School of Computing Science and Engineering
B.Tech CSE
ETE - Jun 2023

Time : 3 Hours   **Marks : 100**

Sem II - E1UJ201B-B080201T
Data Structure Using C
Your answer should be specific to the question asked
Draw neat labeled diagrams wherever necessary

1. Explain tree, binary tree, complete binary tree and full binary tree. what are the major difference   K2 CO2 (5)
between tree and graph

2. List the different types of representation of graphs.   K3 CO3 (5)

3. What are the merit and demerits of array data structure   K1 CO1 (5)

4. Explain the two popular methods for searching Graphs. Run your algorithms on the following   K4 CO3 (10)
graph.
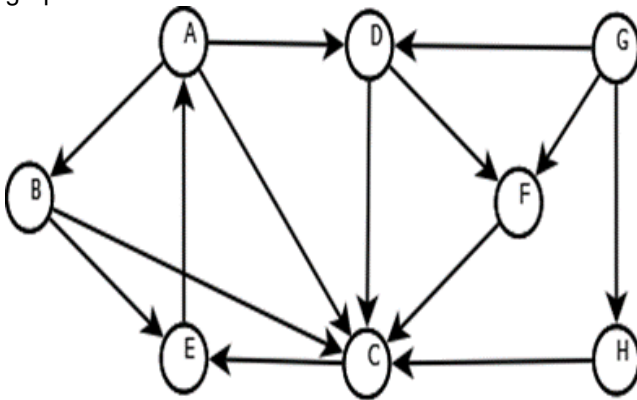
5. Create a BST using the following set of values. 67, 45, 110, 26, 12, 89, 33, 115, 230, 412, 48,   K2 CO2 (10)
71, 10, 98, 5, 139, 21. Traverse the tree in Preorder, Inorder and Post order.

6) Write down the algorithm for insertion sort. When do we use insertion sort. Sort the following list   K4 CO4 (10)
using Insertion sort algorithms, displaying each step.
66, 44, 30, 15, 20, 35, 75, 20, 50, 48, 70, 110, 30

OR

Use quick sort algorithm to sort 15,22,30,10,15,64,1,3,9,2. Is it a stable sorting algorithm? –   K4 CO4 (10)
Justify.

7. Consider the linear arrays AAA[5:50],BBB[-5:10] and CCC[1:8]   K1 CO1 (10)

  1. Find the number of elements in each array?
  2. Suppose base (AAA) =300 and w=4 words per memory cell for AAA. Find the address of
     AAA[15],AAA[35] and AAA[55].

8. Write a C program and its algorithm for Array implementation of Circular Queue. Write the entire   K3 CO1 (15)
primitive operation.

9. Write an algorithm of stack using linked list also find all operation   K4 CO4 (15)

OR

Write the algorithm for deletion of an element in binary search tree. Create a binary search tree   K4 CO4 (15)
for the following sequence of numbers: 45, 32, 90, 34, 68, 72, 15, 24, 30, 66, 11, 50, 10. Delete
30, 66, 32 from the tree one by one and show the tree after each deletion

10. Explain BST and its operations. Make a BST for the following sequence of numbers, show all   K3 CO2 (15)
steps: 45, 32, 90, 34, 68, 72, 15, 24, 30, 66, 11, 50, 10.