

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 $5 \times 12 = 60$ Marks)

UNIT-1

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

OR

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

UNIT-2

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

OR

4. a) Design an algorithm to insert an element at beginning of circularly linked list.
- b) Design an algorithm to delete an element at end of circularly linked list. [6 Marks]

UNIT-3

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

OR

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

UNIT-4

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

OR

8. a) Explain selection sort with an algorithm and example.
b) Design a program to demonstrate selection sort. [5 Marks]

UNIT-5

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

OR

10. Illustrate the steps for Dijkstra's algorithm with an example. [12 Marks]