LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.C.A. DEGREE EXAMINATION – **COMPUTER APPLICATIONS**

FIRST SEMESTER – **APRIL 2016**

CA 1805 - PROGRAMMING & DATA STRUCTURES THRO C++

Date: 30-04-2016
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

PART - A

Answer all Questions: 10 x 2 = 20

1.   Differentiate procedure oriented and object oriented languages.

2.   List the operators used in C++ and not in C.

3.   What is polymorphism? Mention its types.

4.   Mention the file mode parameters.

5.   Define stack . What are the applictations of stack?

6.   What is searching? Give the logic of binary search.

7.   Define tree. Mention its types.

8.   What are the basic rules of Red Black trees?

9.   Define Graph. List its types.

10. What is minimum spanning tree?

PART – B

**Answer all Questions:**   5 x 8 = 40

11.a. Explain the data types in C++.

(OR)

b. Write short notes on storage class specifiers.

12.a. Mention the features of friend function. Write a program to access the private

member of a class using friend function.

(OR)

b. Explain virtual function with an example.

13.a.What is Queue? Explain the types of Queue.

(OR)

b. Perform the following sorting for the given data:

610, 950, 853, 745, 582, 417, 683, 219, 903, 340, 279, 650.

i.   Quick sort.

ii.   Selection sort.

14.a.Define forest. Explain the conversion of forest into binary tree.

(OR)

b. Explain Hash functions with examples.

15.a. Explain the graph traversal BFS and DFS for the following graph
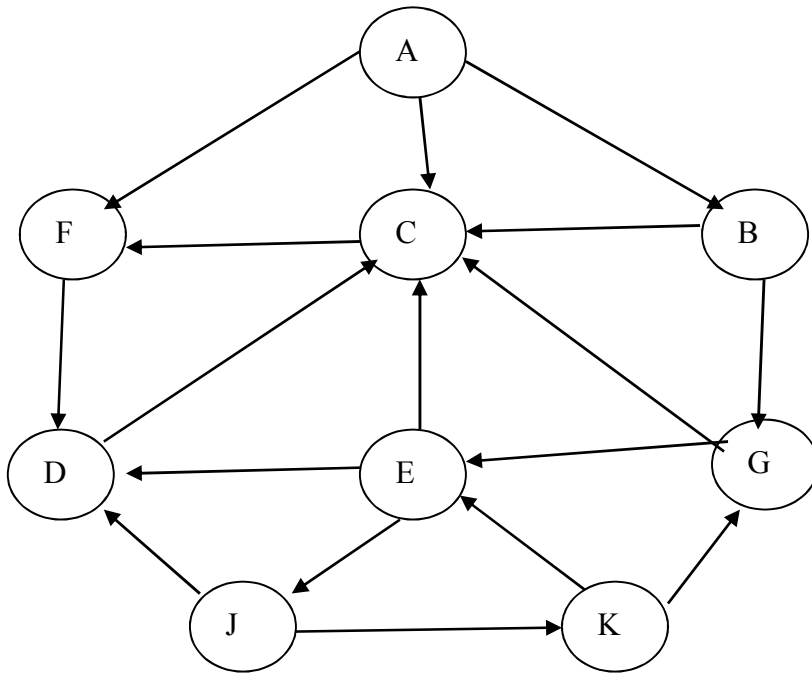
(OR)

b. Find the shortest path using Dijkstra's algorithm for the given graph:

(Source vertex V1)
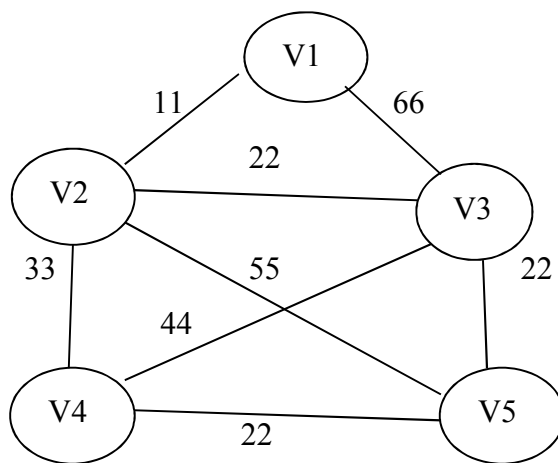
PART-C

Answer any TWO Questions: **2 X 20 = 40**

16.a. Explain the control structures with example.

   b. Explain the features used for formatting the output.

17.a. Explain the addition and deletion operations in a Singly linked list with examples.
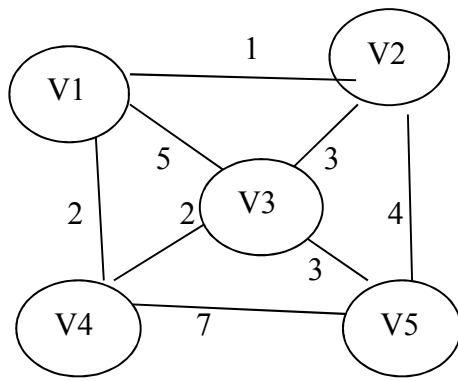
   b. Perform the heap sort for the following data.

                  10,20,30,40,50,60,70,80,90,100,110,120,130,140,150

18.a. Construct minimum spanning tree for the graph using the following algorithms

            i. Kruskal's algorithm

            ii. Prim's algorithm.

b. What are AVL trees? Illustrate the rotations for the following cases:

     i. Left to Left insertion.

    ii. Left to Right insertion.

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