

# School of Computing Science and Engineering

B.Tech CSE  
ETE - Jun 2023

Time : 3 Hours

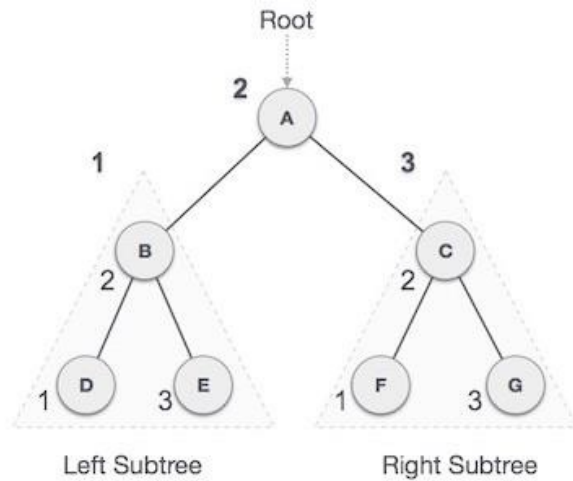
Marks : 100

Sem II - E1UA201B -B070203T  
Data Structure

Your answer should be specific to the question asked  
Draw neat labeled diagrams wherever necessary

1. Execute all three tree traversal techniques on the following tree and obtain the traversing order of the nodes of it.

K1 CO4 (5)



2. What do you mean by internal and external sorting?

K2 CO2 (5)

3. Write a C program to remove all elements from a singly linked list that are greater than a given value x.

K3 CO3 (5)

4. Explain binary search tree (BST) for the following numbers starts from an empty binary search tree create one .  
20,27,10,60,70,30,38.

K1 CO5 (10)

5. Create algorithmic steps with example to perform Breadth First Search (BFS) and Depth First Search (DFS) for graph traversal.

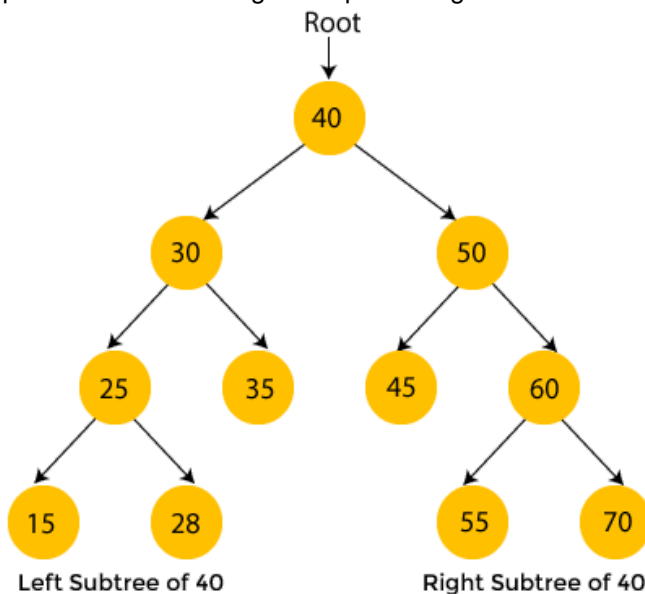
K2 CO6 (10)

6. Describe DFS & BFS in a binary search tree

K4 CO4 (10)

- 7) Explain with the following example in diagram inorder traversal & it's complexity.

K4 CO3 (10)



**OR**

Write the algorithm of Depth First Search traversal algorithm. Explain how it works using the following directed graph(digraph) starting from node H. K4 CO2 (10)

8. Write and explain through program to demonstrate the use of array of pointers K3 CO2 (15)
- 9) Identify the limitation(s) of the linear queue. Justify how a circular queue overcome the limitation of the linear queue & write the algorithm for the various operations in a circular queue. K4 CO3 (15)

**OR**

*Huffman coding* is a lossless data compression algorithm. Explain its algorithm in detail. K4 CO5 (15)

10. Demonstrate algorithm or a program on steps to perform push , pop ,peek ,isempty, isfull operations in a stack. K3 CO2 (15)