



# National University

of Computer & Emerging Sciences Peshawar Campus



Student Name: \_\_\_\_\_

Roll No: \_\_\_\_\_

Program: BS(CS)

Semester: Spring-2021

Time Allowed: 02 hours

Course: CS218– Data Structures

Examination: Mid Term

Total Marks: 60 Weightage: 30

Date: 28<sup>th</sup> May, 2021

Instructor Name: Waqas Ali

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**NOTE:** Attempt all questions.

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## Question No. 5

**Attempt Time:** 20 mins, **Submission Time:** 5 min

**Marks:** 13

- In an AVL tree the height of the left and the right subtrees of each node can differ by at most 1. Why are AVL trees preferred if a perfect balance can be achieved by having both the left and right subtrees of each node at the same height? Demonstrate your argument with the help of an example.
- Starting with an empty tree, construct an AVL tree by inserting the following numbers into the tree (in the same order). Mention the balance of each node and the rotation performed (if required) at each step.

30, 45, 41, 32, 31, 27, 57