

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**B.VOC- SEMESTER-II EXAMINATION – WINTER 2024**

**Subject Code:21120201**

**Date:21-12-2024**

**Subject Name: Data Structures**

**Time:02:30 PM TO 04:30 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.

		<b>Marks</b>
<b>Q.1</b>	(a) Explain types of data structure.	<b>05</b>
	(b) Define Flow Chart. Explain various symbols used in Flow Chart.	<b>05</b>
<b>Q.2</b>	(a) Define Queue. What are the benefits of circular queue over Queue?	<b>05</b>
	(b) Convert following Infix expression to the corresponding Reverse Polish expression using Stack. $A + B * C - D / E * H$	<b>05</b>
<b>OR</b>		
	(b) Write a pseudocode for the PUSH and POP operations of the stack.	<b>05</b>
<b>Q.3</b>	(a) What is a Linked List? Explain types of it	<b>05</b>
	(b) Differentiate between arrays and linked list	<b>05</b>
<b>OR</b>		
<b>Q.3</b>	(a) Explain delete operation of doubly linked list.	<b>05</b>
	(b) Write an algorithm to perform insertion at last position in a linear linked list	<b>05</b>
<b>Q.4</b>	(a) Explain 2-3 trees.	<b>05</b>
	(b) Discuss Depth first & Breadth first search.	<b>05</b>
<b>OR</b>		
<b>Q.4</b>	(a) Explain Binary Search Tree with an example.	<b>05</b>
	(b) Explain Prim's algorithm with an example.	<b>05</b>
<b>Q.5</b>	(a) Explain Hashing technique in detail.	<b>05</b>
	(b) Write an algorithm for merge sort.	<b>05</b>
<b>OR</b>		
<b>Q.5</b>	(a) Explain bubble sort with an example.	<b>05</b>
	(b) What is a divide and conquer technique? Explain it in details	<b>05</b>

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