

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) Identify the steps to print the product of two numbers.
- b) Identify the steps to display numbers from one to given number. [6 Marks]

OR

2. Explain the following i) Big -Oh ii) Big -Omega iii) Big -Theta [12 Marks]

UNIT-2

3. 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]

OR

4. Explain different ways for inserting an element into a Single Linked List with example. [12 Marks]

UNIT-3

5. a) What is the various representation of a binary tree?
- b) List out and explain various binary tree traversals. [6 Marks]

OR

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

UNIT-4

7. Explain about Hashing with an example. [12 Marks]

OR

8. a) Prepare an algorithm for Quick sort with example.

b) Prepare an algorithm for Merge sort with example. [6 Marks]

UNIT-5

9. a) Discuss BFS Graph Traversal with an algorithm.

b) Explain BFS Graph traversal with steps for the following Graph . [3 Marks]

OR

10. a) Discuss how to represent Graph storage using Adjacency matrix.

b) Briefly explain about Adjacency List with example. [7 Marks]