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. a) What is a Data Structure? Explain its advantages.   [6M]
b) Explain various types of Data Structures.   [6M]

UNIT-2

3. a) Prepare an algorithm to insert an element at the end of doubly linked list .   [6M]
b) Prepare an algorithm to delete an element at the end of doubly linked list.   [6M]

OR

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

UNIT-3

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

OR

6. a) Explain BFS Tree Traversal with an example.   [6M]
b) Explain DFS Tree Traversal with an example.   [6M]

UNIT-4

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

OR

8. a) Explain selection sort with an algorithm and example. [5M]

b) Design a program to demonstrate selection sort. [7M]

9. a) Discuss DFS Graph Traversal with an algorithm. [3M]

b) Explain DFS Graph traversal with steps for the following Graph .

[9M]

OR

10. Discuss and compare various graph traversals. [12M]