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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) What is an Array? Explain the representation of an array. [6M]
- b) Apply various operations that can perform on array. [6M]

OR

2. a) Explain Linear and Non Linear Data structure with examples [6M]
- b) Differentiate linear and non -linear data structure . [6M]

UNIT-2

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

OR

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

UNIT-3

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

OR

6. a) Analyze the steps to insert elements into Binary Search Tree. [6M]
- b) Analyze the steps to search element in Binary Search 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 bubble sort with an algorithm and example. [5M]

b) Design a program to demonstrate bubble sort.

[7M]

UNIT-5

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

[12M]

OR

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

[3M]

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

[9M]