

1.

For the expression  $(7-(4*5))+(9/3)$  which of the following is the post order tree traversal?

- ☐ A \*745-93/+
- ☐ B 93/+745\*-
- ☐ C 745\*-93/+
- ☐ D 74\*+593/-

## Question 2

Which traversal's pseudo code is written here?

```
order(node)
Q → Queue()
Q.push(node)
while !Q.empty():
    current_node = Q.pop()
    print current_node.value
    if current_node.left is not NULL:
        Q.push(current_node.left)
    if current_node.right is not NULL:
        Q.push(current_node.right)
```

- ☐ A Level order
- ☐ B Pre-order
- ☐ C Post-order
- ☐ D In-order

### Question 3

Which traversal is shown by this pseudo code?

```
Order(node):  
    if node is not null:  
        Order(node.left)  
        print node.value  
        Order(node.right)
```

- ☐ A In-order
- ☐ B Level Order
- ☐ C Post-order
- ☐ D Pre-order

## Question 5

What is a full binary tree?

- ☐ A Each node has exactly zero or two children
- ☐ B Each node has exactly two children
- ☐ C All the leaves are at the same level
- ☐ D Each node has exactly one or two children

## Question 8

Which among the following is the pseudo code for post-order traversal?

(A) 

```
Order(node):  
    if node is not null:  
        Order(node.left)  
        Order(node.right)  
        print node.value
```

(B) 

```
Order(node):  
    if node is not null:  
        Order(node.right)  
        Order(node.left)  
        print node.value
```

(C) 

```
Order(node):  
    if node is not null:  
        Order(node.left)  
        print node.value
```

(D) None of the above

## Question 10

Which of the following is not an advantage of trees?

- ☐ A Hierarchical structure
- ☐ B Faster search
- ☐ C Router algorithms
- ☐ D Undo/Redo operations in a notepad

### **Answers:**

1. C First build a binary tree for the expression then find out the postorder traversal of that tree and after that the answer will be  $745 * -93 / +$ .

2. A

3. A

5. A A full binary tree is a tree in which each node has exactly 0 or 2 children.

8. A

10. D Undo/Redo operations in a notepad is an application of stack. Hierarchical structure, Faster search, Router algorithms are advantages of trees.

### More Questions

1. The number of edges from the root to the node is called \_\_\_\_\_ of the tree.
- a) Height
  - b) Depth
  - c) Length
  - d) Width
2. The number of edges from the node to the deepest leaf is called \_\_\_\_\_ of the tree.
- a) Height
  - b) Depth
  - c) Length
  - d) Width

### 3. What is a full binary tree?

- a) Each node has exactly zero or two children
  - b) Each node has exactly two children
  - c) All the leaves are at the same level
  - d) Each node has exactly one or two children
- 

### 4. What is a complete binary tree?

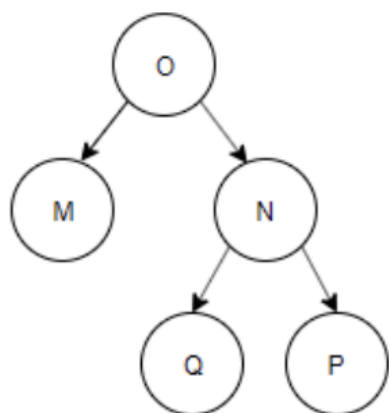
- a) Each node has exactly zero or two children
  - b) A binary tree, which is completely filled, with the possible exception of the bottom level, which is filled from right to left
  - c) A binary tree, which is completely filled, with the possible exception of the bottom level, which is filled from left to right
  - d) A tree in which all nodes have degree 2
- 

### 11. Construct a binary tree by using postorder and inorder sequences given below.

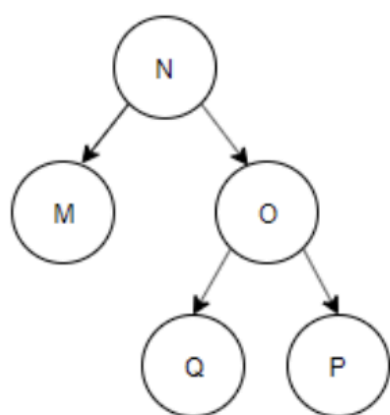
Inorder: N, M, P, O, Q

Postorder: N, P, Q, O, M

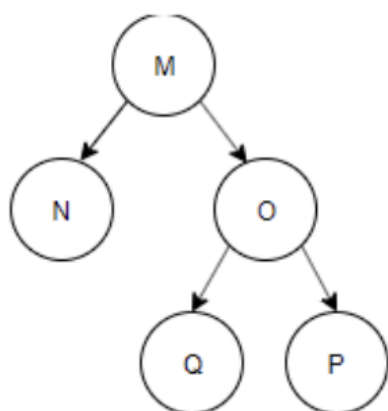




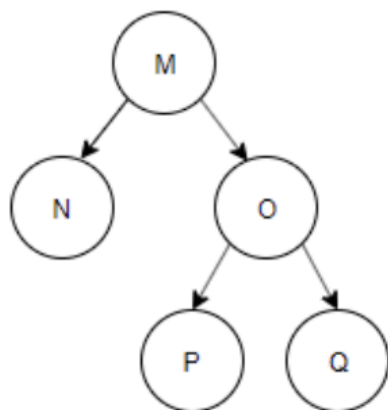
a)



b)



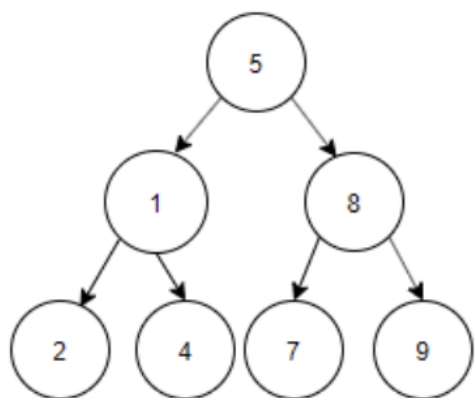
c)



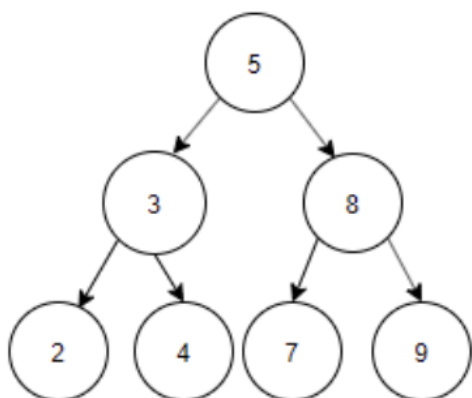
d)

12. Construct a binary search tree by using postorder sequence given below.  
Postorder: 2, 4, 3, 7, 9, 8, 5.

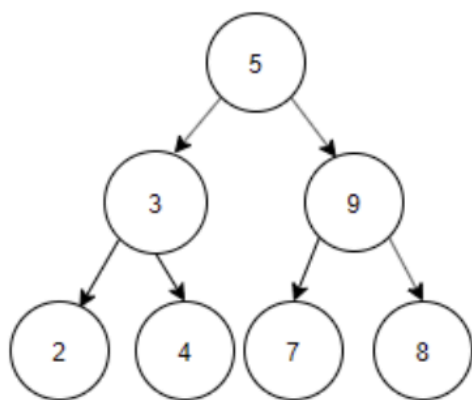




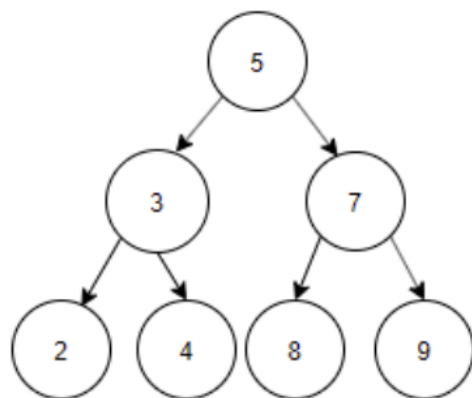
a)



b)



c)

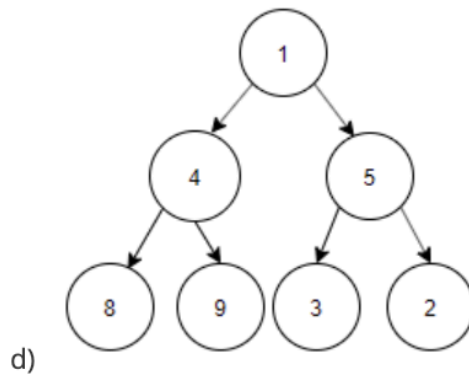
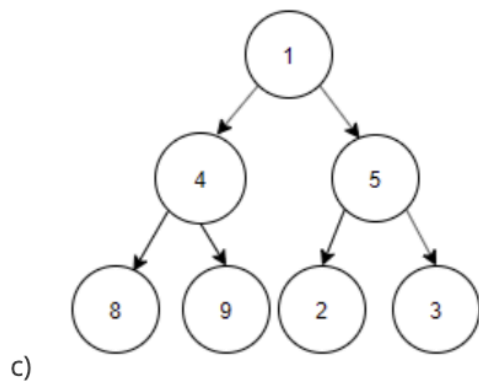
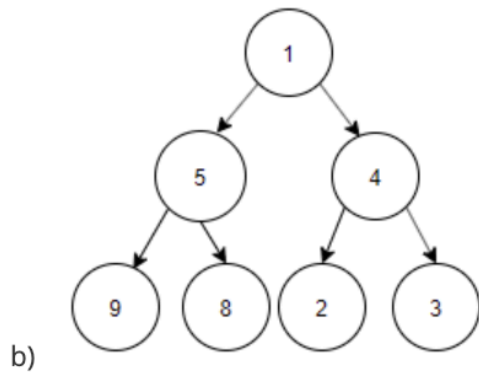
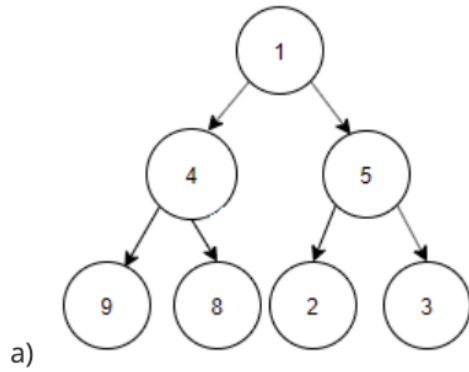


d)

13. Construct a binary tree using inorder and level order traversal given below.

Inorder Traversal: 3, 4, 2, 1, 5, 8, 9

Level Order Traversal: 1, 4, 5, 9, 8, 2, 3



**Answers:**

1. Answer: b

Explanation: The number of edges from the root to the node is called depth of the tree.

2. Answer: a

Explanation: The number of edges from the node to the deepest leaf is called height of the tree.

3. Answer: a

Explanation: A full binary tree is a tree in which each node has exactly 0 or 2 children.

4. Answer: c

Explanation: A binary tree, which is completely filled, with the possible exception of the bottom level, which is filled from left to right is called complete binary tree. A Tree in which each node has exactly zero or two children is called full binary tree. A Tree in which the degree of each node is 2 except leaf nodes is called perfect binary tree.

11.

Answer: d

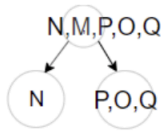
Explanation: Here,

Postorder Traversal: N, P, Q, O, M

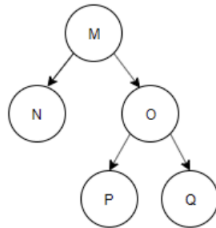
Inorder Traversal: N, M, P, O, Q

Root node of tree is the last visiting node in Postorder traversal. Thus, Root Node = 'M'.

The partial tree constructed is:



The second last node in postorder traversal is O. Thus, node P becomes left child of node O and node Q becomes right child of node Q. Thus, the final tree is:



12.

Answer: b

Explanation: Postorder sequence is 2, 4, 3, 7, 9, 8, 5.

Inorder sequence is the ascending order of nodes in Binary search tree. Thus, Inorder sequence is 2, 3, 4, 5, 7, 8, 9. The tree constructed using Postorder and Inorder sequence is

13.

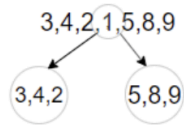
Answer: a

Explanation: Inorder Traversal: 3, 4, 2, 1, 5, 8, 9

Level Order Traversal: 1, 4, 5, 9, 8, 2, 3

In level order traversal first node is the root node of the binary tree.

Thus the partially formed tree is:



In level order traversal, the second node is 4. Then, node 3 becomes left child of node 4 and node 2 becomes right child of node 4. Third node of level order traversal is 8. Then, node 5 becomes left child of node 8 and node 9 becomes right child of node 8. Thus, the final tree is:

