Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–III (NEW) EXAMINATION – SUMMER 2021

Subject Code:3130702   **Date:08/09/2021**
Subject Name:Data Structures
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.**
4. **Simple and non-programmable scientific calculators are allowed.**

Q.1	**(a)**	Explain primitive and Non-primitive data types in detail.	**03**
	(b)	Explain Binary Search with example.	**04**
	(c)	Explain Asymptotic Notations in detail.	**07**
Q.2	**(a)**	Differentiate: Static and Dynamic Memory Allocation	**03**
	(b)	Explain linear and Non-linear data structure with example.	**04**
	(c)	What is stack? Explain operations on stack in detail.	**07**
		OR	
	(c)	What is queue? Explain operations on queue in detail.	**07**
Q.3	**(a)**	Explain advantages of circular queue over Simple queue.	**03**
	(b)	Explain Tower Of Hanoi with example.	**04**
	(c)	Write and explain algorithm for deletion in Singly Linked List.	**07**
		OR	
Q.3	**(a)**	Evaluate the following postfix expression in tabular form: 3 5 * 6 2 / +	**03**
	(b)	Explain Dequeue and Priority queue in detail.	**04**
	(c)	Write and Explain algorithm for insertion in doubly linked list.	**07**
Q.4	**(a)**	Define the following: 1. Sibling 2. Forest 3. Strictly Binary Tree	**03**
	(b)	Construct BST for following sequence and find inorder traversal for the same. 35, 46, 29, 2, 24 ,68, 44, 57, 1, 22, 79, 71	**04**
	(c)	Explain Prim's algorithm with suitable example.	**07**
		OR	
Q.4	**(a)**	Write an algorithm for selection sort.	**03**
	(b)	Differentitae: BFS and DFS.	**04**
	(c)	Explain Kruskal's algorithm with suitable example.	**07**
Q.5	**(a)**	Explain indexed file organization.	**03**
	(b)	Explain rotation rules for AVL tree.	**04**
	(c)	Explain insertion and deletion in B-tree with example.	**07**
		OR	
Q.5	**(a)**	Explain random file organization.	**03**
	(b)	Explain collision resolution techniques with example.	**04**
	(c)	Construct AVL tree for following sequence: 10, 20, 30, 40, 50, 60, 70 ,80	**07**

****