

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-III (New) EXAMINATION – WINTER 2018

Subject Code: 2130702

Date: 28/11/2018

Subject Name: Data Structure

Time: 10:30 AM TO 01:00 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 Recursion? Write a pseudocode in 'C' language to find the multiplication of two natural numbers. **03**
- (b) Differentiate between Stack and Queue. **04**
- (c) Write algorithms for Push and Pop operations on a stack. **07**
- Q.2** (a) Convert Infix Expression $A \wedge B * C - D + E / F / (G + H)$ into Postfix expression using stack. **03**
- (b) Explain average case timing analysis for Search Algorithm. **04**
- (c) Write an algorithms to convert Infix Expression(without parenthesis) into Postfix Expression **07**
- OR**
- (c) Write algorithms for Insert and Delete operation in Circular Queue. **07**
- Q.3** (a) Evaluate the Postfix Expression $6\ 2\ 3\ +\ -\ 3\ 8\ 2\ /\ +\ * \ 2\ \$\ 3\ +$ using Stack. **03**
- (b) Write an algorithm for insertion of node at last position in Liner Linked List. **04**
- (c) Create a Binary Search Tree for the following data and do Inorder, Preorder and Postorder traversal of the tree.
45, 70, 30, 60, 15, 75, 35, 55, 20, 85, 80 **07**
- OR**
- Q.3** (a) Explain Priority Queue? **03**
- (b) Write an algorithm for deletion of node in Liner Linked List. **04**
- (c) What is Binary Search Tree? Construct a binary search tree for the following elements
11, 6, 14, 8, 12, 15, 16, 7, 9, 23 **07**
- Q.4** (a) Write an algorithm for Bubble sort. **03**
- (b) Write an algorithm for insertion of a node in Doubly Linked List. **04**
- (c) What is hashing? Explain Different Hashing techniques in brief. **07**
- OR**
- Q.4** (a) Write an algorithm for Selection sort. **03**
- (b) Write an algorithm for deletion of a node in Doubly Linked List. **04**
- (c) What is hashing? Explain hash clash and its resolving techniques. **07**
- Q.5** (a) Explain spanning tree with example. **03**
- (b) Write an algorithm for Sequential Search. **04**
- (c) Explain different types of File Organizations and discuss the advantages and disadvantages of each of them. **07**
- OR**
- Q.5** (a) What is Topological sorting? **03**
- (b) Write an algorithm for Binary Search. **04**
- (c) Explain Sequential Files and Indexed Sequential Files Structures. **07**
