2009

Subject Code—650-X

P.G.D.C.A. EXAMINATION

(Second Semester)

(Re-appear)

MS-06

DATA STRUCTURE & ALGORITHM

Time : 3 Hours   *Maximum Marks :* 100

Note : Attempt any *Five* questions. All questions carry equal marks.

1. What are Data Structures ? Explain their classification. Linked list is a better data structure than an array, why ?   **20**

2. What is a stack ? Explain its implementations, operations and application with illustrations.**20**

3. (a) Consider a circular queue Q with six spaces where front = 2, Rear = 4, Q : _, L, M, N. _, _

   (i) Add O

   (ii) Add P

   (iii) Delete two letters.

   (iv) Add Q; R. S

   (v) Delete one letter.

   Describe queue after each operation. **10**

   (b) Explain various types of queue with illustrations. **10**

4. (a) Show, how is following polynomial being represented using a linked list :

   $$P = 4x^4y^4 - 7x^2y^2 + 5x^2y + 3xy^2 + 8$$

   (b) Write an algorithm/procedure to delete alternate element from a linear linked list. **8+12**

5. (a) Draw BST for the following data and write its preorder, inorder and postorder traversals :

   J R D G T E M H P A F Q

(b) Draw the binary tree using the following data and draw the one-way and two-way inorder threading of it :

Pre : A B C D E F G H J K L M P Q N

In : C D E B G H F K L P Q M N J A

8+12

6. What is a Graph ? How is it represented in memory ? Discuss its applications with illustrations. **20**

7. What do you understand by searching and sorting ? Explain four sorting techniques of your choice and discuss, how do you rank them according to their complexity analysis ? **20**

8. Write short notes on the following : **6+4+10**

   (a) Balanced Trees

   (b) Internal and External Sorting

   (c) Various Hashing Techniques.