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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. a) Explain Linear and Non Linear Data structure with examples
- b) Differentiate linear and non -linear data structure . [12 Marks]

**OR**

2. Discuss how you can measure Performance of an algorithm. [12 Marks]

**UNIT-2**

3. a) What is a Stack? What are the operations that perform on a stack?
- b) What is a Queue? What are the operations that perform on a Queue? [12 Marks]

**OR**

4. Develop various queue operations using arrays. With example [12 Marks]

**UNIT-3**

5. a) What is the various representation of a binary tree?
- b) List out and explain various binary tree traversals. [12 Marks]

**OR**

6. a) Define binary tree and give the binary tree node structure.
- b) What are the various types of a binary tree? [12 Marks]

**UNIT-4**

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

**OR**

8. a) Explain selection sort with an algorithm and example.

b) Design a program to demonstrate selection sort. [12 Marks]

<b>UNIT-5</b>
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9. Explain about shortest path problem with an algorithm and example. [12 Marks]

**OR**

10. Discuss and compare various graph traversals.

Prepared by:

Mr. J. S. ANANDA KUMAR

Assistant Professor/ MCA [12 Marks]