Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–III • EXAMINATION – WINTER 2013

Subject Code: 130702   **Date: 07-12-2013**
Subject Name: Data and File Structure
Time: 02.30 pm - 05.00 pm   **Total Marks: 70**
Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1   Answer the following.   **14**
(a) What do you mean by Data Structure? Give the difference between Primitive and Non-primitive data structures.
(b) Explain Multidimensional Array. How it is stored in memory?
(c) Write a short note on threaded binary tree
(d) Convert following Infix expression into Postfix expression. Show each step.
         A + B ^ C^ D - E * F / G

Q.2 **(a)** What is Stack? Write down algorithms for performing POP and PEEP operations on a stack.   **07**
(b) Answer the following.   **07**
         (i) Compare Simple Queue and Circular Queue.
         (ii) Define the following terms:
              Path, Cycle, Degree of vertex, Sibling.
                                    OR
(b) Write an algorithm to implement insert and delete operation into a Circular Queue using array representation of Queue.   **07**

Q.3   Answer the following.(Any TWO)   **14**
(a) Write an algorithm/program to Delete a node from Doubly Linked List.
(b) Write an algorithm/program to "Insert a node at End" operation of Singly Linked List.
(c) Define tree. Write an algorithm to do in-order traversal and post-order traversals of Binary Search Tree.

Q.4   Answer the following.(Any TWO)   **14**
(a) Create a Binary Search Tree for the following data and do Inorder, Preorder and Postorder traversal of the tree.
              40, 65,25, 55, 10,70,30,50,15,80,75
(b) Define Graph. Write an algorithm to do BFS traversal of a Graph.
(c) Write short notes on (i) Height Balanced Tree. (ii) Indexed-Sequential Files.

Q.5   Answer the following.(Any TWO)   **14**
(a) Explain matrix and linked list representation of a Graph. Also compare BFS and DFS methods of Graph Traversal.
(b) What do you mean by Hashing? Explain any FOUR hashing techniques.
(c) Explain various multiple key access file organization in brief with advantages and disadvantages of each method.

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