

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – WINTER • 2014****Subject Code: 130702****Date: 01-01-2015****Subject Name: Data and File Structure****Time: 02.30 pm - 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) What is data structure? Explain linear and non-linear data structure with example. **03**
- (b) Discuss best case, average case and worst case time analysis with example. **04**
- (c) Explain PUSH and POP operation of the stack with algorithm. **07**
- Q.2** (a) Write an algorithm to perform insert and delete operation on single queue. **07**
- (b) (a) Convert the following infix expression to postfix prefix form. **07**
 $((A - (B + C)) * D) \quad \$ (E + F)$
 (b) Evaluate the following infix expression.
 $2 \quad \$ \quad 3 + 5 * 2 \quad \$ \quad 2 - 6 / 6$
- OR**
- (b) Define the following term : Path, Cycle, Degree of vertex, Sibling, Height
 Balanced Tree, Strictly binary tree, in degree **07**
- Q.3** (a) Explain delete operation in doubly link list. **07**
- (b) What is the difference between queue & Dqueue . Explain insertion operation in Dqueue. **07**
- OR**
- Q.3** (a) Write an algorithm to reverse a given single link list. **07**
- (b) Create a binary search tree by inserting following nodes in sequence. **07**
 $68, 85, 23, 38, 44, 80, 30, 108, 26, 5, 92, 60$
 Write inorder, preorder and post order traversal of the above generated Binary search tree.
- Q.4** (a) Write an algorithm to perform traversal of Binary search tree **07**
- (b) Explain AVL tree with the help of an example also show insertion and deletion with the help of an example. **07**
- OR**
- (a) Write a short note on :spanning tree , threaded binary tree **07**
- (b) Explain the basic two techniques for Collision-resolution in Hashing with example. Also explain primary clustering. **07**
- Q.5** (a) Compare and contrast Prim's and Kruskal's algorithm with the help of an example **07**
- (b) Explain various multiple key access file organization in brief with advantages and disadvantages of each method. **07**
- OR**
- Q.5** (a) What do you mean by Hashing? Explain any FOUR hashing techniques **07**
- (b) Explain and differentiate BFS and DFS graph traversal method with suitable graph. **07**
