Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – WINTER • 2014

Subject Code: 130702 **Date: 01-01-2015**

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	**(a)**	What is data structure? Explain linear and non-linear data structure with example.	**03**
	(b)	Discuss best case, average case and worst case time analysis with example.	**04**
	(c)	Explain PUSH and POP operation of the stack with algorithm.	**07**
Q.2	**(a)**	Write an algorithm to perform insert and delete operation on single queue.	**07**
	(b)	(a) Convert the following infix expression to postfix prefix form. ((A –(B +C))* D) $ (E +F) (b) Evaluate the following infix expression. 2 $ 3 + 5 * 2 $ 2 – 6 / 6	**07**
		OR	
	(b)	Define the following term : Path, Cycle, Degree of vertex, Sibling, Height Balanced Tree, Strictly binary tree, in degree	**07**
Q.3	**(a)**	Explain delete operation in doubly link list.	**07**
	(b)	What is the difference between queue & Dqueue . Explain insertion operation in Dqueue.	**07**
		OR	
Q.3	**(a)**	Write an algorithm to reverse a given single link list.	**07**
	(b)	Create a binary search tree by inserting following nodes in sequence. 68,85,23,38,44,80,30,108,26,5,92,60 Write inorder,preorder and post order traversal of the above generated Binary search tree.	**07**
Q.4	**(a)**	Write an algorithm to perform traversal of Binary search tree	**07**
	(b)	Explain AVL tree with the help of an example also show insertion and deletion with the help of an example.	**07**
		OR	
	(a)	Write a short note on :spanning tree , threaded binary tree	**07**
	(b)	Explain the basic two techniques for Collision-resolution in Hashing with example. Also explain primary clustering.	**07**
Q.5	**(a)**	Compare and contrast Prim's and Kruskal's algorithm with the help of an example	**07**
	(b)	Explain various multiple key access file organization in brief with advantages and disadvantages of each method.	**07**
		OR	
Q.5	**(a)**	What do you mean by Hashing? Explain any FOUR hashing techniques	**07**
	(b)	Explain and differentiate BFS and DFS graph traversal method with suitable graph.	**07**

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