SPRING END SEMESTER EXAMINATION-2014
2nd Semester MCA

OBJECT ORIENTED PROGRAMMING Using C++
MCA – 201

Regular - 2013 Admitted batch & Back

Full Marks: 60 **Time: 3 Hours**

Answer any Six questions including question No.1 which is compulsory.
The Figures in the right hand margin indicate full marks.
Candidates are required to give their own words as far as practicable and all parts of a question should be answered at one place only.

1. a) Briefly explain how the programming language 'C++' different from 'C'. [2x10]

   b) Differentiate between a structure and a union in C++.

   c) Why is it necessary to write the following statement before writing a C++ program? What is the significance of the word 'namespace'?

```
#include <.....>
using namespace std;
```

   d) Polymorphism is of two types. Explain the two types with respect to binding.

   e) If a local integer variable and a global integer variable are declared with the same name, can we access the global variable in the local block? Explain using a simple program.

   f) Discuss the advantages and disadvantages of using an inline function.

g) C++ allows the member functions to be declared without any definition in a class. What are such functions called and what constraint do they add to a class?

h) 'For different types of exceptions we can declare only one catch block'. Is the statement correct? Justify your answer with an example.

i) Briefly explain the advantages of using templates in C++? What are the two important types of templates available?

j) What are the various stream classes available for performing operations on standard IO devices and files?

2. a) Illustrate with small programs how objects can be created during compile time and runtime. [4+4]

b) Explain how a Friend function breaks the important property of encapsulation in C++. What properties does the member function have in a Friend class?

3. a) Briefly explain the use of 'static' keyword with respect to class members (private and public) and objects using a simple example. [4+4]

b) 'Dynamically created objects do not have a name'. Give a small example to create objects without any name. What are such objects called and how are they used?

4. a) Discuss how the private members of the base class can be accessed using the objects of the derived class where there is private inheritance. How can the above be simplified? [4+4]

b) There are three classes A, B and C. Class B is derived from class A and class C is derived from class B. Class A contains a virtual function and 4 objects of Class C is created. How many virtual tables and virtual pointers will be created for the above scenarios? Briefly explain how the virtual tables and virtual pointers are implemented in C++.

5. a) Differentiate between an error and an exception. Discuss the usage of the three keywords 'try', 'catch' and 'throw' in C++. [4+4]

b) Demonstrate how exception handling can be used effectively in restricting the object creation for a specific condition in C++.

6. Write a program to: [4+4]

a) Input the string 'How are you today?' from the keyboard and write it into a text file called 'Hello.txt'.

b) Read the above file 'Hello.txt' and display its content i.e. 'How are you today?' onto the monitor.

7. You are required to implement a simple solution for XYZ bank with the following requirements. Implement a class 'Account'. An account has a balance, functions to add and withdraw money, a function to inquire the current balance and also an attribute to identify the type of account. Pass a value into a constructor to set an initial balance. If no value is passed the initial balance should be set to Rs.0. Charge a Rs.100 penalty if an attempt is made to withdraw more money than available in the account. Enhance the Account class to compute interest on the current balance. Create 2 account objects of type saving and current and store them in an array. Depending upon the users input perform the withdrawal, deposit, balance check on the two array of objects and display the appropriate results. [8]

8. Write short notes on the following: [2x4]

a. Pure Virtual Function

b. Virtual Destructors

c. Operator function

d. Global Objects

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