TCS-607 370

Even Semester Examination - 2017

B.TECH. (VI SEMESTER)

DATA STRUCTURES USING C++

Time: 03:00 Hours **Max Marks : 100**

Note: Attempt **all** questions, each question carry **equal** marks.

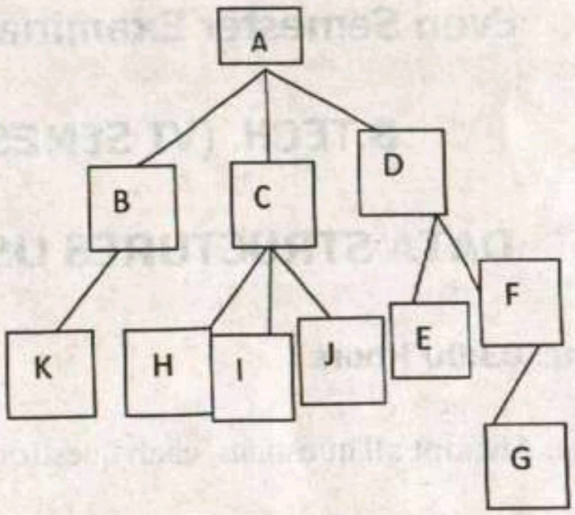
Q1. Attempt any four parts of the following: (5X4=20)

(a) Explain clearly the Asymptotic notations to find out the time complexity of algorithm.

(b) Find out the time complexity of following code –

```
Func()
{ int I,j,k;
For(i=n/2 ;i<=n; i++)
For(j=1; j<=n/2; J++)
For(k=1; k<n; k=k*2)
Printf("DAA");
}
```

(c) Convert the given tree in to Binary Tree.



(d) Explain the Finiteness, Definiteness and Effectiveness properties of algorithm.

(e) What is RAM model to find out the Time Complexity of Algorithm.

Q2. Attempt any four parts of the following: (5X4=20)

(a) What are Linear and Non linear data structures? Give two examples of each.

(b) What is Heap. Explain the characteristics of Max Heap and Min Heap.

(c) Explain how pointers are used to implement linked list structures.

(d) How doubly linked list can be used for dynamic storage?

(e) What are the operation performed on Stack? Also write the application of this structure.

Q3. Attempt any two parts of the following: (10X2=20)

(a) What is exception .Explain with the help of suitable example? What are the keywords use to handle the exception in C++.

(b) Write an Algorithm/Program for Mergesort. Execute the Mergesort on the given array A=(310,285,179,652,351,423,861,254,450,520).

(c) Explain the Directed and Undirected Graph with its characteristics. How the graph are implemented in data structure.

Q4. Attempt any two parts of the following: (10X2=20)

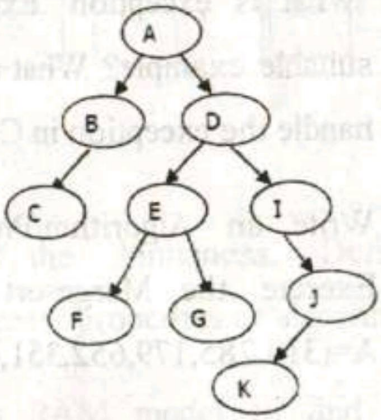
(a) Illustrate the algorithm heapsort on the given array A=(5,13,2,25,7,17,20,8,4).

(b) What is Hashing? Explain the various collison resolution techniques used for hashing with example.

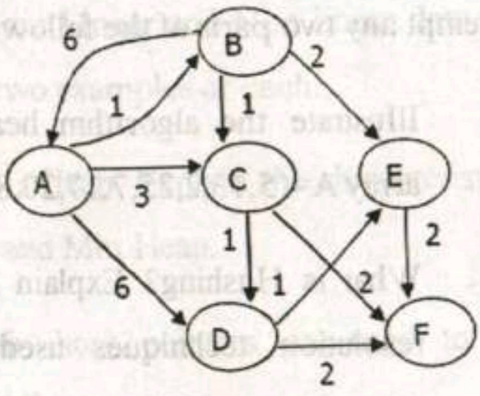
(c) Explain the Breadth first Search and Depth First Search with its advantages.

Q.5 Attempt any two parts of the following: (10X2=20)

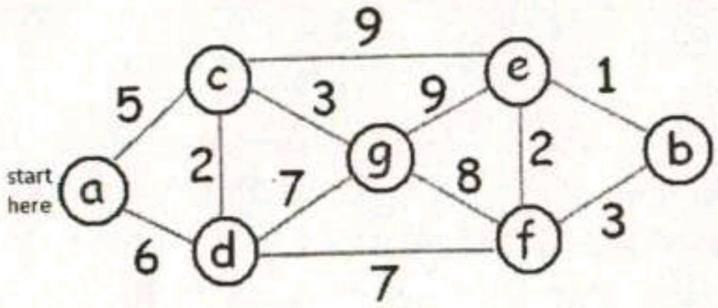
(a) For the given Binary Tree, perform Inorder, Preorder and Postorder traversal.



(b) For the given Graph, give adjacency list, storage representation for adjacency list and edge list.



(c) Explain Minimum Spanning Tree. Apply prims algorithm to find the minimum spanning tree and path cost for the given graph-



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