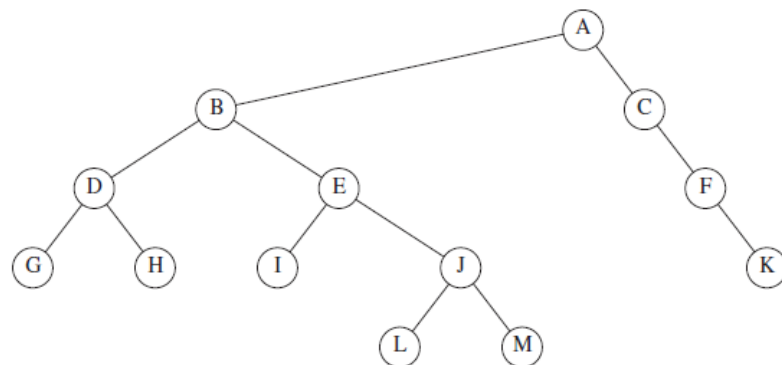**TUTORIAL 8**

ECE532

Figure 1 Tree for Exercises 1 to 3

1 For the tree in Figure 1:
a. Which node is the root?
b. Which nodes are leaves?

2 For each node in the tree of Figure 1:
a. Name the parent node.
b. List the children.
c. List the siblings.
d. Compute the depth.
e. Compute the height.

3 What is the depth of the tree in Figure 1?

4 Give the prefix, infix, and postfix expressions corresponding to the tree in Figure 2.
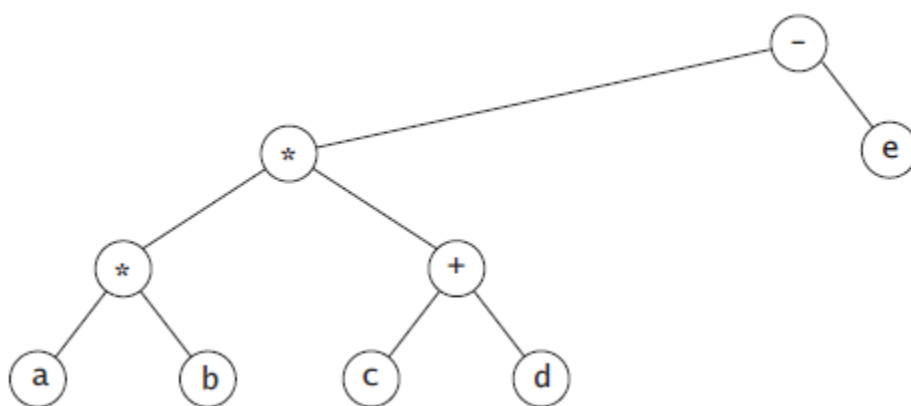

Figure 2 Tree for Exercise 8

5 a. Show the result of inserting 3, 1, 4, 6, 9, 2, 5, 7 into an initially empty binary search tree.
b. Show the result of deleting the root.

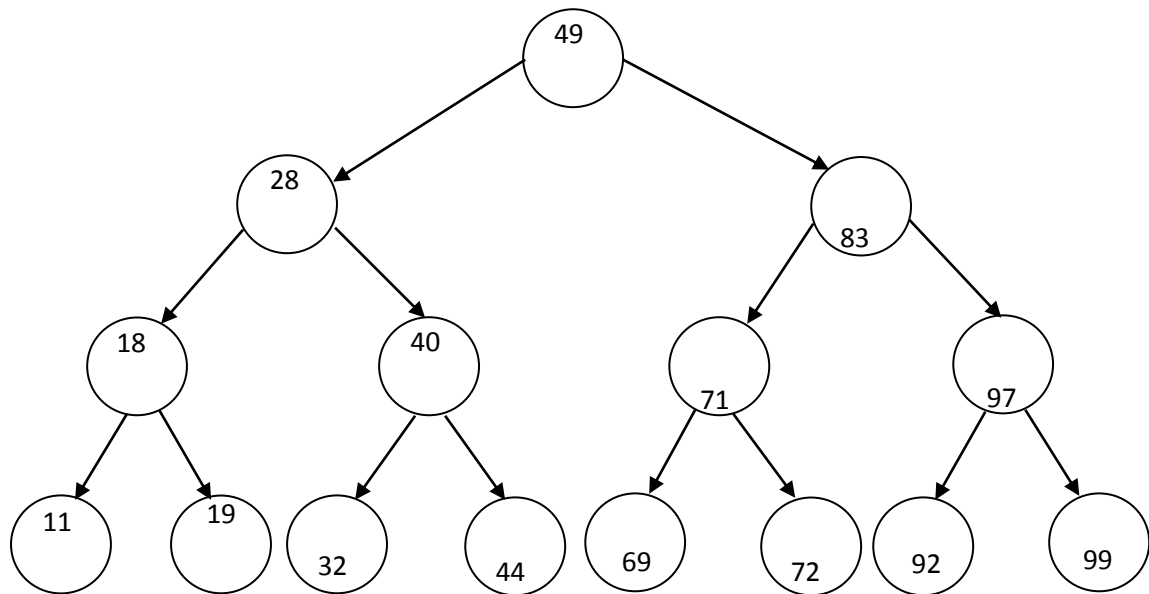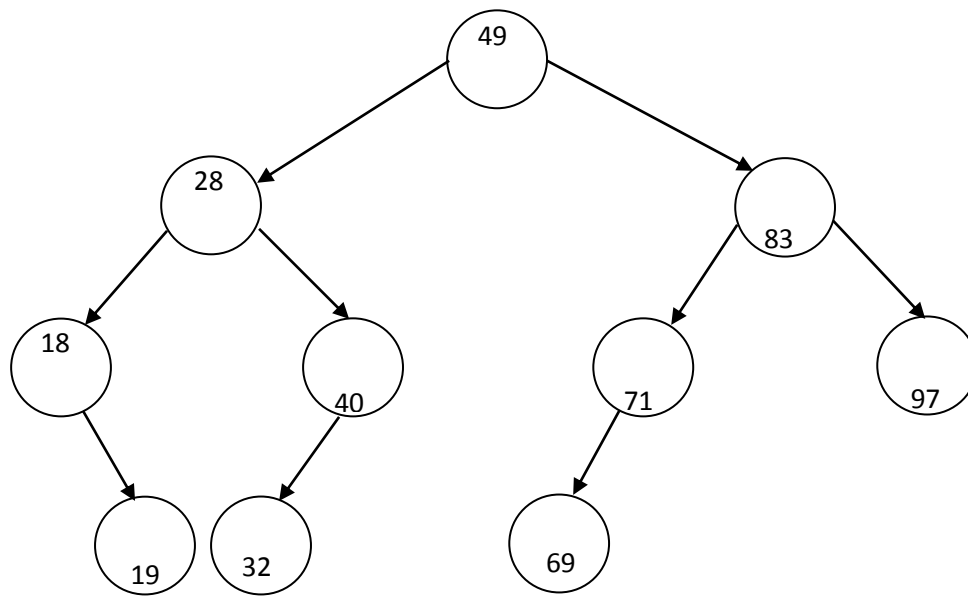**6** For the Binary Search Tree shown in the Figure 3, list down the inorder and preorder traversals of the tree.

Figure 3

7)   Draw the binary expression tree that represents the following parenthesized infix expression.

$$(((A + B) * (C - D)) / (E \wedge F))$$

8) For the Binary Search Tree shown below, list down the postorder and preorder traversals of the tree.

(4   marks)

9)   A binary tree has the following data structure:

```
struct tnode
    {
    int data;
    struct tnode *lchild, *rchild;
    };
```

Write a function to insert a new node in binary search tree to get a tree created.

10) Write a function to search for a given key value in a binary search tree