

GUJARAT TECHNOLOGICAL UNIVERSITY**BVOC- SEMESTER– II EXAMINATION – SUMMER 2023****Subject Code: 21120201****Date:18-07-2023****Subject Name: Data Structures****Time:10:30 AM TO 12:30 PM****Total Marks:50****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.

		Marks
Q.1	(a) Define Flow Chart. Explain various symbols used in Flow Chart.	05
	(b) What do you mean by Data Structure? Give the difference between Primitive and Non-primitive data structures.	05
Q.2	(a) Define Queue. What are the benefits of the circular queue over Queue?	05
	(b) Write a pseudocode for the PUSH and POP operations of the stack.	05
OR		
	(b) What is Recursion? Write a pseudocode in 'C' language to find the multiplication of two natural numbers.	05
Q.3	(a) What is linked list? Explain types of it.	05
	(b) Write an algorithm to perform insertion at first position in a linear linked list.	05
OR		
Q.3	(a) Write an algorithm for following operations a) Delete a node from beginning b) Delete a node from the end c) Delete a node after a given node.	05
	(b) State the advantages of circular and doubly linked lists over a singly linked list.	05
Q.4	(a) Explain application of Binary Tree.	05
	(b) Define the following terms: (a) Directed Graph (b) Undirected Graph (c) Weighted Graph (d) Self loop (e) Adjacent Vertices	05
OR		
Q.4	(a) Explain Dijkstra's algorithm with suitable example.	05
	(b) Define Binary Tree. Construct a binary tree from the traversals given below: In-order: E, A, C, K, F, H, D, B, G Pre-order: F, A, E, K, C, D, H, G, B	05
Q.5	(a) What do you mean by Hashing? Explain any two hashing techniques.	05
	(b) Explain the trace of Selection Sort with a suitable example.	05
OR		
Q.5	(a) Write an algorithm that performs a search using binary search method.	05
	(b) Explain collision resolution techniques in detail.	05
