

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

UNIT-3

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

OR

6. a) Define binary tree and give the binary tree node structure. [6M]
 b) What are the various types of a binary tree? [6M]

UNIT-4

7. a) Discuss Space and Time Complexity for Linear and Binary Search. [6M]
 b) Distinguish between Linear Search and Binary Search. [6M]

OR

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

b) Develop a program to demonstrate Binary Search.

[6M]

UNIT-5

9. a) Define Graph. List out various graph operations?

[4M]

b) What are the various applications and properties of Graphs ?

[8M]

OR

10. a) What is minimum – cost spanning tree?

[4M]

b) Prepare an algorithm for Prim's with example.

[8M]