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BT-3/D-22 **43229**

DATA STRUCTURE
ES-CS-AIML-203A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit.

Unit I

1. (a) Define Data Structure. How can you implement static and dynamic data structures ? Explain using examples. **8**

   (b) Explain Insertion sort with the help of a suitable example. **7**

2. (a) Write an algorithm for linear search from an array. **8**

   (b) What do you understand by Space Matrices ? **7**

Unit II

3. (a) What do you understand by polish notation ? Write the procedure to convert infix expression to prefix expression. **8**

   (b) Explain quick sort algorithm with the help of a suitable example. **7**

4. (a) What is a circular queue ? Discuss its advantages over simple queue. Write a procedure to insert an element into a circular queue. 8

(b) What is priority queue ? Discuss its any application. 7

Unit III

5. (a) How is traversing performed on singly linked list ? 8

(b) Write a short note on circular linked list. 7

6. (a) What is doubly linked list ? Write the procedure to insert a node in a sorted doubly linked list. 8

(b) Write the PUSH and POP procedure for linked implementation of stack. 7

Unit IV

7. (a) What is Binary Tree ? Explain various transversal methods on a binary tree in brief. 8

(b) What is an AVL ? Explain the procedure to delete a node in an AVL tree. 7

8. Explain Breadth first and Depth first graph traversal using a suitable example. 15