

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. Explain the following i) Big -Oh ii) Big -Omega iii) Big -Theta

[12M]

OR

2. a) What is a Data Structure? Explain its advantages.
 b) Explain various types of Data Structures.

[6M]

[6M]

UNIT-2

3. a) Convert the expression $(5 + 6) * (6 - 5)$ from infix to postfix
 b) Evaluate the postfix expression $25*423 - * +$.

[6M]

[6M]

OR

4. Develop various queue operations using arrays. With example

[12M]

UNIT-3

5. Identify the following terms from the given tree
 i) Internal Nodes
 ii) External Nodes
 iii) Depth
 iv) Height
 v) Level

[12M]

OR

6. Identify the following terms from the given tree
 i) Parent
 ii) Child
 iii) Siblings
 iv) Path
 v) Sub Tree

[12M]

UNIT-4

7. a) Explain Linear Search with an algorithm and example.

[6M]

b) Design a program to demonstrate Linear Search.

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

[3M]

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

[9M]

OR

10. Discuss and compare various graph traversals.

[12M]