

BT-3/D-21**43159****DATA STRUCTURE****Paper-IT-205A**

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *five* questions out of *eight* questions selecting at least *one* question from each unit.

UNIT-I

1. (a) What is abstract data types ? Also explain built in and user defined Data structure with the help of example. 8
- (b) What is sparse matrix ? Write a algorithm to transpose a matrix of $(p \times q)$ size matrix. 7
2. Write a algorithm to sort data 23, 67, 13, 21, 2, 56 with the help of Quick sort algorithm and explain all the steps. 15

UNIT-II

3. (a) What is stack and its uses. 5
- (b) Write an Algorithm from infix to Postfix conversion using stack. Explain $A+B/C*(D-A)^F^H$ and convert to postfix expression step-by-step. 10
4. What do you mean by circular Queue ? Write an algorithm to implement insertion and deletion in linear queue and circular Queue. 15

UNIT-III

5. What do you mean by linked list ? Write an algorithm to implement Stack Using Linked List. 15
6. What is double linked list ? Write an algorithm to implement deletion and insertion in double linked list. 15

UNIT-IV

7. What is Binary tree ? Write an algorithm to create binary tree from 23, 56, 78, 26, 65, 109. And insert 37 data in this tree. 15
8. What is directed graph and undirected graph ? Also explain minimum spanning tree with the help of example. 15

