

- S. **Note:** Start answer of a fresh question from fresh page only. Direct answer to a question will not be entertained. course outcome (CO)
- No. CO1
1. A binary tree **T** has 9 nodes. The inorder and preorder traversals of **T** yield the following sequences of the nodes:
 Inorder: 5, 1, 3, 11, 6, 8, 4, 2, 7
 Preorder: 6, 1, 5, 11, 3, 4, 8, 7, 2 CO1
 2. Suppose the following list of numbers is inserted in inorder into an empty binary search tree. Draw the resulting binary tree. CO2
 10, 18, 4, 7, 20, 5, 13, 8, 16, 1, 6, 17
 3. Consider the tree illustrated in **Figure 1**. find the tree after CO2
 (i) the node 13 is deleted and
 (ii) The node 4 is also deleted.

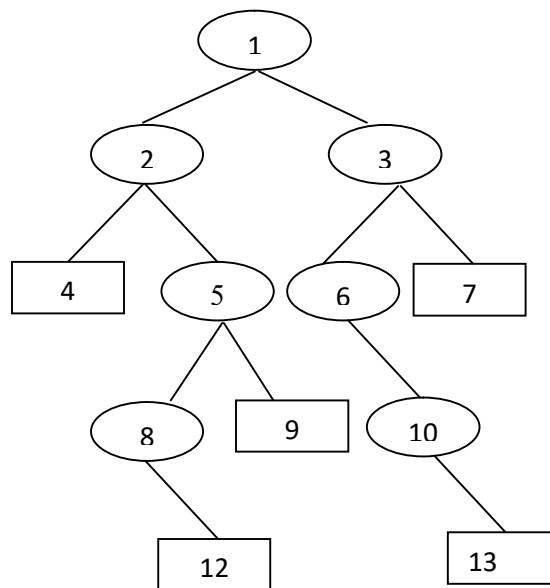


Figure 1. Binary tree

4. Suppose 8 weights 16, 32, 6, 18, 19, 20, 3, 8 are given. Find a 2-tree **T** with the given weights and a minimum weighted path length. CO3
5. Examine the binary search tree given in **Figure 2** and discuss the following: CO3
 - (i) If an item is to be inserted whose key value is less than the key value in node 1 but greater than the key value in node 5, where would it be inserted?
 - (ii) If node 1 is to be deleted, the value in which node could be used to

- replace it?
- (iii) 44, 22, 77, 55, 11, 66, 88, 33 is a traversal of the tree in which order?
 - (iv) 11, 22, 44, 55, 77, 33, 66, 88 is a traversal of the tree in which order?

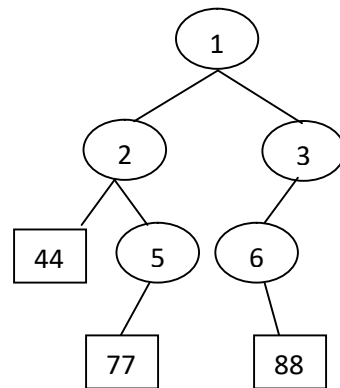


Figure 2. Binary Tree

6. Write a program that implements the list of employees of CCET Company. Write a recursive function that searches an employee record using binary search. Sort the list of employees' record in alphabetical order. CO4