

FE Sem - II (NEP - 2020) INFT, CMPN May 2026

Data Structure

[Max Marks:60]

Duration: 2 hrs

- N.B. :** (1) Question No 1 is Compulsory.
 (2) Attempt any three questions out of the remaining five.
 (3) All questions carry equal marks.
 (4) Assume suitable data, if required and state it clearly.

- 1 **Attempt any THREE** [15]
 - a Define Data Structure. List the types of Data Structure. [5]
 - b What is a Tree? Explain its terminology (root, leaf, height, degree). [5]
 - c List the applications of the queue. [5]
 - d Differentiate between array and Linked List. [5]
- 2 a Convert the following infix expression to a postfix expression. $A + B * (C - D) / E$ [8]
 - b Write an algorithm to implement operations on Stack. (Push(), Pop(), Display()) [7]
- 3 a What is a Linked List? Write an algorithm to delete a node from a Singly Linked List. [8]
 - b List and explain the operations on data structures. [7]
- 4 a List the tree traversal methods. Write the algorithm for preorder, inorder and postorder tree traversal. [8]
 - b Design a Huffman tree for the word "MAHARASHTRA". Also write the Huffman code to represent each symbol. [7]
- 5 a What is a Binary Search Tree? Design a Binary Search Tree for the following elements: 40, 70, 80, 90, 20, 30, 50, 60 [8]
 - b Write an algorithm to implement stack using Linked List. [7]
- 6 a List the applications of Stack. Explain any one application with a suitable example. [8]
 - b Write an algorithm to reverse a Singly Linked List. [7]