine-language equivalent.
   a) Machine language b) Assembler
   c) Interpreter d) C program

Q.2 Answer any four of the following. **08**

a) Define Interpreter.
b) Define Header File.
c) Define Information Technology
d) List out characteristics of the computers.
e) Define Computer.
f) Define Hardware.

Q.3 Write short notes on any two of the following. **08**

a) What are the advantages and disadvantages of Computer?
b) Write a Note on CLR and JVM.
c) Explain uses of IT in Education and Business.

Q.4 Answer any Two of the following. **08**

a) Explain any 2 generation of computer in detail.
b) Explain Namespace and packages.
c) Write a Note on IDE and Assembler.

Q.5 Answer any one of the following. **08**

a) Define Computer Language? Explain Types of Computer language.
b) Explain various types of Computers.

SLR-QE-16

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester -I) (Old) (CBCS) Examination: March/April-2023
Fundamental of Computer System – II (ECS0107)

Day & Date: Monday, 24-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams and given equations.
4) Use of logarithmic table and calculator is allowed.

Q.1 Multiple choice question **08**

1) User communicates with a computer with the help of which devices?
a) Input device b) Output device
c) Software device d) Both a and b

2) DVD Stands For: _____?
a) Digital Versatile Disk b) Digital Versatile Drive
c) Digital volume disk d) Digital Video drive

3) Which input device is used for input text, numbers, and commands to the computer?
a) Mouse b) Keyboard
c) Scanner d) All of the above

4) Which of the following is not a pointing device?
a) Mouse b) Joystick
c) Light pen d) Digitizer

5) Which printer is used to print only character and symbols?
a) Ink-jet printer b) Thermal printer
c) Daisy wheel printer d) laser printer

6) The full form of LCD is_____
a) Liquid Crystal Display b) Logical Crystal Display
c) Logical Crystal Display d) Logical Crystalline Display

7) ALU stands for _____?
a) Arithmetic Longest Unit b) Arithmetic Longest United
c) Arithmetic Longest United d) None of these

8) How many types of RAMs are?
a) 2 b) 3
c) 4 d) 5

Q.2 Answer any four of the following **08**

a) What is SMPS?
b) What is magnetic disk?
c) What is Motherboard?
d) Defame the memory of computer.
e) What is Serial Port?
f) What is floppy disk?

Q.3 Write short notes on any two of the following **08**

a) Explain Type of printer.
b) Explain Types of ROM.
c) Explain Block Diagram of computer.

Q.4 Answer any Two of the following **08**

a) Explain Types of Monitor.
b) Explain RAID& it's level.
c) Explain optical disk.

Q.5 Answer any one of the following **08**

a) Define Computer? Explain in Brief Input &output Devices of Computer?
b) What is memory? Explain in Brief Types of Memory?

SLR-QE-17

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination: March/April-2023
Numerical Methods - I (ECS0108)

Day & Date: Tuesday, 25-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Draw neat diagrams and give equations wherever necessary.
3) Figures to the right indicate full marks.
4) Use of logarithmic table and any type of calculator is allowed.
(At. Wts.: H=1, C=12, O=16, N= 14, Na =23, Cl = 35.5)

Q.1 Choose the correct alternatives from the options. **08**

1) If we represent the system of m-linear equations in n-variables in the form of augmented matrix its order is _____.
a) $m \times n$ b) $m \times (n + 1)$
c) $(m + 1) \times n$ d) $m \times (n - 1)$

2) While doing multiplication of two numbers in normalized floating point form, the exponents should be _____.
a) added b) Subtracted
c) Multiplied d) Divided

3) One of the root of the equation $f(x) = 0$ lies in the interval (a, b) if $f(a)$ and $f(b)$ have _____ signs.
a) Same b) Opposite
c) Positive d) Negative

4) Homogeneous system of linear equations is never _____.
a) Inconsistent b) Consistent
c) Convergent d) None of these

5) The equations which include trigonometric, exponential and logarithmic functions are known as _____ equations.
a) Polynomial b) Algebraic
c) Special d) Transcendental

6) The one of the roots of the equation $f(x) = x^2 - 4x - 10 = 0$ lies in the interval _____.
a) (4, 5) b) (-1, 0)
c) (5,6) d) (3,4)

7) $0.1234\ E4 \times 0.8735\ E4$ _____.
a) 1.2345 E4 b) 0.1078 E8
c) 0.1078 E4 d) 0.1078 E0

8) In iteration method, the function $\varphi(x)$ is selected in such a way that $|\varphi'(x)|$
a) <1 b) =1
c) >1 d) None of these

Q.2 Answer any four of the following. **08**

1) Define absolute error and percentage error.
2) Find the value of ($0.4596E_3 + 4.6982E_4$). Write your answer in normalised floating point form.
3) Find first approximate value for the root of equation $f(x) = x^2 - 3x + 2$ by using Newton- Raphson method. Take initial approximation x_0=0.
4) Define transcendental equation with suitable example.
5) Define homogeneous system of linear equations.
6) Write augmented matrix for following system of linear equations
   $x + 2y + 3z = 3;\ -2y + 3z = 7;\ 2x + y = 6.$

Q.3 Answer any two of the following **08**

1) Find the roots by using Bisection method of $x^3 - 4x - 9 = 0$ (Perform only three iterations).
2) Compare the Regula Falsi method and Newton Raphson Method.
3) Find cube root of 10 by Newton Raphson Method (correct to 4 places of decimal).

Q.4 Attempt any two of the following. **08**

1) Find real root of the equation $x^2 - 2x - 5 = 0$, in the interval $[2, 3]$ by using Regula-Falsi method. Perform only two iterations.
2) Derive Newton-Raphson method formula to find root of the equation $f(x) = 0$
3) Solve the following system of linear equations by using Gauss-Elimination method,
   $x - y - z + 2w = 1; 2x + y + 4z + w = 1;\ 3x + y + 5z + 4w = -3.$

Q.5 Answer any one of the following. **08**

a) Solve the following system by using Gauss-Seidal method.
   $10x + y + z = 12$
   $2x + 10y + z = 13$
   $X + y + 5z = 7$ (perform two iterations)
b) Obtain the root of $x^3 - 2x - 5 = 0$ correct upto4-decimal places by using Newton- Raphson method.

SLR-QE-18

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination: March/April-2023
Numerical Methods – II (ECS0109)

Day & Date: Wednesday, 26-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of Scientific Calculator is allowed.

Q.1 Choose the correct alternatives from the options. **08**

1) Which of the following relation is true?
a) $E^{-1} = 1 + \Delta$ b) $E = 1 + \nabla$
c) $E = 1 + \Delta$ d) $E = 1 - \Delta$

2) Trapezoidal rule is obtained by putting n = _____ in the general quadrature formula.
a) 0 b) 1
c) 3 d) 2

3) In Runge-Kutta Second order method k_2 =_____
a) $h\,f(x_0 - h)$ b) $h\,f(x_0 - h, y_0 - k_1)$
c) $h\,f(x_0 + h, y_0 + k_1)$ d) $h\,f(x_0, y_0)$

4) The value of $\Delta^2\,(e^x)$ = _____ by taking $h = 1$.
a) $(e-1)^2 e^x$ b) $(e+1)^2 e^x$
c) e^{2x} d) $(e-1)e^x$

5) Simpson's $(\frac{1}{3})^{rd}$ rule is obtained by putting n = _____ in the general quadrature formula.
a) 0 b) 3
c) 2 d) -1

6) If the data is equally spaced and interpolation is near beginning of the data then _____ interpolation formula is used.
a) Newton's backward difference b) Newton's divided difference
c) Lagrange's d) Newton's forward difference

7) $E^n f(x) =$ _____.
a) $f(a + x)$ b) $f(x - nh)$
c) $f(x + nh)$ d) $f(x - h)$

8) In Runge- Kutta fourth order method, formula for k_4 = _____
a) $h\,f(x_0, y_0)$ b) $h\,f(x_0 + h, y_0 + k_1)$
c) $h\,f(x_0 + h, y_0 + k_3)$ d) $h\,f(x_0 + h, y_0 + k_0)$

Q.2 Answer any four of the following **08**

a) Evaluate $\Delta^2\,(ab^{cx})$ (Assuming the interval of differencing h)
b) Write Simpson's $(\frac{3}{8})^{th}$ rule for integration.
c) State Lagrange's interpolation formula for the data containing four arguments x_0, x_1, x_2 and x_3.
d) State the formula for k_1 and k_2 for Runge - Kutta second order method.
e) State general quadrature formula for equidistant ordinates.

f) Prepare the forward difference table for the following data

X	10	20	30	40
y	9	39	74	116

Q.3 Write short notes on any two of the following. **08**

a) Given $\frac{dy}{dx} = x + y, y(1) = 0$. Obtain Taylor's series for $y(x)$, with $h = 0.1$. Hence estimate $y(1.1)$ correct to four places of decimal.

b) Find the cubic polynomial which takes the following values:

X	0	1	2	3
y	1	2	1	10

Hence or otherwise evaluate f (4).

c) Evaluate $\int_0^6 \frac{dx}{1+x^2}$ by using trapezoidal rule.

Q.4 Answer any two of the following **08**

a) By using Newton's backward difference interpolation formula, find the value of y at $x = 42$ from the following data.

x	20	25	30	35	40	45
y	354	332	291	260	231	204

b) Given $\frac{dy}{dx} = x\,y$, $y(0) = 1$, estimate $y\,(0.4)$ by Euler's method. (use $h = 0.1$)

c) Evaluate $\int_0^1 \frac{dx}{1+x}$, by using Simpson's $(\frac{1}{3})^{rd}$ rule correct to three decimal places.

Q.5 Answer any one of the following **08**

a) Use Runge - Kutta forth order method to obtain the value of y at $x = 0.2$ for the differential Equation $\frac{dy}{dx} = 1 + y^2$ with initial condition $x_0 = 0\ and\ y_0 = 0$ take $h = 0.2$

b) Derive Simpson's $(\frac{1}{3})^{rd}$ rule.

SLR-QE-19

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - II) (New) (CBCS) Examination: March/April-2023
ENGLISH (Comp.)
Communication Skill (ECS1201)

Day & Date: Monday, 19-06-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

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

Q.1 Choose the correct alternative from the given options. **08**

1) Who according to the author has only one year of schooling?
a) John Rockefeller b) Jay Gould
c) B. Russell d) Sir Henry

2) Rabindranath Tagore won the Nobel Prize for Literature for his book Gitanjali in _____.
a) 1911 b) 1912
c) 1913 d) 1914

3) In the age of Monarchy, who gets manipulated to achieve their own personal interests?
a) The People b) The Ministers
c) The Countries d) The King

4) Who has lynched the lakes?
a) The poet b) Factories
c) Vehicles d) Humans

5) How old is Pope believed to be when he wrote ‘Ode on Solitude’?
a) 11 b) 13
c) 12 d) 14

6) What does the poet wish to hear from the lover in the poem – ‘Remember’?
a) Marriage plans b) His work
c) His family d) Future plans

7) Choose the correct synonyms for the word - Dark.
a) Dirty b) Light
c) Gloomy d) Thought

8) Use past tense form in the following sentence.
We _____ (go) to Mumbai last year.
a) gone b) was go
c) went d) was going

Q.2 Write the answers in short. (Any Four) **12**

a) What opinion does the author have of the education system of his time?
b) What is the true sense of freedom?
c) Discuss the theme of the poem – 'Our Earth Will Not Die' in your words.
d) Why is the poet giving so much emphasis on solitude in the poem and what does it mean to him?
e) Discuss the tone of compassion used by the poet in the poem - Remember?
f) What kind of people can achieve the true essence of freedom?

Q.3 Answer the following questions. (Any One) **10**

a) Write a letter to your father requesting him to send 5000/- as your class trip is going on to visit South India. Mention the details of four tour and places to visit.
b) Write a formal letter to your college librarian as you lost your library card. Request him also to issue a duplicate library card to you. Mention all details of yourself like Name, Class, Roll No and how you lost the card.

Q.4 What is interpersonal intelligence? Write a detailed note on interpersonal intelligence and how to improve them. **10**

SLR-QE-20

Seat No.	

Set P

B.Sc. (E.C.S) (Semester - II) (New) (CBCS) Examination: March/April-2023
Introduction to Web Technology (ECS1202)

Day & Date: Tuesday, 20-06-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat labeled diagrams wherever necessary.
4) Use of logarithmic table and calculator is allowed.
(At.Wts.:H=1, C=12, O=16, N=14, Na=23, Cl=35.5)

Q.1 Choose the correct alternatives from the options. **08**

1) Which of the following tag is used to add rows in the table?
a) <td> and </td> b) <th> and </th>
c) <tr> and </tr> d) None of the above

2) What type of CSS is generally recommended for designing large web pages?
a) Inline b) External
c) Internal d) All

3) Which of the following keywords is used to define a variable in JavaScript?
a) var b) let
c) both (a) and (b) d) none

4) How can we write comments in CSS?
a) /* */ b) //
c) # d) All

5) What is JavaScript?
a) JavaScript is a scripting language used to make the website interactive
b) JavaScript is an assembly language used to make the website interactive
c) JavaScript is a compiled language used to make the website interactive
d) None of the mentioned

6) How can we select an element with a specific ID in CSS?
a) . b) #
c) ^ d) All

7) Which of the following tag is used to make the underlined text?
a) <i> b)
c) <u> d) <pre>

8) The correct sequence of HTML tags for starting a webpage is -
a) Head, Title, HTML, body b) HTML, Body, Title, Head
c) HTML, Head, Title, Body d) HTML, Head, Title, Body

Q.2 Answer the following questions. (Any Four) **08**

a) How can you create an Array in JavaScript?
b) Give the syntax and example of use of a for loop in JavaScript.
c) Create a HTML document to display the following text in the title bar of the browser. “Welcome to the world of Internet”.
d) How many types of functions JavaScript supports?
e) Give the syntax with example of comments in HTML and CSS.
f) Write the applications of an Internet

Q.3 Write Short Notes. (Any Two) **08**

a) List in HTML
b) Types of CSS
c) DOM in JavaScript

Q.4 Answer the following questions. (Any Two) **08**

a) Why is it important to use Cascading Style Sheet (CSS)?
b) Write a short note on HTML text formatting tags with example.
c) What is JavaScript? What are the advantages of using JavaScript?

Q.5 Answer the following questions. (Any One) **08**

a) Write a HTML program to design a form which should allow to enter your personal data.
(Hint: make use of text field, password field, e-mail, lists, radio buttons, checkboxes, submit button)
b) Explain how & when to use the following HTML elements / tags in a web page for design. Illustrate with suitable example.
1) Frame
2) Heading
3) Table

SLR-QE-21

Seat No.	

Set P

B.Sc. (E.C.S) (Semester - II) (New) (CBCS) Examination: March/April-2023
Operating System (ECS1203)

Day & Date: Wednesday, 21-06-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Draw neat diagrams and give equations wherever necessary.
3) Figures to the right indicate full marks.
4) Use of logarithmic table and calculator is allowed.
(At. Wts.:H=1, C=12, O=16, N=14, Na=23, Cl=35.5).

Q.1 Multiple choice questions. **08**

1) A deadlock avoidance algorithm dynamically examines the _____ to ensure that a circular wait condition can never exist.
a) operating system b) resources
c) system storage state d) resource allocation state

2) What is the paging in the operating system?
a) Memory management scheme b) Network management scheme
c) Internet management scheme d) None of the these

3) SSTF stands for _____.
a) Shortest Signal Time First b) Shortest Seek Time First
c) System Seek Time First d) System Shortest Time First

4) Which of the following statements is correct about virtual memory?
a) It is a combination of the logical-memory and physical-memory
b) It is a separation of user logical memory and physical memory
c) It is a virtual network memory
d) None of the these

5) Page replacement becomes necessary when _____.
1) page fault occur and there are no free page frames in the memory
2) page fault occur and there are free page frames in the memory
3) page fault would arise if the replaced page is referenced again
4) It is important to replace a page that is not likely to be referenced again immediate future
a) 1 only b) 1 and 3 only
c) 1, 2 and 4 only d) None of the above

6) Which of the following basic operations that can be performed on files by the operating system?
a) Read, write, delete b) Write, paint, reposition
c) Delete, truncate files, sorting d) All of these

7) Which of the following method is used to improve the main memory utilization?
a) Swapping b) Operating system
c) Memory' stack d) None of these

8) Banker's algorithm is used?
a) To prevent deadlock b) To deadlock recovery
c) To solve the deadlock d) None of these

Q.2 Answer any four of the following. **08**

a) What is the basic function of paging?
b) What is page fault?
c) State any two page-replacement algorithms.
d) Write the use of having virtual memory.
e) Define deadlock.
f) State different file types.

Q.3 Write short notes on any two of the following. **08**

a) File linked allocation with their disadvantages.
b) Paging memory-management scheme.
c) Segmentation with a neat diagram.

Q.4 Answer any Two of the following. **08**

a) Explain the difference between Physical and logical address.
b) Discuss in detail about Fragmentations and their types.
c) Explain the importance of Page Replacement Algorithm.

Q.5 Answer any one of the following. **08**

a) What is disk scheduling? Explain FCFS and SCAN disk scheduling algorithms.
b) Define the term deadlock. Explain various necessary conditions for a deadlock to occur. Explain in brief about deadlock prevention.

SLR-QE-22

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - II) (New) (CBCS) Examination: March/April-2023
Object Oriented Programming using C++ (ECS1204)

Day & Date: Thursday, 22-06-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Draw neat diagrams and give equations wherever necessary.
3) Figures to the right indicate full marks**.**
4) Use of logarithmic table and calculator is allowed.
(At. Wts.:H=1, C=12, O=16, N=14, Na=23, Cl=35.5)

Q.1 Choose the correct alternatives from the option. **08**

1) Identify the incorrect constructor type.
   a) friend constructor b) Default constructor
   c) Parameterized constructor d) Copy constructor

2) C++ uses which approach?
   a) right-left b) left-right
   c) top-down d) bottom-up

3) Identify scope resolution operator _____.
   a) ? b) :
   c) :: d) %

4) When can an inline function be expanded?
   a) run-time b) compile-time
   c) both (a) and (b) d) None of these

5) Choose the option below which is not a member of class.
   a) friend function b) static function
   c) virtual function d) const function

6) Which of the following functions can be inherited from base class?
   a) Constructor b) Destructor
   c) Static d) None

7) What is an object in C++?
   a) It is function of class b) It is instance of class
   c) It is data type of class d) None

8) Which of the following is not a type of inheritance?
   a) Multiple b) Multilevel
   c) Distributed d) Hierarchical

Q.2 Answer any four of the following. **08**

a) What is the purpose of fstream class?
b) Define inline function with example.
c) How dynamic memory is allocated in C++?
d) What is the role of destructor in C++?
e) What is the advantage of this pointer?
f) How polymorphism is achieved in C++?

Q.3 Write short notes on any two of the following. **08**

a) friend function
b) Access specifiers
c) Rules for Operator Overloading

Q.4 Answer any two of the following. **08**

a) Define Classes and Objects. How you can create and access a class through objects? Support your answer with program example.
b) Define Operator Overloading. How operator overloading can be done in C++? Support your answer with program example.
c) Differentiate between Procedural Languages & Object Oriented Languages with the support of program example.

Q.5 Answer any one of the following. **08**

a) What is Inheritance? How it is being used in C++? Differentiate multiple and multilevel inheritance with the help of C++ program examples.
b) What are Virtual functions? How they are different from Pure Virtual functions? Make a program example in C++ which shows the use of pure virtual function.

SLR-QE-23

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - II) (New) (CBCS) Examination: March/April-2023
Python - II (ECS1205)

Day & Date: Friday, 23-06-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Draw neat diagrams and give equations whenever necessary.
3) Figures to the right indicate full marks.
4) Use of logarithmic table and calculator is allowed.

Q.1 Choose the correct alternatives from the options. **08**

1) How many keyword arguments can be passed to a function in a single function call?
a) zero b) one
c) zero or more d) one or more

2) Which type of elements are accepted by random.shuffle()?
a) strings b) lists
c) tuples d) integers

3) The function of re.search is _____.
a) Matches a pattern at the start of the string
b) Matches a pattern at the end of the string
c) Matches a pattern from any part of a string
d) Such a function does not exist

4) _____ is used to create an object.
a) class b) constructor
c) User-defined functions d) in-built functions

5) Overriding means changing behavior of methods of derived class methods in the base class.
a) True b) False

6) Which function overloads the + operator?
a) _add_() b) _plus_()
c) _sum_() d) none of the mentioned

7) When will the else part of try-except-else be executed?
a) Always
b) when an exception occurs
c) when no exception occurs
d) when an exception occurs in to except block

8) What is the use of tell() method in python?
a) tells you the current position within the file
b) tells you the end position within the file
c) tells you the file is opened or not
d) none of the mentioned

Q.2 Answer any four of the following **08**

1) What is class and object?
2) Define local and global variables.
3) What is module?
4) What is inner class?
5) Define function.
6) What is exception handling?

Q.3 Write notes on any two of the following **08**

a) Constructor
b) Features of OOPs
c) Math module

Q.4 Answer any Two of the following **08**

a) Explain function in detail with example.
b) Explain methods used in python with example.
c) What is file? Explain modes of file with example.

Q.5 Answer any one of the following **08**

a) What is inheritance? Explain any four types of inheritance with example.
b) What is exception handling? Explain in detail with example.

SLR-QE-24

Seat No.	

Set P

B.Sc. (E.C.S) (Semester - II) (New) (CBCS) Examination: March/April-2023
Linear Algebra (ECS1206)

Day & Date: Saturday, 01-07-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams and give equations wherever necessary.
4) Use of logarithmic table of calculator is allowed.

Q.1 Choose the correct alternatives from the options. **08**

1) If z_1 and z_2 are any two complex numbers then $arg.(z_1.z_2) =$ _____.
a) $arg \cdot z_1 + arg \cdot z_2$ b) $arg.z_1 \cdot arg.z_2$
c) $argz_1 - argz_2$ d) $arg.z_1 \div arg.z_2$

2) The imaginary part of complex number $z = -5 + 2i$ is _____. .
a) -5 b) $-2i$
c) 2 d) None of this

3) The order of row matrix is _____.
a) $1 \times n$ b) $m \times 1$
c) $n \times h$ d) $m \times h$

4) Order of augmented matrix for following system of linear equations $x + 2y + 3z = 3; -2y + 3z = 7; 2x + y = 6$ is _____.
a) 3×3 b) 3×4
c) 4×3 d) 4×4

5) If any two rows or columns of determinant are equal then its value is _____.
a) 1 b) -1
c) 0 d) Non zero

6) If $\begin{vmatrix} x & 4 \\ 3 & 1 \end{vmatrix} = 5$ then $x =$ _____.
a) 17 b) -17
c) 20 d) None of these

7) The rank of identity matrix is equal to _____.
a) 1 b) -1
c) its order d) 0

8) If $\lambda = 0$ is an eigenvalue of matrix A if & only if A is _____.
a) square matrix b) singular matrix
c) non singular matrix d) triangular matrix

Q.2 Answers any four of the following. **08**

a) Find the modulus & argument of complex number $z = 2 + 2\sqrt{3}\,i$

b) Define Conjugate of complex number with example.

c) Find the area of triangle ABC having co-ordenates $A(-1,2), B(2,4), C(0,0)$.

d) Evaluate the determinant $A = \begin{vmatrix} 3 & 2 & 5 \\ -4 & 0 & 7 \\ 1 & -3 & 2 \end{vmatrix}$

e) State Cayley Hamilton theorem.

f) Define Square matrix.

Q.3 Write short notes on any two of the following. **08**

a) Find adjoint of matrix $A = \begin{bmatrix} -3 & 4 \\ 7 & -5 \end{bmatrix}$

b) Verify that $\begin{bmatrix} 6 \\ -5 \end{bmatrix}$ eigenvector of $\begin{bmatrix} 1 & 5 \\ 6 & 2 \end{bmatrix}$

c) Explain method of Solution of System of linear Equations by Gauss-Jordan elimination method.

Q.4 Answers any two of the following. **08**

a) Find real and imaginary part of the complex number $Z = \frac{2+3i}{4+6i}$

b) Solve the system of equations by using Gauss elimination method
$2x + 3y + 3z = 5;\ x - 2y + z = -4;\ x - y - 2z = 3;$

c) Find the eigenvalues of $\begin{bmatrix} 2 & 3 \\ 3 & -6 \end{bmatrix}$

Q.5 Answers any one of the following. **08**

a) Find inverse of matrix by adjoint method $A = \begin{vmatrix} 3 & 4 & -1 \\ 5 & -3 & 2 \\ 1 & 5 & 3 \end{vmatrix}$

b) Solve by Cramer's rule
$2x - y + z = 1;\ x + 2y + 3z = 8;\ 3x + y - 4z = 1;$

SLR-QE-25

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - II) (New) (CBCS) Examination: March/April-2023
Discrete Mathematics (ECS1207)

Day & Date: Sunday, 02-07-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw necessary diagrams whenever necessary.
4) Non programmable calculators are allowed.

Q.1 Choose the correct alternative. **08**

1) If n pigeon hole contain _____ pigeon the at least one pigeonhole contains more than one pigeon.
   a) n b) n+1
   c) 1 d) 2

2) If every element of the set A is related to any each element of the set B then the relation is called as _____ relation.
   a) Reflexive b) Universal
   c) Void d) Identical

3) The function which is surjective is also called _____ function.
   a) one-one b) on-to
   c) Identity d) Injective

4) If $F(x) = (2x - 1)(x - 2)(x - 3)$ then f (-3) = _____
   a) 66 b) -210
   c) -120 d) None of these

5) If $A = \{1, 3, 5, 8, 9, 10, 13, 17, 25\}$ then $|A| =$ _____
   a) 4 b) 8
   c) 6 d) 9

6) A set having only one element is called _____.
   a) Infinite set b) Finite set
   c) Singleton set d) None of these

7) Let R be a relation from the set A to the set B. Then the set of all second coordinates of the ordered pairs of R is called _____ of R.
   a) Domain b) Co-domain
   c) Range d) None of these

8) A set contains uncountable element is called _____ set.
   a) finite b) one
   c) zero d) infinite

Q.2 Answer any Four of the following. **08**

1) Define function.
2) Define partial ordering relation.
3) Define surjective function.
4) Define linear Recurrence Relation with constant coefficients.
5) Define equivalence relation.
6) Let R be the Relation on the Set $A = \{1, 2, 3, 4, 5\}$ given by $R = \{(1,1), (1,3), (1,5), (2,4), (1,2), (3,5), (4,5)\}$.
Find Diagraph of R.

Q.3 Write short notes on any Two of the following. **08**

1) Solve the following recurrence relation $a_r - 4a_{r-1} + 4a_{r-2} = 0$
2) Explain graphical representation of relation.
3) State & prove Inclusive-exclusive principles for two sets.

Q.4 Answer any Two of the following. **08**

1) Let f: R → R is defined by $f(x) = \frac{3x+7}{4}$ show that $f(x)$ is bijective function.
2) If $f(x) = 2x^3 + 3x$ then find i) f(2), ii) f(3), iii) f(x-1) & iv) f(1)
3) Define union and intersection of two sets.

Q.5 Answer any One of the following. **08**

1) Let R is a relation defined on set $A = \{1,2,3,\}$ & $R\{(1,1), (1,2), (1,3), (2,3), (3,2)\}$ find transitive closure of R by Warshall's algorithm.
2) Solve the recurrence relation $a_r - 7a_{r-1} + 6a_{r-2} = 0$ with initial conditions $a0 = 8, a1 = 6$

SLR-QE-26

Seat No.		Set	P

B.Sc. (E.C.S.) (Semester - II) (New) (CBCS) Examination: March/April-2023
Digital Electronics and Microprocessor (ECS1208)

Day & Date: Monday, 03-07-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams and give equations wherever necessary.
4) Use of logarithmic table and calculator is allowed.
(At. Wts.: H=1, C=12, O=16, N=14, Na=23, Cl=35.5)

Q.1 Choose the correct alternative. **08**

1) _____ universal gates.
a) and b) or
c) not d) all

2) Capacity of flipflop to store _____ bit.
a) 1 b) 2
c) 3 d) 4

3) _____ AND gate IC.
a) 7432 b) 7400
c) 7408 d) none

4) FA consist _____ i/p and_____ o/p.
a) 2,2 b) 3,2
c) 3,3 d) 1,1

5) Shift register consist of _____.
a) flipflop b) adder
c) subtractor d) inverter

6) Data bus of 8085 is _____ bit.
a) 4 b) 16
c) 8 d) all

7) _____ branching instruction.
a) jmp b) add
c) inc d) none

8) _____ called data selector.
a) mux b) dmux
c) encoder d) decoder

Q.2 Answer any four of the following. **08**

1) Define Instruction cycle.
2) Define system bus.
3) Define decade Counter.
4) Define Shift Register.
5) Define Addressing mode.
6) Define Instruction set.

Q.3 Write short notes on any two of the following. **08**

1) State Application of combinational circuit.
2) State Application of logic gates.
3) Clocked master slave FF's.

Q.4 Answer any two of the following. **08**

1) Explain SIPO shift register.
2) Draw symbol of and truth table of X-O Rand X-NOR logic gates.
3) Explain 2:4 decoder.

Q.5 Answer any one of the following. **08**

1) Write feature of 8085.
2) Explain PIPO shift register.

SLR-QE-27

Seat No.	

Set P

B.Sc. (E.C.S) (Semester - II) (New) (CBCS) Examination: March/April-2023
Introduction to Microcontroller and Embedded System (ECS1209)

Day & Date: Tuesday, 04-07-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams wherever necessary.
4) Non programmable calculators are allowed.

Q.1 Choose the correct alternatives from the options. **08**

1) Speed of 8051_____ MHz.
a) 2 b) 3
c) 6 d) 12

2) In case of 8051, Keil compiler has _____ file.
a) reg51.h b) reg8051.h
c) reg80.h d) reg51c.h

3) 8051 contains _____ no of I/O ports.
a) 1 b) 2
c) 3 d) 4

4) In embedded C _____ used for multiple line comments.
a) *….* b) */….. /*
c) /*…. */ d) //

5) ROM used in 8051 is _____ Kb.
a) 4 b) 8
c) 16 d) 32

6) In flash magic baud rate is _____.
a) 2400 b) 4800
c) 9600 d) 18600

7) 8051 has _____ its timer / counter.
a) 4 b) 8
c) 16 d) 32

8) For making LED ON using embedded C port 1 is initialized by _____.
a) P = 0xFF; b) P = 0x00;
c) P = 0x0F; d) P = 0xF0;

Q.2 Answer any FOUR of the following. **08**

a) Write difference between microprocessor and microcontroller.
b) Draw block diagram of microcontroller.
c) Write application of embedded system.
d) Classify embedded system.
e) Write concept of hardware design.
f) Explain data transfer instruction of 8051.

Q.3 Write note on any TWO of the following. **08**

a) Explain SFR's of 8051.
b) Explain embedded system with block diagram.
c) Explain pin function of 8051.

Q.4 Answer any TWO of the following. **08**

a) Explain steps involved in Keil micro vision simulation.
b) Explain RAM and ROM memory organization of 8051.
c) Explain step involved in Flash Magic.

Q.5 Answers any ONE of the following. **08**

a) Explain embedded C and IO programming.
b) Write features of 8051 and explain 8051 with block diagram.

SLR-QE-28

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - II) (Old) (CBCS) Examination: March/April-2023
ENGLISH (Compulsory)
Literary Voyage (ECS0201 / ECS20201)

Day & Date: Monday, 19-06-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

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

Q.1 Rewrite the following by choosing the correct alternative. **08**

1) Who regards the value of education as unquestionable?
a) Practical men b) Educated men
c) Eminent men d) Plutocrats

2) What did the famous naturalist Buffon write an account on?
a) Education b) Books
c) Science d) Squirrels

3) Whose cruelty is the ugliest in its ferocity?
a) Dictators b) Racists
c) Conservatives d) Cowards

4) What releases the arsenic urine?
a) Profit factories b) Infected waste
c) Chemicals d) The earth

5) What is the profession of the ideal man described in the poem 'Ode on Solitude'?
a) Pastor b) Farmer
c) Cobbler d) None of these

6) What does the poet wish to hear from the lover?
a) Move on b) Grieve
c) His family d) Future plans

7) Choose the correct **synonym** of 'Amazing' _____
a) Inquire b) Incredible
c) Special d) Clever

8) Your brother _____ (eat) too much chocolate. **(Simple Present Tense)**
a) eat b) eats
c) is eating d) ate

Q.2 Write the answers in short. (Any Four out Six) **12**

a) What opinion does Bertrand Russell have of the education system of his time?
b) What is true sense of freedom?
c) What opinion does Rabindranath Tagore present to the people in India of that time regarding freedom?
d) Discuss the theme of the poem 'Our Earth Will Not Die'.
e) Why is Alexander Pope emphasizing on solitude in the poem?
f) What is the main idea of the Poem 'Remember'?

Q.3 Answer any one of the following broad question. **10**

a) Write an application to the Regional Manager, State Bank of India, Pune, asking for loan for further studies.

b) What is interpersonal intelligence? Explain it with examples.

Q.4 Answer the following broad question. **10**

Read the following advertisement. Write a letter of application for it

KIDZEE

Requires teacher

Educational Qualification: Graduate

Experience: Min. 6 months in teaching pre-primary children

Interested candidate send CV and application at

Preprimarykids@gmail.com

SLR-QE-29

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester – II) (Old) (CBCS) Examination: March/April-2023
Programming in JAVA – I (ECS0202)

Day & Date: Tuesday, 20-06-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

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

Q.1 Choose the correct alternatives from the options. **08**

1) What is the range of short data type in Java?
a) -128 to 127 b) -32768 to 32767
c) -2147483648 to 2147483647 d) None of the mentioned

2) Which component is used to compile, debug and execute java program?
a) JVM b) JDK
c) JIT d) JRE

3) Which component is responsible for converting bytecode into machine specific code?
a) JVM b) JDK
c) JIT d) JRE

4) Which concept of Java is achieved by combining methods and attribute into a class?
a) Encapsulation b) Inheritance
c) Polymorphism d) Abstraction

5) Which of these operators can be used to concatenate two or more String objects?
a) + b) +=
c) & d) | |

6) What is true about constructor?
a) Constructor name must be the same as its class name
b) A Constructor must have no explicit return type
c) A Java constructor cannot be abstract, static, final, and synchronized
d) all of these

7) Which of these methods of class StringBuffer is used to extract a substring from a String object?
a) substring() b) Substring()
c) SubString() d) None of the these

8) Which of these is an incorrect array declaration?
a) int arr[] = new int[5]; b) int [] arr = new int[5] ;
c) int arr[];arr = new int[5]; d) int arr[] = int [5] new;

Q.2 Answer the following questions. (Any Four) **08**

a) How to Compiling and Executing a Java Program?
b) What is Constructor?
c) What is JVM?
d) Define parameter passing.
e) Explain Immutable and mutable objects.
f) Differences between C++ and Java?

Q.3 Write Short Notes. (Any Two) **08**

a) Java Architecture and Features
b) Array
c) Operators

Q.4 Answer the following questions. (Any Two) **08**

a) Write a java program to check given no is prime or not
b) Explain Principles of Object-Oriented Programming.
c) What is Data Type? Explain different types of Data type.

Q.5 Answer the following questions. (Any One) **08**

a) What is String? Explain methods of String class with example.
b) Write a java program to implement method overloading.

SLR-QE-30

Seat No.	

Set P

B.Sc. (E.C.S) (Semester - II) (Old) (CBCS) Examination: March/April-2023
Programming in JAVA – II (ECS0203)

Day & Date: Wednesday, 21-06-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

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

Q.1 Multiple choice questions. **08**

1) Which of this keyword must be used to inherit a class?
a) super b) this
c) extent d) extends

2) Which of the following package is imported by Default in Java?
a) java.util b) java.lang
c) java.string d) All of these

3) Choose a correct statement about Java Interfaces?
a) Interface contains only abstract methods by default
b) A Java class can implement multiple interfaces
c) An Interface can extend or inherit another Interface
d) All the above

4) Which of these keywords is not a part of exception handling?
a) try b) finally
c) thrown d) catch

5) Which of these class is used to encapsulate IP address and DNS?
a) DatagramPacket b) URL
c) InetAddress d) ContentHandler

6) Which of the following is not an interface?
a) ResultSet b) DriverManager
c) Statement d) Connection

7) Which of these methods can be used to output a string in an applet?
a) display() b) print()
c) drawString() d) transient()

8) Which one method is used to set the visibility of the frame?
a) setVisible(true) b) setVisible(false)
c) setVisible() d) None of these

Q.2 Answer any four of the following. **08**

a) What is package?
b) What is Interface?
c) What is AutoBoxing?
d) What is Thread?
e) What is GUI?
f) What is Applet?

Q.3 Write short notes on any two of the following. **08**

a) Thread synchronization
b) Swing components
c) Enumerations and Metadata

Q.4 Answer any Two of the following. **08**

a) What Is Inheritance and Explain types of Inheritance?

b) Write a program to store book information such as book_id, book_name, author, publication, amount, etc. into book table.

c) What is Layout? Explain layout manager with example.

Q.5 Answer any one of the following. **08**

a) What is Exception? How to Handle Exception?

b) Write a Java Program to drawing figures such as lines, rectangles, ovals, using different fonts and colors.

SLR-QE-31

Seat No.	

Set P

B.Sc. (E.C.S) (Semester - II) (Old) (CBCS) Examination: March/April-2023
Discrete Structures – I (ECS0204)

Day & Date: Thursday, 22-06-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams and give equations wherever necessary.
4) Use of calculator is allowed.

Q.1 Choose the correct alternatives from the options. **08**

1) If $|A| = 35, |B| = 20$ and $|A \cap B| = 15$, Then $|A \cup B|$= _____.
a) 84 b) 170
c) 40 d) 20

2) If $A = \{a, b, c, e, f, h\}$ then $|A|$ = _____.
a) 4 b) 5
c) 6 d) 7

3) The function which is injective & surjective is _____ function.
a) Bijective b) Surjective
c) Identity d) Injective

4) If $f(x) = 2x^2 - x + 5$ then $f(-2)$ is _____.
a) 15 b) 11
c) -1 d) 0

5) Let R be the relation defined on the set $A = \{a, b, c, d\}$ given by $R = \{(a, b), (b, a), (a, d), (b, b), (b, d), (c, a), (c, d), (d, b), (d, a)\}$. Order of matrix of relation R is _____.
a) 3X3 b) 2X2
c) 4X4 d) 5X5

6) Find the value of a_4 for the recurrence relation $a_n = 2a_{n-1} + 3$, with $a_0 = 6$.
a) 320 b) 221
c) 141 d) 65

7) If $aRb \ \& \ bRa \rightarrow a = b$, then the relation R is called as _____.
a) Antisymmetric b) Symmetric
c) Reflexive d) Transitive

8) If $A \cap B = \emptyset$ then set A & B are _____ sets.
a) Equal b) Disjoint
c) Both a & b d) None of these

Q.2 Answers any four of the following. **08**

a) State first principle of mathematical induction.
b) Find the order of recurrence relation $a_r - 7a_{r-1} + 10a_{r-2} = 0$
c) Define finite set with example.
d) State the pigeonhole principle.
e) Define equivalence relation.
f) Define domain of function.

Q.3 Write short notes on any two of the following. **08**

a) Define reflexive relation & symmetric relation.
b) Define homogeneous recurrence relation with constant coefficient & find charactertics equation of recurrence relation $a_r - 8a_{r-1} + 16a_{r-2} = 0$
c) What is injective & surjective function.

Q.4 Answers any two of the following. **08**

a) Let f: $R \rightarrow R$ is defined by $f(x) = \frac{5x-4}{3}$ show that f is bijective function.
b) Let R is a relation defined on set $A = \{1,2,3\}$ & $R = \{(1,1),(1,2),(2,3),(3,1),(3,2)\}$ find transitive closure of R by Wharshall's algorithm.
c) If $f(x) = x^2 + x - 1$ then find i) $f(2)$, ii) $f(-4)$, iii) $f(x+1)$ & iv) $f(2x)$

Q.5 Answers any one of the following. **08**

a) State & prove mutual inclusion - exclusion principle for 3 sets.
b) Solve the recurrence relation $a_r - 5a_{r-1} + 6a_{r-2} = 0$ with initial conditions $a_0 = a_1 = 1$.

SLR-QE-32

Seat No.	

Set P

B.Sc. (E.C.S) (Semester - II) (Old) (CBCS) Examination: March/April-2023
Discrete Structures – II (ECS0205)

Day & Date: Friday, 23-06-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Draw neat diagrams and give equations wherever necessary.
3) Figures to the right indicate full marks.
4) Use of calculator is allowed.

Q.1 Choose the correct alternative. **08**

1) _____ of all entries of any row of incidence matrix is equal to degree of corresponding vertex.
a) Sum b) Product
c) Division d) Subtraction

2) Every tree has _____ centres.
a) One b) Two
c) One or two d) Three

3) A tree with 11-vertices has _____ number of edges.
a) 10 b) 11
c) 9 d) None of these

4) A complete graph K_{12} is _____ regular.
a) 8 b) 24
c) 11 d) 17

5) Total degree of k_8 is _____.
a) 0 b) 8
c) 56 d) None of these

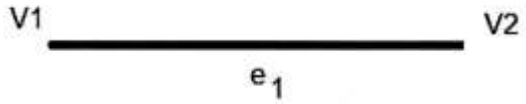
6) Order of adjacency matrix of a graph, having 5 vertices and 8 edges is _____.
a) 5×8 b) 8×5
c) 5×5 d) 8×8

7) A _____ graph having 'n' vertices is zero regular graph.
a) null b) pseudo
c) subgraph d) None of these

8) A vertex having degree _____ is called as pendent vertex
a) 0 b) 1
c) 3 d) None of these

Q.2 Answer any four of the following. **08**

a) Define pseudo graph with example.
b) Draw complete bipartite graph $K_{3,4}$ & $K_{4,2}$
c) Define vertex deleted subgraph with example.
d) Draw all possible sub graphs of following graph.



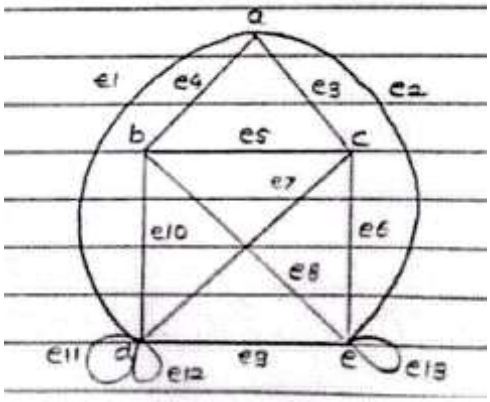
e) What is Hamiltonian graph?
f) Define tree with example.

Q.3 Write short notes on any two of the following. **08**

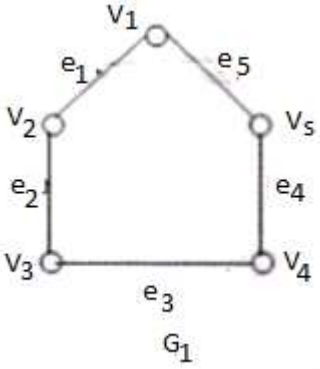
a) State & prove Shaking hand lemma.
b) Write the note on edge disjoint & vertex disjoint subgraphs.
c) Write the note on Chinese postman problem.

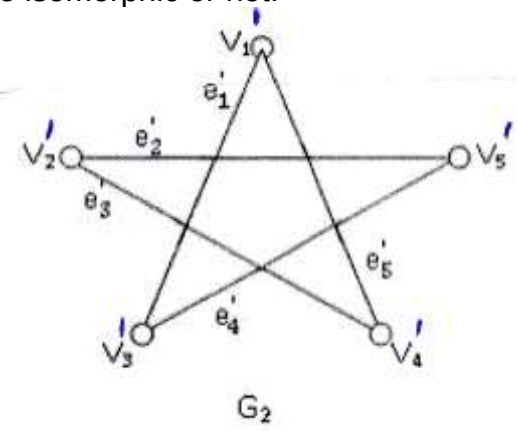
Q.4 Answer any Two of the following. **08**

a) Find the adjacency & incidence matrix of following graph.



b) Verify the following pairs of graphs are isomorphic or not.

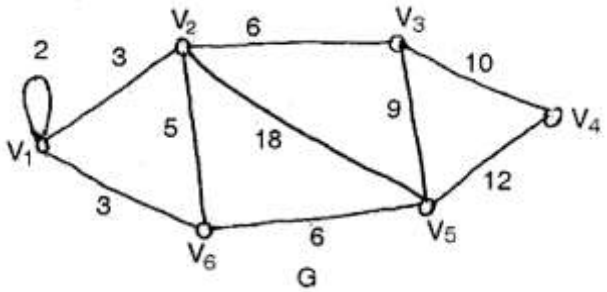




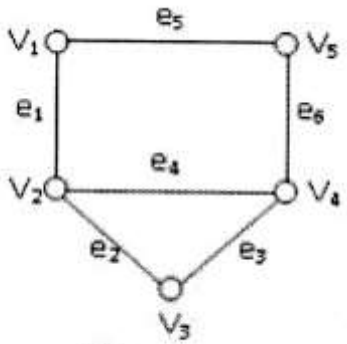
c) 1) Draw the graph which is neither Euler circuit nor Hamilton cycle.
2) Draw the graph which is Hamilton cycle but not Euler circuit.

Q.5 Answer any one of the following. **08**

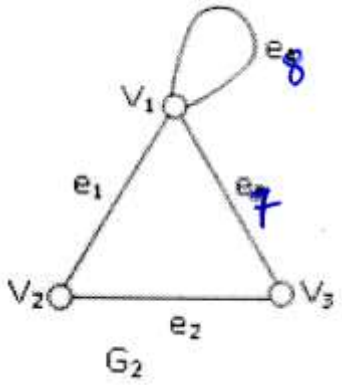
a) What is spanning tree & shortest spanning tree? Find the shortest spanning tree & its weight of following graph by using Kruskal's algorithm.



b) Define union, intersection & ring sum of two graphs. Also draw union, intersection & ring sum of following graphs.



G_1



G_2

Set No.	

Set **P**

B.Sc. (E.C.S) (Semester - II) (Old) (CBCS) Examination: March/April-2023
Introduction to Web Designing – I (ECS0206)

Day & Date: Saturday, 01-07-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams and give equations wherever necessary.

Q.1 Multiple choice questions. **08**

1) There are _____ level of heading in html.
   a) three b) four
   c) five d) six

2) Which program is used by web clients to view the web pages?
   a) Web browser b) Protocol
   c) Web server d) Search Engine

3) The purpose of markup is to _____.
   a) add hypertext capabilities b) enhance the document
   c) both a & b d) none of the above

4) _____ tag is used before beginning of the paragraph text.
   a) <textarea> b) <sup>
   c) <p> d) <h1>

5) Which property is used to change body background color?
   a) bgcolor b) bg-color
   c) background d) background-color

6) The following html tag is used to display the content as a moving text.
   a) <marquee>
   b) <img>
   c) <a href>
   d) none of the above

7) html document have an extension _____.
   a) .htx or .htxl b) .htm or .html
   c) .himt or hmtl d) none of the above

8) Which of the following tags do not require a Closing?
   a) <u> b)
   c) <b> d) none of the above

Q.2 Answer any four of the following. **08**

1) What is Basic principles involved in developing a web site?
2) What is formatting in HTML?
3) What are heading tags?
4) Five Golden rules of web designing?
5) How to use Line Break in HTML?
6) Why create a web site?

Q.3 Write short notes on any two of the following. **08**

1) Explain the Basic structure of an HTML document.
2) Advantages and disadvantages of World Wide Web.
3) Explain Markup tag. Explain with examples.

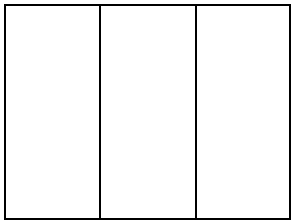
Q.4 Answer any two of the following. **08**

1) Explain Marquee Tag all attribute with example.
2) Explain Physical Style tag with example.
3) Explain Internet Evolution.

08

Q.5 Answer any one of the following.

1) Advantages and Disadvantages of HTML?
2) Create following output



SLR-QE-34

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - II) (Old) (CBCS) Examination: March/April-2023
Introduction to Web Designing – II (ECS0207)

Day & Date: Sunday, 02-07-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

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

Q.1 Choose the correct alternative. **08**

1) HTML stands for _____.
   a) High Text Machine Language
   b) Hyper Text and links Markup Language
   c) Hyper Text Markup Language
   d) None of these

2) Which of the following tag is used to insert a ruler in HTML?
   a)
 b) <r>
   c) <hr> d) <new r>

3) The description list can be _____.
   a) Ordered list b) Unordered list
   c) Both A and B d) Neither A nor B

4) When <frameset> tag is used, <body> tag should not be used.
   a) True b) False

5) In HTML, _____ are used to divide your browser window into multiple sections (or panes) where each section can load a separate HTML document.
   a) Tables b) Frames
   c) Image Maps d) <section> tag

6) In html form multiple radio buttons can be selected at the same time.
   a) True b) False

7) _____ controls the distance between adjacent cells.
   a) ColSpan b) Rowspan
   c) Cell Padding d) Cell Spacing

8) HTML supports a content model.
   a) True b) False

Q.2 Answer any Four of the following. **08**

1) Explain get() and post() method of <form> tag.
2) Write a short note on css padding property.
3) What are ColSpan and RowSpan attribute of table?
4) What is CSS box model?
5) Explain in short, any 4 text formatting tags.
6) What is CSS Opacity property?

Q.3 Write short notes on any Two of the following. **08**

1) Write a note on <pre> tag. Provide a program to justify.
2) Explain CSS border properties.
3) Explain <img> tag in HTML with program.

Q.4 Answer any Two of the following. **08**

1) What are different types of html Lists?
2) What are HTML Links? Explain with types.
3) What is Navigation bar in CSS?

Q.5 Answer any One of the following. **08**

1) Explain in detail <form> tag in html with different elements in it. Design a form for college admission system web site.
2) What is CSS? What are its types?

SLR-QE-35

Seat No.	

Set P

B.Sc. (ECS) (Semester - II) (Old) (CBCS) Examination: March/April-2023
Digital Electronics – I (ECS0208)

Day & Date: Monday, 03-07-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Draw neat diagrams and give equations wherever necessary.
3) Figures to the right indicate full marks.

Q.1 Multiple choice questions. **08**

1) Base of octal no system is _____.
   a) 2 b) 4
   c) 8 d) 16

2) The excess 3 code of 5 is _____.
   a) 1111 b) 1010
   c) 1000 d) 0101

3) Total no of gates in IC 7402 are _____.
   a) 2 b) 3
   c) 4 d) 6

4) The number of distinct Boolean expression of 4 variables is _____.
   a) 16 b) 256
   c) 1024 d) 65536

5) _____ gate whose output is 1 only when both inputs are 1.
   a) OR b) NAND
   c) AND d) EX-OR

6) The output of a half subtractor is _____.
   a) Sum b) Difference and Borrow
   c) Carry d) none of these

7) The NAND gate is _____ gate.
   a) Basic b) Universal
   c) Inverter d) None of these

8) IC 74138 is _____ decoder.
   a) Octal to binary b) 3 to 8
   c) Hex to binary d) Decimal to binary

Q.2 Answer any four of the following. **08**

1) What is number system?
2) What is universal gate?
3) Draw the logic diagram of half adder.
4) Explain complement 4 with example
5) What is decimal number system?
6) Explain binary addition with example

Q.3 Write short notes any two of the following. **08**

1) Explain parity check error detection.
2) Explain D Morgan's theorem.
3) Explain Basic Gates.

Q.4 Answer any Two of the following. **08**

1) Explain full adder with diagram.
2) Write a note on two variable K-map.
3) Explain 4:1 Multiplexer.

Q.5 Answer any One of the following. **08**

1) Explain universal adder/sub tractor.
2) Explain RS flip flop using NAND and NOR gate.

SLR-QE-36

Seat No.	

Set P

B.Sc. (E.C.S) (Semester - II) (Old) (CBCS) Examination: March/April-2023
Digital Electronics – II (ECS0209)

Day & Date: Tuesday, 04-07-2023 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams and give equations wherever necessary.

Q.1 Choose the correct alternatives from the options. **08**

1) 3 Bit counter counts _____ number of states.
a) 2 b) 4
c) 9 d) 16

2) IC _____ is shift register.
a) 7495 b) 7490
c) 74138 d) 74150

3) _____ of the following is DAC.
a) R-2R b) Binary weighted
c) Successive approximation d) Dual slope

4) 1 Flip-flop stores _____ bit information.
a) 0 b) 1
c) 3 d) 4

5) Race around condition occurs in _____ flip flop.
a) JK b) RS
c) D d) None of these

6) Toggling occurs in JK flip flop for input _____.
a) 1,1 b) 1,0
c) 0,1 d) 0,0

7) IC7476 is _____.
a) Register b) Counter
c) flip-flop d) Encode

8) Dynamic memory is made from _____.
a) RAM b) D-RAM
c) SAM d) None of the following

Q.2 Answer any FOUR of the following. **08**

a) Explain ring counter.
b) What is race-around condition?
c) Explain SIPO and PISO.
d) Give difference between encoder and decoder.
e) What is flip-flop?
f) What is ADC and DAC?

Q.3 Write short note on any TWO of the following. **08**

a) Explain SISO and PIPO with diagram.
b) Explain Decoder with example.
c) What is asynchronous counter?

Q.4 Answer any TWO of the following. **08**

a) Give the classification of the memory.
b) Explain synchronous counter.
c) Explain RS flip-flop using NAND gates.

Q.5 Answers any ONE of the following. **08**

a) Explain 3 bit up counter.
b) Explain master slave JK flip flop.

SLR-QE-37

Seat No.	

Set P

B.Sc. (ECS) (Semester - III) (New) (CBCS) Examination: March/April-2023
Data Structure using C++ - I (ECS0301)

Day & Date: Monday, 03-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions:1) All questions are compulsory.
2) Draw neat diagrams and give equations wherever necessary.
3) Figures to the right indicate full marks.
4) Use of logarithmic table and calculator is allowed.

Q.1 Multiple choice questions. **08**

1) _____ is a linear data structure.
   a) Array b) AVL Trees
   c) Binary Trees d) Graphs

2) 'Stack overflow' refer to _____.
   a) accessing item from an undefined stack
   b) adding items to a full stack
   c) removing items from an empty stack
   d) Index out of bounds exception

3) In sorting algorithms _____ provide the best time complexity in the worst-case scenario.
   a) Merge Sort b) Quick Sort
   c) Bubble Sort d) Selection Sort

4) _____ is not the type of queue.
   a) Priority queue b) Ordinary queue
   c) Circular queue d) Single-ended queue

5) Queue follows ____ method.
   a) FIFO (First In First Out) principle
   b) LIFO (Last In First Out) principle
   c) Ordered array
   d) Linear tree

6) What would be the Prefix notation for the given equation? A+(B*C)
   a) +A*CB b) *B+AC
   c) +A*BC d) *A+CB

7) _____is false about a doubly linked list.
   a) We can navigate in both the directions
   b) It requires more space than a singly linked list
   c) The insertion and deletion of a node take a bit longer
   d) Implementing a doubly linked list is easier than singly linked list

8) In data structures _____ can be used for parentheses matching.
   a) stack b) queue
   c) n-ary tree d) priority queue

Q.2 Answer any four of the following. **08**

1) Double Ended Queue
2) Circular linked list
3) Divide and Conquer
4) Traverse in array
5) Matching parenthesis
6) ADT for queue

Q.3 Write short notes any two of the following. **08**

1) Explain difference between stack and queue.
2) Define algorithm and explain Complexity of algorithm.
3) Explain stack using linked list with program.

Q.4 Answer any Two of the following. **08**

1) Explain Doubly (Double) circular linked list in detail.
2) Explain Circular Queue in detail with diagrams.
3) Explain Stack Conversion expressions (infix, prefix and postfix).

Q.5 Answer any One of the following. **08**

1) Define Linked Lists and explain singly linked list and write a program on it.
2) Define Array and explain its types. Write any two-dimension program.

SLR-QE-38

Seat No.	

Set P

B.Sc. (E.C.S) (Semester - III) (New) (CBCS) Examination: March/April-2023
Data Structure using C++ - II (ECS0302)

Day & Date: Tuesday, 04-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat labeled diagrams wherever necessary.

Q.1 Choose the correct alternatives from the options. **08**

1) _____ data organization method is used in hash tables.
a) Stack b) Array
c) Linked List d) Queue

2) Breadth First search is used in ____.
a) Binary trees b) Stacks
c) Graphs d) Both a and c above

3) To represent hierarchical relationship between elements ____ data structure is suitable.
a) Deque b) Priority
c) Tree d) All of Above

4) Graph is a Linear Data Structure.
a) TRUE b) FALSE

5) The node which does not have any child is called as _____.
a) Non-leaf Node b) Leaf node
c) Ancestors d) Siblings

6) Tree is suitable to implement directory structure of computer.
a) TRUE b) FALSE

7) Graph can be used to find out shortest path.
a) TRUE b) FALSE

8) _____ not belong to exchange sort techniques.
a) Bubble Sort b) Insertion Sort
c) Quick Sort d) Selection Sort

Q.2 Define Any FOUR from following. **08**

a) Searching Technique.
b) Binary Expression Tree.
c) Directed Graph.
d) Shortest Path.
e) Sorting with advantage.
f) Hash Function with Hash Table.

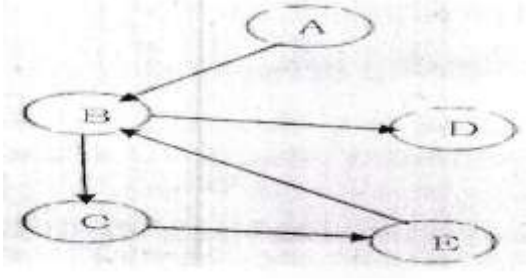
.

Q.3 Solve Any TWO from following. **08**

a) Define Heap Tree and Explain its Types.

b) Explain Indexed Sequential Search Method.

c) Write Adjacency Matrix for given graph below.



Q.4 Solve Any TWO from following. **08**

a) What is a Graph and List out its applications?

b) Sort following array by using Radix sort method with all passes,

	0	1	2	3	4	5	6
LIST	233	124	209	345	457	943	101

c) Explain AVL Tree with its advantage.

Q.5 Answers any ONE of the following. **08**

a) Explain all Tree Traversal Methods with Example.

b) Explain Bubble Sort Technique with Algorithm and program.

SLR-QE-39

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - III) (New) (CBCS) Examination: March/April-2023
Software Engineering (ECS0303)

Day & Date: Wednesday, 05-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat labelled diagrams must be drawn wherever necessary.
4) Use of logarithmic table and calculator is allowed.

Q.1 Multiple Choice Questions. **08**

1) Main aim of software engineering is to produce _____.
   a) Program
   b) Software
   c) Within budget
   d) Software within budget in the given schedule

2) What is a Functional Requirement?
   a) specifies the tasks the program should not
   b) specifies the tasks the program must complete
   c) specifies the tasks the program must not work
   d) All of the mentioned

3) Identify the simplest model of SDLC?
   a) Agile b) RAD
   c) Spiral d) waterfall

4) Select the people who identify the document and verifies the correctness of the software _____.
   a) Project manager b) SQA team
   c) Project team d) All of these

5) Which of the following is not a fact finding technique?
   a) Third party enquiry b) Interview
   c) Record review d) Observation

6) Changes made periodically to a system, after its implementation, is known as _____.
   a) Analysis b) Design
   c) Development d) Maintenance

7) HIPO stands for _____.
   a) Hierarchy input process output
   b) Hierarchy input plus output
   c) Hierarchy plus input process output
   d) Hierarchy input output process

8) The most important feature of spiral model is ____.
   a) Requirement analysis b) Risk management
   c) Quality management d) Configuration management

Q.2 Answer any four of the following. **08**

1) Define System Software.
2) Define DFD.
3) What is software implementation?
4) Define spiral model.
5) What is metrics?
6) Define ERD.

Q.3 Write short notes on any two of the following. **08**

1) V-shape model
2) Decision Trees
3) Data Dictionary

Q.4 Answer any Two of the following. **08**

1) Explain types of system.
2) What is risk? Explain types Risk Managements.
3) Explain types of Dependencies.

Q.5 Answer any one of the following. **08**

1) What is Software? Explain in brief Software requirements.
2) Define System? Explain in brief System Development Life Cycle.

SLR-QE-40

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - III) (New) (CBCS) Examination: March/April-2023
Software Testing (ECS0304)

Day & Date: Thursday, 06-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Draw neat diagrams and give equations wherever necessary.
3) Figures to the right indicate full marks.
4) Use of logarithmic table and calculators is allowed.

Q.1 Multiple choice questions. **08**

1) Software Testing with real data in real environment is known as _____.
a) alpha testing b) beta testing
c) regression testing d) None of these

2) Software mistakes during coding are known as _____.
a) errors b) failures
c) bugs d) defects

3) Which of the following is not a part of bug report?
a) Test case b) Output
c) Software version d) LOC

4) Which is a Black Box testing techniques appropriate to all levels of testing?
a) Acceptance testing b) Regression testing
c) Equivalence partitioning d) Quality assurance

5) By collecting _____ during software testing, it is possible to develop meaningful guidelines to halt the testing process.
a) Failure intensity b) Testing time
c) Metrics d) All of these

6) What is normally considered as an adjunct to the coding step?
a) Integration testing b) Unit testing
c) Completion of testing d) Regression testing

7) White Box techniques are also classified as _____.
a) Design based testing b) Structural testing
c) Error guessing techniques d) None of the mentioned

8) Alpha testing is done at _____.
a) Developer's end b) User's end
c) Developer's & User's end d) None of the mentioned

Q.2 Answer any four of the following. **08**

1) Define software testing.
2) What is smoke testing?
3) Define Bug.
4) What is Automation testing?
5) Define Black Box testing.
6) Define error.

Q.3 Write short notes on any two of the following. **08**

1) Manual and Automation Testing
2) Writing Test Plan
3) Defect Tracking and Reporting

Q.4 Answer any two of the following. **08**

1) Explain error guessing and Exploratory testing.
2) How to write a test case and examples.
3) Explain importance or need of software testing.

Q.5 Answer any one of the following. **08**

1) What is White Box testing? Explain in brief Dynamic Techniques / Structural / Techniques.
2) Define System Testing. Explain functional & nonfunctional testing.

SLR-QE-41

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - III) (New) (CBCS) Examination: March/April-2023
Probability Theory – I (ECS0305)

Day & Date: Friday, 07-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

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

Q.1 Multiple choice question **08**

1) In ${}^{n}C_{5}$, 5 must be _____.
a) $\neq n$ b) $> n$
c) $\leq n$ d) $\geq n$

2) An event consisting of those elements of sample space which are not in A is called_____.
a) primary event b) derived event
c) simple event d) complementary event

3) If A is an event then $P(A/A) =$ _____.
a) zero b) one
c) $P(A)$ d) less than one

4) How many permutations of letters of word 'APPLE' are there?
a) 600 b) 120
c) 240 d) 60

5) If $P(B) = 0.4$ and $P\left(\frac{A}{B}\right) = 0.3$ then $P(A \cap B)$ is _____.
a) 0 b) 0.012
c) 1.20 d) 0.12

6) For discrete r.v. x if $E(x^2) = 11$, $E(x) = 1$ then $V(x)$ = _____.
a) 10 b) 11
c) 121 d) 122

7) If a discrete r.v. x if takes on four values 0,1,2,3 with probabilities 0.1, 0.15, 0.2, K respectively find value of K
a) 0.45 b) 1.45
c) 0.55 d) 1

8) If $n = 10$ and $p = 0.4$ then variance of binomial distribution is _____.
a) 0.4 b) 4
c) 16 d) 2.4

Q.2 Solve any four. **08**

a) Define certain event and impossible event.
b) State multiplication principal of counting.
c) Define independent event.
d) find value of n if ${}^{n}C_{5} = 5\ {}^{n}P_{3}$
e) Prove that $P(A) = 1 - P(\bar{A})$ where $\bar{A}$ is complement of A.
f) Define Poisson distribution.

Q.3 Explain any two. **08**

a) If A and B are independent events then show that A^c and B are also independent.

b) Define binomial distribution, state it's additive property, mean and variance.

c) Define cumulative distribution function of a discrete r.v. and state any three properties of it.

Q.4 Solve any two **08**

a) The probability distribution of r.v. X is

X	0	1	2	3
$P(X=x)$	$1/6$	$1/2$	$3/10$	$1/30$

Find $E(X),\ V(X)$

b) Find value of x if,

$$\binom{11}{5}+\binom{11}{6}+\binom{12}{7}+\binom{13}{8}=\binom{14}{x}$$

c) Which of the following are probability models.

i) $p(w_1)=p(w_2)=p(w_3)=1/3, p(w_4)=p(w_5)=p(w_6)=1/6$

ii) $p(w_1)=0.1,\ p(w_2)=0.2,\ p(w_3)=0,\ p(w_4)=0.4, p(w_5)=0.2,$ $p(w_6)=0.1$

iii) $p(w_1)=\frac{3}{10}\ ,\ p(w_2)=0\ ,\ p(w_3)=\frac{1}{5}\ , p(w_4)=\frac{2}{5},\ p(w_5)=0\ ,$ $p(w_6)=\frac{1}{10}$

iv) $p(w_i)=\frac{1}{6}\ ,\quad \forall\ i=1,2,\dots 6$

Q.5 Solve any one. **08**

a) Define permutation and combination, also find value of n if ${}^nP_5 : {}^nP_3 = 2 : 1$

b) Following is c.d.f. of discrete r.v. x

x	-4	-3	-2	-1	0	1	2	3
$F(x)$	0.09	0.21	0.35	0.53	0.69	0.82	0.92	1.0

Find

i) probability distribution of x

ii) $P[1\times 1\le 1]$

iii) $P(x>0)$

iv) $P\left(x\ge 2/x>0\right)$

SLR-QE-42

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - III) (New) (CBCS) Examination: March/April-2023
Probability Theory-II (ECS0306)

Day & Date: Saturday, 08-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Draw neat diagrams and give equations wherever necessary.
3) Figures to the right indicate full marks.
4) Use of logarithmic table and any type of calculator is allowed.
(At. Wts.: H =1, C=12, O=16, N=14, Na=23, Cl=35.5)

Q.1 Choose the correct alternatives. **08**

1) Normal distribution is symmetric about _____.
   a) A.M. b) Median
   c) Mode d) All of these

2) Let $X \rightarrow U(4,16)$. Then variance of r.v.x is
   a) 16 b) 4
   c) 12 d) 20

3) A statistical measure based on all units of population is called_____.
   a) statistic b) parameter
   c) sample d) none of these

4) If $F(x)$ distribution function then $F(\infty) =$
   a) 0 b) 1
   c) ∞ d) $-\infty$

5) For which of the following distribution having mean and SD is always equal?
   a) Normal b) Uniform
   c) Exponential d) All of these

6) Area of critical region depends on _____.
   a) Size of type-I error b) Size of type-II error
   c) Value of statistics d) Number of observations

7) A r.v. X has exponential distribution with mean 1 then $P(X > 2)$is _____.
   a) e^2 b) e^{-2}
   c) $1 - e^{-2}$ d) $1 - e^2$

8) If $X \rightarrow N(10,4)$ and $Y \rightarrow N(12,9)$ are independent random variables then distribution of $(X + Y)$ is _____.
   a) $N(22, 13)$ b) $N(16, 5)$
   c) $N(22, 169)$ d) None of these

Q.2 Answer any Four of the following. **08**

a) Define mean of a continuous r.v. X ...

b) If a continuous r.v. X having p.d.f. $\mathrm{f(x)} = 3\mathrm{x}^2, 0 < \mathrm{x} < 1$ then find its cdf.

c) State mean and variance of uniform distribution.

d) Define Chi-square distribution.

e) Define Null hypothesis and alternative hypothesis.

f) If $\mathrm{X} \rightarrow (4, 12)$ calculate $(5 \leq \mathrm{X} \leq 9)$

Q.3 Attempt any Two of the following. **08**

a) State and prove "Lack of Memory" property of exponential distribution.

b) $\mathrm{A\ r.v.\ X}$ has pdf given by $f(X) = CX^2 \quad if\ 0 \leq X \leq 1$
$= 0 \qquad if o.w.$

Find: The value of C

c) A sample of 400 male students is found to have mean weight 52.47 kg. Can it be regarded as sample from large population with mean weight 52 kg, given that the population standard deviation is 1.2 kg. $(Use\ \alpha = 0.01)$

Q.4 Answer any Two of the following. **08**

a) Define the following terms,

i) $\mathrm{Type - I\ error}$

ii) $\mathrm{Type - II\ error}$

iii) Level of significance

iv) Critical region

b) The p.d.f. of r.v. X is as follows:

$$f(x) = \begin{cases} 6x(1-x), & 0 < x < 1 \\ 0, & o.w. \end{cases}$$

Find: $\mathrm{V(X)}$

c) Write the procedure of testing equality of two population proportions.

Q.5 Answer any One of the following. **08**

a) Define Normal distribution. State important properties of normal distribution.

b) Suppose the life time of a certain make of T.V. tube is exponentially distributed with mean life time 1600 hrs.
Find probability that:

a) The tube will work up to 2400 hrs.

b) The tube will survive after 1000 hrs.

iii) The tube will survive in between 1200 hrs. to 2000 hrs.

SLR-QE-43

Seat No.	

Set P

B.Sc. (ECS) (Semester - III) (New) (CBCS) Examination: March/April-2023
Introduction to Python Programming (ECS0307)

Day & Date: Monday, 10-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams and give equations wherever necessary.

Q.1 Choose correct alternative for the following. **08**

1) Which type of Programming does Python support?
   a) object-oriented programming b) structured programming
   c) functional programming d) all of the mentioned

2) Who developed Python Programming Language?
   a) Wick van Rossum b) Rasmus Lerdorf
   c) Guido van Rossum d) Niene Stom

3) What will be the value of the following Python expression?
   4 + 3 % 5
   a) 7 b) 2
   c) 4 d) 1

4) Which of the following is the truncation division operator in Python?
   a) | b) //
   c) / d) %

5) To add a new element to a list we use which Python command?
   a) list1.addEnd(5) b) list1.addLast(5)
   c) list1.append(5) d) list1.add(5)

6) What is output of print(math.pow (3, 2))?
   a) 9.0 b) None
   c) 9 d) None of the mentioned

7) What does the function re.search() do?
   a) matches a pattern at the start of the string
   b) matches a pattern at any position in the string
   c) such a function does not exist
   d) none of the mentioned

8) Which is the correct operator for power(x^y)?
   a) X^y b) X**y
   c) X^^y d) None of the mentioned

Q.2 Answer any four of the following. **08**

1) Define list with example.
2) Define module.
3) List out various data types in python.
4) Write use of input() function with example.
5) Write use of pass keyword with example.
6) Define dictionary.

Q.3 Write short notes on any two of following. **08**

1) Characteristics of python
2) Explain various manipulations on tuple.
3) Constructors in python

Q.4 Answer any two of the following. **08**

1) Explain abstract class and abstract method.
2) Write a program to implement hierarchical inheritance.
3) Define regular expression. Explain various metacharacters.

Q.5 Answer any one of the following. **08**

1) Define file. Explain various file operations.
2) List decision making statements, write a program by using nested if—else to find large number between three numbers.

SLR-QE-44

Seat No.		Set	P

B.Sc. (E.C.S.) (Semester - IV) (New) (CBCS) Examination: March/April-2023
Database Management System (ECS0401)

Day & Date: Monday, 19-06-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Draw neat diagrams and give equations wherever necessary.
3) Figures to the right indicate full marks**.**

Q.1 Multiple choice questions. **08**

1) What do you mean by one to many relationships?
   a) One class may have many teachers
   b) Many classes may have many teachers
   c) One teacher can have many classes
   d) Many teachers may have many classes

2) A Database Management System is a type of _____ software.
   a) It is a type of system software
   b) It is a kind of application software
   c) It is a kind of general software
   d) Both a and c

3) Which of the following is a top-down approach in which the entity's higher level can be divided into two lower sub-entities?
   a) Aggregation b) Generalization
   c) Specialization d) All of the above

4) In a relation database, every tuples divided into the fields are known as the _____.
   a) Queries b) Domains
   c) Relations d) All of the above

5) Which one of the following is commonly used to define the overall design of the database?
   a) Application program b) Data definition language
   c) Source code d) Schema

6) Which of the following levels is considered as the level closed to the end-users?
   a) Internal Level b) External Level
   c) Conceptual Level d) Physical Level

7) The architecture of a database can be viewed as the _____.
   a) One level b) Two-level
   c) Three-level d) Four level

8) Which of the following provides the ability to query information from the database and insert tuples into, delete tuples from, and modify tuples in the database?
   a) DML b) DDL
   c) Query d) Relational Schema

Q.2 Answer any four of the following. **08**

a) What are the advantages of DBMS?
b) Define Aggregation. Explain with example.
c) Discuss the properties of transaction.
d) What is check point?
e) What is shared lock?
f) What is Shadow paging?

Q.3 Write short notes on any Two of the following. **08**

a) What is DBMS Architecture? Explain Types of DBMS Architecture.
b) What is scheduling? Explain view serializability with example.
c) Describe in detail Timestamp Ordering Protocol.

Q.4 Answer any Two of the following. **08**

a) Explain ACID Properties in DBMS.
b) Explain Generalization and specialization with suitable example.
c) Explain three schema Architecture.

Q.5 Answer any One of the following. **08**

a) What is deadlock? How it is detected in DBMS? Explain with example.
b) What is ER-model? Explain its notations in detail with example.

SLR-QE-45

Seat No.	

Set P

B.Sc. (E.C.S) (Semester-IV) (New) (CBCS) Examination: March/April-2023
MYSQL (ECS0402)

Day & Date: Tuesday, 20-06-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat labeled diagrams and give equations wherever necessary.

Q.1 Choose the correct alternatives from the options. **08**

1) Which operator is used to compare a value to a specified list of values?
a) ANY b) BETWEEN
c) ALL d) IN

2) In which of the following cases a DML statement is not executed?
a) When existing rows are modified
b) When a table is deleted
c) When some rows are deleted
d) All of the above

3) Which of the following is true about the HAVING clause?
a) Similar to the WHERE clause but is used for columns rather than groups
b) Similar to WHERE clause but is used for rows rather than columns
c) Similar to WHERE clause but is used for groups rather than rows
d) Acts exactly like a WHERE clause

4) _____ command makes the updates performed by the transaction permanent in the database?
a) ROLLBACK b) COMMIT
c) TRUNCATE d) DELETE

5) Group of operations that form a single logical unit of work is known as _____.
a) View b) Network
c) Unit d) Transaction

6) _____ is a constraint that can be defined only at the column level?
a) UNIQUE b) NOT NULL
c) CHECK d) PRIMARY KEY

7) Find the cities name with the condition and temperature from table 'weather' where condition = sunny or cloudy but temperature >= 60.
a) SELECT city, temperature, condition FROM weather WHERE condition = 'cloudy' AND condition = 'sunny' OR temperature >= 60
b) SELECT city, temperature, condition FROM weather WHERE condition ='cloudy' OR condition = 'sunny' OR temperature >= 60
c) SELECT city temperature, condition FROM weather WHERE condition = 'sunny' OR condition = 'cloudy' AND temperature >= 60
d) SELECT city, temperature, condition FROM weather WHERE condition = 'sunny' AND condition = 'cloudy' AND temperature >= 60

8) How can you change "Thomas" into "Michel" in the "Last Name" column in the Users table?

a) UPDATE User SET LastName = 'Thomas' INTO LastName = 'Michel'
b) MODIFY Users SET LastName = 'Michel' WHERE LastName = 'Thomas'
c) MODIFY Users SET LastName = 'Thomas' INTO LastName = 'Michel'
d) UPDATE Users SET LastName = 'Michel' WHERE LastName = 'Thomas'

Q.2 Answer the following questions. (Any Four) **08**

a) What are Data & Database?
b) Explain Types of MySQL Constraints.
c) How to Create Index in MySQL.
d) How to change the table name in MySQL?
e) How to execute a stored procedure in MySQL?
f) How MySQL Works?

Q.3 Write Short Notes. (Any Two) **08**

a) Explain Data types in MySQL.
b) Explain Count(), Sum() & AVG() Aggregate Functions with example.
c) Explain Primary key, Foreign key with example.

Q.4 Answer the following questions. (Any Two) **08**

a) What is Cursor? Explain types of cursor with example.
b) Explain MySQL clause order by, group by, rollup with example.
c) Explain History of MySQL in detail.

Q.5 Answer the following questions. (Any One) **08**

a) Explain INSERT, UPDATE, SELECT, DELETE with example.
b) Explain three types of MySQL joins with example.

SLR-QE-46

Seat No.	

Set P

B.Sc. (E.C.S) (Semester - IV) (New) (CBCS) Examination: March/April-2023
Operating System (ECS0403)

Day & Date: Wednesday, 21-06-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

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

Q.1 Choose the correct alternatives from the options. **08**

1) The operating system where fixed time slot is allocated to each active process is _____.
a) Real time O.S b) Multiprogramming O.S
c) Batch O.S d) Time-sharing O.S

2) A program in execution is called _____.
a) Process b) Instruction
c) Procedure d) Function

3) Interval between the time of submission and completion of the job is called _____.
a) Waiting time b) Turn-around time
c) Throughput d) Response time

4) FIFO scheduling is _____.
a) Preemptive scheduling b) Non-preemptive scheduling
c) Deadlock scheduling d) None of these

5) "Throughput" of a system is _____.
a) Number of programs processed by it per unit time
b) Number of times the program is invoked by the system
c) Number of requests made to a program by the system
d) None of the above

6) Virtual memory is _____.
a) Simple to implement
b) Used in all major commercial operating systems
c) Less efficient in utilization of memory
d) Useful when fast I/O devices are not available

7) Process is called as a _____ entity.
a) Passive b) Active
c) Non active d) None of these

8) There is a guarantee that the critical tasks are completed in given amount of time. That is called as _____.
a) Hard Real-time systems b) Soft real-time system
c) Real-time systems d) None of the above

Q.2 Answer the following questions. (Any Four) **08**

a) Define Operating systems.
b) What is meant by Multiprogramming?
c) What is meant by Real-time system?

d) What is meant by Context Switching?
e) Define Semaphores.
f) Define demand paging.

Q.3 Write Short Notes. (Any Two) **08**
a) Process Control Block
b) Swapping
c) File System structure

Q.4 Answer the following questions. (Any Two) **08**
a) Explain the different Services provided by Operating System.
b) Explain the different Scheduling criteria in detail.
c) Define the term file. Explain different types of file.

Q.5 Answer the following questions. (Any One) **08**
a) Define Process Synchronization. Explain Dinning Philosopher problem.
b) Define Deadlock. Explain Bankers Algorithm with example.

SLR-QE-47

Seat No.	

Set P

B.Sc. (E.C.S) (Semester - IV) (New) (CBCS) Examination: March/April-2023
Linux OS and Shell Scripting (ECS0404)

Day & Date: Thursday, 22-06-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

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

Q.1 Choose the correct alternatives from the options. **08**

1) _____ can be developed the Linux Operating System.
a) Stephen Bourne b) Linus Torvalds
c) Bill Joy d) David Korn

2) Maximum size of Linux filename is _____.
a) 128 bytes b) 32 bytes
c) 255 bytes d) 64 bytes

3) The system administrator is also called the _____.
a) super user b) root user
c) service user d) Regular user

4) Which combination of keys is used to exit from terminal?
a) Ctrl + t b) Ctrl + z
c) Ctrl + d d) Ctrl + e

5) Which of the following OS is not based on Linux?
a) Ubuntu b) Redhat
c) CentOs d) BSD

6) Which command is used to get the kernel version in Linux?
a) uname -r b) Kernel
c) uname -n d) uname -s

7) Which command is used to list all the files in your current directory?
a) ls -l b) ls -t
c) ls -a d) ls -i

8) Which command is used to change password of your Linux system?
a) Password b) Pass
c) change -p d) Passwd

Q.2 Answers any four of the following. **08**

a) What is Shell?
b) What are the basic components of Linux?
c) Define the hard links?
d) What is the use of pipe?
e) What is grep command?
f) What is mean vi Text Editors?

Q.3 Write short notes on any two of the following. **08**

a) Write note on Chmod and chown command.
b) Shell Scripts
c) System process

Q.4 Answers any two of the following. **08**

a) Write the procedure for creates the user? Explain Useradd and Usermod command.
b) What is boot looder? Explain LILO.
c) List the basic Linux commands for managing files and directories? Explain makdir Command

Q.5 Answers any one of the following. **08**

a) Explain Architecture & features of Linux system.
b) List out and explain different Communication commands.

SLR-QE-48

Seat No.	

Set P

B.Sc. (E.C.S) (Semester - IV) (New) (CBCS) Examination: March/April-2023
Statistics for Data Science (ECS0405)

Day & Date: Friday, 23-06-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

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

Q.1 Choose the correct alternatives from the options. 08

1) An aggregate of objects or individuals on the units under study is called as _____.
   a) Population b) Sample
   c) Subsample d) None of these

2) When the population is heterogeneous then _____ method is more appropriate.
   a) SRSWR b) SRSWOR
   c) Stratified d) All of these

3) Mode can be determined graphically by using _____.
   a) less than ogive curve
   b) Greater than ogive curve
   c) Histogram
   d) None of these

4) The measure of central tendency needs to arrange data in order is _____
   a) AM b) Median
   c) Mode d) All of these

5) If variance of X is 25 then S.D. is _____
   a) 625 b) 5
   c) 25 d) 20

6) _____ is a relative measure of dispersion.
   a) C.V. b) S.D.
   c) Q.D. d) All of these

7) Value of correlation coefficient always lies between _____
   a) (-1,1) b) (0,1)
   c) (-2,2) d) None of these

8) If $r = 0.6$ and $by_x = 1.2$ then $bx_y =$ _____
   a) 0.3 b) 1
   c) 0.6 d) 0.36

Q.2 Answer any four of the following **08**

1) Define population and sample will illustration.
2) Define class limit, class mark with example.
3) Find median for: 40, 41, 38, 33, 30, 41, 32, 28, 25
4) The A.M. of following observations 12, 15, 18, 20, 30, a, 25 is 21.71 find value of a.
5) Define range and coefficient of range
6) Give $n = 10,\ \sum xy = 110,\ x - bar = 3,\ y - bar = 8$ find $cov(x, y)$

Q.3 Write short note on any two. **08**

1) Write advantages of sampling over census.
2) Distinguish between absolute and relative measure of dispersion.
3) Describe scatter diagram and explain how it is used to find type of correlation.

Q.4 Answer any two of the following **08**

1) Find missing frequency of the class 30-40 if median is 36.

Class:	10-20	20-30	30-40	40-50	50-60
Frequency:	7	12	-	14	9

2) Construct histogram and hence find value of mode.

Class:	0-20	20-40	40-60	60-80	80-100
Frequency:	5	12	18	10	2

3) Compute correlation coefficient between X and Y

X:	2	4	5	6	8	11
Y:	18	12	10	8	7	5

Q.5 Answer any one of the following. **08**

a) Obtain line of regression of X on Y and Y on X. Hence estimate value of X for $Y = 8$

X:	1	2	3	4	5	6	7
Y:	9	8	10	12	11	13	14

b) Find median for the following data.

Weight:	30-40	40-50	50-60	60-70	70-80	80-90
No of students:	8	27	35	17	5	3

SLR-QE-49

Seat No.	

Set P

B.Sc. (E.C.S) (Semester - IV) (New) (CBCS) Examination: March/April-2023
Optimization Techniques (ECS0406)

Day & Date: Saturday, 01-07-2023 Max. Marks: 40
Time: 09:00 AM To 11:00 AM

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

Q.1 Choose the correct alternatives from the options. **08**

1) The value of variable which satisfies the set of constraints of LPP is _____.
a) solution of LPP b) feasible solution
c) Infeasible solution d) dual of LPP

2) An A.P. is special type of _____.
a) T.P. b) A.P.
c) LPP d) All of these

3) In the canonical form of LPP objective function must be of which type?
a) Maximization b) Minimization
c) either a, b d) None of these

4) If dual has unbounded solution then primal has _____.
a) unbounded solution b) No feasible solution
c) feasible solution d) None of these

5) Which of the following is not a method of solving T.P.?
a) VAM b) LCM
c) NWCR d) Hungarian

6) Every LPP is associated with another LPP is called _____.
a) LPP b) Primal
c) dual d) None of these

7) VAM Stands for _____.
a) Vogel's Approximation Method
b) Vogeal's Approximation Method
c) Vangel's Approximation Method
d) Vogel's Approximate Method

8) Find objective function of dual from given primal:
$\text{Min } z = 7x_1 + x_2$
subject to constraints,
$x_1 + 2x_2 \leq 5$
$2x_1 + 5x_2 \leq 7$
$x_1, x_2 \geq 0$
a) $\text{Min } z = 5x_1 + 7x_2$ b) $\text{Max } z = 5x_1 + 7x_2$
c) $\text{Max } z = 5x_1 - 7x_2$ d) $\text{Max } z = 7x_1 + x_2$

Q.2 Answer any four of the following. **08**

a) Define solution of LPP and feasible solution.
b) Define balanced A.P.
c) Write formula to find opportunity cost d_{ij} in MODI method.

d) Write standard form of LPP

$\text{Min } z = 2x + 3y$

Subject to constraint

$4x + 3y \geq 12$

$2x + y \geq 2$

$x, y \geq 0$

e) Find dual of following LPP

$\text{Max } z = 3x_1 + x_2$

Subject to constraint

$x_1 + x_2 \leq 2$

$x_1 + 3x_2 \leq 4$

$x_1, x_2 \geq 0$

f) Define non-generate solution of $m \times n$ T.P.

Q.3 Write note on any two **08**

a) Write step by step procedure of converting primal of LPP to dual.

b) Write MODI method in T.P.

c) Explain difference between T.P. and A.P.

Q.4 Attempt any two of following. **08**

a) Solve following LPP by using graphical method

$\text{Max } z = x_1 + 2x_2$

s. t. c.

$x_1 + 2x_2 \leq 20$

$x_1 + x_2 \leq 12$

$x_1, x_2 \geq 0$

b) Find IBFS of following T.P. by using NWCM.

	W_1	W_2	W_3	W_4	a_i
F_1	30	25	40	20	100
F_2	20	26	35	40	250
F_3	31	33	37	30	150
b_j	90	160	200	50	

c) Solve following LPP by using simplex method

$\text{Max } z = 4x_1 + 10x_2$

s. t. c.

$2x_1 + x_2 \leq 50$

$2x_1 + 5x_2 \leq 100$

$2x_1 + 3x_2 \leq 90$

$x_1, x_2 \geq 0$

Q.5 Attempt any one of the following. **08**

a) Find IBFS of T.P. with given allocations. Hence find optimum solution by using MODI method.

Factory	W_1	W_2	W_3	W_4	Capacity (a_i)
F_1	21	16	25	11 / 13	11
F_2	16 / 17	3 / 18	14	4 / 23	13
F_3	32	7 / 27	12 / 18	41	19
Demand (b_j)	6	10	12	15	43

b) Solve following A.P. to determine optimal cost.

	I	II	III	IV
A	10	12	19	11
B	5	10	7	8
C	12	14	13	11
D	8	15	11	9

SLR-QE-50

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - IV) (New) (CBCS) Examination: March/April-2023
Web Development using PHP (ECS0407)

Day & Date: Sunday, 02-07-2023 Max. Marks: 40
Time: 9:00 AM To 11:00 AM

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

Q.1 Multiple choice question. **08**

1) What does PHP stand for?
   a) Personal Home Page
   b) Hypertext Preprocessor
   c) Pretext Hypertext Processor
   d) Preprocessor Home Page

2) Which one of the following functions will convert a string to all uppercase?
   a) strtoupper()
   b) uppercase()
   c) str_uppercase()
   d) struppercase()

3) Which of the looping statements is/are supported by PHP?
   i) for loop
   ii) while loop
   iii) do-while loop
   iv) foreach loop

   a) i) and ii)
   b) i), ii) and iii)
   c) i), ii), iii) and iv)
   d) Only iv)

4) Which of the functions is used to sort an array in descending order?
   a) asort()
   b) sort()
   c) rsort()
   d) dsort()

5) Which two predefined variables are used to retrieve information from forms?
   a) $GET & $SET
   b) $_GET & $_POST
   c) $__GET & $__SET
   d) GET & SET

6) Which one of the following function is used to start a session?
   a) start_session()
   b) session_start()
   c) session_begin()
   d) begin_session()

7) Which directive determines whether PHP scripts on the server can accept file uploads?
   a) file_uploads
   b) file_upload
   c) file_input
   d) file_intake

8) Which one of the following databases has PHP supported almost since the beginning?
   a) Oracle Database
   b) SQL
   c) SQL+
   d) MySQL

Q.2 Answer any four of the following. **08**

1) What is php? why do we use php?
2) What is meant by variable variables in php?
3) What are the differences between echo and print?
4) What are the uses of explode and implode functions?
5) How can you make a connection with MySql server using php?
6) How can you create a session in php?

Q.3 Write short notes on any Two of the following. **08**

1) Explain Multidimensional array with example.
2) State difference between GET () and POST () method.
3) Explain for each looping statement with example.

Q.4 Answer any Two of the following. **08**

1) Write a program to find prime number or not.
2) Explain form validation with example.
3) What is cookie with example?

Q.5 Answer any One of the following. **08**

1) Explain following variables:
   i) $_GET
   ii) $_COOKIES
   iii) $_FILES
   iv) $_SESSION

2) Write a php script for student database in MySQL with multiple queries (Insert, Update, Delete, and Select).

SLR-QE-51

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination: March/April-2023
ENGLISH
Business English (ECS0501)

Day & Date: Sunday, 02-07-2023 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.

Q.1 Rewrite the sentence by filling the blanks with the correct answer from the given options. 08

1) What did Jim sell to buy a gift for Della?
a) His old house b) His motorbike
c) Wedding ring d) Heirloom watch

2) What did Phatik lose?
a) Cycle b) Pocket
c) School text book d) Shoes

3) The story 'The Homecoming' ends with _____.
a) Phatik's death from illness b) Phatik's death in an accident
c) Phatik's birth in the hospital d) Phatik's arriving to his village

4) What did the poet in 'The Solitary Reaper' carry in his heart?
a) The beauty of the Tiger b) The boy's beauty
c) The girl's song d) The necklace

5) Who snatched the Queen's mirror in 'The Queen's Rival'?
a) Her son b) Her daughter
c) The King d) The father

6) What did the schoolmaster in the poem 'The Village Schoolmaster' love?
a) Religious books b) Debate
c) Learning d) Gossiping

7) The gate ____ by the watchman.
a) had opened b) was opened
c) opened d) has opened

8) It is not easy _____the meeting.
a) to get rid off b) to tie up
c) to send off d) to call off

Q.2 Write answer in short. (Any 4 out of 6) 12

1) Why was Della sad in the beginning of the story 'The Gift of the Magi'?
2) How did Phatik feel arriving at the uncle's house?
3) Describe the Reaper in the poem 'The Solitary Reaper'.
4) Why is the Queen unsatisfied in 'The Queen's Rival'?
5) Describe the character of Schoolmaster in the poem 'The Village Schoolmaster'.
6) Where did Della go to buy Jim's gift?

Q.3 Answer any One of following. **10**

1) What are the benefits of 21st century technology?

OR

2) Write a detailed note on learning and literacy skills.

Q.4 Describe in detail the four C's. in your own words. **10**

SLR-QE-52

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination: March/April-2023
Data Communication and Networking (ECS0502)

Day & Date: Monday, 03-07-2023 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.

Q.1 a) Multiple choice questions. **10**

1) Computer Network is _____.
   a) Collection of hardware components and computers
   b) Interconnected by communication channels
   c) Sharing of resources and information
   d) All of the Above

2) For a _____ channel, we need to use the Shannon capacity to find the maximum bit rate.
   a) Noiseless b) Noisy
   c) low-pass d) band pass

3) _____ provides a connection-oriented reliable service for sending messages.
   a) TCP b) IP
   c) UDP d) All of the above

4) Addressing mechanism is done at _____.
   a) Physical Layer b) Data Link Layer
   c) Application Layer d) None of these

5) Coaxial cable consists of _____ concentric copper conductors.
   a) 1 b) 2
   c) 3 d) 4

6) Which one of the following is not a network topology?
   a) Star b) Ring
   c) Bus d) Peer to Peer

7) Physical or logical arrangement of network is _____.
   a) Networking b) Routing
   c) Topology d) Linking

8) _____Topology there is a central controller or hub.
   a) Mesh b) Star
   c) Ring d) Bus

9) The resources needed for communication between end systems are reserved for the duration of Session between end systems in _____.
   a) Packet switching b) Frequency switching
   c) Line switching d) Circuit switching

10) Which transmission media has the highest transmission speed in a network?
   a) Coaxial cable b) Twisted pair cable
   c) Optical fiber d) Electrical cable

b) Fill in the blank **06**

1) The physical layer translates logical communication requests from the _____ into hardware specific operations.
2) The information to be communicated in a data communications system is the _____.
3) Repeater operates in _____ layer of the OSI model.
4) _____ is the transmission of data between two or more computer over communication links.
5) Network components are connected to the same cable in the _____ topology.
6) Error detection at the data link level is achieved by _____.

Q.2 Solve any eight of the following. **16**

a) Define Computer Network. And what are the benefits of the networks?
b) Define the term Protocol.
c) What are the Data-Rate Limits?
d) Define Analog and Digital signal.
e) What is Transmission Media?
f) Define the term Multiplexing.
g) Define the term Framing.
h) Define the term ARP.
i) Define the term Error Detection.
j) Define the term Flow Control.

Q.3 a) Attempt any two of the following. **10**

1) Explain the Connection oriented and connection less services in data Communication.
2) Explain Pulse Code Modulation in data communication techniques.
3) Define Network devices. Explain Hub and Repeaters.

b) Write Short note on. **06**

1) SMTP
2) HTTP

Q.4 a) Attempt any two of the following. **08**

1) Explain Fiber Optic Cable transmission media.
2) Differentiate packet switching and Circuit switching
3) Explain the Digital to Analog Modulation in data communication.

b) Explain ISO- OSI Reference Model in detail with suitable diagram. **08**

Q.5 Attempt any two of the following. **16**

a) Explain the different data transmission modes: Parallel and Serial.
b) Explain the TCP/IP protocol suite in computer network.
c) What is Routing? Explain Link State Routing Algorithms.

SLR-QE-53

Seat No.		Set	P

B.Sc. (E.C.S) (Semester - V) (New) (CBCS) Examination: March/April-2023
Theory of Computer Science (ECS0503)

Day & Date: Tuesday, 04-07-2023 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) Draw neat labelled diagrams wherever necessary.

Q.1 A) Choose the correct alternatives from the options. 10

1) There are _____ tuples in finite state machine.
   a) 4 b) 5
   c) 6 d) Unlimited

2) The value of n if Turing machine is defined using n-tuples: _____.
   a) 6 b) 7
   c) 8 d) 5

3) Number of states requires to accept string ends with 10.
   a) 3 b) 2
   c) 1 d) Can't be represented

4) A language is regular if and only if _____.
   a) accepted by DFA b) accepted by PDA
   c) accepted by LBA d) accepted by Turing machine

5) Which of the following a Turing machine does not consist of?
   a) input tape b) head
   c) state register d) none of the mentioned

6) Regular expressions are closed under _____.
   a) Union b) Intersection
   c) Kleen star d) All of the mentioned

7) Languages of a automata is _____.
   a) If it is accepted by automata
   b) If it halts
   c) If automata touch final state in its life time
   d) All language are language of automata

8) A DPDA is a PDA in which _____.
   a) No state p has two outgoing transitions
   b) More than one state can have two or more outgoing transitions
   c) At least one state has more than one transitions
   d) None of the mentioned

9) A PDA machine configuration (p, w, y) can be correctly represented as: _____.
   a) (current state, unprocessed input, stack content)
   b) (unprocessed input, stack content, current state)
   c) (current state, stack content, unprocessed input)
   d) none of the mentioned

10) With reference of a DPDA, which among the following do we perform from the start state with an empty stack?
   a) process the whole string b) end in final state
   c) end with an empty stack d) all of the mentioned

Q.1 B) Fill in the blank **06**

1) Statement: For every CFL, G, there exists a PDA M such that L(G) = L(M) and vice versa.
   a) True b) False
2) * is the _____ closure of |-
3) Transition function of DFA is _____.
4) Maximum number of states of convert of NFA to DFA is _____.
5) Finite automata recognizes _____.
6) There are _____ tuples in finite machine.

Q.2 Answer the followings (Any Eight): **16**

a) What is set? Explain form of set.
b) Give the formal definition of CFG.
c) What is Automation?
d) Write a regular expression for the language accepting all combination of "a's"
e) Explain pushdown automata with operations.
f) Design DFA with E= {0, 1} accepts all strings starting with 1.
g) Explain parse tree with example.
h) Explain relation in set theory.
i) Give the difference between NPDA and DPDA.
j) Give the difference between NFA and DFA.

Q.3 A) Answer the followings (Any two): **10**

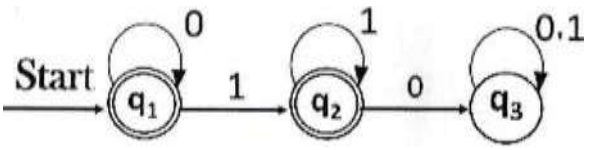
1) Explain types of relation with example.
2) Explain arden's theorem.
3) Explain pumping leema for regular language.

B) Explain finite automata model with their types. **06**

Q.4 A) Answer the followings (Any two): **08**

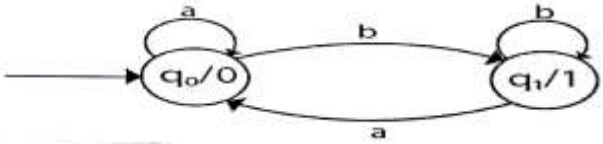
1) Construct DFA for set of string over {a,b} length of string |w| divisible by 3 i.e. |w| mod 3=0
2) Explain closure properties of regular language.
3) Explain normal forms of CFG.

B) Regular Expression for given DFA **08**



Q.5 Answer the following (Any Two). **16**

a) Explain the steps for converting NFA to DFA with example.
b) Explain Turing Machine with example.
c) Convert Moore Machine into equivalent mealy machine.



SLR-QE-54

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination: March/April-2023
Visual Programming (ECS0504)

Day & Date: Wednesday, 05-07-2023 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Draw neat labelled diagrams wherever necessary.
3) Figures to right indicate full marks.
4) Use of log table and calculators is allowed.

Q.1 A) Multiple choice questions. **10**

1) The modifier used to define a class which does not have objects of its own but acts as a base class for its subclass is?
   a) Sealed b) Static
   c) New d) Abstract

2) _____ is not a component of the CLR.
   a) Class loader b) Class collector
   c) .NET Framework d) JIT Compiler

3) All C# applications begin execution by calling the _____ method.
   a) Class() b) Main()
   c) Submain() d) Namespace

4) _____ keyword is used for including the namespaces in the program in C#?
   a) imports b) using
   c) exports d) None of the above.

5) What is CTS?
   a) Common type system b) Common type-safe
   c) Compiler type structure d) Common type specification

6) Boxing converts a value type on the stack to an ____ on the heap.
   a) Bool type b) Instance type
   c) Class type d) Object type

7) Select the correct statement about an Exception?
   a) It occurs during loading of program
   b) It occurs during Just-In-Time compilation
   c) It occurs at run time
   d) All of the mentioned

8) _____ statement correctly defines Interfaces in C#.NET?
   a) Interfaces cannot be inherited
   b) Interfaces consists of data static in nature and static methods
   c) Interfaces consists of only method declaration
   d) None of the mentioned

9) C# does not support _____ constructors.
   a) parameterized b) parameter-less
   c) Class d) Method

10) _____ are the correct statements about delegates.
   a) Delegates can be used to implement callback notification
   b) Delegates permit execution of a method on a secondary thread in an asynchronous manner
   c) Delegate is a user defined type
   d) All of the mentioned

B) True or false. **06**

1) The assignment operators cannot be overloaded.
2) Only one method can be called using a delegate.
3) An object of a derived class cannot access private members of base class.
4) An abstract inherited property cannot be overridden in a derived class.
5) There is no private or protected inheritance in C#.NET.
6) An object cannot be assigned to an enum variable.

Q.2 Solve any Eight of the following. **16**

1) Common type system
2) Polymorphism
3) Enum
4) Hash Table
5) Indexer
6) Array List
7) Reference Type
8) Stored Procedures
9) Static Members
10) Directory classes

Q.3 A) Answer any Two of the following. **10**

1) Explain Control Statements in detail.
2) What is Exception? Explain Rules for Handling Exception.
3) Explain Data set and its Advantages.

B) What is Delegation. Explain Types of delegates in detail. **06**

Q.4 A) Answer any Two of the following. **08**

1) Explain Custom generic classes in C#.
2) Explain Common Language Runtime in detail.
3) Explain Parameter passing techniques.

B) Explain Evolution of ADO.NET in detail. **08**

Q.5 Answer any Two of the following. **16**

a) Explain DOT NET class framework in detail.
b) How to Establish Connection with Database? Write a program of Executing simple Insert, Update and Delete commands.
c) What is Object oriented Programming? Explain Operator and method Overloading and overriding with examples.

SLR-QE-55

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination: March/April-2023
Advanced Java (ECS0505)

Day & Date: Thursday, 06-07-2023 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.

Q.1 Multiple choice questions. **10**

1) Which of theses packages contains classes and interfaces for networking?
   a) java.io b) java.util
   c) java.net d) java.network

2) Which of the following code is used to get an attribute in a HTTP Session object in servlets?
   a) session.getAttribute (String name)
   b) session.alterAttribute (String name)
   c) session.updateAttribute (String name)
   d) session.setAttribute (String name)

3) Which of the following is used to cell stored procedure?
   a) Statement b) PreparedStatement
   c) CallableStatement d) CalledStatement

4) When destroy() method of a filter is called?
   a) The destroy() method is called only once at the end of the life cycle of a filter
   b) The destroy() method is called after the filter has executed doFilter method
   c) The destroy() method is called only once at the beginning of the cycle of a filter
   d) The destroyer() method is called after the filter has executed

5) Which of these class is necessary to implement datagrams?
   a) DatagramPacket b) DatagramSocket
   c) Both a) and b) d) None of the above

6) Which of these method of DatagramPacket is used to find the port number?
   a) port() b) getPort()
   c) findPort() d) receivePort()

7) Which of these class must be used to send a datagram packets over a connection?
   a) InetAdress b) DatagramPacket
   c) DatagramSocket d) All of the above

8) Give the abbreviation of AWT?
   a) Applet Windowing Toolkit b) Abstract Windowing Toolkit
   c) Absolute Windowing Toolkit d) None of the above

9) Which object can be constructed to show any number of choices in the visible window?
   a) Labels
   b) Choice
   c) List
   d) Checkbox

10) Which class is used for this Processing Method processActionEvent( )?
   a) Button,List,MenuItem
   b) Button,Checkbox,Choice
   c) Scrollbar,Component,Button
   d) None of the above

B) Fill in the blanks. **06**

1) ____ is the extension of Deployment Descriptor file in servlet.
2) JSP Stands for _____
3) ____ is the name of the Swing class that is used for frames.
4) JSTL stands for ____
5) _____ classes in Java contains swing version of an applet.
6) Servlet are used to program _____ component in a web application.

Q.2 Solve any Eight of the following. **16**

a) What is JDBC?
b) What are the JDBC statements?
c) What are use of RequestDispatcher in servlet?
d) What is Session Tracking in Servlets?
e) What the Request Object in JSP?
f) What the interfaces?
g) What is mean by Cookies?
h) What is mean by Data navigation?
i) Explain HttpSession in servlet.
j) What is JApplet in swing?

Q.3 A) Attempt any two of the following. **10**

1) Explain component and features of JDBC.
2) Explain different java.net package.
3) Write a Servlet program for handling cookies.

B) Short note on: **06**

i) HTTP Request Model
ii) JSP Standard Tag Library (JSTL)

Q.4 A) Attempt any Two of the following. **08**

1) What is swing? Explain JFrame and JComponent in Swing Technology.
2) Explain the use CallableStatement with example.
3) Explain Handling HTTP Requests and Responses using GET and POST methods in Servlet.

B) Explain JDBC Architecture with types of Divers. **08**

Q.5 Attempt any two of the following. **16**

1) Define JSP. Explain JSP Lifecycle and elements of JSP.
2) Explain Servlet Architecture and types of Servlet.
3) Explain JButton class, Check Boxes, Radio buttons, Combo boxes with examples.

SLR-QE-56

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination: March/April-2023
Advanced Python Programming (ECS0506)

Day & Date: Friday, 07-07-2023 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.

Q.1 A) Choose correct alternatives. **10**

1) How does run() method is invoked?
   a) Thread.run() b) Thread.create()
   c) Thread.run() d) None of these

2) ____ method is used to identify a thread?
   a) getThread() b) getName()
   c) getIndt() d) None of these

3) After inserting the data we need to issue
   a) Rollback() b) Mycur.commit(1)
   c) setAutocomit() d) mycur.commit()

4) _____ connector is used to connect the MySQL with Python?
   a) mysql.connector b) Mysql.pymysql
   c) pysql d) None of these

5) ____ provide two-way communication between two different programs.
   a) socket b) port
   c) HTTP d) Protocol

6) _____ keyword is used for function in Python language.
   a) Function b) def
   c) fun d) define

7) ____ is essential thing to create window screen using tkinter in python.
   a) call tk() function b) create button
   c) define geometry d) none of these

8) In tkinter fg is ____
   a) background b) foreground
   c) both a and b d) none of these

9) ____ is library used for data visualization in python.
   a) Threating b) numpy
   c) matplotlib d) None of these

10) The ____ is a rectangular area intended for drawing pictures or other complex layouts.
   a) canvas b) button
   c) imageView d) none of these

B) Fill in the blanks. **06**

1) _____ are the endpoints of a bidirectional communication channel.
2) To access Dataframe you need to import ____
3) The _____ is correction extension of python file.

4) CGI stands for _____
5) DOM Stands for _____
6) _____ is the continues and smoothed version of the Histogram estimated from the data.

Q.2 Answer the following (Any Eight): **16**

1) What is IP address and URL?
2) Write a note on Button.
3) What is series in python?
4) List out the method in root class.
5) What is cookies?
6) What are HTTP headers?
7) What is difference between Frame and Canvas?
8) What is use of cursor in connectivity?
9) Write use of matplotlib module in python.
10) Which parameters are passed to connect with MySql database in Python.

Q.3 A) Answer the following questions. (Any Two) **10**

1) Explain Get and Post method.
2) Write a program to demonstrate use of Button.
3) Write a note on Thread synchronization.

B) What are steps for database connectivity? Explain. **06**

Q.4 A) Answer the following questions. (Any Two) **08**

1) Write a note on Tkinter.
2) Explain CGI architecture.
3) What is use of Histogram?

B) Explain XML parser with example. **08**

Q.5 Answer the following questions. (Any Two) **16**

1) What is socket? Explain socket methods.
2) Write a python program to insert data into student table.
3) What is multithreading in Python? Explain methods in Thread class.

SLR-QE-57

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination: March/April-2023
ENGLISH
Literary Mindscapes – I (ECS0601)

Day & Date: Monday, 19-06-2023 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

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

Q.1 Choose the correct word /Phrase from the given options and complete the sentence. **08**

1) Aksionov lived as a convict in Siberian prison for _____ years.
   a) twenty six b) twenty two
   c) twenty d) thirty two

2) Mrs. Quick was associated with the ____.
   a) Welfare Committee b) Old age Home
   c) Orphanage d) Rotary Club

3) _____ is not a dream says John Keats in the poem 'Ode to Blindness'.
   a) illusions b) ambition
   c) life d) goal

4) 'My Last Duchess' is based on historical events involving the _____.
   a) Duke of Ferrara b) Duke of Syberia
   c) Robert Browning d) Ezra Pound

5) _____ was found by Robert which was left by his wife.
   a) money b) note
   c) ticket d) wallet

6) The _____ of nature helps in strengthening the bond between nature and human beings.
   a) cruelty b) greenery
   c) beauty d) ugliness

7) The little lamb followed Mary everywhere. (Choose the type of adverb)
   a) adverb of time b) adverb of manner
   c) adverb of place d) adverb of frequency

8) He said to her, "What a Cold day!"
   a) He told her that it was a Cold day.
   b) He exclaimed that it was a Cold day.
   c) He exclaimed Sorrfully that it was a Cold day.
   d) He claimed that it was a very Cold day.

Q.2 Write answers in short (Any Four) **12**

1) What did Robert Quick expect from his daughter's after returning from the business trip?
2) What did Makar Semyonich want from Aksionov?
3) Why the mother feels sad while narrating the story of Sita?

4) What are the things of beauty mentioned in the poem?
5) What is the poem ‘My Last Duchess’ about?
6) How does Charlotte Bronte ask her readers to look towards life?

Q.3 Answer any One of the following Questions. **10**

1) How can technology literacy Skills help learners in the future?
2) What life skills are needed to become a good leader?

Q.4 As a Sensitive human being, what measures do you to take to conserve the environment and how will you educate people about the importance of environment? **10**

SLR-QE-58

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination: March/April-2023
System Security (ECS0602)

Day & Date: Tuesday, 20-06-2023 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

Q.1 A) Multiple choice questions. **10**

1) In the asymmetric key encryption technique, the number of keys used in the encryption and decryption process are _____.
   a) 2 b) 3
   c) 4 d) 5

2) _____ is the science and art of transforming messages to make them secure and immune to attack.
   a) Cryptography b) Cryptanalysis
   c) either (a) or (b) d) neither (a) or (b)

3) _____ algorithm transforms ciphertext to plaintext.
   a) Encryption b) Decryption
   c) Cipher d) None of the above

4) A small program that changes the way a computer operators _____.
   a) Worm b) Trojan
   c) Bomb d) Virus

5) A program that copies itself _____.
   a) Worm b) Virus
   c) Trojan d) Bomb

6) What are examples of Malware Spreads?
   a) Social network b) Pirated software
   c) Removable media d) All of the above

7) A Programme that deletes all the data from a computer is _____.
   a) Virus b) Malware
   c) Sweeper d) Adware

8) DoS attack coming from a large number of IP addresses, making it hard to manually filter or crash the traffic from such sources is known as a _____.
   a) GoS attack b) PDoS attack
   c) DoS attack d) DDoS attack

9) Which of the following do not come under network layer DoS flooding?
   a) UDP flooding b) HTTP Flooding
   c) SYN flooding d) NTP Amplification

10) What is used for database security?
   a) data encryption b) a view
   c) finger print d) all of the above

B) Fill in the blank/Definition/One sentence answer/One word answer/ Give the name/ Predict the product etc. **06**

1) An attack in which the site is not capable of answering valid requests.
2) What is plaintext or cleartext?
3) What is the name of the encryption/decryption key known only to the party or parties that exchange secret messages?
4) DoS is abbreviated as _____.
5) A virus type that is capable of transferring from one computer to another without any 'user intervention' is known as?
6) What are the common access rights on file?

Q.2 Solve any Eight of the following. **16**

a) What is Token Based Authentication?
b) What are flooding attacks?
c) Explain about Trojans.
d) Explain object & subject in Access Control.
e) What is Biometric Authentication & its examples?
f) What is the hashing function?
g) List out Types of Malicious Software.
h) What is Authorisation?
i) What is Distributed Denial of Service?
j) What are worms? Explain with an example.

Q.3 A) Attempt any Two of the following. **10**

1) What are called Flooding Attacks?
2) Explain Malicious software Propagation in Social Engineering.
3) What are Reflector and Amplifier Attacks?

B) Short note/Solve **06**

Explain what are Malicious Software & Types of Malicious Software?

Q.4 A) Attempt any Two of the following. **08**

1) Explain Means of Authentication & various types of Biometric Authentication.
2) What are Zombies, Phishing, Spyware, Backdoors & Rootkits?
3) What is the Need for Database Security?

B) Describe/Explain/Solve **08**

Explain RBAC Access Control System with Real-time example in detail.

Q.5 Attempt any Two of the following. **16**

a) Explain what are the Defenses Against Denial-of-Service Attacks.
b) Explain what are the Password-Based Authentication and Token- Based Authentication.
c) Explain about symmetric & asymmetric encryption with suitable examples.

SLR-QE-59

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination: March/April-2023
Compiler Construction (ECS0603)

Day & Date: Wednesday, 21-06-2023 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Draw neat labelled diagrams wherever necessary.
3) Figures to right indicate full marks.
4) Use of log table and calculators is allowed**.**

Q.1 A) Multiple choice questions. **10**

1) The _____ is used to eliminate common sub expression.
   a) Syntax tree b) annoted parse tree
   c) DAG d) none of these

2) The attributes that can be computed from the values of the attributes at the siblings and parent of that node is called as _____.
   a) synthesized b) inherited
   c) both a & b d) none of these

3) The _____ is optional phase of compiler.
   a) Lexical analyzer b) syntax analyzer
   c) code optimization d) code generation

4) The output of a lexical analyzer is _____.
   a) Machine code b) Intermediate code
   c) A stream of tokens d) A parse tree

5) _____ is the sequence of statements in compiler.
   a) Three address code b) syntax errors
   c) both a and b d) none of these

6) A memory allocates and deallocates storage as needed at runtime from data areas known as _____.
   a) heap b) stack
   c) static d) all of these

7) In some programming languages, an identifier is permitted to be a letter followed by any number of letters or digits. If L and D denotes the sets of letters and digits respectively, which of the following expressions define an identifier?
   a) (L ∪ D) * b) L (L ∪ D)*
   c) (L * D)* d) L . (L . D)*

8) The _____ parser uses reduction process.
   a) Top down parser b) Bottom up Parser
   c) Either a or b d) Both a and b

9) The errors come due to undefined variable incompatible operands to operator is called _____ errors.
   a) lexical b) syntactic
   c) semantic d) logical

10) Grammar of the programming is checked at _____ phase of compiler.
   a) Semantic analysis b) code generation
   c) Syntax analysis d) code optimization

B) Give the One sentence answer. **06**

1) Define String.
2) What is left-most derivation?
3) Write the three address code for the expression $a = b + c + d$
4) What is the s-attributed definition?
5) What is Activation Records?
6) Which data structure is used in symbol table?

Q.2 Solve any Eight of the following. **16**

a) What is the role of syntax analyzer?
b) Explain Two pass compiler.
c) Explain Lexical analysis phase.
d) What is the difference between formal parameter and actual parameter?
e) Construct DAG for Expression? $i := 1 + 10$
f) Write postfix notation for the expression $c = a + b*d$
g) What is the regular expression for string ends with 00 over an alphabet {0,1}
h) Define:
   1) Synthesized attribute
   2) Inherited attribute
i) Explain syntax directed definition.
j) List out phases that constitute the front-end of compiler.

Q.3 a) Attempt any Two of the following. **10**

1) What is Ambiguity in grammar? Consider the Grammar,
$E \rightarrow E + E/E^{*}E/id$
Check whether the above grammar is ambiguous or not; if found ambiguous, remove the ambiguity and write an equivalent unambiguous grammar.
2) Explain parameter passing techniques.
3) What is the difference between S-attributed definition and L-attributed definition?

b) What is syntax tree? Construct the syntax tree for the expression $a - 4 + c$ **06**

Q.4 a) Attempt any Two of the following. **08**

1) What is Annotated parse tree? Construct annotated parse tree for $3 * 5 + 4n$ using following grammar rules:

PRODUCTION	SEMANTIC RULE
$L \rightarrow EN$	$\text{Print}(E.val)$
$E \rightarrow E\ 1 + T$	$E.val := E\ 1.val + T.val$
$E \rightarrow T$	$E.val := T.val$
$T \rightarrow T1 * F$	$T.val := T1.val * F.val$
$F \rightarrow digit$	$F.val := digit.lexval$

2) What is storage organization? Explain sub-division of Run-time memory.
3) Explain compiler construction tools.

b) What is intermediate code generation? Explain types of three-address code implementation of statements. **08**

Q.5 Attempt any Two of the following. **16**

a) Explain Storage allocation strategies.

b) Explain phases of a compiler.

c) What is Code generation? What are the issues in Code generation?

SLR-QE-60

Seat No.	

Set P

B.Sc. (E.C.S) (Semester - VI) (New) (CBCS) Examination: March/April-2023
Internet Programming using ASP.Net (ECS0604)

Day & Date: Thursday, 22-06-2023 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) Draw neat labelled diagrams wherever necessary.
4) Use of log table and calculators is allowed.

Q.1 A) Choose the correct alternatives from the options. 10

1) The ASP.NET Web Form class inherit from by default _____.
   a) System.Web.UI.Page b) System.Web.UI.Form
   c) System.Web.GUI.Page d) System.Web.Form

2) The type of code found in Code-Behind class is _____.
   a) Client-side code b) Server-side code
   c) Both a and b d) None of these

3) _____ are different stages of an ASP.NET page?
   a) Page request
   b) Page load and initialization
   c) Postback and event handling
   d) All of the above

4) In checkbox _____ property is used to get or set check box status.
   a) Status b) Check box status
   c) Checked d) None of these

5) A web application can contain _____.
   a) No File b) Only one Web.config file
   c) Only two Web.config file d) More than one Web.config file

6) _____ is the Datatype return in IsPostback property.
   a) bit b) Boolean
   c) int d) object

7) In ASP.NET validation control _____ can be used to determine if data that is entered into a TextBox control is of type Currency.
   a) ValidationSummary b) CompareValidator
   c) RequiredFieldValidator d) None of the above

8) In ASP.NET the dll files are stored in _____ folder.
   a) Bin b) App_Data
   c) App_Code d) App_LocalResources

9) _____ works on server side.
   a) View State
   b) Hidden Field
   c) Application and session
   d) All of the above

10) In all web forms inherit _____ is the base class.
   a) Master Page
   b) Page Class
   c) Session Class
   d) None of these

B) True or false **06**

1) Menus, tree view and site map path controls cannot be styled with CSS.
2) ASP.NET supports a number of programming models for building web applications.
3) Boolean is the Data Type return in IsPostback property.
4) Load is not an ASP.NET page event.
5) Every server control must have an id.
6) ASP.NET was developed by Google.

Q.2 Answer the followings (Any Eight): **16**

a) Cookies
b) cross-page posting
c) SOAP
d) Content page
e) Post back concepts
f) Page Directives
g) Themes in Master Page
h) Processing Transactions
i) Update panel
j) Ad Rotator

Q.3 A) Answer the followings (Any two): **10**

1) Write the step of Attach XML file to tree view and menu.
2) Explain Rich Controls in detail.
3) What is Master Page? Explain Nested Master pages.

B) Explain Site Navigation Technique. **06**

Q.4 A) Answer the followings (Any two): **08**

1) What is Web Service? Explain Creating Web services in detail.
2) Explain Architecture of ASP.NET in detail.
3) Explain any 5 basic standard controls in ASP.Net.

B) Explain AJAX's Server-side controls. **08**

Q.5 Answer the following (Any Two). **16**

a) Explain Types of validation.
b) Explain State Management (Server and client side).
c) Write a program of DML commands in ADO.

SLR-QE-61

Seat No.		Set	P

B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination: March/April-2023
Angular JS (ECS0605)

Day & Date: Friday, 23-06-2023 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Draw neat diagrams wherever necessary.
3) Figures to the right indicate full marks.
4) Use of log table and calculators is allowed.

Q.1 A) Multiple choice questions. **10**

1) The _____ directives is used to start an AngularJS application.
   a) ng-start b) ng-init
   c) ng-model d) ng-app

2) The _____ directive is used to bind AngularJS data to HTML.
   a) ng-model b) ng-bind
   c) ng-app d) ng-repeat

3) AngularJS is a _____ framework.
   a) Java b) JavaScript
   c) PHP d) Python

4) Directives are used as _____.
   a) An Element b) As Class
   c) As Comment d) All of these

5) Multiple filters can be applied using _____ way.
   a) {{ expression | filter1 | filter2 | ...}}
   b) {{ expression | {filter1} | {filter2} | ..}}
   c) {{ expression - {filter1} - {filter2} -... }}
   d) {{ {filter1} j {filter2} | …- expression}}

6) The _____ property returns True if the form input has not been used yet.
   a) $touched b) $dirty
   c) $pristine d) $invalid

7) The _____ method of string object returns a string which remove whitespaces.
   a) remove() b) replace()
   c) trim() d) delete()

8) What is output of following code?
   print(parseInt("Hello123"));
   a) 123 b) NaN
   c) 1 d) Error

9) If you want to sort the data in descending order by using the orderby filter, _____ prefix is used.
   a) Plus sign (+) b) Minus sign (-)
   c) dec d) desc

10) Following expression will be _____ type of expression.
$scope. expression = { key1: 'welcome', key2: 'to', key3: 'Solapur'};
a) String b) Array
c) Object d) Directory

B) Fill in the blank. **06**

1) CDN stands for _____.
2) AngularJS is based on _____ Architecture pattern.
3) SPA is nothing but _____.
4) We can create instance or allies of controller using _____ keyword.
5) _____ keyword is used to define a variable in JavaScript.
6) The _____ method is used to solve string of JavaScript code.

Q.2 Solve any Eight of the following. **16**

a) What is two-way binding? Give example.
b) How to set the AngularJS environment?
c) Write out any four-event directives.
d) What is the controller? Write example.
e) What is use of a style tag? Give example.
f) Write an example for the ng-hide and ng-show directive.
g) What is Scope-less Controllers? Where it is used?
h) What is the use of compose validation?
i) Write any four String object methods of JavaScript with example.
j) What is the use of the ng-option directive? Write example.

Q.3 A) Attempt any two of the following. **10**

1) What is Form validation? Explain different Angular built-in validators with example.
2) What is modules? Explain Dependencies and Order of execution of modules with example.
3) Write a custom filter for the character count, word count, and title case and use that filter.

B) What are JavaScript objects? Explain window, location objects with different methods. **06**

Q.4 A) Attempt any two of the following. **08**

1) What are the difference between AngularJS Expressions and JavaScript Expressions?
2) What is MVC? Explain the MVC architecture used in AngularJS.
3) What are services? Explain Dependencies in a Service.

B) What is the Directive? Explain how to create a custom directive with an example. **08**

Q.5 Attempt any two of the following. **16**

a) What are the different types of expressions used in AngularJS? Explain with an example.
b) What are scope Hierarchies? Explain scope broadcasting with an example.
c) What are different template directives used in AngularJS? Explain any four template directives with example.

SLR-QE-62

Seat No.		Set	P

B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination: March/April-2023

Mobile Application Development (Special Paper - XI) (ECS0606)

Day & Date: Saturday, 01-07-2023 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

Q.1 A) Choose correct alternatives. **10**

1) _____ is the correct name for the layout design file of an activity in android application.
   a) MainActivity.java b) activity_main.xml
   c) Gradle.sql d) none of these

2) _____ Android Studio folders includes drawable files for different launcher icon.
   a) Mipmp b) Layout
   c) String d) Values

3) If you want to configure a link between two Android activities in the same Android application, you need to use _____.
   a) Gradle b) Toast
   c) seek bar d) intent

4) SQLite is an Open Source Database system embedded into every Android device.
   a) true b) false

5) Android is open source and _____ Based operating system for mobile devices.
   a) IOS b) Linux
   c) Windows d) Apple

6) _____ Component represents the single screen with the user interface.
   a) Activity b) Service
   c) Broadcast receiver d) Content provider

7) _____ is responsible for code compilation, testing, deployment and conversion of the code into .dex file.
   a) Manifest b) Gradle
   c) AppCode d) none of these

8) APK stands for Android program.
   a) True b) False

9) The _____ arranges widgets in positions relative to each other.
   a) LinearLayout b) ConstraintLayout
   c) RelativeLayout d) None of these

10) What is the extension of dex code?
   a) .txt b) .java
   c) .class d) .dex

B) Fill in the blanks. **06**

1) AVD stands for ____.
2) The full form of DVM is _____.
3) The _____ is a layout that arranges other views either horizontally in a single column or vertically in a single row.
4) _____ permission is used for use camera.
5) URI stands for _____.
6) Intent with _____ Action is created to send Email in Android application.

Q.2 Solve any Eight of the following. **16**

1) What is Android?
2) Write a note on TextView.
3) Write a note on ImageView.
4) Datepicker view in Android.
5) What is DVM?
6) Content provider registration in androidMainFest.xml.
7) What is use of Geocoding?
8) Write name of permissions used to send and receive SMS.
9) What is intent filter?
10) What is use of String.xml?

Q.3 A) Answer the following. (Any Two) **10**

1) List out Android Market Application Store.
2) Write a program to display typed content of EditText in TextView.
3) Write a List of System generated intent.

B) What is intent? Explain type of Intent. **06**

Q.4 A) Answer the following. (Any Two) **08**

1) Write the list of methods in Activity.
2) Differentiate View and ViewGroup.
3) Explain Broadcast receiver.

B) What is Android SDK? **08**

Q.5 Answer the following. (Any Two) **16**

a) Explain Android architecture.
b) Write a program to demonstrate LinearLayout. (write XML file with button, EditText and TextView).
c) Explain AndroidMainfest.xml.

SLR-QE-73

Seat No.	

Set P

B.Sc. (E.S.C) (Semester - IV) (CBCS) Examination: March/April-2023
Object Oriented Programming Using JAVA (2013401)

Day & Date: Thursday, 27-07-2023 Max. Marks: 70
Time: 11:00 AM To 02:00 PM

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

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

1) Primitive types can be converted into object type using _____.
a) Abstract class b) Wrapper Class
c) Interfaces d) All of these

2) How many classes we can extend in java?
a) one b) two
c) three d) any number of

3) Static prevents a method in a super class from being overridden by its subclass.
a) True b) False

4) Which of the following is not access specifier in Java?
a) Public b) Protected
c) Private d) Super

5) Wait thread can be revived by using _____ method.
a) start () b) suspend ()
c) notify () d) yield ()

6) Which of these classes is used for input and output operation when working with text files?
a) Input stream and Output stream
b) Reader and Writer
c) Both a and b
d) None of these

7) Which of these is a type of variable in Java?
a) Instance Variable b) Local Variable
c) Static Variable d) All of these

8) The default priority of a thread is _____.
a) 5 b) 10
c) 15 d) 20

9) Which of the following can be declared as final in java?
a) Class b) Method
c) Variable d) All of these

10) Which of the following type of listener is used for handling button click events?
a) Mouse Listener b) Item Listener
c) Key listener d) Action Listener

11) 'this' keyword in java is _____.
a) Used to hold the reference of the current object
b) Holds object value
c) Used to create a new instance
d) All of these

12) How can we access methods for file handling in java?
a) Java.files
b) Java.io
b) Java.io.File
d) Java.FileHandling

13) In _____ method having same name but different signatures.
a) Method overloading
b) Method overriding
c) constructor overriding
d) None of these

14) We can implement methods inside the interface.
a) True
B) False

Q.2 **a)** **Write notes on:** **08**
i) Garbage Collection
ii) uses of super keyword
b) **Attempt the following:** **06**
i) What is abstract class? State its properties.
ii) Explain the inner classes in Java.

Q.3 **Answer any Two of the following.** **14**
a) What is package? Explain any two packages with suitable example.
b) What is synchronization? Explain with example.
c) Explain different exception keywords with one example.

Q.4 **Answer any Two of the following.** **14**
a) What is applet? Give one example of an applet.
b) Explain inter-thread communication with example?
c) Write a program to copy contents of one text file to another text file using command line arguments.

Q.5 **Answer any Two of the following.** **14**
a) What is constructor? Explain types of constructor with example.
b) What is interface? Explain with example.
c) Explain any two collection classes with suitable example.