No of Pages : 3 **Course Code : 12XT25 / 12XW24**

Roll No:

(To be filled in by the candidate)

PSG COLLEGE OF TECHNOLOGY, COIMBATORE - 641 004

SEMESTER EXAMINATIONS, AUGUST / SEPTEMBER - 2015

MSc – SOFTWARE SYSTEMS / TCS Semester : 2

12XT25 / 12XW24 OBJECT ORIENTED PROGRAMMING

Time : 3 Hours **Maximum Marks : 100**

INSTRUCTIONS:

1. Answer **ALL** questions from GROUP – I.
2. Answer any **FIVE** questions from GROUP – II.
3. Answer any **ONE** question from GROUP – III.
4. Ignore the box titled as **"Answers for Group III"** in the Main Answer Book.

GROUP - I **Marks : 10 x 3 = 30**

1. Is the following code legal? Justify.

```
class ABC {
        int orde;
        static int stac;
        public:
          static void fn()  {cout<<orde;}
      };
```

2. Distinguish between the following

   i) overloading and overriding

   ii) declaration and definition

   iii) assignment and initialization

3. What is meant by friend function? Why do we require it?
4. Identify the mistake in the following class definition.

```
class Incorrect {
        int x;
        const float y;
        public:
        Incorrect (int a1, float a2)
            {x=a1; y=a2;}
        };
```

5. Under what circumstances, a copy constructor is invoked?
6. Is it possible for a derived class to have a constructor but its base class not to have a constructor? Write a sample C++ code to defend your answer.
7. What is meant by pure virtual function? Discuss its use.
8. What is an exception? How is it implemented in C++?
9. Compare static data member and global variable. Which one you prefer and why?

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10. Given the following class hierarchy, each class having a default constructor

```
Class A { };
Class B:public A { };
Class C:public B { };
Class X { };
Class Y { };
Class Z :public X, public Y { };
Class P:public C, public Z { };
P  p;
```

What will be the order of construction?

GROUP - II **Marks : 5 x 10 = 50**

11. If you need to assign one object to another object and the objects manage heap memory dynamically, make sure that the class has an overloaded assignment operator. The copy constructor is not enough. Justify this statement for a string class that handles dynamic memory.
12. Compare the various parameter passing and returning mechanisms available in C++ through a program.
13. Explain the use of virtual destructor. Can constructor be virtual? Justify.
14. By defining a rational number, write a C++ class rational. Write a C++ program to multiply two rational objects with and without friend functions.
15. Imagine a publishing company that markets both book and audio cassette version to its works. Create a class publication that stores the title and price of a publication. From this class derive two classes : book, which adds a page count and tape, which adds a playing time in minutes. Each class should have a getdata() function to get its data from the user and a putdata() function to display its data. Write a main() program to test the book and tape classes by creating instances of them asking the user to fill in data with getdata() and then displaying the data with putdata().
16. What is a template? Why do we require it? Write a C++ program to implement stack data structure by defining a template stack class and appropriate template function.

GROUP - III **Marks : 1 x 20 = 20**

17. Define a standard string class in C++ which should contain functions to overload the operators +, + = and [ ] and also a member function to reverse the string. Implement this by writing a complete C++ program.
18. a) What are the various types of inheritances supported by C++? Explain how they have been implemented in C++. Discuss the usage of constructors in inheritance.
    b) Describe the object creation and termination processes in C++ by writing a relevant C++ code.

CSK.

/END/