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 space complexity? Evaluate space complexity for the following code
int square(int a) { return a*a; }
b) What is time complexity? Evaluate time complexity for the following code
int square(int a) { return a*a; } [6 Marks]

UNIT-2

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

OR

4. a) What is a Stack? What are the operations that perform on a stack?
b) What is a Queue? What are the operations that perform on a Queue? [6 Marks]

UNIT-3

5. a) Analyze the steps to insert elements into Binary Search Tree.
b) Analyze the steps to search element in Binary Search Tree. [6 Marks]

OR

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

UNIT-4

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

OR

8. Differentiate various sorting techniques with time complexity. [12 Marks]

UNIT-5

9. Explain about shortest path problem with an algorithm and example. [12 Marks]

OR

10. Discuss and compare various graph traversals.

Prepared by:

Assistant Professor/ MCA [12 Marks]