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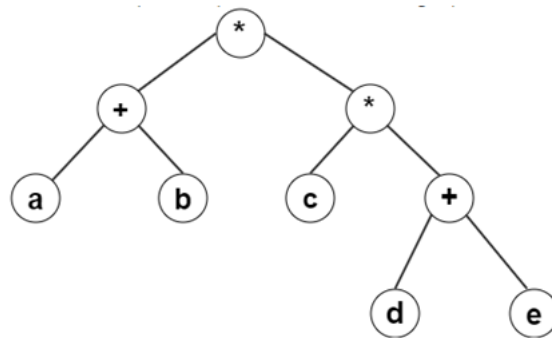
1) Which of the following number of nodes can form a full binary tree?

- ☐ 8
- ☐ 15
- ☐ 14
- ☐ 13

2) Suppose the numbers 7, 5, 1, 8, 3, 6, 0, 9, 4, 2 are inserted in that order into an initially empty binary search tree. What is the in-order traversal sequence of the resultant tree?

- ☐ 7 5 1 0 3 2 4 6 8 9
- ☐ 0 2 4 3 1 6 5 9 8 7
- ☐ 0 1 2 3 4 5 6 7 8 9
- ☐ 9 8 6 4 2 3 0 1 5 7

3) What is the postfix expression for the following expression tree?



- ☐ abcde++**
- ☐ ab+cde++**
- ☐ abc+de++**
- ☐ abcd+*e+*

4) With what data structure can a priority queue be implemented?

- ☐ Array
- ☐ List
- ☐ Heap

☐ All of these

5) A binary tree T has 20 leaves. The number of nodes in T having two children is:

☐ 18

☐ 19

☐ 17

☐ Any number between 10 and 20

6) The preorder traversal sequence of a binary search tree is 30, 20, 10, 15, 25, 23, 39, 35, 42. Which one of the traversal sequence of the same tree?

☐ 10, 20, 15, 23, 25, 35, 42, 39, 30

☐ 15, 10, 25, 23, 20, 42, 35, 39, 30

☐ 15, 20, 10, 23, 25, 42, 35, 39, 30

☐ 15, 10, 23, 25, 20, 35, 42, 39, 30

7) Consider a node X in a Binary Search Tree. Given that X has two children, let Y be the Inorder successor of X. about Y?

☐ Y has no right child

☐ Y has no left child

☐ Y has both children

☐ None of these

8) The number of different binary trees with 6 nodes is

☐ 6

☐ 42

☐ 132

☐ 256

9) A full binary tree with n leaves contains

☐ n nodes

☐ $\log_2 n$ nodes

☐ $2n-1$ nodes

☐ 2^n nodes

- 10) The following three are known to be the preorder, inorder and postorder sequences of a binary tree. But it
- MBCAFHPYK
- KAMCBYPFH
- MABCKYFPH
- Pick the true statement from the following:

- ☐ I and II are preorder and inorder sequences respectively
- ☐ I and III are preorder and postorder sequences respectively
- ☐ II is the inorder sequence, but nothing more can be said about the other two sequences
- ☐ II and III are the preorder and inorder sequences respectively

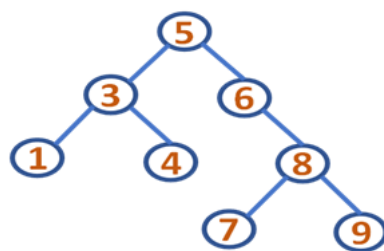
- 11) In which of the following trees, parent node has a key value greater than or equal to the key value of both c

- ☐ Binary search tree
- ☐ Threaded binary tree
- ☐ Complete binary tree
- ☐ Max-heap

- 12) The height of a tree is the length of the longest root-to-leaf path in it. The maximum and minimum number height 5 is:

- ☐ 63 and 6 respectively
- ☐ 64 and 5 respectively
- ☐ 32 and 6 respectively
- ☐ 31 and 5 respectively

- 13) If we remove the root node, which of the node from the right subtree will be the new root?



- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9

- 14) Consider the following nested representation of binary trees: (X Y Z) indicates Y and Z are the left and right X. Note that Y and Z may be NULL, or further nested. Which of the following represents a valid binary tree?

- ☐ (1 2 (4 5 6 7))

- ☐ (1 (2 3 4) 5 6) 7)
 - ☐ (1 (2 3 4)(5 6 7))
 - ☐ (1 (2 3 NULL) (4 5))
-

15) The following numbers are inserted into an empty binary search tree in the given order: 10, 1, 3, 5, 15, 12, 1. The height of the binary search tree (the height is the maximum distance of a leaf node from the root)?

- ☐ 2
 - ☐ 3
 - ☐ 4
 - ☐ 6
-

16) Which of the following traversal outputs the data in sorted order in a BST?

- ☐ Preorder
 - ☐ Inorder
 - ☐ Postorder
 - ☐ Level Order
-

17) In a binary tree with n nodes, every node has an odd number of descendants. Every node is considered to be its own descendant. What is the number of nodes in the tree that have exactly one child?

- ☐ 0
 - ☐ 1
 - ☐ $(n-1)/2$
 - ☐ $n-1$
-

18) What is a threaded binary tree traversal?

- ☐ a binary tree traversal using stacks
 - ☐ a binary tree traversal using queues
 - ☐ a binary tree traversal using stacks and queues
 - ☐ a binary tree traversal without using stacks and queues
-

19) A binary search tree contains the values 1, 2, 3, 4, 5, 6, 7, 8. The tree is traversed in pre-order and the values in the following sequences is a valid output?

- ☐ 53124786
- ☐ 53126487
- ☐ 53241678
- ☐ 53124768

20) The height of a binary tree is the maximum number of edges in any root to leaf path. The maximum number of nodes in a binary tree of height h is:

☐ $2^h - 1$

☐ $2^{h-1} - 1$

☐ $2^{h+1} - 1$

☐ 2^{h+1}

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BST and its Implementation

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