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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. Discuss how you can measure Performance of an algorithm. [12 Marks]

OR

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

UNIT-2

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

OR

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

UNIT-3

5. a) Prepare an algorithm to insert an element into B+ Tree.
b) Prepare an algorithm to delete an element in B + Tree. [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. a) What do you mean by searching? What are the types of searching?
b) Differentiate various searching techniques. [6 Marks]

OR

8. a) Explain Binary Search with an algorithm and example.
b) Develop a program to demonstrate Binary Search. [6 Marks]

UNIT-5

9. a) Define Graph. List out various graph operations?
b) What are the various applications and properties of Graphs ? [4 Marks]

OR

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