Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA - SEMESTER– II EXAMINATION – WINTER 2019

Subject Code: 3620002   **Date: 20/12/2019**
Subject Name: Data Structures
Time: 02:30 PM TO 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)**	Attempt the following questions.	**07**
		1. What is analysis of algorithm?	
		2. What are the Linear and Nonlinear Data Structures?	
		3. How to calculate the address of any element in array?	
		4. Which data structures normally used in simulation?	
		5. What is mixed graph?	
		6. A path in diagraph in which edges are distinct is called simple path(True/False)	
		7. What is the worst case time complexity of selection sort?	
	(b)	Discuss the KWIC indexing using example.	**07**
Q.2	**(a)**	What are the applications of stack? How stack is used in recursion?	**07**
	(b)	Write the algorithm for convert infix to reverse polish expression? And also convert A*B+C*D in to reverse polish expression.	**07**
		OR	
	(b)	Write the algorithms for insertion and deletion in circular queues.	**07**
Q.3	**(a)**	Discuss the applications of Linked List with example.	**07**
	(b)	What are the different storage representations of the binary trees? Explain linked storage representation of binary trees in detail.	**07**
		OR	
Q.3	**(a)**	How multi linked structures are useful in representation of sparse matrix? Explain with example.	**07**
	(b)	Write the algorithm for inserting element in Linked List in sorted order.	**07**
Q.4	**(a)**	Discuss all the Tree Traversal techniques in detail.	**07**
	(b)	What is spanning trees? Explain DFS and BFS spanning trees in detail.	**07**
		OR	
Q.4	**(a)**	Discuss the matrix representation of graphs in detail.	**07**
	(b)	Compare sequential searching with binary searching in detail.	**07**
Q.5	**(a)**	Sort following numbers using Bubble sort by showing all passes. 23,56,78,14,69,24,26,34,95,66	**07**
	(b)	Discuss 2-3 trees along with its operations in detail.	**07**
		OR	
Q.5	**(a)**	What are the different hashing functions? Briefly explain all of these functions.	**07**
	(b)	Discuss how following numbers are sorted using Quick Sort. 56,24,95,87,34,55,78,12,48,44	**07**

****

1