

Duration: 3hrs

[Max Marks:80]

- 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 **FOUR** [20]
a List the linear and non-linear data structures with examples. [5]
b What is a graph? Explain methods to represent a graph. [5]
c Explain the advantage of circular queue over linear queue with a suitable example. [5]
d Differentiate between stack and queue. [5]
e Explain expression tree with suitable example. [5]
- 2 a What is Queue? Write an algorithm to implement a queue using an array. [10]
b Explain circular queue and priority queue with examples. [10]
- 3 a What is a Linked List? Write an algorithm to add a new node at the beginning of the Doubly Linked List. [10]
b Explain different types of Linked List. Also explain the operations on the linked list. [10]
- 4 a Explain the preorder, inorder and postorder traversal methods with examples. [10]
b Design a Huffman tree for the word "MAHARASHTRA". Also write the Huffman code to represent each symbol. [10]
- 5 a What is a Binary Search Tree? Design a Binary Search Tree for the following elements: 90, 70, 80, 50, 30, 40, 10, 100 [10]
b What is Binary Search? Write an algorithm to perform binary search. [10]
- 6 a Explain the collision resolution techniques. [10]
b Explain Comparison of sorting Techniques. [10]
