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]**

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