Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination: March/April - 2025
English(Comp.)
Communication Skill (ECS1101)

Day & Date: Thursday, 08-May-2025 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) Mahatma Gandhi was born on ____.
a) 2nd October 1859 b) 2nd October 1869
c) 2nd October 1879 d) 2nd October 1889

2) What did the grandmother do in her room all day?
a) Spinning wheel b) Read scriptures
c) Watch television d) Rest

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

4) How did the author travel to school in the city?
a) Car b) Motor bus
c) Bicycle d) On foot

5) Coventry Kersey Dighton Patmore is an ____ poet.
a) Anglo-Irish b) Indian
c) English d) American

6) Who sung praises for the flowers?
a) Bard b) Oracle
c) Saints d) Reader

7) What is the prefix in the word “Misbehave”?
a) Mis b) behave
c) Misbe d) be

8) A _____ is a word that is used to join two words.
a) Conjunction b) Interjection
c) an adjective d) Preposition

Q.2 Write the answers in short. (Any four out of six) **12**

a) What is the relation between economics and religion?
b) What is the significance of the sparrows?
c) How did the grandmother take care of the author?
d) Discuss the theme of pride and culture used in the poem.
e) What is the significance of the toys in the poem?
f) What are the various qualities the poet discusses in the poem Let Me Not Pray to be Sheltered from Dangers?

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

a) What is communication? Explain the process of communication.
b) Explain the concept of effective communication.

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

Write in detail about intrapersonal skills.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination: March/April - 2025
Fundamental of Computer (ECS1102)

Day & Date: Friday, 09-May-2025 Max. Marks: 40
Time: 12:00 PM To 02:00 PM

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

Q.1 Multiple Choice Questions. **08**

1) ____ is most common output device used to create hard copy output.
a) Monitor b) Plotter
c) Printer d) none of these

2) Which of the following is the brain of the computer?
a) Central Processing Unit b) Memory
c) Arithmetic and Logic unit d) Control unit

3) Computer Circuit board is called ____.
a) Mother board b) CPU board
c) Memory board d) none of these

4) Binary code comprises of digits from 0 to 9.
a) True b) False

5) The only language which the computer understands is ____.
a) Assembly Language b) Binary Language
c) BASIC d) C Language

6) The smallest unit of data in computer is ____.
a) Byte b) Nibble
c) Bit d) KB

7) ____ is not example of output device.
a) Monitor b) Joystick
c) Plotter d) Printer

8) ____ best describes a dot matrix Printer.
a) Laser b) Impact
c) Non-impact d) Inkjet

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

a) What is Computer?
b) Define CRT monitors.
c) Limitations of Computer.
d) What is CPU?
e) Define SMPS.
f) What is System board?

Q.3 Write short note. (Any Two) **08**

a) What is hardware? Explain four types of hardware.
b) Explain Motherboard Components in detail.
c) Explain different Application area of Computer.

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

a) Explain difference between Serial and Parallel Port.
b) What is Computer Memory? Explain Storage structure of hard disk.
c) Differentiate between high level and low level language.

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

a) Explain block diagram of computer system with suitable diagram.
b) Solve the followings.
1) $(101011.110)_8 = (?)_{10}$
2) $(1B.2D)_{16} = (?)_{10}$

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination: March/April - 2025
Basics of Operating System (ECS1103)

Day & Date: Saturday, 10-May-2025 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 labelled diagrams wherever necessary.
4) Use of log table and calculators is allowed.

Q.1 A) Select the correct alternative. **08**

1) Which of the following is the not an operating system?
   a) Windows b) Linux
   c) Oracle d) DOS

2) The starvation problem faced in _____ scheduling algorithm.
   a) FCFS b) SJF
   c) Priority d) RR

3) A binary semaphore _____
   a) Has the value one or zero
   b) Is essential to binary computers
   c) Is used only for synchronization
   d) Is used only for mutual exclusion

4) To access the service of operating system, the interface is provided by the _____
   a) System calls b) API
   c) Library d) Assembly instructions

5) Process control block contains which of the following _____
   a) Process id b) Process state
   c) List of open files d) All of these

6) Short-term scheduler executes more frequently than long-term scheduler.
   a) Ture b) False

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

8) The processes that are residing in main memory and are ready and waiting to execute are kept on a list called _____
   a) job queue b) ready queue
   c) execution queue d) process queue

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

a) What is operating system?
b) What is co-operating process.
c) What is process? List out states of process.
d) What is scheduling?
e) What is Semaphores?
f) What is multiprogramming operating system?

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

a) Explain Critical Section problem.
b) What is scheduler? Explain the types of scheduler.
c) Explain the producer-consumer problem of synchronization.

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

a) What is process? Explain process state with block diagram.
b) What is PCB? Explain in detail.
c) How many types of operating system? Explain Real time operating system.

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

a) Explain the service provided by operating system.
b) Explain the FCFS and Round robin scheduling algorithm with example.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination: March/April - 2025
Programming using 'C' (ECS1104)

Day & Date: Tuesday, 13-May-2025 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 & give equations wherever necessary.
4) Use of log table and calculator is allowed.

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

1) _____ is the valid identifier in 'C' language.
   a) 24emp b) _12emp
   c) 12emp@ d) Emp$

2) Which of the following is an invalid example of character constant?
   a) 'a' b) 'ab'
   c) 'abc' d) None of this

3) _____ is the exit controlled loop.
   a) for b) while
   c) do-while d) Both a & b

4) printf() function belongs to _____ header file.
   a) stdio.h b) string.h
   c) conio.h d) math.h

5) Which of the following is not keyword in C language?
   a) struct b) if
   c) for d) None of these

6) Array index starts from _____
   a) 1 b) 10
   c) 0 d) None of these

7) _____ string function is used to display string length.
   a) stringlen b) strlen
   c) stlength d) None of these

8) _____ are conditional operators.
   a) < and > b) ? and :
   c) ? and ; d) ! and :

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

a) What is pseudo code?
b) Define Constant.
c) List types of Errors
d) What is flowchart?
e) How to initialize pointer?
f) List types of operators

Q.3 Write short note on following. (Any Two) **08**

a) Recursion
b) Chain of Pointer
c) Format code

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

a) Explain types of array with example.
b) What is string? Explain any three string handling functions.
c) Explain call by value and call by address with example.

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

a) Write a program for multiplication of matrices.
b) What is function? Explain all types of functions in details.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination: March/April - 2025
Python - I (ECS1105)

Day & Date: Wednesday, 14-May-2025 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 the following is not a core data type in Python programming?
a) Tuples b) Lists
c) Class d) Dictionary

2) In general, the index of the first element in an array is _____
a) 0 b) -1
c) 2 d) 1

3) Is Python code compiled or interpreted?
a) Python code is both compiled and interpreted
b) Python code is neither compiled nor interpreted
c) Python code is only compiled
d) Python code is only interpreted

4) Which of the statements about dictionary values if false?
a More than one key can have the same value
b) The values of the dictionary can be accessed as dict[key]
c) Values of a dictionary must be unique
d) Values of a dictionary can be mixture of letters and numbers

5) Which one of the following is not a keyword in Python language?
a) pass b) eval
c) assert d) nonlocal

6) If a = {5,6,7,8}, which of the following statements is false?
a) print(len(a)) b) print(min(a))
c) a.remove(5) d) a[2]=45

7) What is the output when we execute list (“hello”)
a) [‘h’, ‘e’, ‘l’, ‘l’, ‘o’] b) [‘hello’]
c) [‘llo’] d) [‘olleh’]

8) What do we use define a block code in Python language?
a) Key b) Brackets
c) Indentation d) None of these

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

a) What is array?
b) What is dictionary?
c) What is garbage collector?
d) What is comments?
e) Explain naming convention.
f) What is keyword?

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

a) Explain operator associativity with example.
b) Explain set with example.
c) Explain string methods any four with example.

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

a) Write a program to check given number is palindrome or not.
b) Explain Numeric datatype with example.
c) Explain advantages of array.

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

a) Explain Break and Continue statement
b) What is python? explain its features.

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination: March/April - 2025
Numerical Methods (ECS1106)

Day & Date: Thursday, 15-May-2025 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) Use of scientific calculator is allowed.

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

1) _____ method is used to solve ordinary differential equations.
a) Forward interpolation b) Lagrange's interpolation
c) Taylor's series d) Backward interpolation

2) If the data is equally spaced & interpolation is near the beginning of the data then interpolation formula is used.
a) Newton's Gregory forward difference
b) Newton divided difference
c) Lagranges
d) Newton's Gregory backward difference

3) Simpson's $3/8\text{th}$ rule is obtained by putting $n =$ _____ in general quadrature formula.
a) 1 b) 2
c) 3 d) 4

4) The first order divided difference is _____.
a) $\dfrac{f(x_1) - f(x_0)}{x_1 - x_0}$ b) $f(x_1) - f(x_2)$
c) $\dfrac{f(x_1) + f(x_2)}{x_1 - x_0}$ d) $f(x_0) - f(x_1)$

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

6) Runge-Kutta II order method is used to solve _____ equations.
a) Differential b) Integral
c) Linear d) Interpolating

7) $E^n f(x) =$ _____
a) $f(a + x)$ b) $f(x - nh)$
c) $f(x + nh)$ d) None of these

8) While doing multiplication of two numbers in normalised floating-point form, the exponents should be _____.

a) added b) subtracted
c) multiplied d) divided

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

a) Write Trapezoidal rule for integration.
b) Prove that $E\nabla = \Delta$.
c) Write Newton's Gregory backward difference interpolation formula.
d) Prepare the forward difference table for the following data.

x	1992	1994	1996	1998	2000
$f(x)$	40	48	52	65	84

e) Write Newton's divided difference interpolation formula.
f) State General quadrature formula for equidistant ordinates.

Q.3 Write notes on the following (Any Two) **08**

a) Prepare $f(4) = f(3) + \Delta f(2) + \Delta^2 f(1) + \Delta^3 f(1)$

b) Define Ordinary differential equation and order and degree of given differential equation.

$$\frac{d^3y}{dx^3} + x^2\left(\frac{d^2y}{dx^2}\right)^3 = 0$$

c) Define Absolute error and Relative error, also find absolute error and relative error for the given exact number 2.31345 and approximate number 2.3

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

a) Evaluate the following

i) $0.3451E_2 + 0.1205E_4$
ii) $0.3451E_2 - 0.1205E_{-4}$
iii) $0.3451E_2 \times 0.1205E_{-4}$
iv) $0.3451E_2 \div 0.1205E_{-4}$

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

c) For $\frac{dy}{dx} = 1 + xy, y(0) = 1$, Obtain Taylor's series for $y(0.1)$ correct upto 4 decimal places.

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

a) Estimate $f(8)$ & $f(9)$ by using Newton's Forward difference interpolation formula for the following data.

x	5	10	15	20
$f(x)$	50	70	100	145

b) $\int_0^1 \frac{x^3}{1+x^3}dx$ by Simpson's $\frac{3^{th}}{8}$ and Simpson's $\frac{1^{rd}}{3}$ rule. Take $h = 0.1$.

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) : Examination March/April - 2025
Graph Theory (ECS1107)

Day & Date: Friday, 16-May-2025 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.

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

1) A connected graph G is Eulerian if degree of each vertex in G is _____.
a) Same b) Prime
c) Even d) Odd

2) A closed path which covers all the vertices of a connected graph G is called as _____.
a) Eulerian path b) Eulerian circuit
c) Hamiltonian path d) Hamiltonian circuit

3) Order of incidence matrix of a graph having 5 vertices and 9 edges is ___.
a) 5×9 b) 9×5
c) 9×9 d) 5×5

4) _____ is a particular case of the Eulerian graph.
a) Chinese Postman Problem b) Traveling Salesman Problem
c) Kruskal's Algorithm d) Seven Bridge Problem

5) For the simple graph $G_1(V_1, E_1)$ & $G_2(V_2, E_2)$ the vertex set of the product of graph $G_1 \times G_2$ is _____.
a) $V1 \times V2$ b) $V1 \oplus V2$
c) $V1 \cap V2$ d) None of these

6) Let G be a connected graph with n vertices & m edges. To find spanning tree T from G we have to remove _____ number of edges from G.
a) $m - (n - 1)$ b) $n - (m - 1)$
c) $n(n - 1)$ d) $n - 1$

7) The complement of null graph is _____.
a) Regular b) Simple
c) Complete d) Bipartite

8) The vertex of degree 1 is called as _____.

a) Pendant b) Isolated
c) Pseudo d) regular

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

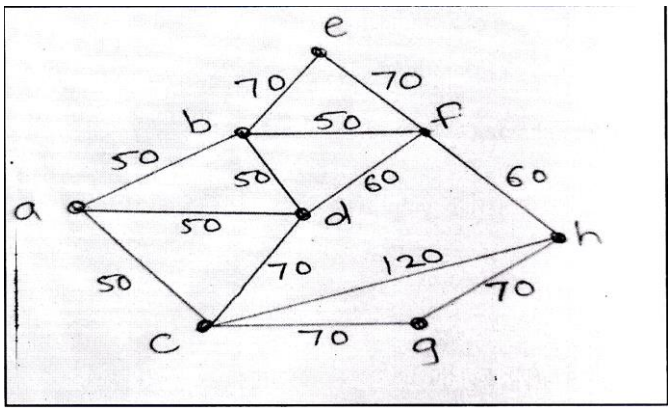
a) State Hand shaking lemma.
b) Draw a graph which is both Eulerian and Hamiltonian.
c) Define complete graph. Is every regular graph complete?
d) Define connected and disconnected graph.
e) Define a binary tree.
f) Define Eulerian circuit and Euler graph.

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

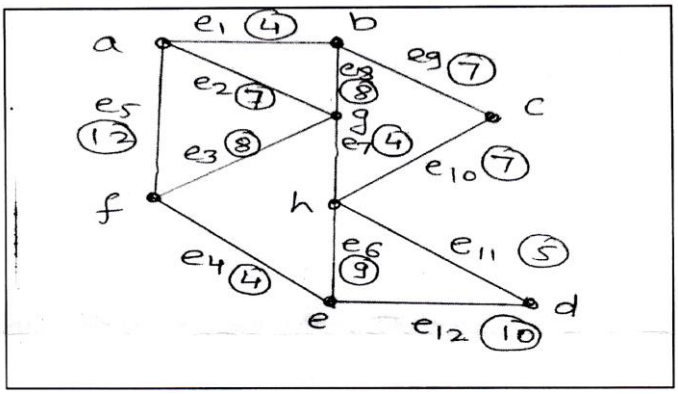
a) Explain Traveling salesman problem.
b) A graph G with n vertices and $n-1$ edges, prove that G has either a vertex of degree one or an isolated vertex.
c) Write a note on spanning tree.

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

a) Solve the Chinese postman problem for the following graph.



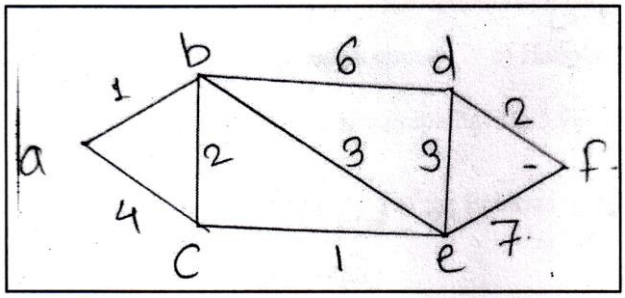
b) By Kruskal's algorithm find the shortest spanning tree & its weight for the following weighted connected graph G.



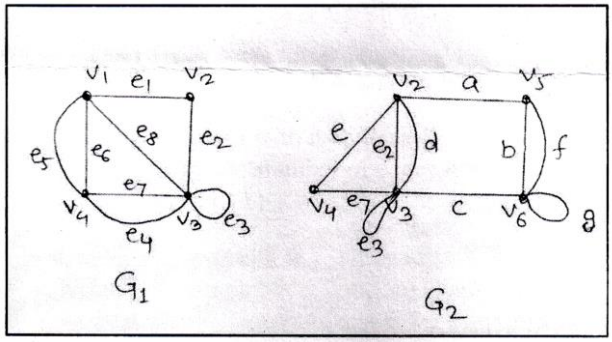
c) If $G(V, E)$ is a k-regular graph with p vertices & q edges then prove that $q = \frac{pk}{2}$

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

a) Apply Dijkstra's algorithm to a graph given below to find shortest path from a to f.



b) Find adjacency matrix for graph G_1& G_2 and also draw the graphs $G_1 \cup G_2$ and $G_1 \oplus G_2$



Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination: March/April - 2025
Basic Electronics Paper – I (ECS1108)

Day & Date: Saturday, 17-05-2025 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 labelled diagrams wherever necessary.
4) Non programmable calculators are allowed.

Q.1 A) Choose the correct alternatives from the options. 08

1) _____ is unit of resistance.
   a) farad b) ohm
   c) henry d) volt

2) _____ is polarized capacitor.
   a) tantalum b) germanium
   c) mica d) alluminium

3) _____ eV is energy gap VB and CB in insulator.
   a) 3 b) 2
   c) 1 d) 5

4) _____ is used as dielectric in non electrolyte capacitors.
   a) aluminum b) tantalum
   c) copper d) ceramic

5) Electrons are majority carriers in _____ type semiconductor.
   a) P b) N
   c) PN d) NPN

6) Barrier potential of Si is _____ V.
   a) 0.3 b) 0.4
   c) 0.5 d) 0.7

7) Ripple factor of bridge rectifier is _____.
   a) 0.48 b) 0.47
   c) 0.49 d) 0.50

8) BJT is _____ controlled device.
   a) voltage b) current
   c) resistance d) None of these

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

1) Define inductor
2) Define semiconductor.
3) Explain function emitter and base of FET.
4) Explain step down transformer.
5) Explain active components.
6) Explain efficiency of half wave rectifier.

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

1) Explain positive voltage regulator.
2) Explain forward biasing of PN junction.
3) Explain mica capacitor.

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

1) Explain aluminum capacitor.
2) Explain carbon composition potentiometer.
3) Explain SMPS with block diagram.

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

1) Explain full wave and bridge rectifiers with circuit diagram and waveforms.
2) Define inductor and explain construction and working of transformer.

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - I) (Old) (CBCS) Examination: March/April - 2025
Advanced Electronics Paper–II (ECS1109)

Day & Date: Monday, 19-May-2025 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 labelled diagrams wherever necessary.
4) Use of logrithmic table and calculators is allowed.

Q.1 Multiple choice questions **08**

1) The process of forming IC on a single Silicon chip is known as_____.
   a) epitaxial IC b) single process IC
   c) monolithic IC d) none of above

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) LCD requires a power of _____ to light up one segment of a 7segment display.
   a) 20 W b) 20 mW
   c) 20 μW d) 20nW

6) Diffusion of impurities is done on the _____ layer.
   a) substrate b) second
   c) SiO2 d) All of above

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

8) The most complicated component fabricated on IC is _____.
   a) diode b) transistor
   c) resistor d) conductor

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

a) Name different sensors. Draw their symbols
b) What is PCB design?
c) What are TTL subfamilies?
d) What is mean by epitaxial growth?
e) What is LED? How it works?
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. (constructin, working)
b) Write a note on MOS families
c) Write a note on photodiode

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

a) Explain with neat diagram photolithography (masking and etching) process in IC fabrication.
b) What are types of 7 segment display? Draw neat diagrams and explain their Working.
c) Explain single layer and multi layer PCB technology.

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

a) What are steps of IC fabrication process? For monolithic IC explain with neat diagram transistor and diode fabrication. State 2 applications of ICs
b) What is SMD and SMT? State advantages and applications of SMD and SMT.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - II) (New) (CBCS) : Examination
March/April - 2025
English(Comp.)
Communication Skill (ECS1201)

Day & Date: Thursday, 22-May-2025 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 A) Select the correct alternative. **08**

1) Does Education do Harm? written by _____
   a) Bertrude Rassel b) Bertrand Russell
   c) Bartrand Rasel d) Gertrude Russell

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

3) Where in the world has the ideal of freedom grown tenuous?
   a) The East b) The West
   c) The entire world d) Nowhere

4) Who is the poet addressing to in the poem?
   a) Her Family b) Her lover
   c) Her reader d) Her friend

5) Who has lynched the lakes?
   a) The Poet b) Factories
   c) Vehicles d) Humans

6) How old is Pope believed to be when he wrote “Ode on Solitude”?
   a) 11 b) 12
   c) 13 d) 14

7) Identify the correct antonym of *Bravery* from the given options
   a) Mighty b) marvelous
   c) Cowardice d) none of these

8) Identify the tense used in the following sentence:
   I have been working on the problem.
   a) Present Continuous b) Present Perfect Continuous
   c) Past Perfect d) Past Perfect Continuous

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

a) What is the relation between education and virtue?
b) What kind of people can achieve the true sense of freedom?
c) Discuss the theme of the poem “Our Earth Will Not Die”
d) Write in brief about the poem “Ode on Solitude”
e) Discuss the theme of the poem “Remember”
f) What was the kings made to understand in the old world?

Q.3 Answer the following questions. (any one) **10**

a) You are Rushikesh / Arpita. You have lost your library card. Write a letter to the librarian to issue you a duplicate Library Card
b) You are **Amar /Amrita**, staying at **“Amrutwel” Station Road, Pune - 410001.** You have come across an advertisement in ***The Indian Express*** for recruitment of Computer Teacher from **Prabhat High School and Jr. College, Pune - 410006.** Apply in response to this Advertisement.

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

Explain the concept of interpersonal Intelligence? How we can improve our Interpersonal Intelligence?

Seat No.	

Set | P

B.Sc. (E.C.S.) (Semester - II) (New) (CBCS): Examination: March/April - 2025
Introduction to Web Technology (ECS1202)

Day & Date: Friday, 23-May-2025 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 equation wherever necessary.
4) Use of logarithmic table and calculators is allowed.
(At. Wts.: H=1, C=12, O=16, N=14, Na=23, Cl=35.5)

Q.1 Multiple choice questions **08**

1) _____ tag is used to display pattern is predefined pattern.
a) <p> b) <pre>
c) <b> d) <pattern>

2) The CSS property used to control the elements font-size is _____.
a) font-size b) font-text
c) text-style d) None

3) Which of the following attribute is used to create server side image mapping?
a) username b) amp
c) name d) ismap

4) The CSS property used to draw a line around the elements outside the border _____
a) line b) border
c) outline d) padding

5) Javascript language attributes writes within _____ tag.
a) <head> b) <html>
c) <style> d) <script>

6) HTML is subset of _____.
a) SGMT b) SGML
c) SGME d) XHTML

7) Two or more array are joined into single array by using _____ function of array object.
a) Join() c) Concat()
c) Merge() d) Combine()

8) Which of the following is _____ used to read an HTML page and render it.
   a) Web server
   b) Web network
   c) Web browser
   d) Web matrix

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

a) Box Model
b) Document objects
c) Anchor Tag
d) Image Map
e) Frameset attributes
f) Frameset

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

a) What is variable? Which keywords used for variables in JavaScript?
b) Write a program to check given value is palindrome or not.
c) Explain Structure of HTML.

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

a) What is hyperlinks? Explain it with example.
b) Define internet. Write uses of internet.
c) Explain different looping statement in JavaScript.

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

a) Explain <table>tag in detail with example.
b) Explain types of CSS with example.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - II) (New) (CBCS) Examination: March/April - 2025
Operating System (ECS1203)

Day & Date: Saturday, 24-May-2025 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 labelled diagrams wherever necessary.

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

1) Virtual memory can be implemented with _____
   a) Segmentation b) Paging
   c) Both a and b d) None of these

2) address is generated by CPU
   a) Physical b) Logical
   c) Both a and b d) None of these

3) Page Fault occurs when _____
   a) Deadlock happens b) Segmentation starts
   c) Page not found in memory d) All of these.

4) Which technique temporary removes inactive programs from memory?
   a) Swapping b) Spooling
   c) Semaphore d) Schedular

5) If the system cannot fulfill the request of all processes, then the state of the system is called
   a) safe b) unsafe
   c) aborted d) All of these

6) Which of the following conditions to occur deadlock _____
   a) Mutual exclusion b) Hold and wait
   c) No preemption and circular wait d) All of these

7) The addresses used in a source code of a program is called?
   a) Symbolic address b) Relative address
   c) Physical address d) None of these

8) Which page replacement algorithm mainly replaces the oldest page that has been present in the main memory for the longest time
   a) OPT b) LRU
   c) FIFO d) None of these

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

1) What is the purpose of demand paging?
2) When Deadlock occurs?
3) What is Swapping?
4) What is process address space?
5) List out objectives of file management system
6) What is virtual memory?

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

1) Explain Contiguous file Allocation method with advantages and disadvantages
2) Assume we have 3 frames and consider the reference string below.
   Reference string: 1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6

   How many page fault will occur by using First-In-First-Out (FIFO) and Least Recently Used (LRU)?
3) Write short note on: Overlays

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

1) Explain variable partitioning. Also, list out its advantages and disadvantages.
2) Explain CSCAN disk scheduling algorithm.
3) Explain compaction with suitable diagram.

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

1) Explain Resource Allocation Graph in details with example.
2) Explain Bankers algorithm with example.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - II) (New) (CBCS) Examination: March/April - 2025
Object Oriented Programming using C++ (ECS1204)

Day & Date: Monday, 26-May-2025 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) When a destructor is called
a) After the end of object life
b) Anytime in between object's lifespan
c) At end of whole program
d) Just before the end of object life

2) _____ binds data and functions together
a) Polymorphism b) Data Abstraction
c) Data Encapsulation d) Class

3) The single copy of _____ data of class is common to all objects.
a) inline b) friendly
c) static d) both a and b

4) Default memory allocation done cpp is
a) compile time b) runtime
c) dynamic d) both a and b

5) Compile time polymorphism is achieved by
a) function overloading b) operator overloading
c) virtual function d) both a and b

6) _____ function outputs bytes to a character array.
a) get() b) put()
c) read() d) write()

7) Exception handlers are declared with _____keyword.
a) Try b) catch
c) Throw d) finally

8) By default data members and member functions of class are_____
a) Static b) Public
c) private d) Friend

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

a) Scope resolution operator.
b) Inline function.
c) What is abstract class in C++?
d) What does polymorphism mean in C++ language?
e) List out characteristics of 'destructor'
f) Hybrid Inheritance.

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

a) Difference between Virtual function and Pure Virtual function
b) Explain call by reference with suitable example.
c) Explain different types file modes in detail.

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

a) What is friend function? Write a program to show the use of friend function
b) Write a program to show multiple catch statements used to handle various types of exceptions
c) Explain parameterized constructor with example.

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

a) Explain destructors in derived classes, with suitable example.
b) Write a program to copy the content of one text file to another text file.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - II) (New) (CBCS) Examination:
March/April - 2025
Python - II (ECS1205)

Day & Date: Tuesday, 27-May-2025 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) Where is function defined?
a) Module b) Class
c) Another function d) All of the mentioned

2) Which of the following is not an advantage of using modules?
a) Provides a means of reuse of program code
b) Provides a means of dividing up tasks
c) Provides a means of reducing the size of the program
d) Provides a means of testing individual parts of the program

3) What does single-level inheritance mean?
a) A subclass derives from a class which in turn derives from another class
b) A single superclass inherits from multiple subclasses
c) A single subclass derives from a single superclass
d) Multiple base classes inherit a single derived class

4) If there is an abstract method in a class then, _____.
a) Class must be abstract class
b) Class may or may not be abstract class
c) Class is generic
d) Class must be public

5) When is the finally block executed?
a) when there is no exception
b) when there is an exception
c) only if some condition that has been specified is satisfied
d) Always

6) What will be the output of the following Python function?
sum(2,4,6)
sum(1,2,3)
a) Error, 6 b) 12, Error
c) 12, 6 d) Error, Erro

7) To open a file c:\scores.txt for appending data, we use _____.
a) outfile = open("c:\\scores.txt", "a")
b) outfile = open("c:\\scores.txt", "rw")
c) outfile = open(file = "c:\scores.txt", "w")
d) outfile = open(file = "c:\\scores.txt", "w")

8) What will be the output of the following Python code?
```
import time
time.asctime()
```
a) Current date only
b) UTC time
c) Current date and time
d) Current time only

Q.2 Answer any four of the following **08**
a) What is inner class?
b) What is object?
c) What is function?
d) What is packages?
e) What is file?
f) What is inheritance?

Q.3 Write short notes on any two of the following **08**
a) Write a program for read a data into file.
b) Explain random module.
c) Explain local and global variable.

Q.4 Write any two of the following. **08**
a) Explain abstract class.
b) Explain lambda function.
c) Write a program for parameterised constructor.

Q.5 Answer any one of the following. **08**
a) Explain types of inheritance.
b) What is exception? How to handle the exception.

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - II) (New) (CBCS) Examination
March/April - 2025
Linear Algebra (ECS1206)

Day & Date: Wednesday, 28-May-2025 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.

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

1) If $A = \begin{bmatrix} 2 & 3 \\ 4 & 3 \end{bmatrix}$ then trace of A is _____.

a) 2 b) 3
c) 5 d) 4

2) Homogenous system of linear equation is _____.

a) consistent b) inconsistent
c) always consistent d) none of these

3) $(1+i)(2-3i)$ = _____.

a) $5-i$ b) $5-2i$
c) $5+i$ d) $2-i$

4) If all the variables of the system of linear equations are leading variables, then the system possesses _____ solutions.

a) No b) Two
c) Infinitely many d) unique

5) The number of non-zero rows present in the matrix echelon form is known as _____.

a) order of matrix b) rank of matrix
c) trace of matrix d) transpose

6) Eigen vectors corresponding to distinct eigen values are _____.

a) linearly dependent b) linearly independent
c) unique d) none of these

7) The sum of all the eigen values is equal to the _____.

a) sum of all nondiagonal b) sum of all principal diagonals
c) determinant d) sum of all elements

8) If two rows (or columns) of a determinant are interchanged, then the sign of the determinant is _____.

a) changed b) remains unchanged
c) negative d) cannot be determine

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

a) Define the system of linear equations.

b) Evaluate determinant of A, where $A = \begin{bmatrix} 1 & 2 & 4 \\ 4 & 2 & 3 \\ 0 & 1 & 1 \end{bmatrix}$

c) Define characteristic polynomial.

d) Find modulus and argument of complex number $7 - 5i$

e) Find the area of triangle whose vertices are $A(0,5), B(-2,3), C(1,-4)$.

f) State Cayley Hamilton theorem.

Q.3 Write short notes on the following: (Any Two) **08**

a) Write an algorithm to find solution of system of linear equation by Gauss Jordan method.

b) Define characteristic matrix & characteristic equation. Find characteristic equation for $\begin{bmatrix} 1 & 2 & 2 \\ 0 & 2 & 1 \\ -1 & 2 & 2 \end{bmatrix}$

c) State De Moivre's theorem and express $z = -1$ in polar form.

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

a) If $Z_1 = 2 - 3i, Z_2 = 3 + 4i$ then find $\frac{Z_1}{Z_2}$ and its complex conjugate.

b) Find inverse of matrix by using adjoint method $\begin{bmatrix} 1 & 2 & 3 \\ 1 & 1 & 5 \\ 2 & 4 & 7 \end{bmatrix}$

c) Find solution of system of linear equation by using gauss elimination method $2x + 3y - z = 6,\ x - y + 2z = 3,\ x + y + z = 4$

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

a) Solve the following linear equation by using Cramer's Rule $x + y - 2z = -10, 2x + y - 3z = -19, 4x + 6y + z = 2$

b) Find eigen value and eigen vector for matrix $\begin{bmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{bmatrix}$

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - II) (New) (CBCS) Examination:
March/April - 2025
Discrete Mathematics (ECS1207)

Day & Date: Thursday, 29-May-2025 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 alternatives from the options. **08**

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

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

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 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

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

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**

a) Define relation.

b) Define Transitive relation.

c) Define bijective function.

d) Define Homogeneous Recurrence Relation with constant coefficients.

e) Define equivalence relation.

f) 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 $M(R)$.

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

a) Solve the following recurrence relation $a_r - 4a_{r-1} + 4a_{r-2} = 0$

b) Explain matrix representation of relation.

c) State & prove Inclusive-exclusive principles for two sets.

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

a) Let $f: R \to R$ is defined by $f(x) = \frac{2x+3}{4}$ show that $f(x)$ is bijective function.

b) If $f(x) = 2x^2 + 6x$ then find

i) $f(-1)$
ii) $f(3)$
iii) $f(x-1)$
iv) $f(-x)$

c) Explain any four types of relation.

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

a) 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.

b) Solve the recurrence relation $a_r - 8a_{r-1} + 16a_{r-2} = 0$ with initial conditions $a2 = 16, a3 = 80$

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - II) (New) (CBCS) Examination
March/April - 2025
Digital Electronics and Microprocessor (ECS1208)

Day & Date: Friday, 30-May-2025 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 alternatives from the options. **08**

1) 8085 has _____ pin IC.
a) 14 b) 16
c) 20 d) 40

2) 7432 is _____ gate.
a) AND b) OR
c) NOR d) NOT

3) 2:4 is _____.
a) multiplexer b) demultilexer
c) encoder d) decoder

4) The counter uses _____ flip flop.
a) T b) D
c) RS d) MSJK

5) IC 7404 has _____ no of gates in on IC.
a) 2 b) 4
c) 6 d) 8

6) OUT is _____ type instruction.
a) arithmetic b) data transfer
c) logical d) branch

7) Vss is connected to pin _____ of 8085.
a) 20 b) 1
c) 40 d) 21

8) 3 bit counter uses _____ no of flip flop.
a) 1 b) 2
c) 3 d) 4

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

a) Define multiplexer
b) Explain minimum/maximum mode pin of 8085.
c) Draw logical diagram of full adder.
d) Explain MOD 5 counter.
e) Write function of IR and ACC registers.
f) Explain carry and auxiliary carry flag of 8085.

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

a) Explain MOD 2 and 5 counter.
b) Explain RS flip flop using NOR gate.
c) Explain logical instruction's of 8085.

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

a) Explain pin function OR and NOR gate.
b) Explain one and two byte instruction of 8085.
c) Explain JK flip flop with logical diagram.

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

a) Explain shift registers and write application.
b) Explain 8085 microprocessor with block diagram.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - II) (New) (CBCS) Examination
March/April - 2025
Introduction to Microcontroller and Embedded System (ECS1209)

Day & Date: Monday, 02-June-2025 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 alternatives from the options given below. **08**

1) 8051 has _____ register banks.
a) 4 b) 8
c) 16 d) 20

2) The embedded system has _____.
a) TROS b) ROS
c) RTOS d) RTS

3) 8051 is _____pin IC.
a) 20 b) 40
c) 14 d) 16

4) In embedded C single line comments is denoted by _____.
a) // b) //*
c) *// d) *//*

5) 8051 operates on _____ volt power supply.
a) +4 b) +8
c) +5 d) -5

6) Address is provide on D0-D7 when ALE is _____.
a) 0 b) 1
c) 01 d) 11

7) 8051 has _____ type instruction set.
a) RISC b) RISI
c) CISC d) CISI

8) Pin no 21 to 28 are used for _____.
a) P0 b) P1
c) P2 d) P3

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

a) Write application of serial port of 8051.
b) Write use of general of registers of 8051
c) Explain stack pointer.
d) Define local variable.
e) Write concept of flash magic.
f) Write function of keil compiler.

Q.3 Write short notes on the following. (Any Two) **08**

a) Explain RAM of 8051.
b) Explain embedded system with diagram.
c) Explain any four features of microcontroller.

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

a) Explain any four SFR's of 8051.
b) Explain ROM organization of 8051.
c) Define embedded system and write program to make LED ON in embedded c program.

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

a) Explain embedded C and development tools.
b) Explain microcontroller 8051 with block diagram.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - III) (New) (CBCS) Examination: March/April - 2025
Data Structure using C++-I (ECS1301)

Day & Date: Thursday, 05-June-2025 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) Which of the following data structure is odd according to type of data structure?
a) Stack b) Queue
c) Array d) Tree

2) What is result of stack function call:
PUSH(A),PUSH(B),POP(),PUSH(C),POP( ),POP()?
a) ABC b) CBA
c) BCA d) CAB

3) Which of the following linked list does not contains NULL pointer?
a) Singly Linear b) Singly Circular
c) Doubly Linear d) None of these

4) _____ queue allow to perform insert and remove elements from either sides.
a) Linear b) Circular
c) Priority d) Deque

5) What is wrong in array declaration: int x[0];
a) data type b) name of array
c) size of array d) Nothing is wrong

6) The amount of _____ required to execute the program is called its 'Time complexity'.
a) Memory b) Time
c) Both a & b d) None of these

7) By performing _____ operation, it leads to "Stack underflow" result.
a) PUSH() b) IsEmpty()
c) POP( ) d) lsFull()

8) In _____ queue, intrinsic ordering of element does not determine its result.

a) Linear b) Circular
c) Priority d) Deque

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

a) Give the difference between Array and linked list.
b) List out the applications of stack.
c) What is array? How array is initialized?
d) Write the prefix expression of infix expression **(a+ (b-(c*d) +x))/e** using stack.
e) Why linked list is called flexible data structure?
f) What is Queue overflow?

Q.3 Write short notes on the following: (Any Two) **08**

a) Backtracking
b) Linked list and its types.
c) Stack in recursion.

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

a) Write a program that reverses string using stack.
b) Write a program that finds even sum and odd sum of array elements.
c) Explain ADT for Queue.

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

a) What is singly linear linked list? Explain its following operations.
i) lnsertLast()
ii) RemoveBegin()
iii) Count()
iv) Search()
b) Write a program to implement circular queue using array.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - III) (New) (CBCS) Examination: March/April – 2025
Linux OS and Shell Scripting (ECS1302)

Day & Date: Friday, 06-June-2025 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) _____ Linux command displays full path of the current directory.
a) cp b) pwd
c) mv d) cd

2) In Linux, _____ command changes ownership of a file to specified owner and group.
a) which b) file
c) tr d) chown

3) _____ Linux command displays the output of program in readable chunks.
a) more b) less
c) both a & b d) neither a nor b

4) The >character in Linux _____.
a) starts a comment, ignored by shell script
b) matches all characters
c) matches any single character
d) sends output to a new file

5) What is use of „who" command in Linux?
a) login user b) logout user
c) login password d) logout password

6) The numeric value of read permission is _____.
a) 4 b) 2
c) 1 d) 0

7) Linux command creates a link to the current file (not a full copy of the file).
a) cp b) ln
c) mv d) cd

8) In Linux, _____ command translates given input characters to specified equivalent characters.
a) which b) file
c) tr d) chown

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

a) Define Shell variable.
b) Define Inode Block.
c) What is use of DHCP protocol?
d) Define Shell and list out its any two types.
e) Define Metacharacter.
f) List out Linux Distributions.

Q.3 Write short notes/Answer of the following: (Any Two) **08**

a) Explain File and Directory permissions.
b) Explain Architecture of Linux.
c) Write a note on Changing process priority with nice.

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

a) Explain background and foreground process.
b) Explain Protocols and Services in networking.
c) Explain I/O and Redirection.

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

a) Comparisons between Linux O.S. and Windows O.S.
b) Define System Administrator and State roles of System Administrator.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - III) (New) (CBCS) Examination: March/April - 2025
Software Engineering (ECS1303)

Day & Date: Monday, 09-June-2025 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) Which of the following is not related with system analyst?
a) Collection of requirement b) User training
c) Creating model d) Programming

2) Software Engineering aims at developing?
a) Reliable software
b) Cost effective software
c) Reliable and cost effective software
d) None of these

3) In _____ aliases or synonyms are allowed when two or more entries show the same meaning.
a) Data Flow Diagrams b) Data Dictionary
c) Data Table d) Decision Table

4) An entity in ER Model is a real world being, which has some properties called _____.
a) Attributes b) Relationship
c) Domain d) None of these

5) The extent to which the software can continue to operate correctly despite the introduction of invalid input is called as _____.
a) Reliability b) Robustness
c) Fault-tolerance d) Portability

6) _____ is sometimes referred as ‘Bubble Diagram’.
a) Flowchart b) ER- Diagram
c) Decision table d) DFD

7) Which of the following is not a fact-finding technique?
a) Interview b) Record review
c) Third party enquiry d) Questionnaire

8) External entities may be a _____.
a) Source of input data only
b) Source of input data or destination of result
c) Destination of result only
d) Repository of data

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

a) Write the advantages of HIPO.
b) Define the term 'System'.
c) What is Normalization?
d) What is CLD?
e) What are the types of Dependencies?
f) Define Deterministic and Probabilistic system.

Q.3 Write short notes on the following. (Any Two) **08**

a) Feasibility study.
b) What is Data Dictionary? Explain the importance of Data Dictionary.
c) Distinguish between System Analysis and System Design.

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

a) Explain Waterfall model in detail.
b) Write the design principles of output.
c) Explain various symbols used in DFD.

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

a) Define the term Entity, Attribute and Relationship. Explain types of relationship with example.
b) Discuss the different methods of conversions from old system to new system in brief.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - III) (New) (CBCS) Examination:
March/April - 2025
Database Management System - I (ECS1304)

Day & Date: Tuesday, 10-June-2025 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 wherever necessary.
4) Use of log table and calculators is allowed.

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

1) The _____ constraint can only be applied at column level.
a) Foreign key b) Primary key
c) Not null d) None of these

2) What is degree of table with 10 row and 5 columns?
a) 10 b) 5
c) 15 d) 50

3) To change column value in a table the _____ command can be used.
a) create b) insert
c) alter d) update

4) Rows of a relation are known as the _____
a) Degree b) Tuples
c) Entity d) All of the above

5) Which of the following is not a type of database?
a) Hierarchical b) Network
c) Distributed d) Decentralized

6) What is xyz in the following SQL statement?
DELETE FROM xyz WHERE abc = 5;
a) column name b) table name
c) row name d) database name

7) The facility that allows nesting one select statement into another is called _____
a) Nesting b) Binding
c) Sub query d) Encapsulating

8) Which of the following statements does not modify the table?
a) Insert b) Update
c) Delete d) Select

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

a) Define the term: a) schemas b) instances
b) What are the advantages of DBMS?
c) What is Constraints?
d) List database users.
e) What is DBMS?
f) What is View?

Q.3 Write a short note on the following. (Any Two) **08**

a) Relational algebra operations: i) select ii) project
b) Network data model.
c) Explain Components of DBMS.

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

a) Explain Aggregate functions with example.
b) Explain Alter command with example.
c) Explain Generalization with example.

Q.5 Attempt the following. (Any One) **08**

a) What is Join? Explain types of Join with example.
b) Explain 2-tier and 3-tier Client Server Architecture.

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - III) (New) (CBCS) Examination: March/April - 2025
Probability Theory (ECS1305)

Day & Date: Wednesday, 11-June-2025 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 any type of calculator is allowed.

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

1) In the experiment of throwing a die if
A : getting even number & B : getting odd number
then events A & B are _____.
a) equally likely events b) mutually exclusive events
c) exhaustive events d) all of these

2) In which distribution means is always greater than its variance?
a) Binomial b) Poisson
c) Discrete uniform d) None of these

3) If $g\left({}^{10}C_g\right) = {}^{10}P_x$, then $x =$?
a) 3 b) 2
c) 1 d) None of these

4) If X be a discrete random variable which takes only one value say 'c' with probability 1 then _____.
a) $E(x) = 0, V(x) = 0$ b) $E(x) = c, V(x) = c$
c) $E(x) = c, V(x) = 0$ d) $E(x) = x, V(x) = c$

5) A random variable X has normally distributed with mean 2 & S.D. 4 then mean of $Y = 2x + 3$ is _____.
a) 8 b) 2
c) 6 d) 7

6) Let $F(x)$ be a cumulative distribution function of a continuous random variable x. If $F(4.7) = 1$ then $P(x > 4.7)$ is _____.
a) 0 b) 0.25
c) 0.47 d) 1

7) If $x \to \cup\,(3,7)$ then $E(x) =$ _____.
a) 5 b) 7
c) 3 d) None of these

8) If $x \to P(m_1)$ & $Y \to P(m_2)$, if x & y are independent then $x + y$ follows _____ distribution.

a) Poisson b) Uniform
c) Binomial d) Waiting time

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

a) State multiplication principle of counting.
b) State mean & variance of normal distribution.
c) Define mutually exclusive events with illustration.
d) For Binomial distribution mean = 4 & variance = 2 then find the value of n & p.
e) If $x \to \cup\,(1,2)$ then find $p(1 < x < 1.5)$
f) If X is discrete random variable having Poisson distribution such that $p(x = 1) = p(x = 2)$ then find the value of parameter of Poisson distribution.

Q.3 Answer any Two of the following: **08**

a) Distinguish between permutation & combination.
b) Properties of distribution function of discrete random variable.
c) Expectation & variance of continuous random variable.

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

a) If there are 4 alphabets A, B, C, D & 7 digits 1, 2, 3, 4, 5, 6, 7 then how many passwords can be formed such that an alphabet followed by 2 digits & repetitions of digit is not allowed.
b) If $X \to p(m = 4)$ then find:
i) $P(X = 5)$
ii) $P(X > 1)$
c) A continuous random variable X having p.d.f $f(x) = kx^3, 0 < x < 1$ then find the value of k.

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

a) The p.m.f of random variable x is as follows:

X:	-2	-1	0	1	2	3
$P(x)$:	0.1	k	0.2	$2k$	0.3	k

Find
i) the value of k
ii) c.d.f. of r.v. X
iii) $E(X)$
iv) $P(-2 < X < 2)$

b) Give axiomatic definition of probability. State & prove addition theorem of probability.

Seat No.	

Set | P

B.Sc. (E.C.S.) (Semester - III) (New) (CBCS) Examination:
March/April - 2025
Data Science with Python (ECS1306)

Day & Date: Thursday, 12-June-2025 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 wherever necessary.

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

1) The _____ is a core object in NumPy that represents multidimensional arrays.
a) Array b) Series
c) Matrix d) ndarray

2) The _____ method is used to check the dimensions of a Data Frame.
a) Size () b) Shape ()
c) Length () d) Dimension ()

3) The _____ statement perform element-wise multiplication of two NumPy arrays named as array1 and array2.
a) arrey1 * array2
b) array1.multiply (array2)
c) Np.multiply(array, array2)
d) Np.elementwise_mul(array1, array2)

4) dIn creating pairplots in seaborn, you can use the _____ parameter to color plot aspects based on the vales of a specific variable.
a) Col b) color
c) Hue d) aspect

5) You can access a specific column in a DataFrame by using ____
a) df.get_column('ColumnName')
b) df.acess_column('ColumnName')
c) df,column('ColumnName')
d) df['ColumnName']

6) The _____ statement generate random numbers in a NumPy array.
a) np.random_number() b) np.rand()
c) np.random.rand() d) np.generate_random()

7) The purpose of loc[] in Pandas to _____
   a) Access rows and column by their index labels.
   b) Filter rows based on a condition.
   c) Locate missing values in the DataFrame
   d) Lock the Dataframe from modifications.

8) The _____ command is used to save a plot in Matplotlib.
   a) Plt.saveplot() b) Plt.save()
   c) Plt.savefig() d) Plt.storeplot()

Q.2 Solve the following. (Any Four) **08**

a) List out the steps in Data Science life cycle.
b) What is variance and bias?
c) How to create identify matrix? Give example.
d) Write any four aggregate functions used in NumPy. Give example.
e) List applications of data science.

Q.3 Attempt the following. (Any Two) **08**

a) What is sampling? Why it is needed? Explain it.
b) Explain use of density plot with example.
c) How to create Data Frame from python Dictionary? Explain with example.

Q.4 Attempt the following. (Any Two) **08**

a) What is difference between Primary and Secondary Data? Explain Secondary Data collection techniques.
b) What is outlier analysis? Explain how to handle it.
c) What is use of Box plot? Explain with example.

Q.5 Solve the following. (Any One) **08**

a) What is Data Cleaning? Why it is important? Explain different techniques for data cleaning.
b) What is Evaluation measure? What are different Evaluation measures used in data science? Explain cross validation with example.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - III) (New) (CBCS) Examination: March/April - 2025
Web Development using PHP (SEC-1)

Day & Date: Friday, 13-June-2025 Max. Marks: 80
Time: 09:00 AM To 12:00 PM

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

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

1) Which of the following is the correct way to add a comment in PHP code?
a) # b) //
c) /**/ d) All of the mentioned

2) What is PHP?
a) PHP is an open-source programming language
b) PHP is used to develop dynamic and interactive websites
c) PHP is a server-side scripting language
d) All of the mentioned

3) The_____ function can be used to compare two strings using a case-insensitive binary algorithm
a) strcmp b) stricmp()
c) strcasecmp() d) stristr()
e) None of the

4) When you use the $_GET variable to collect data, the data is visible to _____
a) None b) Only you
c) Everyone d) Selected few

5) Which of following is not a Superglobals in PHP?
a) $_SERVER b) $_ENV
b) $_FILES d) $_PUT

6) Which one of the following methods is responsible for sending the query to the database?
a) query() b) send_query()
c) Sendquery() d) Mysqli_query()

7) Which function returns an array consisting of associative key/value pairs?
a) Count () b) Array_count()
c) Array_count_values() d) Count_values()

8) Which one of the following function is used to start a session?
a) Start_session() b) Session_start()
c) Session_begin() d) Begin_session()

9) Which one of the following functions can be used to concatenate array elements to form a single delimited string?
a) Explode() b) Implode()
c) Concat() d) Concatenate()

10) Which one of the following statements instantiates the mysqli class?
a) Mysqli=new musqli() b) $mysqli=new mysqli()
c) $mysqli->new.mysqli() d) Mysqli->new.mysqli()

B) One sentence answer/one word answer. **06**

1) What are the different types of PHP variables?
2) What is web server?
3) What are the constants?
4) What are the different types of Array in PHP?
5) List out operators available in PHP.
6) Explain setcookie () function in PHP?

Q.2 Answer the following question (Any Eight): **16**

a) List out different argument passing technique.
b) What is print_r() in php?
c) What is multidimensional array? Explain with example.
d) Difference between Echo () and print () statement.
e) What is type juggling?
f) Explain do...while statement.
g) What is switch statement?
h) Explain Insert mysql query.
i) State the use of strcmp() function.
j) Expain MYSQL data types.

Q.3 A) Answer the following (any two): **10**

i) What is associative array with example?
ii) Write note on variable scope in function.
iii) What is the use of session and cookies in PHP?

B) Short note/Solve. **06**

i) Write a php script to create a form that accept 2 strings compare these 2 string and display message on submit button click.

OR

ii) Explain $_ GET and $ _POST variable

Q.4 A) Answer the following question (Any two): **08**

i) Explain foiling control structures using both ways syntax with suitable example.
1) do_while
2) foreach

ii) Write short note on:
1) variable function and anonymous function.

iii) Differentiate between GET and POST.

B) Describe/Explain/Solve. **08**

i) Write a php script to accept filename with no extension and list all files with given file name

OR

ii) Explain ereg(). List and explain with example special characters used in regular expressions

Q.5 Answer the following (Any Two). **16**

a) What is Session? Explain session state management in detail with example.

b) Write a PHP script to check how many times the web page access by using cookies.

c) Write a php script for student database in MySQL with multiple queries (Insert, Update, Delete, and Select).

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - III) (CBCS) Examination: March/April - 2025
Probability Theory - I (ECS0305)

Day & Date: Thursday, 05-June-2025 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.
4) Use of logarithmic table and calculator is allowed.

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

1) The probability that a person shall not die is _____.
a) 0 b) 1
c) 0.5 d) 0.9

2) In the simultaneous tossing of two fair coins, the probability of having at least one head is _____.
a) 0.5 b) 0.60
c) 0.75 d) 1

3) If a discrete sample space contains 4 elements, then the total number of events on this sample space is _____.
a) 4 b) 16
c) 32 d) 64

4) If a random variable X has binomial distribution with parameters n and p, then _____.
a) Mean $<$ variance b) Mean $>$ variance
c) Mean $=$ variance d) Mean $\leq$ varience

5) The probability of any event always lies between
a) 0 to 1 b) -1 to 1
c) 0 d) 1

6) An event containing only one sample point is called _____ event.
a) Sure b) simple
c) elementary d) both b & c

7) Expectation of any constant is always _____.
a) Zero b) constant
c) Itself d) one

8) Cumulative distribution function are always lies between _____.
a) 0 to 1 b) -1 to 1
c) -1 to 0 d) None of these

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

a) Define term Combination.
b) Define Poisson distribution.
c) If a discrete r.v. X follows Binomial distribution with parameter n=10 and p=0.4 find mean and variance of the r.v.X
d) Define mutually exclusive event.
e) Define Normal distribution.
f) Find the value of 'k' if following is the p.m.f. of discrete r.v. X

X	5	10	15	20
$P(x)$	$3k$	$2k$	$4k$	0.2

Q.3 Answer the following question: (Any Two) **08**

a) Define addition principle of counting with example.
b) Three coins are tossed at a time find the probability that
A: getting head on first coin, B: getting head on second coin, C=At least one head occur.
c) Effect of change of origin and scale on variance. i.e.
$V(aX + b) = a^2V(X)$

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

a) Write down the properties of c.d.f. for continuous random variable.
b) Show that, $0 \leq P(A) \leq 1$
c) For the following probability distribution of discrete r.v. X. Find $V(X)$

X	2	4	6	8	10
$P(x)$	0.3	0.10	0.3	0.2	0.1

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

a) An unbiased coin is tossed 3 times. Let A, B and C are events that head occurs at 1st, 2nd and 3rd toss respectively. Discuss the independence of the events A, B and C
b) Define Poisson distribution. State its additive property, mean and variance, and also write real life situation examples.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - III) (CBCS) Examination: March/April - 2025
Introduction to Python Programming (ECS0307)

Day & Date: Friday, 06-June-2025 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) To open a file c:\scores.txt for reading, we use _____.
a) infile = open("c:\scores.txt", "r")
b) infile = open("c: \ \scores.txt", "r")
c) infile = open(file = "c:\scores.txt", "r")
d) infile = open(file = "c: \ \scores.txt", "r")

2) How many except statements can a try-except block have?
a) zero b) one
c) more than one d) more than zero

3) Suppose list1 is [2, 33, 222, 14, 25], What is list1 [-1]?
a) Error b) None
c) 25 d) 2

4) What is displayed on executing print(math.fabs(-3.4))?
a) -3.4 b) 3.4
c) 3 d) -3

5) Which keyword is used for function in Python language?
a) Function b) def
c) Fun d) Define

6) Which of the following is not a core data type in Python programming?
a) Tuples b) Lists
c) Class d) Dictionary

7) Operators with the same precedence are evaluated in which manner?
a) Left to Right b) Right to Left
c) Can't say d) None of the mentioned

8) Which module in Python supports regular expressions?
a) re b) regex
c) pyregex d) none of the mentioned

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

a) What is keyword?
b) What is data type?
c) What is method?
d) What is constructor?
e) What is module?
f) What is exception?

Q.3 Write short notes: (Any Two) **08**

a) Write program for factorial number.
b) Explain Break and continue statement with example.
c) Explain advantages of function.

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

a) Explain tuple manipulation with example.
b) Explain constructor types with example.
c) Write a program for User defined Exception.

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

a) What is exception? How to handle the exception.
b) Explain Arithmetic and logical operator with example.

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - IV) (New) (CBCS) Examination: March/April - 2025
Data Structure using C++ -II
(ECS1401)

Day & Date: Wednesday, 30-April-2025 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 Choose the correct alternatives from the given options. 08

1) Which of the following sorting method does not belongs to exchange sort category?
a) Radix sort b) Shell sort
c) Bubble sort d) Selection sort

2) Out of 'N' nodes of binary tree, _____ links are NULL.
a) $N-1$ b) $\log(N)$
c) $N+1$ d) $N^*(N-1)$

3) What is the advantage of a hash table in data structure?
a) Easy to implement
b) Faster access of data
c) Exhibit good locality of reference
d) Very efficient for less number of entries

4) If $A[x+5][y+3]$ represents an adjacency matrix, which of these could be the value of x and y?
a) $x=3, y=5$ b) $x=5, y=3$
c) $x=5, y=5$ d) $x=3, y=3$

5) _____ number of maximum successful swapping taken by bubble sort method to sort 'N' elements.
a) $N-1$ b) $N!$
c) $N(N-1)/2$ d) $N/N+2$

6) Which of the following searching method must requires sorted data?
a) Linear b) Binary
c) Indexed Sequential d) All of these

7) Which of the following node of a graph have only incoming edges but not outgoing edges?
a) Source b) Sink
c) Pendant d) Loop

8) We can construct maximum _____ number of binary trees using 5 nodes.

a) 42 b) 24
c) 41 d) 14

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

a) Construct binary tree using numbers: 45,12,74,36,86,10,45,38
b) List out different applications of graph.
c) What is sorting? Write its advantage.
d) What is Max heap tree?
e) What is linear search? Write its disadvantage.
f) What is Siblings in binary tree?

Q.3 Answer the following questions. (Any Two) **08**

a) How we can represent graph by using adjacency list? Illustrate with one example.
b) Write a program to implement selection sort method.
c) Explain indexed sequential search in details.

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

a) What is Hashing? Explain different hash functions.
b) How to delete a node of binary tree having two children? Illustrate with example.
c) Write a program to implement weighted directed graph using adjacency matrix.

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

a) Write a program to implement DFS traversal of graph.
b) Write a menu driven program to implement binary search tree which performs following operations-

1) Insert
2) Preorder
3) Postorder
4) Inorder
5) Count Leaf
6) Search

Seat No.	

Set | P

B.Sc. (E.C.S.) (Semester - IV) (New) (CBCS) Examination:
March/April - 2025
Core Java (ECS1402)

Day & Date: Friday, 02-May-2025 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 correct alternatives: **08**

1) _____ keyword must be used to inherit a class.
a) super b) extends
c) extent d) this

2) In java, _____ concept allows us to implement runtime polymorphism.
a) method overriding b) constructor
c) method overloading d) All of These

3) Exception was found in _____ package in java.
a) java b) java.io
c) java.util d) java.lang

4) Which component of java is responsible for running the compiled java byte code?
a) JRE b) JVM
c) JDK d) JIT

5) _____ is the default priority of thread in java.
a) 1 b) 4
c) 5 d) 10

6) Which of the following class is super class of all the events?
a) EventClass b) EventObject
c) ActionEvent d) ItemEvent

7) The _____ class serves as the foundation for all Swing components.
a) JComponent b) JButton
c) JPanel d) JTextField

8) Which of these keywords are used to implement synchronization?
a) syn b) synchronize
c) synchronized d) synch

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

a) What is Garbage Collection?
b) Define exception.
c) List features of java.
d) What is event?
e) Difference between AWT and Swing.

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

a) What is method overriding? Explain with example.
b) Explain simple java program structure.
c) Write a note on life cycle of thread.

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

a) Why use JcomboBox and JRadio? Explain in details.
b) What is Inheritance? Explain types of inheritance with example.
c) Explain user defied exception in details.

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

a) What is collection? Explain ArrayList and Vector collection classes with example.
b) Explain FileWriter and FileReader class with example.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - IV) (New) (CBCS) Examination: March/April - 2025
Software Testing (ECS1403)

Day & Date: Saturday, 03-May-2025 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) Identify the term which is not related to testing?
a) failure b) error
c) test case d) test boot

2) Which of the following testing is also known as white-box testing?
a) Structural testing b) Error guessing technique
c) Design based testing d) None of the above

3) Which of the following are types of code review?
a) code walkthrough b) code inspection
c) both a and b d) None

4) Beta Testing is done at:
a) Developer's end b) User's end
c) User's & Developer's end d) None of the mentioned

5) Identify the incorrect testing technique.
a) integration testing b) collaboration testing
c) system testing d) unit testing

6) _____ testing is used to check the code.
a) Grey box testing b) Black box testing
c) White-box testing d) Red box testing

7) Which type of testing is responsible for testing how stable the software is built?
a) Recover testing b) Regression testing
c) Smoke testing d) Unit testing

8) Which Test Document is used to define the Exit Criteria of Testing?
a) Defect Report b) Test Summary Report
c) Test Case d) Test Plan

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

a) What is system testing?
b) What is white box testing?
c) What is Alpha testing and Beta testing?
d) What is the difference between Bug, Defect?
e) What is test scenarios?
f) What is Acceptance testing?

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

a) Functional testing
b) Traceability matrix Testing
c) Test Case Template

Q.4 Write notes on two of the following. **08**

a) What are the differences between white box testing and black box Testing?
b) Explain Integration Testing and types.
c) Write test cases for create account for Gmail application.

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

a) Explain Performance Testing and its types.
b) Define black box testing? Explain in detail black box techniques.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - IV) (New) (CBCS) Examination: March/April - 2025
Database Management System - II (ECS1404)

Day & Date: Monday, 05-May-2025 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) In a transaction, a _____ operation will read data from the table and write on the buffer.
a) Write b) Read
c) Execute d) None of these

2) Rollback of a transaction is _____
a) Update the transaction b) Repeat a transaction
c) Retrieve old values d) None of these

3) _____ ensure that system will never entered in deadlock.
a) Two-phase locking protocol b) Deadlock detection protocol
c) Deferred update protocol d) Timestamp ordering protocol

4) The concept of lacking can be used to solve the problem of _____
a) Deadlock b) Lost update
c) Uncommitted dependency d) Inconsistent data

5) _____ number of ways are there to pass the parameters in procedure.
a) 1 b) 2
c) 3 d) 4

6) PL/SQL function must contain a _____
a) Follow Statement b) GOTO Statement
c) Return Statement d) NULL Statement
.

7) The Implicit cursors are created in order to process the ____ statements.
a) DDL b) DCL
c) DML d) TCL

8) _____ is/are an/the implicit cursor's attribute.
a) %FOUND b) %ROWCOUNT
c) %ISOPEN d) All of the above

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

a) States of transaction
b) Write any 4 predefined Exceptions.
c) What is a checkpoint?
d) What is PL/SQL variable?
e) What is a package?

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

a) What is transaction? Explain ACID properties.
b) Write a PL/SQL block to check given number is perfect or not.
c) Explain steps in query processing and advantages of query optimization in detail.

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

a) Define Trigger; create a trigger which allows user to perform DML operation on table.
b) What is concurrency control? Explain lock based protocol in detail
c) Differentiate between PL/SQL function and procedure

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

a) Explain cursor attributes with suitable example.
b) Explain the principle of deadlock recovery in database transaction.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - IV) (New) (CBCS) Examination: March/April - 2025
Descriptive Statistics (ECS1405)

Day & Date: Tuesday, 06-May-2025 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.

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

1) The mid value of class 20-30 is _____.
   a) 20 b) 30
   c) 25 d) 10

2) Median are the values dividing a given set of observations into _____.
   a) Two equal parts b) Four equal parts
   c) Three equal parts d) Five equal parts

3) The value of correlation coefficient is always lies between _____.
   a) 0 to 1 b) -1 to 1
   c) -1 to 0 d) none of these

4) The number of items belonging to a particular class is called as _____ of that class.
   a) lower limit b) upper limit
   c) mid-value d) class frequency

5) In ____ method of sampling same item to be selected more than once.
   a) SRSWOR b) SRSWR
   c) SRS d) All of these

6) For the given set of observations $73,87,86,48,34,22,95,45,29,23,41$ the range is _____.
   a) 73 b) 48
   c) 34 d) 22

7) Any part of the population under study is called as _____.
   a) Population b) Sample
   c) Finite population d) None of these

8) To draw a histogram class must be of type _____.
   a) open end b) exclusive
   c) inclusive d) all of these

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

a) Find the mean for $82,73,08,87,03,86,70,48,22,34,$and $30.$

b) Define Population and Sample.

c) Given $n = 10, \sum x = 590, \sum x^2 = 48920$, find coefficient of variation (C.V.)

d) Define Class Mark and Class Width.

e) Define range and coefficient of range.

f) Write merits of Mode.

Q.3 Attempt any Two of the following. **08**

a) Write the Objectives or Principles of classification.

b) Distinguish between absolute and relative measure of dispersion.

c) Describe the Stratified Random Sampling with suitable example.

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

a) Find the value of median

Marks	0-20	20-40	40-60	60-80	80-100
No of students	8	18	23	28	11

b) Calculate A.M. from following frequency distribution

X	2	4	6	8	10
f	7	15	17	19	8

c) Find correlation coefficient between X and Y

X	10	13	15	18	21
Y	22	17	15	8	6

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

a) Draw the histogram from the following data. Hence determine the mode.

Classes	100-200	200-300	300-400	400-500	500-600	600-700
Frequency	07	12	18	28	16	11

b) Write regression equation X on Y by using least square method.

Seat No.	

Set | P

B.Sc. (E.C.S.) (Semester - IV) (New) (CBCS) Examination: March/April - 2025
Data Visualization (ECS1406)

Day & Date: Wednesday, 07-May-2025 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) Non programmable calculators are allowed.

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

1) Which of the following is a data transformation feature in Power BI?
a) Data modelling b) Data visualization
c) Data exploration d) Data cleansing

2) Which of the following is a way to share a report in Power BI?
a) Exporting to a PDF file
b) Publishing to the Power Bl service
c) Sharing a link to the report
d) All of the above

3) Which of the following is a way to create a Power Bl dashboard?
a) Using the Power Bl desktop application
b) Using the Power Bl service
c) Using the Power Bl mobile app
d) All of the above

4) Which of the following is a way to create a data model in Power BI?
a) Using the Power BI desktop application
b) Using the Power Bl service
c) Using the Power Bl mobile app
d) All of the above

5) Which of the following is a visualization option in power BI?
a) pivot table b) Histogram
c) Bubble chart d) All of the above

6) What is the purpose of Power View in Power Bl?
a) To create and share reports and dashboards
b) To import and transform data from various sources
c) To analyze and visualize data
d) To create and manage data models

7) Which of the following is a way to create a measure in Power BI?
   a) Using the Data view
   b) Using the Visualizations pane
   c) Using the Format pane
   d) Using the Developer tools

8) Which of the following is a way to use natural language queries in Power BI?
   a) Using the Q & A feature in the Power BI service
   b) Using the Power BI mobile app
   c) Using the Power BI desktop application
   d) All of the above

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

a) What is power BI?
b) What is DAX?
c) Which are the common data sources used in power BI?
d) What is KPI?
e) What is data cleansing?
f) What is data visualization?

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

a) Architecture of Power BI
b) Data transformation
c) Data model

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

a) Explain the table and matrix in power BI.
b) Explain the data types used in power BI.
c) Explain the power BI dashboards and reports.

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

a) Explain the features of Power BI.
b) Explain the different types of DAX functions.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination:
March/April - 2025
English (Comp.)
Business English (ECS1501)

Day & Date: Wednesday, 30-April-2025 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 answer and rewrite the sentence. **08**

1) 'Phatik went to Kolkata with his _____.
a) uncle b) mother
c) aunty d) brother

2) King Feroz asked Vizier to bring him _____ brides.
a) Five b) Six
c) Seven d) Eight

3) The village in the poem *The Village School Master* is modeled on _____.
a) Dublin b) Wicklow
c) Lissoy d) Galway

4) Dr. APJ Abdul Kalam advocated for the promotion of _____.
a) religion b) injustice
c) discrimination d) social harmony and justice

5) Dr. Kalam argued that India must enhance its defence capabilities and adopt a proactive_____ policy.
a) foreign b) national
c) cooperative d) universal

6) The Schoolmaster presented in the poem might be the poet's teacher __.
a) Alex Hardy b) John Oliver
c) Thomas Byron d) Thomas Byrne

7) He has written an essay. (Change the voice)
a) An essay has been written by him.
b) An essay is written by him.
c) An essay had been written by him.
d) An essay was written by him.

8) We must learn to _____ with the boss.
(Fill in the blanks by choosing the correct phrasal verb)

a) get into b) get off
c) get along d) get for

Q.2 Write short answers to the following questions. (Any Four) **12**

a) Why was Phatik not happy in Kolkatta?
b) Why does Dr. APJ Abdul Kalam emphasize the significance of freedom?
c) Comment on the theme of the poem *Money Madness*.
d) What are the seven stages of a person according to Shakespeare?
e) What is the central idea of the poem *Queen's Rival*?
f) Comment on the master of the poem *The Village Schoolmaster* by Oliver Goldsmith.

Q.3 What is the significance of the 21st century skills? **10**

OR

Comment on the types of 21st century skills.

Q.4 What are the learning skills of 21st century? **10**

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination:
March/April - 2025
Data Communication and Networking (ECS1502)

Day & Date: Sunday, 18-May-2025 Max. Marks: 80
Time: 09:00 AM To 12:00 PM

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

Q.1 A) Choose the correct alternatives. **10**

1) The bit stream is broken into frames is job of _____.
   a) Data link layer b) Physical layer
   c) Network layer d) None of the above

2) _____ protocol is used to map logical address to physical address.
   a) ARP b) RARP
   c) ICMP d) IP

3) The degeneration of a signal over distance on a network cable is called _____.
   a) Noise b) Distortion
   c) Attenuation d) Fluctuation

4) A bridge is _____ device.
   a) Networking b) Connecting
   c) Inter networking d) Routing

5) _____ segment is used to disconnect the connection in TCP.
   a) SYN b) VRG
   c) PSH d) FIN

6) Which consequences are more likely to occur during the frame transmission in Stop-and-Wait ARQ mechanism?
   a) Loss of frame or an acknowledgement
   b) Delay in an acknowledgement
   c) Normal operation
   d) All of the above

7) A _____ receives weak or corrupted signal and regenerates original signal.
   a) bridges b) repeaters
   c) Routers d) gateways

8) _____ algorithm discover its neighbors and learn their network addresses.
   a) Flooding b) shortest path routing
   c) link state routing d) none

9) What is the class of IP address starting with 0110.
   a) class A b) class B
   c) class C d) class D

10) Parity bit is added to every data unit in _____ check.
   b) Simple parity b) CRC
   c) Checksum d) none

B) Fill in the blank. **06**

1) _____ protocol does not resend N frames when just one frame is damaged; only the damaged frame is resent.
2) _____ is a repository of information linked together from points all over the world.
3) A wireless network uses _____ waves to transmit signals.
4) In the _____ random access method there is no collision.
5) Class D IP addresses are used for _____.
6) In virtual circuit network each packet contains _____.

Q.2 Solve any Eight of following. **16**

1) What is meant by framing?
2) What is Piggybacking?
3) Which are the various types of errors?
4) Mention the advantages of bus topology.
5) What is hamming distance?
6) What is multiport bridge?
7) Define transmission mode and its types.
8) What is the use of ARP?
9) What is WDM?
10) What is gateway?

Q.3 A) Attempt any Two of the following. **10**

1) Explain FTP in short.
2) Explain Router in short.
3) Generate the codeword for the data 1010011110 and the divisor 10111 at the sender site.

B) Explain OSI model. **06**

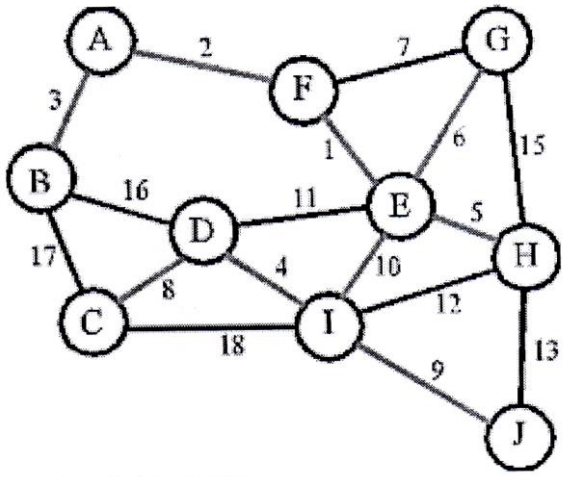
Q.4 A) Attempt any Two of the following. **08**

1) Explain Distance vector routing.
2) In a block of addresses, we know the IP address of one host is 182.44.81.16/26. Find first address, last address and number of addresses in network block.
3) Compare virtual circuit subnet and datagram subnet.

B) Explain TCP segment in detail with diagram. **08**

Q.5 Attempt any Two of the following. **16**

a) Consider the following network with the indicated link cost. Use Dijikstra's shortest-path algorithm to compute the shortest paths from A to I and H.



b) Explain Go back n ARQ protocol in detail.

c) What is multiplexing? Explain FDM and TDM in detail.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination: March/April - 2025
Advanced Java (ECS1503)

Day & Date: Sunday, 25-May-2025 Max. Marks: 80
Time: 09:00 AM To 12:00 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) Select the correct alternative. **10**

1) What are the major components of the JDBC?
   a) DriverManager, Driver, Connection, Statement, and ResultSet
   b) DriverManager, Driver, Connection, and Statement
   c) DriverManager, Statement, and ResultSet
   d) DriverManager, Connection, Statement, and ResultSet

2) Thin driver is also known as?
   a) Type-3 Driver b) Type-2 Driver
   c) Type-4 Driver d) Type-1 Driver

3) What is a servlet program that runs on the server to handle client requests?
   a) A java program that runs on the server to handle client requests
   b) A type of coffee bean
   c) A java class used for file I/O
   d) A java keyboard

4) This object can be used to access other implicit objects in JSP.
   a) Request b) Page
   c) Context d) Page context

5) Which method is used to initialize a servlet?
   a) Init() b) Start()
   c) Initialize d) Setup()

6) Which method is used to handle GET requests in a servlet?
   a) doPost() b) doGet()
   c) Get() d) Put()

7) A servlet maintain session in _____.
   a) Servlet Context b) Servlet container
   c) Servlet response heap d) Servlet request heap

8) Which of the following are the valid scopes in JSP?
   a) request - page, session,application
   b) request - page, session, global
   c) response,page, session, application
   d) request, page, context, application

9) Which are the modules of Data Access/ integration layer?
   a) jdbc, ORM, OXM, JMS, Transactions
   b) jdbc, ORM, OXM, OXM, JMS
   c) jdbc, ORM, Web, Beans
   d) jdbc, ORM, OXM, JMS

10) Which of the following is not a core interface of Hibernate?
   a) Configuration b) Criteria
   c) Session Management d) Session

B) Give one Word Answer **06**

1) Which option is stored at the client side
2) Leads a high network traffic
3) What is the maximum size of cookies
4) JSP stands for
5) SMTP stands for
6) Open Source Object Relational and Query service for Java language.

Q.2 Solve any Eight of the following. **16**

a) What is JDBC?
b) List the JSTL tags.
c) Define session tracking.
d) List out implicit objects
e) Explain Object relational Mapping
f) Explain IOC and Dependancy Injection
g) What is Loose Coupling?
h) What are the Datagram and Sockets?
i) What is JPA?
j) Explain Hibernate Inheritance.

Q.3 A) Attempt any Two of the following. **10**

i) Explain JDBC drivers
ii) Explain Servlet Life Cycle
iii) Explain JSP XML tags

B) Write a Program of Servlet to send username to the browser using doGet and doPost methods. **06**

Q.4 A) Attempt any Two of the following. **08**

i) TCP/IP programming
ii) Table per Class in Hibernate
iii) Explain the architecture of JSP

B) Write a program to retrieve, insert, update and delete records in table using JDBC. **08**

Q.5 Attempt any Two of the following. **16**

a) Create a jsp page that will display current data and time and also display how many times user visited to the page.

b) Explain different types of implicit object in JSP.

c) What is Cookies? Explain advantages and disadvantages and use of 'Cookies' in Servlet with example.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination: March/April - 2025
Dot NET Core (ECS1504)

Day & Date: Monday, 05-May-2025 Total Marks: 80
Time: 09:00 AM To 12:00 AM

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

Q.1 A) Multiple choice questions. **10**

1) What is LINQ in C#?
a) A collection of functions
b) A new programming language
c) A library for parallel programming
d) A framework for querying data in a consistent manner

2) Which of the following is a valid way to instantiate a delegate?
a) DelegateName del = new DelegateName();
b) DelegateName del = DelegateName.MethodName;
c) DelegateName del = new DelegateName(MethodName);
d) All of the above

3) Which method is commonly used with a lambda expression to filter a collection in LINQ?
a) Select b) Where
c) OrderBy d) GroupBy

4) In C#, what does the Thread.Join() method do?
a) Starts a new thread
b) Pauses the calling thread until the thread on which Join is called has completed
c) Terminates the thread
d) Makes a thread sleep

5) Which of the following is a namespace of a class?
a) System.Object b) System.Collection
c) System.Data d) System.Class

6) What is the primary purpose of the Elvis operator (?.) in C#?
a) To perform arithmetic operations
b) To simplify null checking
c) To concatenate strings
d) To create lambda expressions

7) In LINQ, what does the Aggregate() method do?
a) Combines elements into a single value using a specified function
b) Groups elements by a key
c) Filters elements based on a predicate
d) Selects elements into a new form

8) Which of the following methods is used to add an item to a List<T>?
a) AddItem b) Insert
c) Add d) Push

9) What is base class for all exception in c#?
a) System.Error b) System.CatchException
c) System.ThrowException d) System.Exception

10) Which of the following statements is true about the Dispose method?
a) It is called automatically by the garbage collector
b) It should only be called once
c) It can be called multiple times without issue
d) It should never be called explicitly

B) Fill in the blanks **06**

1) The ____ interface is the base interface for all generic collections in C#.
2) Destructors are called automatically by the ____ during garbage collection.
3) The exception that occurs when a requested file cannot be found is known as ____.
4) All classes in C# are reference types, which means they are stored on the ____.
5) To create a reference to an instance of a class, you use the ____ keyword followed by the class name.
6) The ____ method can be used to read a single character from the console.

Q.2 Solve any Eight of the following. **16**

a) What is CLR?
b) List out Access specifier.
c) What is event?
d) What is exception?
e) What is tuple?
f) What is virtual function?
g) What is nullable types?
h) What is BCL?
i) What is delegate?
j) What is ArrayList collection?

Q.3 A) Attempt any Two of the following. **10**

a) Explain LINQ architecture.
b) Write a program which implement structure for student.
c) Write a program for constructor overloading.

B) Explain properties in c#. **06**

Q.4 A) Attempt any Two of the following. **08**

a) Explain static class in C#.
b) Explain elvis operator.
c) What is boxing and unboxing.

B) Write a program for multicast delegate and explain. **08**

Q.5 Attempt any Two of the following. **16**

a) Write a program which can implement multiple interfaces.
b) Write a program which implement function overriding.
c) Explain .Net architecture with its components.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination: March/April - 2025
Advanced Python Programming (ECS1505-A)

Day & Date: Tuesday, 06-May-2025 Max. Marks: 80
Time: 09:00 AM To 12:00 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 calculator is allowed.

Q.1 A) Multiple choice questions. **10**

1) _____ makes it possible for two or more activities to execute in parallel on a single processor.
   a) Multithreading b) Threading
   c) Single Threading d) Both single and Multithreading

2) What protocol can be used to retrieve web pages using python?
   a) Urllib b) Bs4
   c) GET d) HTTP

3) Config() in python tkinter are used for _____.
   a) destroy the widget
   b) place the widget
   c) change the property of widget
   d) configure the widget

4) To create connection between the MySQL database and python application, the connection() function required 4 parameters _____.
   a) Host,server,Database,Password
   b) Host,HTTP,Database,Password
   c) Host,Username,FTP,GET
   d) Host,Username,Database,Password

5) What is Django?
   a) A programming language
   b) A database management system
   c) An operating system
   d) A web framework for python

6) The method will be executed once the thread's ____ method is called.
   a) Event Begin b) Eventstart
   c) Begin d) start

7) What provides two way communication between two different programs in a network?
   a) port b) socket
   c) HTTP d) Protocol

8) How pack() function works on tkinter widget?
   a) According to x,y coordinate
   b) According to row and column vise
   c) According to left,right,up,down
   d) None of the above

9) What does MVT stand for in Django?
   a) Model View Texture b) Module Virtual Template
   c) Model View Template d) None of these

10) In tkinter fg is _____.
   a) Background b) Foreground
   c) Both a and b d) None of these

B) Fill in the blanks **06**

1) Data structured maintained by the operating system to maintain information for each thread within a process is known _____.
2) _____ widget is used to display the graphics in the application.
3) _____ method is used to bind a socket to a specific IP and address and port number.
4) _____ is the process of converting a Python object into a byte stream or a string representation that can be easily stored or transmitted.
5) _____ widget is used to provide the slider to the user.
6) _____ geometry manager organizes the widgets in the tabular form.

Q.2 Solve any Eight of the following. **16**

a) What is widget?
b) What IP address and URL?
c) What is tkinter?
d) What is serialization?
e) What is difference between frame and canvas?
f) What is database?
g) What is thread?
h) Advantages of GUI
i) What are cookies?
j) What is use of cursor in connectivity?

Q.3 A) Attempt any Two of the following. **10**

a) What is thread synchronization?
b) What is layout? Explain types of layout.
c) Write steps of database connectivity.

B) Write a short note on Django project. **06**

Q.4 A) Attempt any Two of the following. **08**

a) What is socket? Explain server-side socket methods.
b) Explain different dialog boxes in python.
c) Explain session in Django.

B) Write a python program to apply create, read, update, delete operation on student information table. **08**

Q.5 Attempt any Two of the following. **16**

a) Explain scrollbar and spin box.
b) Explain Thread life cycle.
c) What is canvas? Explain line, rectangle, oval and polygon with example.

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination:
March/April - 2025
Theory of Computation (ECS1505-B)

Day & Date: Tuesday, 06-May-2025 Max. Marks: 80
Time: 09:00 AM To 12:00 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 calculator is allowed.

Q.1 A) Choose the correct alternative. **10**

1) _____ is a finite set of strings.
   a) Σ b) symbol
   c) language d) set

2) Transition function NFA with ε moves is _____.
   a) $đ: Q -> \Delta$ b) $đ : Q^*\Sigma -> 2^Q$
   c) $đ: Q^*(\Sigma \upsilon \varepsilon) -> 2^Q$ d) $đ: Q^*\Sigma -> Q$

3) The set of all strings over the $\sum = \{a, b\}$ which containing zero or more number of a's followed by any number of b's is denoted as
   a) a^+b^+ b) a^+b^*
   c) a^*b^* d) a^+b^*

4) The symbol which can't be replaced by any other symbol is called _.
   a) terminal b) variable
   c) production d) both a & b

5) Suffix of the string abc are _____.
   a) ε, a, ab b) ε, a, ab, abc
   c) ε, c, bc d) ε, c, bc, abc

6) A regular expression represented by regular language abc is _____.
   a) $(a + c)b^*(a + c)$ b) $(a + b + a)$
   c) $(a + b)a$ d) $a + (ba)$

7) In CNF productions in the following form _____.
   a) $A -> ABC$ or $A -> a$ b) $A -> AB$ or $A -> a$
   c) $A -> aA^*$ d) $A -> AB$ or $A -> aA$

8) One or more number of b's followed by one or more number of a's is denoted by
   a) $b^* + a^*$ b) $(b + a)^+$
   c) $b^+.a^+$ d) $(ab)^*$

9) If $L(r) = \{ccccc\}$ then r = _____
   a) a^* b) a^+
   c) a d) a^5

10) Which of the following grammar contains unit production?
   a) $S -> AB|AA, A -> a, B -> b$
   b) $S -> AA|b, A -> a$
   c) $S -> A, A -> a$
   d) $S -> a|b$

B) Answer the following. **06**

1) Language recognizer for type 1 grammar is _____.
2) A grammar is said to be _____ if it contains at more than one variable at the right side of production.
3) Define Mealy machine.
4) DPDA
5) Turing machine
6) Reflexive and transitive closure

Q.2 Answer any Eight of the following. **16**

a) Design DFA for ATM machine password.
(password contains four digits between 0 to 9)
b) Define PDM.
c) Design NFA for binary number where the first & last digits are different.
d) Define ε- production.
e) Write the CFG for $R = (0+1)1^*(0+1)$
f) Check the regular expression is equivalent or not $P(QP^*)$& $(P+Q)^*$.
g) Design DFA over $\sum = \{a, b, c\}$ which give acceptance to the string that start with 1 in between any number of 2 and end with 3.
h) Find the language for the regular expression $(01)^* + (10)^+$
i) Let $R = \{(a, b), (b, c), (c, a)\}$. Find R^+, R^*.
j) What are the applications of pumping lemma?

Q.3 A) Answer any Two of the following. **10**

a) Define FSM. Design FSM for divisibility for 3 tester.
b) Write a note on Simplification of grammar.
c) Find the CFL for the following grammar.
   i) $S -> AS|\varepsilon, A -> a,$
   ii) $S -> Aa|Bb, A -> aA|a, B -> bB|b$

B) Construct FA for following $RE(0+1)^* (0.1)^* (0+1)^*$. **06**

Q.4 A) Answer any Two of the following. **10**

a) Check whether following grammar is ambiguous or not. If ambiguous remove the ambiguity.String "$\mathrm{id} + \mathrm{id}^{*}\mathrm{id}$"
$\mathrm{E} -> \mathrm{id}^{*}\mathrm{id}|\mathrm{id} + \mathrm{id}|\mathrm{id}$

b) Convert following NFA with ε-moves to NFA without ε-moves.

Q/Σ	A	b	c	ε
$-> \mathrm{p}$	P	q	r	R
Q	Q	r	-	P
$^{*}\mathrm{r}$	R	-	p	Q

c) What is pumping lemma? Check $\mathrm{L} = \{\mathrm{a}^{\mathrm{p}}|\mathrm{p}\ \mathrm{is}\ \mathrm{prime}\}$ is regular or not.

B) Find a grammar in GNF for the given CFG. **06**
$\mathrm{E} -> \mathrm{E} + \mathrm{T}|\mathrm{T}, \mathrm{T} -> \mathrm{T}^{*}\mathrm{F}|\mathrm{F}, \mathrm{F} -> (\mathrm{E})|\mathrm{a}$

Q.5 Attempt any Two of the following. **16**

a) Construct FA for the following regular expression.
$(\mathrm{b}(\mathrm{aa})^{*}\mathrm{b} + \mathrm{ab}^{*}\mathrm{a})^{*}$

b) Construct PDA that accepts the language generated by CFG.
$\mathrm{S} -> \mathrm{S} + \mathrm{S}|\mathrm{S}^{*}\mathrm{S}|4$

c) Find CNF for the following grammar.
$\mathrm{S} -> \mathrm{A} + \mathrm{A}|\mathrm{A}^{*}\mathrm{A}|(\mathrm{A})|\mathrm{a}$

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination: March/April - 2025
Mobile Application and Development (ECS1505-C)

Day & Date: Tuesday, 06-May-2025 Max. Marks: 80
Time: 09:00 AM To 12:00 PM

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

Q.1 A) Choose the correct alternative. **10**

1) Under which of the following Android is licensed?
   a) OSS b) Sourceforge
   c) Apache/MIT d) None of the above.

2) _____ virtual machine is used in Android operating system.
   a) Dalvik Virtual Machine b) JVM
   c) PVM d) Simple Virtual Machine

3) All layout classes are the subclasses of _____.
   a) android.widget b) android.view.View
   c) android.view.ViewGroup d) None of these

4) Which of the following is not an activity lifecycle callback method?
   a) onClick() method b) onCreate() method
   c) onStart() method d) onBackPressed() method

5) In android mini activities are also known as _____.
   a) Adapter b) Activity
   c) Fragment d) Intent

6) In android _____ converts Java bytecode into Dalvik bytecode.
   a) dex compiler b) java compiler
   c) java interpreter d) None of these

7) Which of the layer is the lowest layer of android architecture?
   a) System Libraries and Android Runtime
   b) Linux Kernel
   c) Applications
   d) Applications Framework

8) Which of the following method in android is used to log debug messages?
   a) Log.r() b) Log.R()
   c) Log.d() d) Log.D()

9) _____ is the built-in database in Android.
   a) MySQL b) Oracle
   c) MongoDB d) SQLite

10) Which of the following is contained in the src folder?
   a) XML b) Java source code
   c) Manifest d) None of the above

B) Fill in the blanks **06**

1) _____ layout in android arranges its children into rows and columns.
2) ADB stands for _____.
3) The system calls _____ method when another component wants to bind with the service.
4) _____ is the first callback method that is invoked by the system during an activity life-cycle.
5) In _____ year OHA (Open Handset Alliance) is announced.
6) _____ is a view group that displays child views in relative positions.

Q.2 Solve any Eight of the following. **16**

a) What is Service component in Android?
b) What is Toast? Write its Syntax.
c) What is the role of Dalvik Virtual Machine in Android?
d) Define View and ViewGroup.
e) List out the different libraries of Android.
f) What is Web-Kit?
g) List out the different Layouts available in Android.
h) What are the dialog boxes supported in android?
i) What is Content Provider in Android?
j) What are different ways the developer can test their android app?

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

a) What is Intent? Explain the use of Intent.
b) What is Android SDK? Explain the components of Android SDK.
c) What is AndroidManifest.xml file and why do you need this?

B) Write a short note on Features of Android. **06**

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

a) Write the difference between Activities and Services in Android.
b) Explain TextView and EditText UI Components in Android.
c) Explain the strings.xml file in android.

B) Explain Linear Layout component with its attributes. **08**

Q.5 Answer the following questions. (Any Two) **16**

a) Explain Activity Life cycle in Android.
b) Explain the Architecture of Android Operating System.
c) Design a UI Layout and Write an Activity to handle the onClick() event.

Seat No.	

Set | P

B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination: March/April - 2025
Artificial Intelligence (ECS1506)

Day & Date: Wednesday, 07-May-2025 Max. Marks: 80
Time: 09:00 AM To 12:00 PM

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

Q.1 A) Multiple choice questions **10**

1) How do you represent "All dogs have tails"?
a) ∀X dog(X) → tail(X) b) ∀X dog(X) → tail(Y)
c) ∀X dog(Y) V tail(X) d) ∀X dog(X) V tail(X,Y)

2) _____ algorithm is used in the Game tree to make decisions of Win/Lose?
a) Heuristic Search b) DFS/BFS
c) Greedy Search d) Min/Max

3) In propositional logic, Let P: We should be honest, Q: We should be dedicated, R: We should be overconfident. Then 'We should be honest or dedicated but not overconfident.' is represented by?
a) ~P v ~Q v R b) P ∧ ~Q ∧ R
c) P v Q ∧ R d) P v Q ∧ ~R

4) Which condition is used cease the growth of forward chaining?
a) Atomic sentences b) Complex sentences
c) No further inference d) All of these

5) An Al agent perceives and acts upon the environment using _____
a) Sensors b) Perceiver
c) Actuators d) Both a and c

6) An Algorithm is said as complete algorithm if _____.
a) It ends with solution
b) It be gains with solution
c) It does not end with solution
d) It contain a loop

7) Which of the following is a not capability of expert system?
a) Advising b) Demonstration
c) Explaining d) Expanding

8) Which rule is applied for the Simple reflex agent?
a) Simple-action rule
b) Simple & Condition-action rule
c) Condition-action rule
d) none of the above

9) Knowledge and reasoning also play a crucial role in dealing with _____ environment.
a) Completely Observable
b) Partially Observable
c) Neither Completely nor Partially Observable
d) Only Completely and Partially Observable

10) Best-First search is a type of informed search, which uses ___ to choose the best node for expansion.
a) Evaluation function returning lowest evaluation
b) Evaluation function returning highest evaluation
c) Evaluation function returning lowest & highest evaluation
d) None of them is applicable

B) Fill in the Blanks **06**

1) Process of finding substitutions that make different logical expression look identical is called _____
2) The characteristics of the computer system capable of thinking, reasoning and learning is known as _____
3) _____ Al is able to perform dedicated task.
4) _____ do not guarantee optimal/any solutions
5) In a rule-based system, procedural domain knowledge is in the form of _____
6) The success of an intelligent behavior of a system can be measured with _____

Q.2 Solve any Eight of the following **16**

a) List some drawbacks of hill climbing process.
b) List the criteria to measure the performance of search algorithm strategies.
c) Define rational agent.
d) Define Prior probability.
e) Define Information gain.
f) What is inference engine?
g) What is the purpose of unification?
h) What are the advantages of Al?
i) What is inductive learning?
j) What are the components of a problem search space?

Q.3 A) Attempt Aany TWO of the following **10**

1) Differentiate forward chaining and backward chaining
2) Prove that following statements are true using inference rule and solve it with truth table.

   if Pravin likes a radio programme and the programme is a sponsored programme then the programme is not in the evening before 7 O'clock.
3) Explain AO* Algorithm with example.

B) Discuss Breadth First Search (BFS) algorithm with examples. **06**

Q.4 A) Attempt Any Two of the following **08**

1) Differentiate between propositional and first order predicate logic?
2) Explain knowledge acquisition Processes.
3) Represent the following sentence in predicate form:
   a) All the children like sweets
   b) Everyone is loyal to someone
   c) Every perfect square is divisible by some prime
   d) Sunny likes all kind of vegetables

B) Explain Min-Max algorithm with example. **08**

Q.5 Answer the following questions in detail. (Any Two) **16**

a) What is Expert system? Explain its components.

b) How many types of knowledge representation techniques? Explain it.

c) Consider the following facts and represent them in predicate form then prove by resolution:

1. John likes all kind of food.
2. Apple and vegetable are food
3. Anything anyone eats and not killed is food.
4. Anil eats peanuts and still alive
5. Harry eats everything that Anil eats.

Convert the facts in predicate form to clauses and then prove by resolution: "John likes peanuts".

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination:
March/April - 2025
Web technology and E-commerce – I (2013505)

Day & Date: Wednesday, 07-May-2025 Max. Marks: 70
Time: 09:00 AM To 12:00 PM

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

Q.1 Choose and write correct answer from given alternative. **14**

1) ASP stands for _____.
   a) Active Server Page b) Action Server Page
   c) Active Save Page d) Action Server Page

2) _____ is the last event of web page life cycle of ASP.Net.
   a) Page_Load b) Page_LoadComplete
   c) Page_Finish d) Page_Unload

3) What is the extension of code behind page in ASP.Net?
   a) .aspx.cs b) .aspx.vb
   c) .aspx d) Both a & b

4) The @Page directive is present on _____ extension of page.
   a) .aspx b) .ascx
   c) .master d) None of these

5) In ASP.Net only one Global.asax file present.
   a) True b) False

6) _____ property of TextBox control is used to show TextBox as a password control.
   a) TextValue b) TextMode
   c) Password d) None of these

7) Which type of validation is used to check password and confirm password in a login form?
   a) CustomValidator b) RangeValidator
   c) CompareValidator d) RequiredFieldValidator

8) _____ is the client side state management technique.
   a) ViewState b) ControlState
   c) QueryString d) All of these

9) _____ object is used to fill a DataSet/DataTable with query results in ADO.net.
   a) DataReader b) Dataset
   c) DataAdapter d) DataTables

10) _____ is concerned with the buying and selling information, products and services over computer communication networks.
   a) Commerce b) E-Commerce
   c) E-Business d) None of these

11) Which web server control is used to display advertisements in ASP.Net webpage?
   a) Image b) ImageMap
   c) Panel d) AdRotator

12) Electronic Exchange of business documents in a standard format is known as _____.
   a) E-commerce b) E-Business
   c) EDI d) None of these

13) _____ property of radio button must be set to achieve single selection from group of radio buttons.
   a) GroupName b) TextMode
   c) Checked d) SingleGroup

14) Which SqlCommand execution returns the value of the first column of the first row from a table?
   a) ExecuteNonQuery b) ExecuteReader
   c) ExecuteXmlReader d) ExecuteScalar

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

1) Advantages of E-Commerce.
2) Define FTP.
3) Explain @Import directive.
4) What is meant by Validation? List the Server side validation techniques.
5) Explain Data Reader.

B) Write Notes on. (Any Two) **06**

1) RadioButton Control
2) IIS
3) App_Themes ASP.NET application folder

Q.3 A) Answer the following. (Any Two) **08**

1) Nesting master page
2) ASP.NET Page Events
3) Client-Side versus Server-Side Validation

B) Answer the following. (Any One) **06**

1) Explain ASP.NET Page Structure.
2) Explain different types of E-Commerce.

Q.4 A) Answer the following. (Any Two) **10**

1) Explain ASP.NET Page life cycle.
2) Explain DropDownList control with example.
3) Explain .Net framework in detail.

B) Answer the following. (Any One) **04**

1) What is Application Folder? Explain App_Code folder in details.
2) Explain Global.asax with example.

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

a) What are Validation Controls? Explain types of validation controls with example.

b) What is Page directive? Explain different page directives.

c) What is state management? Explain client-side state management techniques in brief.

SLR-YB-43

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - V) (Old) (CBCS) Examination:
March/April - 2025
English (Comp.)
Business English (ECS0501)

Day & Date: Wednesday, 30-April-2025 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 Answer the following questions by choosing the correct option. 08

1) What did Della sell off to buy a gift for Jim?
a) jewellery b) fur coat
c) her hair d) none of the above

2) Who tried to stop the moving of the log?
a) Phatik's mother b) Phatik's friends
c) Phatik's brother d) Phatik's uncle

3) What instrument was the girl using in the poem "The Solitary Reaper"?
a) axe b) spade
c) knife d) sickle

4) Who snatched the queen's mirror in the poem "The Queen's Rival"?
a) her daughter b) the new bride
c) the king d) none of the above

5) What did the schoolmaster love above all?
a) discipline b) learning
c) ciphering d) debate

6) Where did the roads diverge in the poem "The Road Not Taken"?
a) on the brown road b) in the yellow wood
c) on the grey road d) on the green road

7) Let's _____ together to get a solution to this problem.
a) work on b) work upon
c) work with d) work out

8) The guard opened the door. (Change into Passive Voice)
a) The door was opened by the guard.
b) The door were opened by the guard.
c) The door is opened by the guard.
d) None of the above

Q.2 Answer the following questions in brief. (Any Four) **12**

a) Why was Della sad in the beginning of the story "The Gift of Magi"?

b) Discuss the relationship between phatic and the two women in the story "The Homecoming".

c) Describe the use of nature and harmony in the poem "The Solitary Reaper".

d) Why is the queen unsatisfied and seeks a rival?

e) How did the villagers regard the schoolmaster in the poem "The village schoolmaster"?

f) Describe the literal and metaphorical parallels in the poem "The Road Not Taken".

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

Explain the concept of 21st century skills and its importance.

OR

Describe in detail the four C's (The 4C's) in your own word.

Q.4 Discuss in detail types of 21st Century skills. **10**

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - V) (Old) (CBCS) Examination: March/April - 2025
Data Communication and Networking (ECS0502)

Day & Date: Sunday, 18-May-2025 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) 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) No 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?
   b) 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 following. **16**

1) Define Computer Network? And what are the benefits of the networks?
2) Define the term Protocol.
3) What are the Data-Rate Limits?
4) Define Analog and Digital signal?
5) What is Transmission Media?
6) Define the term Multiplexing?
7) Define the term Framing?
8) Define the term ARP?
9) Define the term Error Detection?
10) 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 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.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - V) (Old) (CBCS) Examination: March/April - 2025
Theory of Computer Science (ECS0503)

Day & Date: Sunday, 25-May-2025 Max. Marks: 80
Time: 09:00 AM To 12:00 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) Select the correct alternative. **10**

1) The grammar in which right-hand side production contains at most one non-terminal is called _____ grammar.
   a) Context free b) Context sensitive
   c) Recursive d) Regular

2) The grammar in which right-hand and left-hand side production contains one non-terminal is called _____ grammar.
   a) Context free b) Context sensitive
   c) Unit d) Regular

3) The empty string is denoted by _____.
   a) ε b) ϕ
   c) both and a and b d) none of these

4) The _____ machine has infinite tape two both sides.
   a) TM b) PDA
   c) DFA d) None of these

5) The (a/b) is a rule used for the conversion of RE to NFA with ε-moves used for _____.
   a) alternative b) closure
   c) positive closure d) series

6) NFA is more powerful than DFA.
   a) True b) False

7) In _____ machine, the transition is associated with the state.
   a) Moore b) Mealy
   c) both a and b d) none of these

8) Context-free grammar has _____ tuples.
   a) 4 b) 5
   c) 6 d) 7

9) All possible subset of the set is known as _____.
   a) subset b) power set
   c) super set d) none of these

10) A pumping lemma is used to prove that a given language is _____.
   a) irregular b) context-sensitive
   c) restricted d) none of these

B) Fill in the blanks. **06**

1) Type 2 grammar is also called as _____ grammar.
2) The ordered pair of elements is known as _____.
3) The language of PDA is _____.
4) In _____ machine, the transition is associated with the state.
5) If the rightmost and leftmost production is a single non-terminal then it is known as _____ production.
6) _____ is a collection of objects without repetition.

Q.2 Solve any Eight of the following. **16**

a) Define:
   i) Regular Expression
   ii) Language

b) State difference between DFA and NFA.

c) Find a CFG for each of the languages defined by the following regular expression.
   i) a.b*
   ii) a*.b*

d) What are the applications of the pumping lemma?

e) Explain the Turing Machine model.

f) How many ways does PDA accept-language? Give names.

g) Give the application of R.E. and F.A.

h) Define Turing Machine.

i) Why do we require NFA with ε-moves?

j) Give operations on set.

Q.3 A) Attempt any Two of the following. **10**

i) Design a DFA that accepts number is even or odd.

ii) Design a Mealy machine for 1's complement of the binary number and convert it into a Moore machine.

iii) Convert the following right linear grammar to equivalent left linear grammar

$$S \longrightarrow 0A \mid 1B$$
$$A \longrightarrow 0C \mid 1A \mid 0$$
$$B \longrightarrow 1B \mid 1A \mid 0 \mid 1A \mid 1$$
$$C \longrightarrow a$$

B) Construct F.A. equivalent to R.E. **06**

$$(a/b)^* \ (aaa + bbb)^*(a/b)^*$$

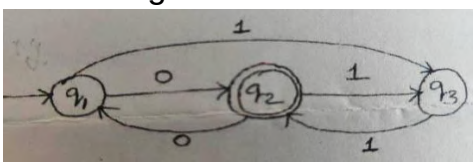
Q.4 A) Attempt any Two of the following. **08**

i) Design a DFA which accepts string either ending with ab or bc over $\sum = \{a, b, c\}$.

ii) Check whether the following grammar is ambiguous or not; if ambiguity is found remove the ambiguity and rewrite an equivalent grammar.

$E \longrightarrow E + E^{*}E|id$

iii) Find out RE for the following DFA



B) What is pumping lemma? Using the pumping lemma check $\{a^n b^{n+1} | n >= 1\}$ is regular or not. **08**

Q.5 Attempt any Two of the following. **16**

a) Convert the following right linear grammar to equivalent left linear Grammar

$$S \longrightarrow 0A \mid 1B$$
$$A \longrightarrow 0C \mid 1A \mid 0$$
$$B \longrightarrow 1B \mid 1A \mid 0 \mid 1A \mid 1$$
$$C \longrightarrow 1$$

b) Construct TM for $L = \{a^n b^n | n >= 1\}$

c) Design a PDA to check whether a given string over {a, b} ends in abb.

Seat No.		Set	P

B.Sc. (E.C.S.) (Semester - V) (Old) (CBCS) Examination: March/April - 2025
Visual Programming (ECS0504)

Day & Date: Monday, 05-May-2025 Total Marks: 80
Time: 09:00 AM To 12:00 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) Which of the classes provide the operation of reading from and writing to the console in C#.NET?
a) System.Array b) System.Output
c) System.ReadLine d) System. Console

2) The data members of a class by default are _____.
a) protected, public b) private, public
c) public d) private

3) A method _____ an exception when that method detects the problem has occurred.
a) Try b) Catch
c) Throws d) All

4) Which of these access specifier should be used for Main( ) method ?
a) Private b) Protected
c) Public d) None of above

5) Indexer is declared using _____ keyword.
a) new b) base
c) get d) this

6) _____ method used to block the current thread for the specified time.
a) Abort() b) Sleep()
c) Join() d) Start()

7) Which of the given statements are valid about generics in .NET Framework?
a) generics are useful in collection classes in .NET framework
b) generics delegates are not allowed in C#.NET
c) generics is a not language feature
d) all of the mentioned

8) From which of these classes, the character-based output stream class Stream Writer is derived?

a) TextWriter b) TextReader
c) Character Stream d) All of the mentioned

9) ____ method used for destroying thread.

a) Start b) Abort
c) Suspend d) Sleep

10) ____ specification defines a set of rules that enables interoperability in .net framework.

a) CTS b) MSIL
c) CLS d) CLR

Q.1 B) Fill in the blank: **06**

a) Unboxing is _____ type of conversion.
b) Every class directly or indirectly extends the _____ class.
c) C# has _____ operator, useful for making two-way decisions
d) _____ preprocessor directive allows creating a compound conditional directive, along with #if in C#
e) The default value of integer type in C# is _____.
f) In which of the _____ collections is the I/O based on a key?

Q.2 Solve any Eight of the following. **16**

a) Differentiate between value type and reference type
b) Explain Sealed Class.
c) Define Constructor.
d) Explain Enumerations.
e) Define Interfaces
f) What is the use of throw keyword?
g) What is function overloading?
h) Define Delegate.
i) What is CLR?

Q.3 A) Attempt any Two of the following. **10**

a) Array List Collection
b) Stream classes
c) What is abstract method? Explain with suitable Example.

B) Short note on parameter passing techniques. **06**

Q.4 A) Attempt (Any Two) of the following. **08**

a) Explain CLR in detail
b) Explain thread life cycle in detail
c) Explain .Net framework with suitable block diagram in detail.

B) What is constructor? Explain constructor overloading with example. **08**

Q.5 Attempt any Two of the following. **16**

a) What is exception? Explain try, catch and finally block with example.

b) Design Window form which insert, update, and delete record in table.

c) What is interface? Write a C# program to implement multiple inheritance.

Seat No.	

Set | P

B.Sc. (E.C.S.) (Semester - V) (Old) (CBCS) Examination:
March/April - 2025
Advanced Java (ECS0505)

Day & Date: Tuesday, 06-May-2025 Max. Marks: 80
Time: 09:00 AM To 12:00 PM

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

Q.1 A) Multiple choice questions. **10**

1) What is javax.servlet.Servlet?
   a) interface b) abstract class
   c) concreate class d) None of the above

2) A servlet maintain session in _____.
   a) Servlet Context b) Servlet container
   c) Servlet response heap d) Servlet request heap

3) JSTL stands for _____.
   a) JavaServer Pages Standard Tag Library
   b) JSP Tag Library
   c) Java Standard Tag Library
   d) None of the above

4) Which of the following classes in Java contains swing version of an applet?
   a) JButton b) JCheckBox
   c) JApplet d) AbstractButton

5) In Java swing, which of the following components are represented by a rectangular area in which a component may be viewed?
   a) Scroll pane b) Tabbed pane
   c) Combo boxes d) None of these

6) How constructor can be used for a servlet?
   a) Initialization
   b) Constructor function
   c) Initialization and Constructor function
   d) Setup() method

7) 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)

8) What is the name of the Swing class that is used for frames?
   a) Window b) Frame
   c) JFrame d) SwingFrame

9) Which cookie it is valid for single session only and it is removed each time when the user closes the browser?
   a) Persistent Cookie b) Non-persistent Cookie
   c) Both a and b d) None of these

10) Parameterized queries can be executed by?
   a) ParameterizedStatement
   b) PreparedStatement
   c) CallableStatement and Parameterized Statement
   d) All the Above

B) Fill in the blanks **06**

1) _____ Method of DatagramPacket is used to find the port number.
2) JSP stands for _____.
3) _____ action variable is used to include a file in JSP.
4) The Java _____ pecification defines an application programming interface for communication between the Web server and the application program.
5) _____ packages contain classes and interfaces for networking.
6) All collection classes are available in _____ package.

Q.2 Solve any Eight of the following. **16**

a) What is the JDBC Statement?
b) Write two uses of Drivers?
c) What is mean by JFrame and JComponent in Swing?
d) What is mean by classes and interfaces in java networking?
e) Define the term Servlet.
f) What are Multithreading in Servlets?
g) What is mean by Prepared Statements?
h) Define ResultSet Class in database.
i) What is mean by Session Object in JSP?
j) What is mean by Swing?

Q.3 A) Attempt any Two of the following. **10**

a) Explain TCP/IP Programming with example in java networking.
b) Write different Steps for Connecting to databases in JDBC.
c) Explain HTTP Request Model in Servlet?

B) Short note on. **06**

a) HTTP Request Methods
b) Basic JSP Lifecycle

Q.4 A) Attempt any Two of the following. **08**

a) Explain Check Boxes and Radio buttons with example in swing.

b) Explain Different JSP Elements.

c) Explain Callable Statements with Example in database.

B) Explain Servlet Architecture with net labeled diagram. **08**

Q.5 Attempt any Two of the following. **16**

a) Explain Types of Drivers in database in detail.

b) Define JSP. Explain The Request Object and The Response Object with example in JSP?

c) Explain Handling HTTP Requests and Responses using GET and POST methods in Servlet?

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - V) (New) (CBCS) Examination: March/April - 2025
Advanced Python Programing (ECS0506)

Day & Date: Wednesday, 07-May-2025 Max. Marks: 80
Time: 09:00 AM To 12:00 PM

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

Q.1 A) Choose correct alternatives. **10**

1) _____ widget is used to accept single-line text input in tkinter.
a) Label b) Button
c) Entry d) Text

2) ____ method is used to bind a socket to an IP address and port.
a) bind b) listen
c) connect d) none of these

3) In Python, to send an email, which module is commonly used?
a) email b) smtp
c) smtplib d) mail

4) _____ module in Python is commonly used for data visualization.
a) Pandas b) numpy
c) matplotlib d) None of these

5) Which Python library is primarily used for GUI development?
a) Tkinter b) Pandas
c) Numpy d) none of these

6) Which of the following is an XML parser used in Python?
a) BeautifulSoup
b) json
c) xml.etree.ElementTree
d) pandas

7) _____ module is commonly used for handling data structures like Series and DataFrame.
a) numpy b) pandas
c) matplotlib d) sypy

8) _____ method is used to visualize univariate data in matplotlib.
a) scatter() b) boxplot()
c) hist() d) lineplot()

9) Python module is commonly used for socket programming.

a) Socket b) Pandas
c) os d) Numpy

10) Which method is used by a client to send data to the server?

a) Socket.bind() b) socket.listen()
c) socket.send() d) socket.accept()

B) Fill in the Blanks **06**

1) In multithreading, _____is the mechanism used to ensure that only one thread can access shared resources at any given time.
2) To create a new thread, you can subclass the _____ class and override its run() method.
3) To create a one-dimensional labeled array in pandas, we use the _____ data structure.
4) To export data from a pandas DataFrame to an Excel file, the method used is _____
5) A _____ plot is useful for displaying the relationship between two continuous variables in a dataset.
6) A _____ is a container widget in Tkinter that allows you to organize other widgets, such as labels, buttons, and entries.

Q.2 Answer the followings (Any Eight): **16**

a) Explain Entry widget.
b) Define IP address.
c) Write a short note on Event.
d) What is HTTP?
e) What is CGI?
f) What is Series in python?
g) Write a note on Histogram.
h) Define multithreading.
i) Write a note on RLock.
j) What is server socket?

Q.3 A) Answer the followings (Any two) **10**

1) Explain CGI architecture with diagram.
2) Write a program to demonstrate use of Entry.
3) Explain XML parser with example

B) Explain methods of Lock and RLock. **06**

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

1) Write advantages of GUI programming.
2) Explain color object with different options.
3) Write a note on matplotlib module in python.

B) Write a python program to update data into student table. **08**

Q.5 Answer the following (Any Two) **16**

a) Explain CGI Environment Variables.

b) Write a GUI program for addition of two numbers.

c) What is Thread synchronization? Which are methods for Thread synchronization?

Seat No.	

Set | P

B.Sc. (E.C.S.) (Sem - VI) (New) (CBCS) Examination: March/April - 2025
English (Comp.)
Business English (ECS1601)

Day & Date: Wednesday, 30-April-2025 Max. Marks: 40
Time: 03:00 PM To 05:00 PM

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

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

1) Lal Bahadur Shastriji was born in _____.
a) Mughalkot b) Mughalsarai
c) Mughalsar d) Malad

2) Who did the wife write a petition to?
a) Chief of police b) Chief Justice
c) Czar d) Church

3) Whose grandeur does the poet refer to?
a) dooms of mighty dead b) tombs of our ancestors
c) grand palaces d) grand towers

4) Robert Browning Poem “The Pied Piper of Hamelin” published in Dramatic Lyrics in _____.
a) 1841 b) 1842
c) 1843 d) 1844

5) In which year was Rabindranath Tagore awarded the Nobel Prize in Literature?
a) 1905 b) 1913
c) 1921 d) 1930

6) In “Tree at My Window”, what do the window and the tree symbolize together?
a) A closed heart
b) Barrier between man and machine
c) The link between the inner world and the outer world
d) A dream and its destruction

7) He said, “I will go to the market.”
(Change the sentence direct to indirect speech)
a) He said that he will go to the market.
b) He said that he went to the market.
c) He said that he would go to the market.
d) He said that I would go to the market.

8) Which of the following is an adverb?

a) Slowly b) Book
c) Happy d) Teacher

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

a) Discuss the difficulties of faced by young students.
b) Sketch the character Aksionov.
c) Write in brief about the poem “Tree at my Window”.
d) Sketch the character Duchess.
e) What are the things of beauty mentioned in the poem?
f) Write a summary of the poem “Endless Time”.

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

a) Write some examples of technology literacy in everyday life?
b) Define literacy skills in your own words. Give an example of a situation in which you used different types of literacy skills.

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

What are the key elements of ‘Life Skills (FLIPS)’? Explain each in detail.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) : Examination March/April - 2025
Network Security (ECS1602)

Day & Date: Sunday, 18-May-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Draw neat labelled diagram wherever necessary.
3) Figure to the right indicates full marks.

Q.1 A) Multiple choice questions: **10**

1) Another name for Message authentication codes is ____.
a) Cryptographic code break
b) Cryptographic code sum
c) Cryptographic check sum
d) Cryptographic check break

2) Network Security provides authentication and access control for resources.
a) True b) False

3) Symmetric key cryptography is also known as ____key cryptography.
a) Public b) Private
c) Personal d) none of these

4) Which of the following is an authentication method?
a) Secret question b) Biometric
c) Password d) All of the above

5) Which of the following is an objective of network security?
a) Confidentiality b) Integrity
c) Availability d) All of the above

6) Which of these is a part of network identification?
a) User ID b) Password
c) OTP d) Fingerprint

7) ____ Is a strong password.
a) 15August23 b) Pune88
c) P@assl23 d) ! August

8) The process of verifying the identity of a user.
a) Authentication b) Identification
c) Validation d) Verification

9) Cryptography can be divided into ____ types.

a) 5 b) 4
c) 3 d) 2

10) When plain text is converted to unreadable format, it is termed as ____.
a) Rotten text b) raw text
c) cipher-text d) cipher-text

Q.1 B) Fill in the blank. **06**

a) ____ play an important role in the use of encryption for various network security applications.
b) ____ defined as a network security device that allows or rejects network access between an untrusted zone and a trusted zone.
c) Image Steganography is defined as a type of steganography which involves caching dispatches or secret information within.
d) ____ can be used to protect any document on the Internet.
e) An algorithm in encryption is called ____.
f) The process of transforming unreadable text into plain text is called ____.

Q.2 Answer the following: (Any Eight) **16**

a) Define Cipher Text?
b) Define Decryption?
c) What is Network Security?
d) Stand for MAC&PGP.
e) What is Kerberos?
f) What are the type Principle of Security?
g) What is Authentication?
h) What are the type of Security Attacks?
i) What is honey pots?
f) What is Transposition technique?

Q.3 A) Answer the following: (Any Two) **10**

1) What is Security? What are the need for Security?
2) Explain RSA Algorithms in details.
3) Define Biometric? Explain Biometric Authentication.

B) Short note on message digests. **06**

Q.4 Answer the following: (Any Two) **16**

a) What is Firewall? Explain type of firewall?
b) Explain type of Internet Security protocol.
c) Explain Substitution Technique in Detail.

Q.5 Answer the following: (Any Two) **16**

a) Define the User Authentication? Explain smart card in details.
b) What is Cryptography? Explain cryptography with Asymmetric key encryption.
c) What is digital signature? Explain its use with the help of example.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination: March/April - 2025
Data Warehousing and Data Mining (ECS1603)

Day & Date: Sunday, 25-May-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

Q.1 A) Select the correct alternative. **10**

1) Consider discretizing a continuous attribute whose values are listed below: 3, 4, 5, 10, 20, 32, 43, 44. 46, 52, 59, 61. Which of the following number of bins is not possible for using equi-depth bins?
   a) 2 b) 4
   c) 5 d) 3

2) Web mining helps to improve the power of web search engine by identifying _____.
   a) Web pages and classifying the web documents
   b) XML documents
   c) Text documents
   d) Database

3) Suppose the data for analysis includes the attribute age. The age values are: 13, 15, 16,16, 19, 20, 23, 29, 35, 41, 44, 53, 62, 69, 72. Using min-max normalization, what is the transformed value of 45 for age onto the range [0,1]?
   a) 0.457 b) 0.542
   c) 0.623 d) 0.724

4) Which of the following activities is a data mining activity?
   I) Computing the total sales of a company.
   II) Predicting the outcomes of tossing a (fair) pair of dice.
   III) Predicting the future stock price of a company using historical records.
   IV) Dividing the customers of a company according to their demographics.
   a) I and II b) II and IV
   c) I and III d) III and IV

5) Overfitting occurs when a model _____.
   a) Underperforms on both training and test data.
   b) Performs exceptionally well on training data but poorly on test data.
   c) Learns too little from the training data.
   d) Is too simple to capture underlying patterns in the data.

6) While analyzing customer feedback about product, you identify five key customer groups that are important for your analysis. To find customers who are most similar to each of these groups, _____ is the best algorithm for this study.
   a) Linear regression b) Decision tree
   c) K-nearest neighbours d) Association rules

7) Fact tables are _____ but star schema have _____ type of relationship.
   a) completely demoralized, many-to-many
   b) completely normalized, one-to-many
   c) partially demoralized, one-to-one
   d) partially normalized, many-to-one

8) If m and n points are direct density reachable if neighbourhood of a _____ and density connected if they are _____ from a core point.
   a) border point, epsilon distance
   b) border point, density reachable
   c) epsilon distance, density connected
   d) core point, density reachable

9) The _____ OLAP operation allows for a deeper analysis by transitioning from summarized data to detailed data, while _____ rotates the data axis to examine the data from various perspectives.
   a) Drill-down, Slice b) Slice, Dice
   c) Drill-down; Pivot d) Pivot, Drill-down

10) In Bayes Theorem a Class conditional probability is called as _____.
   a) Evidence b) Likelihood
   c) Prior d) Posterior

B) Fill in the blank/Definition/One sentence answer/ One word answer/ Give the name/Predict the product etc. **06**

1) In an ANN, each input signal is multiplied by the _____ associated with that connection, and this weighted input is then passed through an _____ function to generate the output.
2) _____ Clustering methods require a merging approach.
3) After cleaning and integrating data from heterogeneous sources, the data is stored in _____.
4) If T consist of 500 transactions, 200 transaction contain bread, 300 transaction contain jam, 100 transaction contain both bread and jam. Then the support of bread and jam is _____%.
5) If _____ is performed on a record data matrix, the transformed data matrix has reduced number of columns.
6) A telecom company wants to part their customers into different groups in order to send suitable subscription offers, this is an example of _____.

Q.2 Solve any Eight of the following. **16**

a) What is a key disadvantage of a snowflake schema compared to a star schema?

b) Justify the following situation as a classification or prediction task and why?
"An airport security screening station wants to determine if passengers are criminals or not by scanning and storing their faces in a database."

c) How does a Random Forest differ from a Decision Tree?

d) List out different distance measures for calculating the distance between clusters in clustering analysis.

e) What is staging area?

f) What is noisy data? How to handle it.

g) A retail company predicts sales for a product based on historical data. After testing the model, the actual and predicted sales for 5 days are provided. Calculate Mean squared error.

Day	Actual Sales (units)	Predicted Sales (units)
Mon	100	110
Tue	150	140
Wed	200	190
Thu	180	175
Fri	220	210

h) What are the key components of a data warehouse?

i) What is the need of outlier detection? List two applications of it.

j) Consider the price of 6 products in online store as 1000, 600, 850, 920, 420 and 120. Normalize the data by Using Min-Max Normalization with the range [0,1].

Q.3 A) Answer of the following. (Any Two) **10**

1) An e-commerce platform has data on 400 users who interacted with product recommendations. Out of these 400 users, 180 actually purchased the recommended products. The recommendation system suggested products to 150 users. Among these, 120 users made purchases. Construct the confusion matrix and calculate the accuracy, precision, and recall, error rate.
2) Explain KDD Process in detail with neat diagram.
3) How does back propagation algorithm works? Explain it?

B) What is Ada boost algorithm? How it is used to increase the accuracy of model? Explain. **06**

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

1) Using Equi-depth binning method, partition the data given below into 3 bins. 95,96,28,56,67,107,109,70, 75,78,89,26,27,89,90,91,70,94. To perform smoothing by bin means, median and boundaries.
2) Explain Support Vector Machine (SVM) algorithm in detail.
3) What is clustering analysis? Distinguish Agglomerative hierarchical from divisive hierarchical clustering.

B) Apply Apriori algorithm to discover strong association rules. Assume that min support=40% and min confidence=70%. Generate association rules for frequent itemsets. Calculate confidence of each rule and identify all strong association rules. **08**

Image ID	Image
1	{Beach, Sunshine, Holiday}
2	{Sand, Beach}
3	{Sunshine, Beach, Ocean}
4	{Ocean, People, Beach, Sunshine}
5	{Holiday, Sunshine}

Q.5 Answer of the following. (Any Two) **16**

a) After the parliament passed a bill on stringent traffic regulation, the following data was captured on a busy and representative traffic signal for a specific period. Consider Crash Severity as the class of interest.

Weather	Driver Condition	Rule Violation	Seat Belt	Crash Severity
Good	Alcohol	Speed	No	Major
Bad	Sober	None	Yes	Minor
Good	Sober	Red Signal	Yes	Minor
Good	Sober	Speed	Yes	Major
Bad	Sober	Other Rules	No	Major
Good	Alcohol	Red Signal	Yes	Minor
Bad	Alcohol	None	Yes	Major
Good	Sober	Other Rules	Yes	Major

Using decision tree algorithm, find out

1) What is the entropy of entire dataset?
2) What is first attribute that will be used for the splitting? And why

b) Explain KNN algorithm and its advantages and disadvantages with example.

c) To apply DBSCAN clustering on the given customer ratings for Product A and Product B with epsilon $(\varepsilon) = 3.5$ and MinPts = 3.

1) Calculate the Euclidean distance matrix for the customers.
2) Identify core and neighboring points based on the distance and given parameters.

Customer	Product A	Product B
A	5	7
B	8	4
C	3	3
D	4	4
E	3	7
F	6	7
G	6	1
H	5	5

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination: March/April - 2025
ASP.Net Core MVC (ECS1604)

Day & Date: Monday, 05-May-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

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

1) What is the full form of MVC in ASP.NET Core MVC?
   a) Model View Control b) Main Visual Control
   c) Model View Controller d) Master View Component

2) Which of the following is not a purpose of appsettings.json file?
   a) Storing configuration settings like connection strings
   b) Defining middleware sequence
   c) Setting environment specific configurations
   d) Reading custom application settings

3) What is the primary purpose of the _ViewImports.cshtml file?
   a) To define the layout for the application.
   b) To import namespaces and tag helpers globally for views.
   c) To register services for dependency injection.
   d) To configure routing for the application.

4) A Partial View in ASP.NET Core MVC is primarily used for: _____.
   a) Defining the overall structure of a page
   b) Rendering a reusable portion of a view
   c) Handling form submissions
   d) Performing complex business logic

5) What is the primary role of the DbContext class in Entity Framework Core?
   a) To configure middleware in the ASP.NET Core pipeline
   b) To handle user authentication and authorization
   c) To manage database connections and perform CRUD operations
   d) To define routing rules for controllers and actions

6) Which Data Annotation Attribute allows you to specify the maximum length of a string property that will be enforced in the database?
   a) [StringLength] b) [MaxLength]
   c) [Length] d) [MaximumLength]

7) Which HTML Helper is used to generate an HTML <label> element that is typically associated with an input field?
   a) Html.Label() b) Html.TextBox()
   c) Html.EditorFor() d) Html.Display ()

8) In EF Core which method is used to add a new entity to the database context _____.
   a) Update b) Insert
   c) Add d) Save

9) Which interface represents the Dependency Injection container in ASP.NET Core MVC?
   a) IServiceProvider b) IServiceCollection
   c) IDependencyResolver d) IContainer

10) What is the purpose of routing in asp.net mvc?
   a) To map URL's to controller action
   b) To manage session state
   c) To authenticate users
   d) To validate user input

B) Fill in the blanks. **06**

1) _____ is the default view engine used in ASP.NET Core MVC.
2) _____ namespace in ASP.NET Core MVC primarily contains the classes and attributes for creating and using Tag Helpers.
3) _____ HTML helper is used to generate a DropDownList in strongly typed view.
4) Entity Framework Core (EF Core) is developed by _____.
5) _____ method of the Program.cs (or Startup.cs in older versions) file is the ASP.NET Core request pipeline configured.
6) PRG stands for _____.

Q.2 Answer the following questions. (Any Eight) **16**

a) Define Model in ASP.NET Core MVC
b) What is a Migration in EF Core?
c) What is the purpose of the wwwroot folder?
d) Define HTML Helpers in ASP.NET Core MVC.
e) What is the difference between Code First and Database First approaches.
f) What is the use of the @model directive in a Razor view?
g) Define Session State in ASP.NET Core.
h) List any two validation attributes used in Data Annotation.
i) What is the difference between ViewBag and ViewData?
j) What is Dependency Injection in ASP.NET Core?

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

1) Write a program to demonstrate the use of custom model binding.
2) What is the Database First Approach in EF Core? Explain with steps.
3) Explain Razor syntax with example.

B) Explain Tag Helpers with suitable example. **06**

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

1) Explain the architecture of ASP.NET Core MVC. Describe the roles of Model, View, and Controller with an example.
2) Write a program to demonstrate model binding using [FromForm] and [FromQuery].
3) Create a Web Application to check given number is Armstrong or Not.

B) Create a form using HTML Helpers and validate it using Data Annotations. **08**

Q.5 Answer the following questions. (Any Two) **16**

a) Create a simple ASP.NET Core MVC application to perform CRUD operations on a “Student” model using Entity Framework Core.

b) Explain how routing works in ASP.NET Core MVC. Differentiate between conventional and attribute routing.

c) Describe the steps involved in creating a new ASP.NET Core MVC application using the CLI or Visual Studio, and explain how the application is launched and runs.

Seat No.	

Set | P

B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination: March/April - 2025
React JS (ECS1605-A)

Day & Date: Tuesday, 06-May-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

Q.1 A) Multiple choice questions. **10**

1) What is the correct syntax for arrow function?
a) () b) =>
c) ()=> d) >=()

2) Which method is used to render a component in React?
a) render() b) React.render()
c) ReactDOM.render() d) component.render()

3) What is the correct syntax for embedding a JavaScript expression in JSX?
a) {expression} b) ${expression}
c) $expression d) #{expression)

4) Which of the following is the correct way to update state in React?
a) this.state = newState; b) this.setState(newState);
c) this.updateState(newState); d) this.changeState(newState);

5) What is React Router used for a React application?
a) Managing state within components
b) Routing between different components based on URL
c) Styling components
d) None of the above

6) What is the correct way to link to another page in React Router?
a) <Links to="/home" /> b) <Link to="$home"$ >
c) <Link to="/home" /> d) <Link path="/home" />

7) What is the correct order of lifecycle phases in a React class component?
a) Mounting -> Updating -> Unmounting
b) Updating -> Mounting -> Unmounting
c) Unmounting -> Mounting -> Updating
d) None of the above

8) Which of the following is used to define a route in React Router?

a) <Route> b) <Link>
c) <BrowserRouter> d) <Redirect>

9) What is the correct way to bind a method to a component instance in a React class component?

a) this.method = this.method.bind(this) in the constructor
b) this.method.bind(this) in the render method
c) Using an arrow function in the method definition
d) All of the above

10) Which of the following is NOT a valid React hook?

a) useState b) useEffect
c) useReducer d) useStore

B) **Fill in the blank/Definition/One sentence answer/ One word answer/ Give the name/Predict the product etc.** **06**

1) _____ hook is used to add state to a functional component in React.
2) JSX stands for _____.
3) A functional component in React is _____.
4) The _____ Hook allows you to persist values between renders.
5) How do you define an event handler in JSX for a button click?
6) Which hook is used for managing side effects in React?

Q.2 **Solve any Eight of the following.** **16**

a) What are React components?
b) What does the use Effect hook do in React?
c) What is the functional component?
d) What is use of props in React?
e) What is a controlled component in React?
f) What are the advantages and disadvantages of ReactJS??
g) What is a Hook?
h) What is Custom hooks in React?
i) What is the arrow function in React?
j) what is conditional rendering?

Q.3 **A)** **Attempt any two of the following.** **10**

a) What are the features of ReactJS?
b) Write a program To create an application with multiple page routes.
c) What is conditional rendering.

Q.3 **B)** Short note React Lists and Keys. **06**

Q.4 A) Attempt any Two of the following. **08**

1) Explain Component life cycle.

2) Explain Stateless and statefull components with example.

3) Explain child component with example.

Q.4 B) Explain State Management in ReactJS. **08**

Q.5 Attempt any Two of the following. **16**

a) What is Hooks? explain Different types of hooks.

b) Explain event handling in ReactJS with example.

c) Write a program to create a Form with following steps Using React JS

1) First use create-react-app command to set up the react project.
2) HTML From to create the form structure.
3) HTML Input of type text, textarea, number, radio, checkbox and select-options and add respective labels for the inputs.
4) HTML Button for reset and submit actions.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination: March/April - 2025
Compiler Construction (ECS1605-B)

Day & Date: Tuesday, 06-May-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

Q.1 A) Multiple choice questions. **10**

1) Which of the following is not an intermediate code form?
   a) Postfix notation b) Syntax trees
   c) Three-address codes d) Quad

2) Which of the following features is related to bottom-up parsing?
   a) Shift b) Reduce
   c) Precedence relation d) All of the above

3) The compiler process can be considered as a series of sub-processes called _____.
   a) series b) subprocess
   c) phases d) none of these

4) The attributes that can be computed from the values of the characteristics of the siblings and parents of that node is called a _____.
   a) synthesized b) inherited
   c) both a & b d) none of these

5) The _____ is a technique in the compiler used to determine if storage location may be accessed more than one way.
   a) Symbol table b) Alias analysis
   c) Syntax analysis d) Semantic analysis

6) In the run-time environment, each node represents _____ of a procedure.
   a) Definition b) declaration
   c) activation d) All of the above

7) In _____ the parser discards enough tokens to reach a decent state on the declaration of errors.
   a) Panic mode recovery b) parser level recovery
   c) both a and b d) None of these

8) An important component of semantic analysis is _____.
   a) code checking b) type checking
   c) flush checking d) All of the above

9) A rightmost derivation in reverse is obtained by _____.
   a) handle b) handle pruning
   c) grammar d) None of these

10) _____ is the process where the stream of characters making up the source program is read from left to right and grouped into tokens.
   a) Lexical analysis b) Diversion
   c) Modelling d) None of the above

B) Fill in the blank. **06**

1) The graph that shows basic blocks and their successor relationship is called_____.
2) The _____ should be able to catch syntactic errors.
3) An intermediate code form is _____.
4) A _____ compiler is also called a residential compiler.
5) A computer uses a _____ to keep track of scope and binding information about names.
6) A compiler that runs on one machine and produces code for a different machine is called _____.

Q.2 Solve any eight of the following.

a) Define: 1) Natural loop 2) Pattern **16**

b) Write a short note on input buffering.

c) What are the issues in code generation?

d) What are the actions available in the shift-reduce parser?

e) What is left recursion? How is it eliminated?

f) What is the difference between CLR and LALR?

g) Construct a DAG for Expression? i:= i + 10.

h) Why is there a need for intermediate code?

i) Why is there a need for code optimization?

j) What is back patching?

Q.3 A) Attempt any two of the following. **10**

1) Construct DAG for Expression? (a+b) * a * a(a+b).
2) What is compiler? What are the types of compiler?
3) What is parameter? Explain the parameter passing techniques.

B) Find out a triple, quadruple, and indirect triple for the following. **06**
P=Q+R*S/T+-U*-V

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

1) What is a handle? Explain how to handle pruning with the help of an example.
2) Explain peephole optimization in detail.
3) Check whether the following grammar is LL (1) or not.
   S→AaAb | BbBa, A→ ε, B→ ε

B) Construct an annotated parse tree for 3*5+4n using the following grammar rules: **08**

	PRODUCTION	SEMANTIC RULES
1)	$L \rightarrow E$ **n**	$L.val = E.val$
2)	$E \rightarrow E_1 + T$	$E.val = E_1.val + T.val$
3)	$E \rightarrow T$	$E.val = T.val$
4)	$T \rightarrow T_1 * F$	$T.val = T_1.val \times F.val$
5)	$T \rightarrow F$	$T.val = F.val$
6)	$F \rightarrow (E)$	$F.val = E.val$
7)	$F \rightarrow$ **digit**	$F.val =$ **digit**.lexval

Q.5 Attempt any two of the following. **16**

a) What is a compiler? Explain the phases of a compiler.

b) Construct an SLR(1) parsing table for the following grammar:
E→E+T|T, T→TF|F, F→a|b

c) Why is there a need for storage allocation? Explain storage allocation strategies.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination:
March/April - 2025
Internet of things (ECS1605-C)

Day & Date: Tuesday, 06-May-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

Q.1 A) Multiple Choice questions. **10**

1) _____ of the following is not an IoT device.
   a) Table b) Laptop
   c) Arduino d) Tablet

2) _____ is the full form of IoT.
   a) Internet of Technology b) Incorporate of Things
   c) Internet of Things d) Interchange of Things

3) How many number of elements in the Open IoT Architecture?
   a) 3 elements b) 7 elements
   c) 8 elements d) 6 elements

4) M2M is mostly _____.
   a) Hardware centric b) Software centric
   c) Both d) None of the above

5) The Raspberry Pi is defined as the _____?
   a) Mini Computer b) Micro Computer
   c) Mega Computer d) Nano Computer

6) Which of the following microcontroller architectures is used in Raspberry Pi?
   a) AVR b) ARM
   c) PIC d) x86

7) An example of an IoT application in food industry is:
   a) Smart irrigation b) Cold chain monitoring
   c) Collision detection d) Retail tagging

8) The communication network in M2M can be used _____.
   a) Wireless medium b) Wired medium
   c) Both a and b d) None of the above

_____ is the use of fog computing.
   a) Big Data b) Internet of Things
   c) Smart Cities d) All of the above

10) Which of the following is NOT a component of the IoT ecosystem?
a) Sensor b) Actuator
c) Operating System d) Network

B) Fill in the blank. **06**

1) _____ is an open-source platform developed by OIC.
2) The full form of WSN is _____.
3) RFID is a _____ technology.
4) Zigbee architecture is a combination of _____ layers.
5) _____ sensor can detect nearby objects.
6) _____ layer is used for wireless connection in IoT devices.

Q.2 Solve any Eight of the following. **16**

a) Define IOT.
b) List any four characteristics of IOT.
c) What are microcontrollers?
d) Define smart objects.
e) What is mean by SCADA?
f) List the advantages of Modbus.
g) What are the different components used in IOT?
h) What is Raspberry Pi?
i) List Advantages of PWM used in IOT?
j) What is cloud computing?

Q.3 A) Answer of the following. (Any Two) **10**

1) What are the different elements of an IOT ecosystem? Explain it.
2) Explain RFID protocol in detail.
3) Explain the Modbus protocol and its applications.

B) Write a note on challenges in IOT. **06**

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

1) Describe various types of sensors used in IoT
2) Write a note on ARM.
3) Explain the IoT Stack in detail with an appropriate diagram.

B) Explain fog computing in detail. **08**

Q.5 Answer of the following (Any Two) **16**

a) Explain IOT architecture in detail.
b) Describe the architecture and applications of Raspberry Pi.
c) Explain health care and water quality application of IOT.

Seat No.	

Set | P

B.Sc. (E.C.S.) (Semester - VI) (New) (CBCS) Examination: March/April - 2025
Mobile Application Development (ECS0606)

Day & Date: Wednesday, 07-May-2025 Max. Marks:80
Time: 03:00 PM To 06:00 PM

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

Q.1 Select the correct alternative. **10**

1) Which of the following is the core component of Android OS?
a) Linux Kernel b) Windows Kernel
c) Mac Kernel d) Solaris Kernel

2) Android applications are written using which programming language?
a) Python b) Java
c) C# d) Kotlin

3) What is the full form of AVD?
a) Android Virtual Device b) Advanced Virtual Device
c) Android Visual Device d) Advanced Visual Device

4) In Android, which component is used for background tasks?
a) Activity b) Service
c) Content Provider d) Broadcast Receiver

5) What is the function of AndroidManifest.xml file?
a) User Interface Design b) Configuration Settings
c) Declaring Application Components d) None of these

6) Which view is used to display a list of scrollable items in Android?
a) TextView b) ListView
c) GridView d) ImageView

7) SQLite is used in Android for:
a) Web Browsing b) Audio Recording
c) Database Management d) Sending SMS

8) What does an implicit intent do?
a) Directs to a specific application
b) Declares an activity
c) Requests action from other apps
d) None

9) Which file specifies the hardware and software features required by an app?

a) Activity_main.xml b) build.gradle
c) AndroidManifest.xml d) strings.xml

10) Which tool is used for designing Android User Interface graphically?

a) Graphical Layout Tool b) Manifest Editor
c) Layout Manager d) Service Manager

B) One sentence answer /One-word answers **06**

1) Name the virtual machine used by Android before Android 5.0.
2) Expand ADT in Android development.
3) Give one example of a location-based service in Android.
4) Which Android component is responsible for listening to broadcast messages?
5) Mention any one indicator view used in Android applications.
6) Name the folder where XML layouts are stored in an Android project.

Q.2 Solve any Eight of the following **16**

a) List any four features of Android.
b) What is Android SDK?
c) Explain the term 'Content Provider' in Android.
d) What are Activities in Android?
e) List the various types of Android devices available in the market.
f) What are the uses of the 'values' folder in Android project structure?
g) What is the role of Broadcast Receivers in Android?
h) Define Intent Filters.
i) Explain the use of SQLite database in Android.
j) What is an Android Emulator?

Q.3 A) Trace the Women's work in Professional field. **10**

a) Explain Android Architecture in detail with a neat diagram.
b) Write a step-by-step procedure to create a new Android Project.
c) What are Android Services? Explain with examples.

B) Short note/Solve. **06**

Write a short note on "Launching Mobile Application using AndroidManifest.xml file".

Q.4 A) Attempt any Two of the following. **08**

a) Explain Views and Layout Managers in Android.
b) Write a note on creating and running an Android Virtual Device (AVD).
c) Explain the use of Buttons, Check Boxes, and Radio Groups in Android.

B) Describe/Explain/Solve. **08**

Explain how to develop a simple Android application that sends an SMS programmatically.

Q.5 Attempt any Two of the following. **16**

a) Explain Android Intents with examples (Explicit and Implicit Intents).

b) Describe the use of multimedia (Audio, Video, Camera) in Android applications.

c) What is Location-based Service? Explain how to configure the Android emulator for location-based services

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - VI) (New/Old) (CBCS) Examination: March/April - 2025
English (Comp.)
Business English (ECS0601)

Day & Date: Wednesday, 30-04-2025 Max. Marks: 40
Time: 03:00 PM To 06:00 PM

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

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

1) What are the name of the children?
a) Joss and Kady b) Jane and Karli
c) Jade and Katie d) Jenny and Kate

2) How long had Aksionov been in prison at the end at the story?
a) 26 years b) 24 years
c) 28 years d) 23 years

3) What is not a dream?
a) Hallucination b) Life
c) Illusions d) Nightmares

4) Who is the narrator in the poem My Last Duchess?
a) the poet b) the emissary
c) the duchess d) the duke

5) How many children are listening to the story in the poem Sita?
a) five b) two
c) three d) one

6) What are the things of beauty mentioned in the poem Ode to Beauty?
a) the sun and the moon b) young trees and stream
c) flowers d) all of the above

7) She was walking slowly. (Identify the adverb)
a) was b) walking
c) slowly d) none of the above

8) She said, “She must leave all the bad habits.”
(Change into reported speech).
a) She said she has to leave all the bad habits.
b) She said that she must have leave all the bad habits.
c) She said that she had to leave all the bad habits.
d) She said that she could leave all the bad habits.

Q.2 Answer the following question in brief. (Any Four) **12**

a) Why did Robert not ask for the children's affection?
b) Why did Aksionov leave the inn early?
c) What is the tragic story told by the narrator in the poem Sita?
d) Describe the personality of duchess?
e) Why "Ode to Beauty" considered to be a romantic poem?
f) Who do you think are 'our best' that the poet refers in the poem Life?

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

a) Explain the "Information Literacy" and its importance.

OR

b) Explain the "Leadership" and its importance.

Q.4 Discuss and write the following skills in your own language. **10**

a) Environment Consciousness
b) Health Literacy

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - VI) (New/Old) (CBCS)
Examination March/April - 2025
System Security (ECS0602)

Day & Date: Sunday, 18-May-2025 Max. Marks: 80.00
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) Select the correct alternative. **10**

1) An encryption algorithm transforms the plaintext into _____.
   a) Cipher text b) Simple text
   c) Plain text d) Empty text

2) A program that copies itself is called _____.
   a) Worm b) Virus
   c) Trojan d) Bomb

3) An attack in which the site is not capable of answering valid request.
   a) Smurfing b) Denial of service
   c) E-mail bombing d) Ping storm

4) A malicious code hidden inside a seemingly harmless piece of code.
   a) Worm b) Bomb
   c) Trojan Horse d) Virus

5) An attack in which the user receives unwanted amount of e-mails.
   a) Smurfing b) Denial of service
   c) E-mail bombing d) Ping storm

6) In a database where the encryption is applied the data is cannot be handled by the unauthorised user without _____.
   a) Encryption key b) Decryption key
   c) Primary key d) Authorized key

7) Data encryption standard (DES) is a _____.
   a) block cipher b) stream cipher
   c) bit cipher d) byte cipher

8) The process of transforming plain text into unreadable text is called _____.
   a) Decryption b) Encryption
   c) Network Security d) Information Hiding

9) _____ is a process which verifies the identity of a user who wants to access the system.
   a) Authentication b) Non-repudiation
   c) Integrity d) None of the above

10) Which of the following is a program capable of continually replicating with little or no user intervention?
   a) Virus b) Trojan horses
   c) Rootkit d) Worms

B) Fill in the blank. **06**

1) _____ play an important role in the use of encryption for various network security.
2) _____ is the basis for most types of access control and for user accountability.
3) The hashed passwords are kept in a separate file from the user IDs, referred to as a _____.
4) _____ are directed at the user file at the host where passwords, token passcodes, or biometric templates are stored.
5) A _____ is a structured collection of data stored for use by one or more applications.
6) _____ programs can be used to accomplish functions indirectly that the attacker could not accomplish directly.

Q.2 Solve any Eight of the following. **16**

a) Define computer security
b) What is a digital signature?
c) What is a public-key certificate?
d) What are four means of authenticating a user's identity?
e) Define the three classes of subject in an access control system?
f) Define the terms database management system and query language?
g) What is a "logic bomb"?
h) What are typical phases of operation of a virus or worm?
i) Define a distributed denial-of-service (DDoS) attack.
j) Define a reflection attack

Q.3 A) Attempt any Two of the following. **10**

1) Explain Message Authentication and Hash Functions in detail?
2) Define the User Authentication? Explain Electronic Identity Cards and smart card in Token-Based Authentication?
3) Explain Access Control Context and Access Control Policies in Access Control Principles?

B) Short Notes. **06**

1) Database Encryption
2) Flooding Attacks

Q.4 A) Attempt any Two of the following. **08**

1) What are two common techniques used to protect a password file?
2) Explain the Means of Authentication?
3) What is a relational database and what are its principal ingredients?

B) What is biometric authentication? Explain Physical Characteristics Used in Biometric Applications and Operation of a Biometric Authentication System. **08**

Q.5 Attempt any Two of the following. **16**

a) What is Malicious Software? Explain Types of Malicious Software?

b) Explain Denial-of-Service Attacks in detail?

c) What is Confidentiality? Explain Confidentiality with Symmetric Encryption?

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - VI) (New/Old) (CBCS) Examination: March/April - 2025
Compiler Construction (ECS0603)

Day & Date: Sunday, 25-May-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

Q.1 A) Select the correct alternative. **10**

1) The compiler process can be considered as a series of sub process is called _____.
   a) series b) sub process
   c) phases d) none of these

2) Concept which can be used to identify loops is _____.
   a) dominators b) reducible graphs
   c) depth first ordering d) all of these

3) The graph that shows basic blocks and their successor relationship is called _____.
   a) DAG b) flow graph
   c) control graph d) Hamiltonion graph

4) _____ is the activity of filling up unspecified information of labels using appropriate semantic actions in during code generation process.
   a) Backtracking b) Triplets
   c) Intermediate code d) Backpatching

5) The _____ is optional phase of compiler.
   a) lexical analyzer b) syntax analyzer
   c) code optimization d) code generation

6) An intermediate code form is _____.
   a) postfix notation b) syntax tree
   c) three address code d) all of above

7) Shift reduce parsers are _____.
   a) top down parser b) bottom up Parser
   c) either a or b d) both a and b

8) A right most derivation in reverse is obtained by _____.
   a) Handle b) handle pruning
   c) grammar d) none of these

9) Type checking is normally done during _____ phase.
   a) Lexical analysis
   b) Syntax analysis
   c) Syntax directed translation
   d) code optimization

10) SLR parser is more powerful in CLR parser.
   a) True b) False

B) Fill in the blank. **06**

1) If optimization is over small program segments, then it is called as _____ optimization.
2) The _____ is used to eliminate common sub expression.
3) The _____ is a flow graph in which there are two types of edges forward edges and backward edges.
4) A memory allocates and deallocates storage as needed at runtime from data areas known as _____.
5) The output of a lexical analyzer is _____.
6) A _____ compiler is also called a residential compiler.

Q.2 Solve any Eight of the following. **16**

a) Define: 1) Token 2) Pattern
b) Write a short note on input buffering.
c) What are the difficulties with bottom-up parsing?
d) What is the role of syntax analyser?
e) Explain left factoring with example.
f) What is the difference between CLR and LALR?
g) Construct DAG for Expression? i:= i + 10.
h) What are the Three Functions of Backpatching?
i) Explain case statements.
j) Define Dominators with example.

Q.3 A) Attempt any Two of the following. **10**

1) Why symbol table is used? Explain symbol table with its operation.
2) Explain compiler construction tools in detail.
3) What is code optimization? Explain in detail the principal source of optimization.

B) Find out a triple, quadruple, and indirect triple for the following: **06**
$a = b + c * d$

Q.4 A) Attempt any Two of the following. **08**

1) What is parameter? Explain the parameter transmission techniques.
2) Explain in details storage allocation strategies.
3) Find out the first and follows of following grammar:
   $S \rightarrow aABb, \quad A \rightarrow c|\varepsilon, \quad B \rightarrow d|\varepsilon$

B) Construct annotated parse tree for 3*5+4n using the following grammar rules: **08**

	PRODUCTION	SEMANTIC RULES
1)	$L \rightarrow E$ **n**	$L.val = E.val$
2)	$E \rightarrow E_1 + T$	$E.val = E_1.val + T.val$
3)	$E \rightarrow T$	$E.val = T.val$
4)	$T \rightarrow T_1 * F$	$T.val = T_1.val \times F.val$
5)	$T \rightarrow F$	$T.val = F.val$
6)	$F \rightarrow (E)$	$F.val = E.val$
7)	$F \rightarrow$ **digit**	$F.val =$ **digit**.lexval

Q.5 Attempt any Two of the following. **16**

a) What is compiler? Explain phases of compiler.

b) Check following grammar is LL(1) grammar or not?
$S \rightarrow BC|AB, \quad A \rightarrow aAa|\varepsilon, \quad B \rightarrow bAa, \quad C \rightarrow \varepsilon$

c) What is Parser? Explain top-down parser with its types.

Seat No.	

Set | P

B.Sc. (E.C.S.) (Semester - VI) (New/Old) (CBCS) Examination: March/April - 2025
Internet Programming using ASP.Net (ECS0604)

Day & Date: Monday, 05-May-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

Q.1 A) Multiple choice questions. **10**

1) Caching type supported by ASP.Net.
   a) Output Caching b) Data Caching
   c) a and b d) none of the above

2) _____ Property to post data from one page to another.
   a) PostBack b) Navigates
   c) PostBackURL d) PostBackResource

3) What is used to validate complex string patterns like an e-mail address?
   a) Extended expressions b) Basic expressions
   c) Regular expressions d) Irregular expressions

4) In which of the following folder source code such as classes, dataset etc. are stored?
   a) App_Data b) App_Theme
   c) App_Code d) App_Web References

5) _____ control is required for every page that has AJAX Extensions for ASP.NET?
   a) Script Manager b) Update Panel
   c) Content Panel d) None of the above

6) If a developer of Asp.Net defines style information in a common location then that Location is called _____.
   a) Master Page b) Theme
   c) Customization d) None of the above

7) The .NET Framework provides a runtime environment called _____.
   a) RMT b) CLR
   c) RCT d) RC

8) Which of the following does not have any visible interface?
   a) Data grid b) Repeater
   c) Dropdown List d) Data list

9) Which commands are used to specify settings of an asp.net?
   a) Class b) Events
   c) Directives d) Validation

10) Which of the following web server control display static text that can change at runtime?
   a) Hyperlink b) Textbox
   c) Label d) None of these

B) One sentence answer. **06**

1) Stands for IIS & WSDL.
2) What is custom control?
3) Which data type does the Range Validator control?
4) What is content area?
5) What is the component of ADO.Net?
6) List out controls in asp.net.
7) What is the file extension of web service?

Q.2 Solve any Eight of the following. **16**

a) What is Data Set?
b) What is script manager proxy?
c) Define Validation.
d) What is cross Page Posting?
e) List the event in page life cycle.
f) Which protocol is used to call a web service?
g) Which property of does the RangValidator Control support?
h) What is view state?
i) Write use of IsPostBack Property.

Q.3 A) Attempt any Two of the following. **10**

1) Explain Rang validator control & compare validator control with example.
2) What are benefits using AJAX? Explain Update Progress control in AJAX.
3) What is directive? Explain any four directives in asp.net.

B) Short Notes. **06**

1) File Upload control
2) Calendar control

Q.4 A) Attempt any Two of the following. **08**

1) Explain architecture of AJAX.
2) What is Inline code & code behind?
3) Explain master page & content page.

B) Design web page on online shopping. Write a code to insert data into Sqlserver database from an asp.net. **08**

Q.5 Attempt any Two of the following. **16**

a) Explain state management with their type.

b) What is site Navigation technique? Explain tree view & Menu control.

c) What is Theme & write how to apply theme?

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Semester - VI) (New/Old) (CBCS) Examination: March/April - 2025
Angular JS (ECS0605)

Day & Date: Tuesday, 06-May-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

Q.1 A) Multiple choice questions. **10**

1) AngularJS is a _____ Framework.
   a) HTML Framework b) .Net Framework
   c) JavaScript framework d) Oracle Framework

2) An AngularJS module defines an _____.
   a) Expression b) application
   c) element d) None of the above

3) _____ function is used to create a module in AngularJS.
   a) Module b) ng-bind
   c) angular.create d) agular.module

4) _____ directive defines the application controller?
   a) ng-control b) ng-controller
   c) ng-Newcontroller d) none of the above

5) AngularJS applications are a mix of _____.
   a) HTML & PHP b) HTML & JavaScript
   c) HTML & CrossScript d) All of these

6) Which community AngularJS belongs to _____.
   a) Google b) Microsoft
   c) Facebook d) Twitter

7) AngularJS is perfect for _____.
   a) Create Single Page Applications
   b) Creating a Desktop Application
   c) Create Web Services
   d) None of these

8) AngularJS is distributed as a _____.
   a) XML file b) PHP file
   c) JavaScript file d) ASP file

9) _____ filter Formats Number as currency.
   a) Date b) Number
   c) Currency d) Time

10) _____ is used as a link between view and controller.
   a) Module b) Scope
   c) CSS d) None of these

B) Fill in the blank/Definition/One sentence answer/ One word answer. **06**

1) What is JavaScript?
2) Define functions in JavaScript?
3) List out JavaScript operators?
4) What is Style Directives?
5) What is Scope Inheritance?
6) What is Rootscope?

Q.2 Solve any Eight of the following. **16**

a) What are the $httpService in AngularJS?
b) Explain directives in AngularJS.
c) Explain Control flow statements in java Scripts.
d) What is data binding in AngularJS?
e) Explain String Expressions in AngularJS?
f) What is the Data Biding in AngularJS?
g) What is Expression in AngularJs?
h) Define ng-repeat directive.
i) Define AngularJs Service.
j) Define Comments used in JavaScript?

Q.3 A) Attempt any Two of the following. **10**

1) Explain the pre and post increment in javaScripts.
2) Explain multiple controllers in AngularJs.
3) Explain the different of the features of Angular JS?

B) Short note on. **06**

1) Passing Parameters to the Methods
2) Creating a custom directive

Q.4 A) Attempt any Two of the following. **08**

1) Explain Control flow statements in java Scripts?
2) What is Filters? Explain different types of Filter?
3) What is Angular JS Forms? Explain Working with Angular Forms?

B) Describe/Explain/Solve **08**

Explain MVC Architecture in Angular JS?

Q.5 Attempt any Two of the following. **16**

a) What is scope? Explain Scope Lifecycle in details.

b) What is AngularJS Modules? Explain Module Loading and Dependencies?

c) What is Ajax? Explain Implementation of Ajax using $http and $qService?

Seat No.	

Set | P

B.Sc. (E.C.S.) (Semester - VI) (New/Old) (CBCS) Examination: March/April - 2025
Mobile Application Development (Special Paper - XI) (ECS0606)

Day & Date: Wednesday, 07-May-2025 Max. Marks: 80
Time: 03:00 PM To 06:00 PM

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

Q.1 A) Select the correct alternative. **10**

1) What is an activity in android?
   a) android class
   b) android package
   c) A single screen in application with supporting java code
   d) None of these

2) _____ virtual machine is used in Android operating system.
   a) Dalvik Virtual Machine b) JVM
   c) PVM d) Simple Virtual Machine

3) All layout classes are the subclasses of _____.
   a) android.widget
   b) android.view.View
   c) android.view.ViewGroup
   d) None of these

4) What is manifest XML file in android?
   a) It has all information about layout in an application
   b) It has all information about an application
   c) It has the information about activities in an application
   d) None of these

5) In android mini activities are also known as _____.
   a) Adapter b) Activity
   c) Fragment d) Intent

6) In android _____ converts Java bytecode into Dalvik bytecode.
   a) dex compiler b) java compiler
   c) java interpreter d) None of these

7) The full form of ADB is _____.
   a) Android Delete Bridge b) Android Debug Bridge
   c) Android Destroy Bridge d) Android Developed Bridge

8) _____ is the topmost layer in Android architecture.
   a) Applications b) Application Framework
   c) Linus Kernel d) Android Runtime

9) _____ is the built-in database in Android.
   a) MySQL b) Oracle
   c) MongoDB d) SQLite

10) _____ manages the sharing of data between applications.
   a) Telephony Manager b) Location Manager
   c) Content Provider d) Activity Manager

B) Fill in the blank/Definition/One sentence answer/ One word answer/ Give the name/Predict the product etc. **06**

1) Android is based on _____ Language.
2) APK stands for _____.
3) _____ Kernel is used in Android.
4) _____ is the first callback method that is invoked by the system during an activity life-cycle.
5) In _____ year OHA (Open Handset Alliance) is announced.
6) _____ method in android is used to log debug messages.

Q.2 Solve any Eight of the following. **16**

a) What is Service component in Android?
b) What is Toast? Write its Syntax.
c) What is the role of Dalvik Virtual Machine in Android?
d) Define View and View Group.
e) List out the different libraries of Android.
f) What is Web-Kit?
g) List out the different Layouts available in Android.
h) What are the dialog boxes supported in android?
i) What is Content Provider in Android?
j) What are different ways the developer can test their android app?

Q.3 A) Attempt any Two of the following. **10**

1) What is Intent? Explain the use of Intent.
2) What is Android SDK? Explain the components of Android SDK.
3) What is AndroidManifest.xml file and why do you need this?

B) Explain TextView and EditText UI Components in Android. **06**

Q.4 A) Attempt any Two of the following. **08**

1) Write the difference between Activities and Services in Android.
2) Explain the different features of Android.
3) Explain the strings.xml file in android.

B) Explain the Table Layout and Linear Layout with its attributes. **08**

Q.5 Attempt any Two of the following. **16**

a) Explain Activity Life cycle in Android.

b) Explain the Architecture of Android Operating System.

c) Design a UI Layout and Write an Activity to handle the onClick() event.

Seat No.	

Set **P**

B.Sc. (E.C.S.) (Sem - IV) (CBCS) Examination: March/April - 2025
Operating System
(ECS0403)

Day & Date: Wednesday, 30-April-2025 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) _____ is a single user allowed to perform multiple tasks at the same time?
a) Batch Operating System
b) Multitasking Operating System
c) Distributed Operating System
d) Real-Time Operating System

2) SSTF (Shortest Seek Time First) disk scheduling aims to_____.
a) Maximize seek time b) Minimize seek time
c) Randomize access d) None of the above

3) What type of scheduler decides which process to put in memory?
a) Long-term Scheduler b) Short-term Scheduler
c) Medium- term Scheduler d) Dispatcher

4) Threads within a process share:
a) Registers b) Program Counter
c) Address Space d) Stack

5) In disk scheduling, which algorithm moves the disk arm towards one end and then reverses?
a) SSTF b) SCAN
c) CSCAN d) FCFS

6) Which page replacement algorithm has the lowest page fault rate theoretically?
a) FIFO b) LRU
c) Optimal (OPT) d) Clock

.

7) A Race Condition occurs when_____
- a) Two processes access shared data simultaneously
- b) A process is scheduled before another
- c) The system crashes
- d) Processes wait indefinitely

8) In Round Robin scheduling, a small unit of CPU time is called_____
- a) Burst
- b) Cycle
- c) Slice
- d) Quantum

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

a) What is the main purpose of a System Call?

b) List any two scheduling criteria for CPU scheduling.

c) Define a Semaphore.

d) What is Thrashing.

e) Define External Fragmentation.

Q.3 Answers any Two of the following. **08**

a) Define a Process. Draw and explain the Process State Transition Diagram.

b) What is the Critical Section Problem? Explain the requirements for a good solution.

c) What is paging? Discuss basic paging technique in details.

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

a) Explain two methods for preventing deadlocks.

b) Explain file access methods.

c) Suppose a disk drive has 400 cylinders, numbered 0 to 399.The driver is currently serving a request at cylinder 143 and previous request was at cylinder 125.The queue of pending request in FIFO order is: 86,147,312,91,177,48,309,222,175,130. Starting from the current head position what is the total distance in cylinders that the disk to satisfy all the pending request for C-SCAN disk scheduling algorithms?

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

a) Consider the following page reference string. 1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2. Assuming four frames respectively? How many page faults would occur for the FIFO page replacement algorithm? Calculate page faults.

b) Consider following processes with length of CPU burst time in milliseconds.

Process	Burst time
P1	5
P2	10
P3	2
P4	1

All process arrived in order p1, p2, p3, p4 all time zero

1) Draw Gantt charts illustrating execution of these processes for SJF and round robin (quantum=1).
2) Calculate waiting time for each process for each scheduling algorithm.
3) Calculate average waiting time for each scheduling algorithm.

Seat No.	

Set P

B.Sc. (E.C.S.) (Semester - IV) (CBCS) Examination: March/April - 2025
Optimization techniques (ECS0406)

Day & Date: Friday, 02-May-2025 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) Use of Logarithmic table and calculator is allowed.

Q.1 Multiple Choice questions. **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) For maximization of LPP, the simplex method is terminated when all values _____.
a) $cj - zj \leq 0$ b) $cj - zj \geq 0$
c) $cj - zj = 0$ d) $zj \leq 0$

4) What is full form of MODI?
a) Modified Deduction Method
b) Modified Distribution Method
c) Multiple Distribution Method
d) None of these

5) VAM Stands for _____.
a) Vogel's Approximation Method
b) Vogeal's Approximation Method
c) Vangel's Approximation Method
d) Vogel's Approximate Method

6) The cost associated with slack or surplus variable in objective function is _____.
a) One b) Positive
c) Negative d) Zero

7) A given T.P is said to be unbalance if the total supply is not equal to total _____.

a) Optimization b) Demand
c) Row d) Column

8) In _____ problem no. of rows equal to number of coulmns.

a) Transportation b) Assignment
c) Linear Programming d) None of these

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

a) Define surplus variables in L.P.P.
b) What is transportation problem?
c) What is Assignment problem?
d) Define unbalanced A.P.
e) Convert LPP in to standard form

$Max\ z = 3x + 4y \quad s.t.c.$
$3x + 2y \leq 6$
$2x + y \leq 1$
$x, y \geq 0$

f) Write formula to find opportunity cost dij in MODI method.

Q.3 Write Notes. (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 Answer any Two of the following. **08**

a) Obtain an IBFS to the following T.P using VAM.

Origin	Destination				Supply
	1	2	3	4	
1	20	22	17	4	120
2	24	37	9	7	70
3	32	37	20	15	50
Demand	60	40	30	110	240

b) Solve following LPP by using graphical method.

$Min\ z = 4x + 2y$

Subject to constraint

$4x + y \geq 20$

$2x + y \geq 14$

$x + 6y \geq 18$

$x, y \geq 0$

c) Find Solution of given LPP by using simplex method.
$Max\ z = 7x_1 + 5x_2$
subject to constraint
$x_1 + 2x_2 \leq 6$
$4x_1 + 3x_2 \leq 12,$
$x_1, x_2 \geq 0$

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

a) 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

b) Solve the LPP by using simplex method: Maximize: $z = 3x + 2y$
Subject to: $x + y \leq 4$
$x - y \leq 2$
and $x, y \geq 0$