

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-III Examination-Dec.-2011

Subject code: 130702

Date: 24/12/2011

Subject Name: Data & File Structure

Time: 2.30 pm -5.00 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) Answer the following 12

- (i) What is Data Structure? Give the difference between Linear and Non Linear Data Structures.
- (ii) Give the difference between Simple Queue and Circular Queue.
- (iii) Define the terms with respect to graph: In-degree, Path, Cycle.
- (iv) Convert following Infix expression into Postfix and Prefix expression.
$$a - b / c * d + e * f / g$$

(b) What do you mean by FIFO and LIFO? 02

Q.2 (a) Write an algorithm to implement PUSH, POP and CHANGE Operations on Stack. 07

- (b) Write short notes on following 07**
- (i). Storage representation of 2 Dimensional array
 - (ii). Advantages and disadvantages of linked list over array.

OR

- (b) Write short note on following. 07**
- (i) Evaluation of Postfix Expression using Stack.
 - (ii) Applications of Trees.

Q.3 (a) Write an algorithm to insert and delete a node in Doubly Linked List. 08

- (b) Write an algorithm/program to implement Delete operation into a Circular Queue using array representation of Queue. 06**

OR

Q.3 (a) Write an algorithm/program to implement following operations in the "Singly Linked List". 08

- (i) Insert the node at end
- (ii) Delete the node whose value = Y.

- (b) Write an algorithm/program to implement insert operation into a Circular Queue using array representation of Queue. 06**

- Q.4 (a)** Create a Binary Search Tree for the following data and do in-order, Preorder and Post-order traversal of the tree. **06**
50, 60, 25, 40, 30, 70, 35, 10, 55, 65, 5
- (b)** Answer the following. **08**
- What is recursion ? What care should be taken in writing recursive function ? Give example of any one recursive function.
 - Compare BFS and DFS traversal methods for Graph.
- OR**
- Q.4 (a)** What is Binary Search Tree? Write recursive algorithm/program to implement in-order and pre-order traversal of the Binary Search Tree. **06**
- (b)** How graph can be represented? Write an algorithm for Breadth First Search Traversal of a Graph. **08**
- Q.5 (a)** Write short notes on following **06**
- Priority Queue.
 - Circular Linked List
- (b)** What do you mean by Hashing? Explain various methods for hashing. **08**
- OR**
- Q.5 (a)** Write short notes on following **06**
- Height Balanced Tree.
 - Deque
- (b)** What is File Structure? Explain Indexed Sequential File Structure in detail. **08**
