O.P.Code: 25MC9104	R25	H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
MCA I Year I Semester RegularExaminations December-2025
DATA STRUCTURES USING C

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

		UNIT-I			
1	a	List the basic elements of the C programming language with examples.	CO1	L1	6M
	b	Describe how variables are used in C programs and explain their scope and lifetime.	CO1	L2	6M
		OR			
2	a	What is a string ?How are strings represented in C?	CO2	L4	6M
	b	List and explain the standard library functions used for string manipulation in C	CO2	L1	6M
		UNIT-II			
3	a	Write short notes on infix, prefix, and postfix notations.	CO3	L3	6M
	b	Convert the infix expression (A + B) * (C - D) to postfix forms.	CO3	L1	6M
		OR			
4	a	Explain the operations of a queue with suitable examples.	CO3	L2	6M
	b	Write C programs that implement Queue using pointers	CO3	L1	6M
		UNIT-III			
5	a	Describe the structure of a node in a singly linked list	CO3	L1	6M
	b	Discuss the advantages and disadvantages of using linked lists over arrays.	CO3	L2	6M
		OR			
6	a	Describe the concept of circular linked lists and how they differ from singly linked lists.	CO3	L2	6M
	b	Discuss the applications and advantages of circular linked lists in real-time systems.	CO3	L3	6M
		UNIT-IV			
7	a	Define the following tree terms with examples: root, leaf, parent, child.	CO4	L1	6M
	b	Describe sequential and linked representation of a tree.	CO4	L3	6M
		OR			
8	a	Differentiate between adjacency matrix and adjacency list representation of graphs.	CO4	L2	6M
	b	Explain the difference between directed and undirected graphs with examples.	CO4	L2	6M
		UNIT-V			
9	a	Describe the step-by-step procedure of linear search algorithm.	CO5	L2	6M
	b	Explain with example how linear search algorithm searches for an element in an array.	CO5	L2	6M
		OR			
10	a	Show step-by-step how insertion sort arranges an array into order.	CO5	L1	6M
	b	Write a C program that implements the insertion sorting.	CO5	L4	6M

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