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) What is an Array? Explain the representation of an array. [6M]
b) Apply various operations that can perform on array. [6M]

OR

2. Analyze and write a program to store a set of values of same data type into a single variable. [12M]

UNIT-2

3. a) Convert the expression (5 + 6) * (6 - 5) from infix to postfix [6M]
b) Evaluate the postfix expression 25*423 -*+. [6M]

OR

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

UNIT-3

5. Identify the following terms from the given tree
i) Internal Nodes
ii) External Nodes
iii) Depth
iv) Height
v) Level

[12M]

OR

6. a) Define binary tree and give the binary tree node structure. [6M]
b) What are the various types of a binary tree? [6M]

UNIT-4

7. a) Explain Linear Search with an algorithm and example. [6M]
b) Design a program to demonstrate Linear Search. [6M]

OR

8. a) Discuss Space and Time Complexity for Linear and Binary Search. [6M]
b) Distinguish between Linear Search and Binary Search. [6M]

UNIT-5

9. a) Discuss DFS Graph Traversal with an algorithm. [3M]
b) Explain DFS Graph traversal with steps for the following Graph . [9M]

OR

10. Explain about shortest path problem with an algorithm and example. [12M]