

O.P.Code: 24mca110	Regulation2022	H.T.No.												
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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. Explain the following i) Big -Oh ii) Big -Omega iii) Big -Theta [12M]

OR

2. a) What is a Data Structure? Explain its advantages. [6M]

b) Explain various types of Data Structures. [6M]

UNIT-2

3. a) Convert the expression $(5 + 6) * (6 - 5)$ from infix to postfix [6M]

b) Evaluate the postfix expression $25*423 -*+$. [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.
b) Design a program to demonstrate Linear Search.

[6M]

[6M]

OR

8. a) Explain bubble sort with an algorithm and example.
b) Design a program to demonstrate bubble sort.

[5M]

[7M]

UNIT-5

9. a) Discuss BFS Graph Traversal with an algorithm.
b) Explain BFS Graph traversal with steps for the following Graph .

[3M]

[9M]

OR

10. Discuss and compare various graph traversals.

[12M]