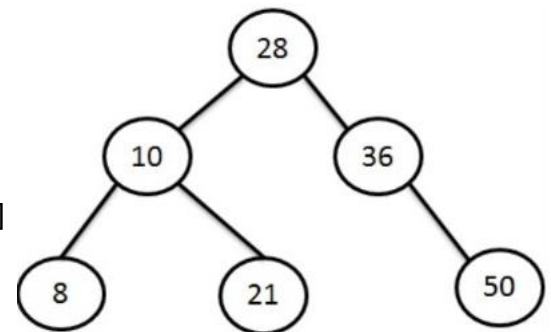# Quiz – 5   Time allowed: 10 min

Balanced BSTs, AVL Trees

Name: _____   ID: _____

Refer to the given AVL tree for questions 1-3.

Q1) What is the best-case time complexity of deletion in an AVL tree? [1.5 pts]

Q2) State one element that, if inserted into the given tree, will require a right rotation, followed by a left rotation. [1.5 pts]

Q3) Construct the final updated AVL tree after performing the following operations, sequentially: [3 pts]

                insert(15), delete(10)

Q4) Complete conditions 1 and 2 in the given code to update an AVL tree after deleting a node. Assume you have a helper function getBalance(Node* node) that returns the balance factor by subtracting the height of the right subtree from the height of the left subtree. [4 pts]

```
Node* rebalance(Node* root) {

    if ( root == nullptr)

        return root;

    updateHeight(root);

    int bal = getBalance(Node* root);

    // Condition 1
    if


        return leftRotate(root);

    // Condition 2
    if


        return leftRightRotate(root);
}
```