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) Explain Linear and Non Linear Data structure with examples   [6M]
b) Differentiate linear and non -linear data structure .   [6M]

OR

2. a) What is an Algorithm? Explain its specifications.   [6M]
b) What are the steps required to find sum of two numbers.   [6M]

UNIT-2

3. a) What is a Stack? What are the operations that perform on a stack?   [6M]
b) What is a Queue? What are the operations that perform on a Queue?   [6M]

OR

4. a) What is linked list? What are the different types of linked list?   [6M]
b) Explain the advantages of linked list over arrays.   [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. Explain about Hashing with an example.   [12M]

OR

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

b) Distinguish between Linear Search and Binary Search.   [6M]

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

OR

10. a) What is minimum – cost spanning tree?   [4M]
b) Prepare an algorithm for Prim's with example.   [8M]