Reg. No. :

Duration: 1.15 hrs   Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. For a method to be an interface between the outside world and a class, it has to be declared

    (a) Private   (b) Public   (c) Protected   (d) Static

2. In which case is it mandatory to provide a destructor in a class?

    (a) Almost in every class
    (b) Class for which two or more than two objects will be created
    (c) Class for which copy constructor is defined
    (d) Class whose objects will be created dynamically

3. Assume that we have constructor functions for both base class and derived class. Now consider the declaration in main( ). Base * P = New Derived; in what sequence will the constructor be called

    (a) Derived class constructor followed by Base class constructor
    (b) Base class constructor followed by derived class constructor
    (c) Base class constructor will not be called
    (d) Base class constructor will not be called

4. _____ inheritance uses both multiple and multilevel inheritance

    (a) Hierarchial   (b) Hybrid   (c) Single   (d) Multipath

5. A heap is a _____.

    (a) Binary tree   (b) Full binary tree

    (c) Complete binary tree   (d) Binary search tree

6. In the following which is open addressing hashing mechanism?

    (a) Separate chaining   (b) Double hashing

    (c) Rehashing   (d) Extensible hashing

7. Binary tree has N number of nodes with two children. How many leaf nodes are available in a tree?

    (a) $N+2$ (b) $N!$ (c) $N+1$ (d) $logN$

8. The classic example for NP-complete problem is

    (a) Dijikstra's algorithm   (b) Floyds algorithm

    (c) Travelling salesman problem   (d) None of these

9. The complexity of multiplying two matrices of order m*n and n*p is

    (a) mnp   (b) mp   (c) mn   (d) np

10. Which sorting technique is the successor of Bucket sort?

    (a) Insertion sort   (b) Bubble sort   (c) Radix sort   (d) Quick sort

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11.   Design a matrix and vector classes with necessary properties. Write a *C++* program to multiply vector and matrix class objects using Friend function.   (8)

12.   Explain exception handling mechanism with an example.   (8)

13.   Explain the various asymptotic notations used for calculating time and space complexities.   (8)

14.   Briefly explain single rotation and double rotation of AVL tree with examples.   (8)

15.   Write the procedure for quick sort. Show the stepwise result of sorting the following set of elements using quick sort: 23,12,45,21,67,81,19,22,56,41,33.   (8)

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