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19BCS102

SEC - B

Q-1:-

Inorder :- A K B J C L D E H G F I

Preorder :- L K A J B C I H E D F G

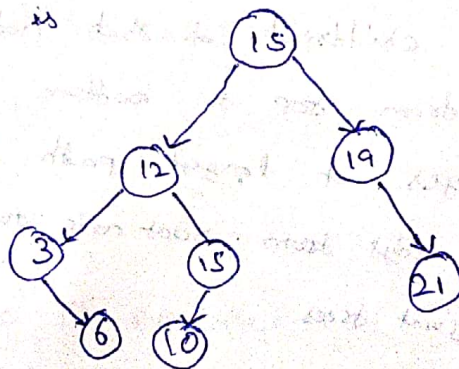
Postorder :- A B C J K I D E F G H L

Breadth First order:-

L K I H A J E F G B C D

Q-2:-

The tree is



AVL: Heights at left & right subtree can't be more than 1

This tree is not an AVL Tree

Q-3:-

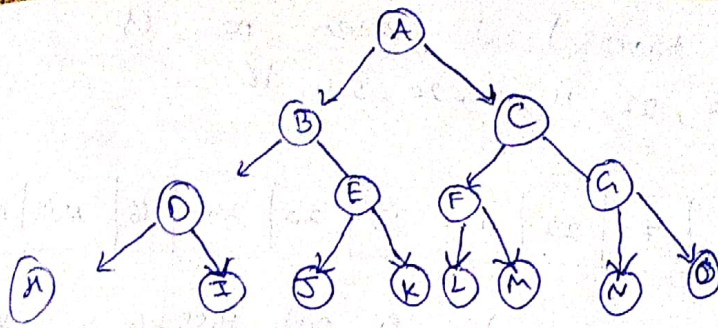
Height of the tree is 3,

The largest number of nodes  $\rightarrow 2^{n+1} - 1 = 2^4 - 1 = 15$

The smallest no. of nodes  $\rightarrow 2^{n-1} = 2^{3-1} = 4$

Tree with largest number of nodes is

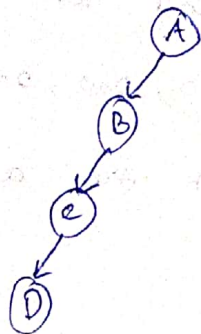




Internal nodes  $\rightarrow$  A, B, C, D, E, F, G

Leaf nodes  $\rightarrow$  H, I, J, K, L, M, N, O

Tree with smallest number of nodes



Here

Internal nodes  $\rightarrow$  A, B, C

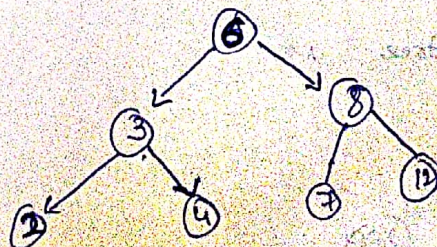
Leaf nodes  $\rightarrow$  D

Q-4: False

In pre-order traversal of tree the first printed item is not smallest one

According to rule, in pre-order we first put, root node then left child and then right child. In between them left child is smallest, and it is not at first place

Ex



Here,

Preorder becomes 6 3 2 4 8 7 12

Now 3 is smallest in first cycle but not at first place.



Q-5:- The breadth first traversal of given tree is

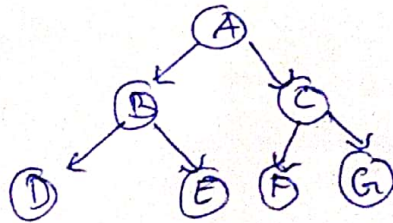
2, 3, 5, 10, 8, 7, 22, 11, 13, 20, 24, 16

2	3	5	10	8	7	22	11	13	20	24	16	Null	Null	Null
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Deletion and addition operation is not possible in this tree because this is not binary search tree. This operation only exists for breadth first traversal.

Q-6:- The postorder traversal sequence for Binary Search tree is given as 10, 30, 20, 150, 300, 200, 100

Let us consider the Binary Search tree as



The post - traversal for this tree will be .

D E B F G C A

Compare the nodes to given values

A - 100

E - 30

B - 20

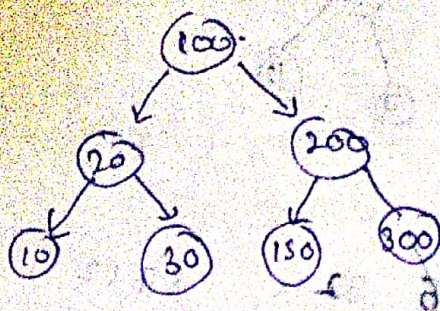
F - 150

C - 200

G - 300

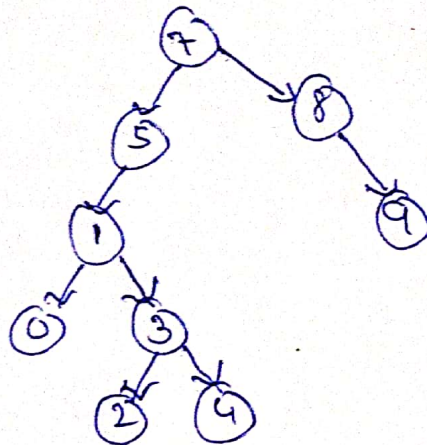
D - 10

∴ The final binary tree is





Q-7:- If the numbers 7, 5, 1, 8, 3, 6, 0, 9, 4, 2 are inserted in order the binary search tree will be



The inorder traversal of the above tree will be

0, 1, 2, 3, 4, 5, 6, 7, 8, 9

option - 2