USN ☐☐☐☐☐☐☐☐☐☐ **10MCA22**

Second Semester MCA Degree Examination, June/July 2011
Object Oriented Programming with C++

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. What is object oriented programming? Bring out the underlying concepts of object oriented programming.   **(05 Marks)**
   b. How are the object oriented programming different from procedure oriented programming?   **(05 Marks)**
   c. State the rules applying for the default arguments. Explain default arguments with an illustration.   **(06 Marks)**
   d. How are new and delete operators manage dynamic memory allocation?   **(04 Marks)**

2 a. What is function template? Write a function template to swap the contents of two reference variables and use two int variables and two char variables as parameters to swap function.   **(08 Marks)**
   b. Explain with examples default constructor and copy constructor.   **(06 Marks)**
   c. Describe the significance of static data members and static functions with example.
                                                                               (06 Marks)

3 a. Explain the following with examples:
      i) Scope resolution operator   ii) Implicit this pointer.   **(06 Marks)**
   b. What are friend functions and friend classes? Why are they used? Explain with example.
                                                                               (08 Marks)
   c. Describe the operator overloading of << and >> operators with an example program.
                                                                               (06 Marks)

4 a. What is inheritance? Explain with general syntax.   **(04 Marks)**
   b. How is multilevel inheritance achieved? Explain with example.   **(08 Marks)**
   c. How do you pass arguments to a constructor of a base class? Give a supporting illustration.
                                                                               (08 Marks)

5 a. Describe the importance of virtual base classes during inheritance along with examples.
                                                                               (10 Marks)
   b. Write a C++ program to create a class called STUDENT with data members usn, name, and age. Using inheritance create the class UG_student and PG_student having fields as semester, fees and stipend. Enter the data for at least 5 students. Find the sum of fees collected for all UG and PG students separately.   **(10 Marks)**

6 a. Distinguish between virtual function and pure virtual functions.   **(08 Marks)**
   b. What are abstract classes in C++? How can we achieve runtime polymorphism? **(04 Marks)**
   c. Define early binding and late binding. Explain each of them with an example. **(08 Marks)**

7 a. What are the two ways of formatting of output in C++? Discuss any four functions of formatting output using both the ways.   **(10 Marks)**
   b. What are iostreams? Explain the stream class hierarchy with a neat diagram. **(10 Marks)**

8 a. What do you mean by exception handling? Explain how multiple catch statement can be used in exception handling in C++.   **(08 Marks)**
   b. Write a short note on standard template library (STL) container classes. **(06 Marks)**
   c. Describe terminate( ) and unexpected( ) functions with syntax and supporting example.
                                                                               (06 Marks)

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