O.P.Code: 24mca110	Regulation2022	H.T.No.										

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

MCA I Year II Semester Regular & Supplementary Examinations June/July-2025

DATASTRUCTURES

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

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

UNIT-1

1. a) Identify the steps to print the product of two numbers. [6M]
b) Identify the steps to display numbers from one to given number. [6M]

OR

2. a) What is space complexity? Evaluate space complexity for the following code
int square(int a) { return a*a; } [6M]
b) What is time complexity? Evaluate time complexity for the following code
int square(int a) { return a*a; } [6M]

UNIT-2

3. Explain different ways for insert ing an element into a Single Linked List with example. [12M]

OR

4. Develop various queue operations using arrays. With example [12M]

UNIT-3

5. a) What is the various representation of a binary tree? [6M]
b) List out and explain various binary tree traversals. [6M]

OR

6. a) Analyze the steps to insert elements into Binary Search Tree. [6M]
b) Analyze the steps to search element in Binary Search Tree. [6M]

UNIT-4

7. a) Explain bubble sort with an algorithm and example. [5M]
b) Design a program to demonstrate bubble sort. [7M]

OR

8. a) Explain Linear Search with an algorithm and example. [6M]

b) Design a program to demonstrate Linear Search. [6M]

UNIT-5

9. What is a Graph ? Explain various Graph terminologies . [12M]

OR

10. a) Define Graph. List out various graph operations? [4M]

b) What are the various applications and properties of Graphs ? [8M]