

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. Discuss about Asymptotic Notations with their types.
 (AUTONOMOUS)

[12M]

OR

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

[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. What is an expression? Explain various types of expressions with example.

[12M]

UNIT-3

5. a) Explain BFS Tree Traversal with an example.
 b) Explain DFS Tree Traversal with an example.

[6M]

[6M]

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 insertion sort with an algorithm and example.

[5M]

b) Design a program to demonstrate insertion sort.

[7M]

OR

8. a) Prepare an algorithm for Quick sort with example.

[6M]

b) Prepare an algorithm for Merge sort with example.

[6M]

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

[12M]