Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 130702 **Date: 02/06/2017**

Subject Name: Data and File Structure

Time: 10:30 AM to 01:00 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 does abstract data type means? Briefly explain linear and non linear data structures.	**07**
	(b)	Explain PUSH and POP operation of the stack with algorithm.	**07**
Q.2	**(a)**	Convert following infix expressions to the postfix expressions. Shows stack trace. A/B$C+D*E/F-G+H (A+B)*D+E/(F+G*D)+C	**07**
	(b)	Write an algorithm to convert infix to postfix expression and explain it with example.	**07**
		OR	
	(b)	Write a Program to perform insert and delete operations on a circular Queue.	**07**
Q.3	**(a)**	Define recursion. What care should be taken in writing recursive function? Give a recursive solution for the problem of "Towers of Hanoi".	**07**
	(b)	Write an algorithm to insert and delete a node in Doubly Linked List.	**07**
		OR	
Q.3	**(a)**	Differentiate between stack & queue. Also explain priority queue with example.	**07**
	(b)	Write a program to search an element in a linked list.	**07**
Q.4	**(a)**	Create a Binary Search Tree for the following data and do in-order, Preorder and Post-order traversal of the tree. 40, 60, 15, 4, 30, 70, 65, 10, 95, 25, 34	**07**
	(b)	Define the following with example : • Strictly binary tree • Complete binary tree	**07**
		OR	
Q.4	**(a)**	How graph can be represented? Write an algorithm for Breadth First Search Traversal of a Graph.	**07**
	(b)	What is an AVL tree? Explain the different types of rotations used to create an AVL tree with suitable examples.	**07**
Q.5	**(a)**	What is hashing? Explain hashing functions.	**07**
	(b)	Write a short note on inverted key file organization	**07**
		OR	
Q.5	**(a)**	Define Hash Clash. Explain Primary Clustering, secondary clustering, rehashing and double hashing.	**07**
	(b)	Write a short note on indexed file organization.	**07**

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