

**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. [6M]  
b) Identify the steps to display numbers from one to given number. [6M]

**OR**

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

**UNIT-2**

3. a) What is linked list? What are the different types of linked list? [6M]  
b) Explain the advantages of linked list over arrays. [6M]

**OR**

4. Develop Circularly Linked List with various operations. [12M]

**UNIT-3**

5. Describe different cases to delete an element in BST with an algorithm and examples. [12M]

**OR**

6. a) Prepare an algorithm to insert an element into B+ Tree. [6M]  
b) Prepare an algorithm to delete an element in B + Tree. [6M]

**UNIT-4**

7. a) Prepare an algorithm for Quick sort with example. [6M]  
b) Prepare an algorithm for Merge sort with example. [6M]

**OR**

8. a) Explain Linear Search with an algorithm and example. [6M]

b) Design a program to demonstrate Linear Search.

[6M]

**UNIT-5**

9. Explain about shortest path problem with an algorithm and example.

[12M]

**OR**

10. a) Discuss DFS Graph Traversal with an algorithm.

[3M]

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

[9M]