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Roll No.....

C-11

B.Tech. Computer Science & Engineering III Semester Examinations (Jun 2026)
Essential Mathematics for CSE (ASH-MAT-203A)

Time- 3hrs

Max.Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1	Marks
(a) Write the Laplace Transform of $\cos 3t - t^3$	2
(b) Write the Statement of Convolution Theorem.	2
(c) Form the partial differential equation for $z = ax^2 + by$	2
(d) Write the formula of Trapezoidal Rule.	2
(e) Separate $(5+3i)^2$ into real and imaginary parts.	2
(e) When the function $u = u(x, y)$ will be harmonic.	2

UNIT-I

Q.2(a)	Find the Laplace Transform of $te^{-2t}\cos t$	6
Q.2(b)	Find the Laplace Transform of $\int_0^t te^t \sin t \, dt$	6
Q.3(a)	Solve the differential equation $D^2x - 2Dx + x = e^t$, with $x = 2$, $dx/dt = -1$ at $t = 0$.	6
Q.3(b)	Find the Inverse Laplace Transform of $\frac{1}{(s+1)(s+3)}$	6

UNIT - II

Q.4	Solve $pxy + pq + qy = yz$ by Charpit method	12
Q.5(a)	Solve $p \tan x + q \tan y = \tan z$	6
Q.5(b)	Solve $3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0$, $u(x, 0) = 4e^{-x}$	6

UNIT-III

Q.6(a)	The population of a country in the decimal census were as under. Estimate the population of the year 1925 by Newton backward Difference formula.	6
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Year x	1891	1901	1911	1921	1931
Population (in thousand) y	46	66	81	93	101

Q.6(b)	Find the missing value using finite differences	6
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X	0	1	2	3	4
Y	1	8	27	----	125

Q.7(a)	Apply Simpson one third rule to estimate the value of integral $\int_1^2 \frac{dx}{x}$ into 4 equal parts	6
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- Q.7(b) Find $y(0.2)$ using Runge Kutta method of fourth order with $h = 0.2$. 6
 $dy/dx = x^2 + y$, $y(0)=1$

UNIT-IV

- Q.8(a) If $z = e^{i\theta}$, show that $\frac{z^2-1}{z^2+1} = i \tan \theta$ 6
- Q.8(b) Determine the analytic function whose real part is $x^3 - 3xy^2 + 3x^2 - 3y^2 + 1$ 6
- Q.9(a) Evaluate $\oint \frac{e^{-z}}{z+1} dz$ over the C where C is the circle $|z| = 2$ 6
- Q.9(b) Evaluate $\int \frac{2z-1}{z(z+1)(z-3)} dz$ over the C where C is the circle $|z| = 2$ using 6
Cauchy Residue theorem.

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Roll No.....

C-12

B.Tech. Computer Science & Engineering/Information Technology
III Semester Examinations (June 2026)
Digital System Design (BT-ECE-221A)

Time- 3hrs

Max. Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1	Marks
(a) $(1011011)_2$ into hexadecimal.	1
(b) Draw 3-input odd parity checker.	2
(c) Describe race around condition.	1
(d) What is the need of A to D and D to A converters?	2
(e) Write the advantages of EPROM over a PROM.	2
(f) Compare the features of PROM, PAL and PLA	2
(g) What is quantization in ADC?	2

UNIT-I

Q.2(a)	Minimize the following Boolean function using K-map and realize the simplified function using NAND gates only $F(A,B,C,D)=\Sigma m(0,1,2,5,8,9,10,14)$	6
Q.2(b)	Reduce the following expression and implement using AOI logic gates. $F=A+B[AC+(B+C')D]$	6
Q.3	Simplify the following function using Quine-McCluskey method: $F(A,B,C,D)=\Sigma m(0,1,2,3,8,9,10,11)$ Implement the minimized function using AOI logic gates.	12

UNIT-II

Q.4(a)	Design BCD Adder and explain the working.	6
Q.4(b)	Implement the following Boolean function using 4x1 Multiplexer $F(A,B,C)=\Sigma m(1,2,6,7)$	6
Q.5(a)	Design a Full Subtractor using basic gates	6
Q.5(b)	Design a 2-bit magnitude comparator using logic gates.	6

UNIT-III

Q.6	Design a synchronous Mod-8 counter using JK Flip-Flops.	12
Q.7(a)	Explain SR, JK and T Flip-Flops with truth tables and excitation tables.	6
Q.7(b)	Design a 4- bit bi-directional shift register	6

UNIT-IV

Q.8 (a)	Implement the following two Boolean functions with a PAL $F_1(A,B,C)=\Sigma m(1,2,4,5,7)$ $F_2(A,B,C)=\Sigma m(0,1,3,5,7)$	6
Q.8 (b)	Explain Weighted Resistor DAC with neat circuit diagram.	6
Q.9(a)	Explain the structure and operation of a static RAM (SRAM) and dynamic RAM (DRAM).	6
Q.9(b)	Explain Dual Slope ADC with neat diagram and working principle.	6

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Roll No.....

C-13

B.Tech. Computer Science & Engineering III Semester Examinations (June 2026)
Database Management System (BT-CSE-201A)

Time- 3hrs
Max. Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1	Marks
(a) Define DBMS. Mention any two advantages of DBMS.	2
(b) Explain briefly schema-based constraints in relational data model.	2
(c) What undesirable dependencies are avoided when a relation is in 2NF?	2
(d) How candidate key is different from super key.	2
(e) Why concurrency control is needed?	2
(f) How is database authorization different from authentication?	2

UNIT-I

Q.2(a)	Explain DBMS in detail. Compare DBMS with file processing system and explain its advantages.	7
Q.2(b)	Explain specialization and generalization with example diagrams	5
Q.3(a)	Explain Entity Integrity Constraint & Referential Integrity Constraints? Why each of these is important in a database.	6
Q.3(b)	Design an ER diagram for keeping track of scoring statistics of your favorite team. You should score the matches played, the score in each match, and individual player scoring statistics for each match. Summary statistics should be modeled as derived attributes with an explanation, how they are computed. Illustrate three schema architecture and explain how it helps to achieve data independence.	6

UNIT-II

Q.4(a)	Explain with examples in SQL: i) Drop command ii) Delete command	6
Q.4(b)	Explain views in SQL. How to modify views?	6
Q.5(a)	Consider the following tables: works (Pname, Cname, Salary), lives (Pname, Street, City), Located-In (Cname, City). write the following queries in SQL: i) List the names of the people who work for the company 'Wipro' along with the cities they live in ii) Find the names of the persons who do not work for 'Infosys'. iii) Find the people whose salaries are more than that of all of the 'oracle' employees. iv) Find the person who works and lives in the same city.	8
Q.5(b)	Explain join operations in relational algebra with suitable example.	4

UNIT-III

Q.6(a)	Consider two sets of functional dependency. $F = \{A \rightarrow C, AC \rightarrow D, E \rightarrow AD, E \rightarrow H\}$ $E = \{A \rightarrow CD, E \rightarrow AH\}$. Are they Equivalent?	6
Q.6(b)	Consider the following relation for CARSALE (CAR-NO, Date-Sold, Salesman No,	6

Commission, Discount). Assume a car can be sold by multiple salesmen and hence primary key is {CAR_No, Salesman_No}.

Additional dependencies are: Date_Sold-> Discount, Salesman_No-> Commission

i) Is this relation in 1NF, 2NF or 3NF? Why or why not?

ii) How would you normalize this completely?

Q.7(a) What do you mean by multivalued dependency? Explain the 4NF with example. **6**

Q.7(b) Explain the concept of lossless join decomposition in 5NF. **6**

UNIT-IV

Q.8(a) Consider the three transactions T1, T2 and T3 and schedules S1 and S2 given below. Determine whether each schedule is serializable or not? If a schedule is serializable write down the equivalent serial schedule (S). **7**

T1: R1(x); R1(z); W1(x);

T2: 2(x); R2(y); W2(z); W2(y);

T3: R3(x); R3(y); W3(y);

S1: R1(x); R2(z); R1(z); R3(x); R3(y); W1(x); W3(y); R2(y); W2(z); W2(y);

S2: R1(x); R2(z); R3(x); R1(z); R2(y); R3(y); W1(x); W2(z); W3(y); W2(y);

Q.8(b) Compare Shadow Paging with Log-based Recovery. **5**

Q.9(a) Explain the procedure of deadlock recovery and what actions need to be taken to recover from deadlock. **6**

Q.9(b) Compare DAC, MAC, and RBAC with suitable examples? **6**

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C-14

B. Tech. Computer Science & Engineering III Semester Examinations (Jun 2026)
Data Structures (BT-CSE-203A)

Time- 3hrs

Max.Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1	Marks
(a) Why are data structures important in computer science?	2
(b) Define primitive and non-primitive data types with examples.	2
(c) Define linear queue and circular queue. List their basic differences.	2
(d) Define the role of the stack in function calls.	2
(e) Discuss dynamic memory allocation and its importance in linked list creation.	2
(f) Explain the tree data structure and write its basic terminology.	2

UNIT-I

Q.2(a)	Explain the role of time complexity and space complexity in selecting efficient algorithms.	6
Q.2(b)	Write the Binary Search algorithm and compare it with Linear Search.	6
Q.3(a)	Write the Bubble Sort algorithm and illustrate its working using a suitable example.	6
Q.3(b)	What do you understand by recursion? Write a recursive algorithm to find the factorial of a number.	6

UNIT-II

Q.4	Apply the Divide and Conquer approach to explain Merge Sort and Quick Sort algorithms with a suitable example and compare their time and space complexity.	12
Q.5(a)	Solve the following postfix expression using a stack and show a step-by-step procedure along with an algorithm. Expression: 5, 6, 2, +, *, 12, 4, /, -	6
Q.5(b)	What is a Queue data structure? Explain the process of insertion and deletion of an element with a suitable example.	6

UNIT-III

Q.6	Explain in detail how a node is inserted at the beginning of a singly linked list. Write the algorithm, illustrate the process with suitable diagrams and example.	12
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- Q.7(a)** Explain how a stack can be implemented using a linked list with an algorithm, along with a suitable example. **6**
- Q.7(b)** Define a doubly linked list and write the algorithm to delete an element from it. **6**

UNIT-IV

- Q.8(a)** Discuss Graph, Multigraph, Adjacency Matrix, Path Matrix, Adjacency List, and Self-Edge with suitable examples. **6**
- Q.8(b)** Define a binary search tree. Construct a binary search tree (BST) for the following elements: 14, 10, 17, 12, 10, 11, 20, 12, 18, 25, 20, 8, 22, 11, 23. Traverse using pre-order and post-order traversal techniques **6**
- Q.9(a)** Construct a Minimum Spanning Tree (MST) for a weighted graph using any MST algorithm and demonstrate it with an example. **6**
- Q.9(b)** Illustrate the inorder traversal of a binary tree by writing its algorithm and explaining its working in detail. **6**

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B.Tech. Computer Science & Engineering III Semester Examinations (Jun 2026)

Object Oriented Programming (BT-CSE-205A)

Time- 3hrs

Max. Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1

- | | |
|---|---|
| (a) Define class and object in Java. | 2 |
| (b) Differentiate between checked and unchecked exceptions. | 2 |
| (c) Can a parent class variable be accessed by child class using super keyword? | 2 |
| (d) Discuss the purpose of sleep () method. | 2 |
| (e) Discuss the advantages of OOP over procedural programming approach. | 2 |
| (f) Differentiate between compile time and run time polymorphism. | 2 |

UNIT-I

- | | |
|---|---|
| Q.2(a) Create a Java program to illustrate multidimensional arrays. | 6 |
| Q.2(b) Explain default constructor and parameterized constructor with examples. | 6 |
| Q.3(a) Discuss anonymous arrays and variable arity methods with examples. | 6 |
| Q.3(b) Discuss the benefits of method overloading in Java applications. | 6 |

UNIT-II

- | | |
|---|----|
| Q.4 Write a Java program demonstrating the complete working of try, catch and finally blocks. | 12 |
| Q.5(a) Differentiate between built-in packages and user-defined packages. | 6 |
| Q.5(b) Explain package importing and static import with examples. | 6 |

UNIT-III

- | | |
|---|----|
| Q.6 Create a Java application showing implementation of interfaces for multiple inheritance. | 12 |
| Q.7 (a) Differentiate between method overloading and method overriding using suitable examples. | 6 |
| Q.7(b) Evaluate the role of wrapper classes in Java programming. | 6 |

UNIT-IV

- | | |
|---|----|
| Q.8(a) Discuss various methods of thread creation in Java. | 6 |
| Q.8(b) Explain inter-thread communication with suitable examples. | 6 |
| Q.9 Analyze thread synchronization and its necessity in concurrent programming. | 12 |

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D-11

B.Tech. Computer Science & Engineering/-IT/AIDS/-AIML

IV Semester Examinations (Jun 2026)

Microprocessor Based System Design (BT-ECE-202A)

Time- 3hrs

Max. Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1	Marks
(a) Differentiate between base and index registers in 8086; give one addressing mode example that uses each.	(02)
(b) The 8086 prefetches instructions in the BIU. Under what condition can prefetch be stalled, and why?	(02)
(c) Distinguish near and far control transfers in 8086 and state how each affects CS and IP?	(02)
(d) Define a wait state. How can READY be used to insert wait states during a slow memory read?	(02)
(e) Briefly explain DRAM refresh necessity and name one common refresh method compatible with 8086-based systems.	(02)
(f) Give the difference between cycle stealing and burst modes in 8237 DMA transfers.	(02)

UNIT-I

Q.2 (a)	Draw and explain the CPU register structure of 8086 microprocessor.	(06)
Q.2 (b)	Describe the instruction queue mechanism in 8086. How does it support parallel execution?	(06)
Q.3(a)	Differentiate between 8085 and 8086 microprocessors. Explain the advancements introduced in 8086 architecture.	(06)
Q.3(b)	Explain the role of segment registers and physical address calculation in 8086 with suitable examples.	(06)

UNIT-II

Q.4(a)	Given that (BX)=637DH, (SI)=2A9BH, (DI)=467AH, (DS)=2100H, (ES)=4200H, (CS)=3800H, Displacement=C237H Determine the effective and physical address of the followings: (i) Register Indirect Addressing (ii) Register Relative Addressing (iii) Based Index Addressing	(06)
Q.4(b)	Write an assembly language program to arrange 10 8-bit numbers in ascending order.	(06)
Q.5(a)	Explain the various assembler directives of 8086 microprocessor.	(06)
Q.5(b)	Write an 8086-assembly language program to produce approximately 1-second delay using nested loops and explain the timing calculations.	(06)

UNIT-III

- Q.6(a)** Draw and explain the operation of 8086 microprocessor in minimum mode using connection diagram (06)
- Q.6(b)** Describe the technique required for the Interfacing and refreshing the DRAMS (06)
- Q.7(a)** Explain the memory write timing diagrams of 8086 in maximum mode operation. (06)
- Q.7(b)** Discuss the role of 8284 clock generator in 8086 systems. Explain clock generation and reset synchronization. (06)

UNIT-IV

- Q.8** Interface the stepper motor with 8086 microprocessor. Draw the address mapping. Also, write the subroutine to rotate the motor in reverse direction in half step mode. (12)
- Q.9(a)** Explain the interrupt structure of 8086 microprocessor. (06)
- Q.9(b)** Draw and explain the block diagram of 8237 DMA Controller. (06)

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D-12

B.Tech. Computer Science & Engineering IV Semester Examinations (Jun 2026)
Discrete Structures (BT-CSE-202A)

Time- 3hrs

Max. Marks: 60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q1.

- | | |
|--|---|
| a) Define a subset and a proper subset with an example. | 2 |
| b) State De Morgan's Laws in set theory. | 2 |
| c) What is a power set? Find the number of elements in the power set of a set having 4 elements. | 2 |
| d) Define a proposition and give one example. | 2 |
| e) What is a tautology? Give an example. | 2 |
| f) Define an equivalence relation. | 2 |

UNIT-I

- Q.2 (a) Define sets, subsets, and power sets. Explain the different operations on sets with suitable examples and Venn diagrams. 6
- (b) State and explain the laws of logic. Discuss logical equivalence and implication with suitable Examples using truth tables. 6

- Q.3 Let $A=\{1,2,3,4,5,6\}$, $B=\{2,4,6,8\}$, and $C=\{1,3,5,7\}$. 12
- (a) Verify the distributive laws of set theory using the given sets.
- (b) Find $A \times B$ and the power set of B.
- (c) Using a Venn diagram, explain the Principle of Inclusion-Exclusion for the sets A, B and C.
- (d) Define partition of a set and determine whether $\{\{1,2\},\{3,4\},\{5,6\}\}$ is a partition of A.

UNIT-II

- Q.4 Discuss equivalence relations and partially ordered relations in detail. Also, explain transitive Closure and Warshall's Algorithm for finding the transitive closure of a relation. 12
- Q.5 (a) Define a relation on a set and explain the different properties of relations such as reflexive, symmetric, antisymmetric, and transitive relations with suitable examples. 6
- (b) What is pigeonhole principle? Prove it by using mathematical induction and use it to show that in a group of 15 people, at least two share the same birth month. 6

UNIT-III

- Q.6** Define a graph and explain the different types of graphs with suitable examples. Discuss subgraphs and various methods of graph representation. Explain Breadth First Search (BFS) and Depth First Search (DFS) traversal algorithms with suitable illustrations and applications. 12
- Q.7** For the Graph G with vertices $V = \{A, B, C, D\}$ and Edges $E = \{(A, B), (B, C), (C, D), (D, A), (A, C)\}$, determine: 6
- i) Whether the graph contains a Eulerian path or circuit or not
 - ii) All Hamiltonian circuits in the Graph G . 6

UNIT-IV

- Q.8** Let $G = \{1, -1, i, -i\}$ under multiplication of complex numbers. 12
- (a) Verify whether G forms a group.
 - (b) Find all cyclic subgroups of G .
 - (c) Determine whether the subgroup $H = \{1, -1\}$ is a normal subgroup of G .
 - (d) Construct the quotient group G / H .
- Q.9** (a) Determine whether the set $A = \{0, 1, 2, 3\}$ under addition modulo 4 forms a monoid and a group. Justify your answer by verifying the required properties. 6
- (b) Explain the concepts of homomorphism, isomorphism, and automorphism in algebraic structures with suitable examples. 6

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D-13

B.Tech. Computer Science & Engineering IV Semester Examinations (Jun 2026)
Computer Organization & Architecture (BT-CSE-204A)

Time- 3hrs

Max. Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1		Marks
(a)	Differentiate between restoring and non-restoring division.	2
(b)	Classify the types of buses in a computer system.	2
(c)	Differentiate hardwired and micro-programmed control units.	2
(d)	Define processor organization.	2
(e)	Explain vector processing.	2
(f)	Describe strobe control mechanism.	2
UNIT-I		
Q.2(a)	Differentiate between computer organization and computer architecture suitable examples.	6
Q.2(b)	Illustrate floating point representation as per IEEE standards.	6
Q.3	Explain the binary multiplication and division operations using suitable examples.	12
UNIT-II		
Q.4	Analyze the organization of a basic computer with block diagram representation.	12
Q.5(a)	Differentiate between register reference and memory reference instructions.	6
Q.5(b)	Explain the instruction cycle with the sequence of operations.	6
UNIT-III		
Q.6	Discuss the factors motivating the use of different addressing modes. Explain the indexed addressing using suitable examples.	12
Q.7(a)	Explain various addressing modes with suitable examples.	6
Q.7(b)	Analyze Flynn's classification of computer architectures.	6
UNIT-IV		
Q.8	Explain the process of data transfer between CPU, memory, and peripheral devices.	12
Q.9(a)	Differentiate interrupt-driven I/O and programmed I/O.	6
Q.9(b)	Illustrate handshaking in data transfer.	6

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B.Tech. Computer Science & Engineering/-AIDS IV Semester Examinations (Jun 2026)
Operating System (BT-CSE-206A/BT-AIDS-208A)

Time- 3hrs
Max. Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1	Marks
(a) What are the different states that occur during the life time of a process?	2
(b) What are four necessary conditions for deadlock to occur?	2
(c) What is the difference between preemptive and non-preemptive scheduling?	2
(d) Explain the concept of Thrashing?	2
(e) What is External fragmentation? Explain with example.	2
(f) What is spooling in kernel I/O subsystem?	2

UNIT-I

Q.2(a)	Explain the storage hierarchy in a computer system. Why is caching important?	6
Q.2(b)	Compare simple, layered, and virtual machine OS structures. Which is more secure and why?	6
Q.3(a)	Discuss the different types of Operating Systems: batch, multi-programming, time-sharing, real-time, distributed, and parallel.	6
Q.3(b)	Explain the concept of a process. How is it different from a program?	6

UNIT-II

Q.4(a)	Explain Shortest Job First (SJF) scheduling. How does starvation occur in SJF?	6
Q.4(b)	Explain the critical section problem. Why is mutual exclusion necessary?	6
Q.5(a)	Processes P1-P4 with burst times: P1=10, P2=1, P3=2, P4=1 ms and priorities: P1=3, P2=1, P3=4, P4=5 (lower number = higher priority). Calculate average waiting time.	6
Q.5(b)	Describe the role of the Process Control Block (PCB) in process management.	6

UNIT-III

Q.6(a)	Assuming that 3 frames are given to a process and initially all the frames are empty. Apply Least Recently Used Page replacement algorithm on the following reference string of pages 7,0,1,5,2,0,7,1,2,3,4,2,1,6,7,2,0,4 and calculate the number of Page faults occur.	6
Q.6(b)	Write and explain Peterson's Solution for critical section problem.	6
Q.7(a)	Consider the reference string: 2, 3, 2, 1, 5, 2, 4, 5, 3, 2, 5, 2 with 3 page frames. Find the number of page faults using the Optimal Page Replacement algorithm.	6

- Q.7(b)** A process requires 200 KB of memory. The system has holes of sizes 150 KB, 275 KB, 425 KB, and 300 KB. Apply First Fit, Best Fit, and Worst Fit strategies. Show which hole is allocated in each case. **6**

UNIT-IV

- Q.8** Suppose that a disk drive has 5,000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is:
86,1470,913,1774,948,1509,1022,1750,130
Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for each of the following disk-scheduling algorithms?
a. FCFS
b. SSTF
c. SCAN
d. LOOK **12**
- Q.9(a)** Describe disk performance parameters (seek time, latency, transfer rate). Take an example to calculate these parameters. **6**
- Q.9(b)** Discuss the following system threats in detail: **6** ----
1. Worms
2. Viruses
3. denial of service

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D-15

B.Tech. Computer Science & Engineering IV Semester Examinations (Jun 2026)

Design & Analysis of Algorithms (BT-CSE-208A)

Time- 3hrs

Max.Marks-60

Attempt 5 questions in all by selecting one question from each unit. Question 1 is compulsory and each Question carries 12 marks.

Q.1		Marks
(a)	Define time and space complexity.	02
(b)	Define recurrence relation.	02
(c)	What is Travelling Salesman Problem? Explain	02
(d)	What is a Fibonacci Heap?	02
(e)	What is Topological Sorting?	02
(f)	Define Zero-One Principle.	02

UNIT-I

Q.2(a)	Explain asymptotic notations and growth of functions with suitable examples.	06
Q.2(b)	Derive and solve recurrence relation for binary search.	06
Q.3	Explain quick sort with suitable example and analyze its best, average and worst-complexities. Also, discuss lower bound theory for sorting problems.	12

UNIT-II

Q.4	Discuss elements of dynamic programming and solution for longest common subsequence problem.	12
Q.5(a)	Explain Huffman coding algorithm with suitable example.	06
Q.5(b)	Explain activity selection problem using greedy strategy.	06

UNIT-III

Q.6	Explain Binary Search Tree insertion and deletion operations with suitable examples. Discuss all deletion cases and analyze the time complexity of BST operations.	12
Q.7(a)	Explain Kruskal's algorithm for Minimum Spanning Tree with suitable example.	06
Q.7(b)	Explain Prim's algorithm and compare it with Kruskal's algorithm.	06

UNIT-IV

Q.8	What do you mean by Flow and Sorting Networks? Explain in detail.	12
Q.9(a)	Discuss Polynomial vs Non-Polynomial Complexity.	06
Q.9(b)	Discuss NP-Hard and NP-Complete Classes	06
