LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIRST SEMESTER – NOVEMBER 2016

CA 1805 - PROGRAMMING & DATA STRUCTURES THRO C++

Date: 01-11-2016 Dept. No. Max. : 100 Marks
Time: 01:00-04:00

PART – A

Answer all Questions: **10 x 2 = 20**

1. Define token. List the different types of tokens.
2. What is a pointer ? State the use of & and * operators.
3. Define function. What are its basic elements?
4. What are manipulators ? List the commonly used manipulators.
5. Define stack . What are the applications of stack?
6. What is searching? Give the logic of binary search.
7. Define binary search tree. Give an example.
8. What are the basic rules of Red Black trees?
9. Define Graph. What are the various ways of representing a graph?
10. What is a minimum spanning tree?

PART – B

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

11.a. Write short notes on the basic concepts of C++.

(OR)

b. Explain the various operators used in C++ with examples.

12.a. "Friend function can access the private members of a class". Explain with an example.

(OR)

b. Illustrate the exception handling mechanism with an example

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

(OR)

b. Explain the operations performed on a stack checking its boundary conditions.

14.a.What are binary trees? Explain its different representations with example.

(OR)

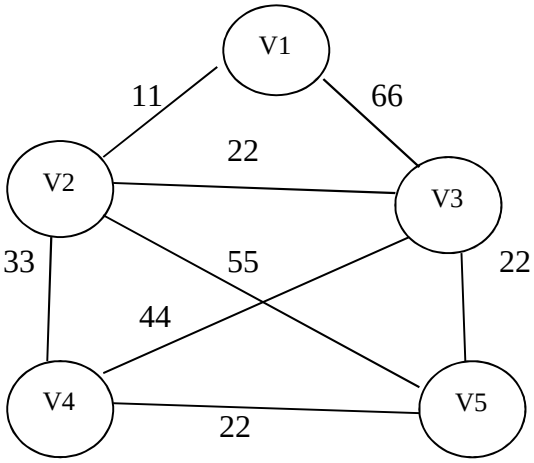
b. Explain Hash functions with examples.

15.a. Explain the different types of graph with examples.

(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 looping statements with example for each.

b. Explain the following:

i. Features of constructors. ii. Types of constructors (3+7 marks)

17.a. Explain the addition and deletion operations in a Singly linked list with examples.

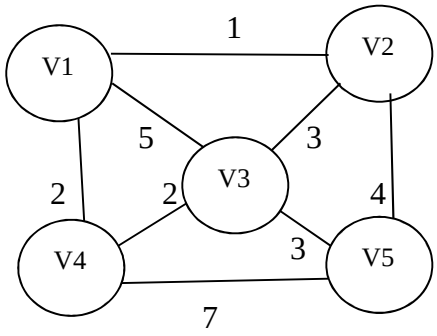
b. What are AVL trees? Illustrate the rotations for the following cases:

i. Left to Left insertion. ii. Left to Right insertion.

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

i. Kruskal's algorithm

ii. Prim's algorithm.



b. Perform the heap sort for the following data.

10,20,30,40,50,60,70,80,90,100,110,120.

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