

TEJAS JUN 2016

Subject Code—4254

**P.G.D.C.A. EXAMINATION**

(Second Semester)

MS-06

**DATA STRUCTURE AND ALGORITHM**

*Time : 3 Hours*

*Maximum Marks : 100*

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

1. Write the algorithm for binary search and apply it on the given data :  
44, 22, 55, 77, 66, 60, 30, 22, 88, 11, 99
2. Explain the linked list and also explain the algorithm to insert and delete a node into the linked list.
3. (a) What is Queue ? Explain the procedure to INSERT and DELETE the element from queue.

**P.T.O.**

- (b) Evaluate the given expression with the help of STACK :

$$6 + 2 \uparrow 3 \uparrow 2 - 4 * 5$$

4. (a) Draw the tree for given expression :

$$E = (2x + y) (5a - b)^3$$

- (b) Suppose T is a complete tree with  $n$  nodes and depth D. Prove :

$$2^{D-1} - 1 < n \leq 2^D - 1.$$

5. (a) Suppose the following sequences. List the nodes of a binary tree T in preorder and inorder, respectively :

**Preorder** : G, B, Q, A, C, K, F, P, D, E, R, H

**Inorder** : Q, B, K, C, F, A, G, P, E, D, H, R

- (b) Write the algorithm for inserting the node into a Binary Search Tree.

6. Write down various remaking techniques for Traversing a graph.

7. Sort the given data with the help of (i) Heap-sort, (ii) Merge-sort.

D, A, T, A, S, T, R, U, C, T, U, R, E, S.

8. Write short notes on the following :

- (a) Doubly Linked List
- (b) Threaded Binary Tree.