THE SUPERIOR UNIVERSITY LAHORE

Final-Term Exam(Lab)

Semester:3rd **Session:Spring 2023**

Faculty of Computer Science and Information Technology **QCH:**
Subject:Data Structure and Algorithm **Total Marks:40**

Name: _____

Roll No: _____

Date: _____

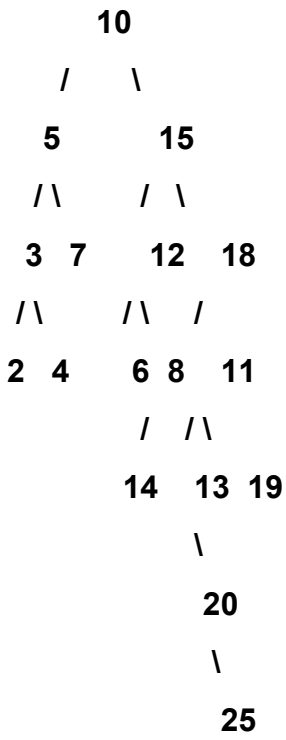
Time Allowed: 120Mins.

Instructions:

1. No cutting or overwriting is allowed.
2. Use of mobile phone is strictly prohibited.
3. No extra time will be given.

Question #	CLO #	Domain and BT Level	Total Marks
1	CLO1,2	C6,C3	15
2	CLO1,2	C3	10
3	CLO1,2	C1	15

Question:1



a) Insertion: Insert the values 25 and 12 into the given BST, following the rules of a Binary Search Tree.

b) In-Order Traversal: Perform an in-order traversal on the **modified** BST. Write down the sequence of visited nodes.

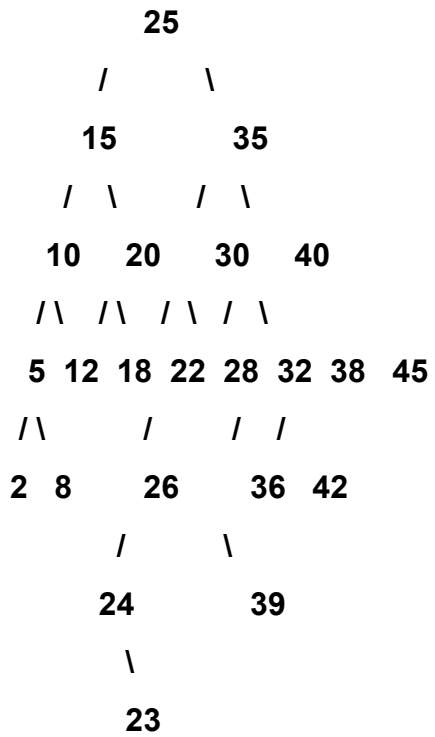
c) Pre-Order Traversal: Perform a pre-order traversal on the **modified** BST. Write down the sequence of visited nodes.

d) Post-Order Traversal: Perform a post-order traversal on the **modified** BST. Write down the sequence of visited nodes.

e) BFS Level-Order Traversal: Perform a Level-order traversal on the modified BST. **Write** down the sequence of visited nodes.

f) Deletion: Delete the node with the value 30 from the BST and then perform an in-order traversal on the modified tree. **Write** down the sequence of visited nodes.

Question#2



Note: You'll need to implement the member functions of the AVLTree class (e.g., insert, getHeight, getBalanceFactor, rightRotate, leftRotate, and **Show**). These functions are responsible for inserting nodes into the AVL tree, balancing it, and **Showing** the tree structure.

Question#3

Define a function RemoveDublicateNode(Node *head) which remove the duplicate node (repeating) from

the sorted link list and display the resultant list.

Sample:

1 -> 2 -> 3 -> 3 -> 8

Output: 1 -> 2 -> 3 -> 8

BEST OF LUCK