**QUIZE 2**

**A close-up of a person's face

Description automatically generatedPROBLEM 1. Consider the following tree and answer the following questions.  
  
  
  
  
  
  
  
  
  
  
  
  
A. No –** The left child of node 5 (8) violates the Binary Search Tree rule.  
**B. Yes –** All levels are filled except the last, which is filled from left to right.  
**C. Yes –** The height difference between left and right subtrees of every node is at most 1.

**A diagram of numbers and circles

Description automatically generatedPROBLEM 2: Consider the following binary tree. What is the result if you delete 9 from the tree.**

**A diagram of a triangle

Description automatically generated  
  
  
  
  
  
  
  
  
  
  
  
  
PROBLEM 3: Consider the following parse tree. What is the output after inorder traversal.  
  
A diagram of numbers and circles

Description automatically generatedAnswer:** A-C\*2 + D \* 5 % 4

**PROBLEM 4:** **Consider the following tree and answer the following questions.**

**A white rectangular object with black text

Description automatically generatedA diagram of a diagram

Description automatically generated A close-up of a card

Description automatically generated**

**A number in a triangle

Description automatically generatedPROBLEM 5: Draw the binary search tree that would result from the insertion of the following integer keys:**

**PROBLEM 6:**  **A.** The node with the value 5 is a parent of the node with the value 10 (True/False). **False. The node with the value 10 is the parent of the node with the value 5.  
B.** The node with the value 30 is a child of the node with the value 25 (True/False). **False. The node with the value 25 is a child of the node with the value 30.  
C.** The tree is a complete tree (True/False). **False.** A complete tree is a binary tree in which all levels are filled except possibly the last level, and the last level has all keys as left as possible. This tree does not meet those criteria. **D.** What is the depth of the tree? **Depth of the tree: 2  
F. What is the order of nodes visited using a pre-order traversal?**

* Pre-order traversal: 10, 5, 2, 30, 25, 45

**g. What is the order of nodes visited using a post-order traversal?**

- Post-order traversal: 2, 5, 25, 45, 30, 10

**A triangle with numbers and letters

Description automatically generatedH.** **We remove the root, what will be the new tree?**

- Here, the in-order successor is 25.  
- New tree after removing 10 and replacing with 25:

A number in a triangle

Description automatically generated**I. We add the element 21, what will be the new tree?**- 21 is less than 30 but greater than 25, so it becomes the left child of 25.   
- New tree after adding 21: