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
b) Differentiate linear and non -linear data structure . [6 Marks]

OR

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

UNIT-2

3. Explain different ways for insert ing an element into a Single Linked List with example. [12 Marks]

OR

4. Develop various queue operations using arrays. With example [12 Marks]

UNIT-3

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

OR

6. a) Prepare an algorithm to insert an element into B+ Tree.
b) Prepare an algorithm to delete an element in B + Tree. [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. Discuss and compare various graph traversals.
Prepared by:
Assistant Professor/ MCA [12 Marks]

OR

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