

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) [12 Marks]

OR

2. Explain the following i) Big -Oh ii) Big -Omega iii) Big -Theta [12 Marks]

UNIT-2

3. Explain different ways for inserting an element into a Single Linked List with example. [12 Marks]

OR

4. Develop Circularly Linked List with various operations. [12 Marks]

UNIT-3

5. Identify the following terms from the given tree
i) Parent
ii) Child
iii) Siblings
iv) Path
v) Sub Tree [12 Marks]

OR

6. a) What are the different ways to define a tree?
b) Find various terminologies used in a tree. Explain any six terminologies [4 Marks]

UNIT-4

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

OR

8. Explain about Hashing with an example. [12 Marks]

UNIT-5

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

OR

10. a) Define Graph. List out various graph operations?
- b) What are the various applications and properties of Graphs ? [4 Marks]