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) What is an Algorithm? Explain its specifications. [6M]
   b) What are the steps required to find sum of two numbers. [6M]

OR

2. a) Identify the steps to print the product of two numbers. [6M]
   b) Identify the steps to display numbers from one to given number. [6M]

UNIT-2

3. Explain different ways for insert ing an element into a Single Linked List with example. [12M]

OR

4. Develop various stack operations using arrays. With example [12M]

UNIT-3

5. a) Define binary tree and give the binary tree node structure. [6M]
   b) What are the various types of a binary tree? [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 selection sort with an algorithm and example. [5M]

b) Design a program to demonstrate selection sort. [7M]

OR

8. a) What do you mean by searching? What are the types of searching? [6M]
b) Differentiate various searching techniques. [6M]

UNIT-5

9. a) What is minimum – cost spanning tree? [4M]
b) Prepare an algorithm for Prim's with example. [8M]

OR

10. Discuss and compare various graph traversals. [12M]