Course Code: 25MC1T01

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE

(AUTONOMOUS)

I – MCA I - Semester Regular Examinations (BR25), Feb - 2026

DATA STRUCTURES (MCA)

Time: 3 hours | Max. Marks: 60

Answer any Five Questions One Question from One UNIT
ALL the Questions Carry Equal Marks

	UNIT-I	**Marks**	**CO**	**BL**
1.a)	Elaborate on the different types of Bitwise operators in C language.	6M	CO1	BL6
b)	Explain the use of break and continue statements inside loops with suitable examples.	6M	CO1	BL2
	OR			
2.a)	How to declare, define and access multidimensional arrays in C? Explain with an example.	6M	CO1	BL1
b)	Discuss the difference between entry-controlled and exit-controlled loops with examples.	6M	CO1	BL6
	UNIT-II	**Marks**	**CO**	**BL**
3.a)	Define a structure book with members: title, author, and price. Write a program to input and display the book details.	6M	CO2	BL1
b)	Differentiate between call by value and call by reference with suitable programs.	6M	CO2	BL2
	OR			
4.a)	List and explain various functions used for opening, closing and processing files in C.	6M	CO2	BL2
b)	Explain how Unions help in memory optimization.	6M	CO2	BL2
	UNIT-III	**Marks**	**CO**	**BL**
5.a)	Explain the concept of a circular linked list. Discuss the advantages and disadvantages of circular linked lists.	6M	CO3	BL2
b)	Write the pseudocode to perform insertion operation on Doubly Linked List and explain the same with neat diagrams wherever appropriate.	6M	CO3	BL3
	OR			
6.a)	Explain how to insert a node at the beginning, in the middle, and at the end of a singly linked list with examples	10M	CO3	BL2
b)	Define Space complexity with an example.	2M	CO3	BL1

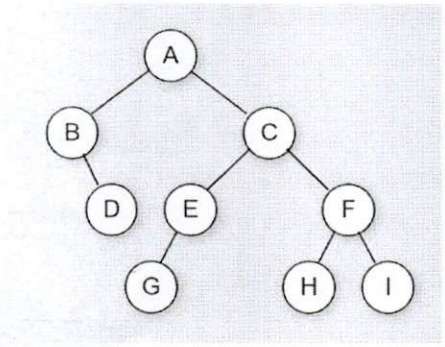
		Marks	**CO**	**BL**

UNIT-IV

7.a)	Write pseudocode to implement the operations of Queue using Arrays.	8M	CO4	BL3
b)	Discuss the applications of Stack data structure.	4M	CO4	BL6
	OR			
8.a)	How collision can be resolved in Hashing? Discuss different collision resolution techniques in hashing with suitable examples.	12M	CO4	BL3

UNIT-V

		Marks	CO	BL
9.a)	Explain the step-by-step procedure of Selection Sort method for sorting the following unordered list of elements 13,32,26,9,34,18,41,43	6M	CO5	BL3
b)	Explain the insertion operation in a BST with an example and diagram.	6M	CO5	BL2
	OR			
10.a)	Trace the preorder traversal for the following tree with the vertex 'A' as root.	6M	CO5	BL3



b)	Write the Quick sort algorithm and give its complexity.	6M	CO5	BL2

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