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. Discuss how you can measure Performance of an algorithm.   [12M]

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

UNIT-3

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

OR

6. Identify the following terms from the given tree
i) Parent
ii) Child
iii) Siblings
iv) Path
v) Sub Tree

[12M]

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 insertion sort with an algorithm and example. [5M]

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

UNIT-5

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

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

[9M]

OR

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

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