Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER– II - EXAMINATION –SUMMER 2016

Subject Code: Data Structure **Date: 24/05/2016**
Subject Name: 2620001 **Total Marks: 70**
Time: 10:30 A.M. to 1:00 P.M.
Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Write short note on	
		1. Minimum spanning tree	**03**
		2. Sparse Matrix	**02**
		3. Height of a tree	**02**
	(b)	Write down various primitive and non primitive data structure in detail.	**07**
Q.2	**(a)**	Write short note on	
		1. KWIC indexing	**04**
		2. Big O notation	**03**
	(b)	Write down algorithms of following operations of singly linked list.	**07**
		1. Add node at last	
		2. Insert node after any node	
		3. Reverse list	
		OR	
	(b)	Write down algorithms of following operations of doubly linked list.	
		1. Add node at last	**03**
		2. Delete node	**03**
		3. Search node	**01**
Q.3	**(a)**	Write down various types of linked list in detail.	**07**
	(b)	Write an algorithm of converting infix expression into prefix expression.	**07**
		OR	
Q.3	**(a)**	Write a recursive algorithm of Binary search.	**07**
	(b)	Compare simple queue and circular queue and write an algorithm to insert element in circular queue.	**07**
Q.4	**(a)**	What is expression tree? Make a expression tree of following expression (a+b)*(c-d)/(e/f)	**07**
	(b)	Write short note on following	
		1. Trie	**03**
		2. AVL Tree	**04**
		OR	
Q.4	**(a)**	Insert following elements in 3-way B-Tree. 12, 23, 435, 56, 67, 78,99, 4 2,34, 46	**07**
	(b)	What is hashing? Write down any four collision resolution techniques.	**07**
Q.5	**(a)**	Explain various Graph representations in detail.	**07**
	(b)	Write an algorithm of Quick sort.	**07**
		OR	
Q.5	**(a)**	Write an algorithm of Depth First search of Graph.	**07**
	(b)	Sort the following data using Heap sort algorithm. 25 37 52 38 12 86 92 35	**07**

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