

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 07
 $(a+b)*(c-d)/(e/f)$
- (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. 07
12, 23, 435, 56, 67, 78, 99, 42, 34, 46
- (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. 07
25 37 52 38 12 86 92 35
