LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIRST SEMESTER – NOVEMBER 2015

CA 1805 - PROGRAMMING & DATA STRUCTURES THRO C++

Date : 05/11/2015 Dept. No. Max. : 100 Marks

Time : 01:00-04:00

PART - A

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

1. List the areas for applications of OOP's.
2. Define token. List them.
3. Mention the functions for manipulation of file pointers.
4. What are manipulators? List the manipulator functions.
5. Define queue. List the types of queue.
6. What is list? Write the syntax for creating a node.
7. Define binary tree. List few of its properties.
8. What is hashing? Mention any two hash functions.
9. Define Graph. List its representation.
10. What is minimum spanning tree?

PART – B

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

11.a. Explain the basic concepts of oop's.

(OR)

b. Illustrate expression types with examples.

12.a. What is inheritance? Explain the types of inheritance and the visibility of inherited members.

(OR)

b. What is an exception? Explain the exception handling mechanism and multiple catch statements with example

13.a. Illustrate the following in singly linked list operations:

i. insertion at the beginning. ii. insertion at the middle.

iii. insertion at the end. iv. deletion at any position.

(OR)

b. Perform the following sorting for the given data:

611, 234, 879, 765, 546, 478, 695, 314, 910, 419, 384, 711.

i. Quick sort ii. Radix sort.

14.a. Illustrate the reconstruction of the binary tree using the following notations

INFIX notation : I E J K F L C B M G N D O H P

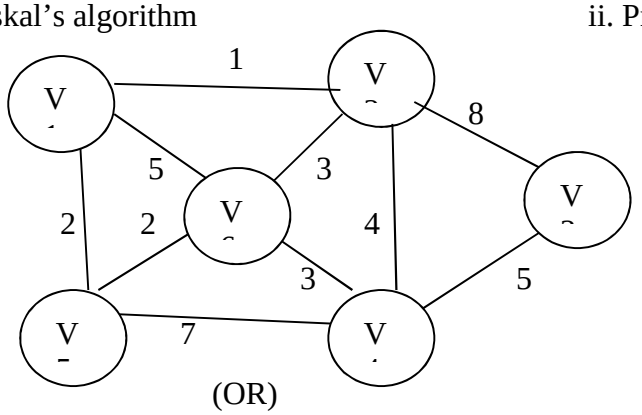
POSTFIX notation: I J E K L F C M N G O P H D B

(OR)

b. Explain threaded binary tree with an example.

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

i. Kruskal's algorithm ii. Prim's algorithm.



(OR)

b. Explain the types of graph with example.

PART-C

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

16.a. Explain the operators of C++ with examples.

b. Define constructor. Mention its features and Illustrate the types of constructors with examples.

17.a. Illustrate the following using stack

i. Operations with boundary conditions.

ii. Convert the following expression from infix to postfix.

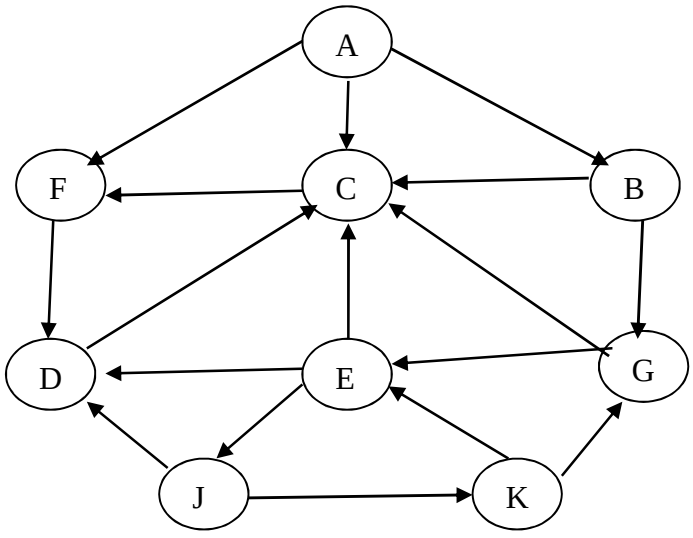
C + (D * E – (F / G ^ H) * I) * J)

b. Perform the following for the given data:

11, 13 , 29, 22, 27, 30, 20 , 23, 40, 45, 7, 37, 6, 9, 15.

i. Construction of Max heap. ii. Heap sort.

18.a. Perform the graph traversals for the following graph:



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

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

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