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Third Semester B.E. Degree Examination, Dec.2014/Jan.2015
Object Oriented Programming with C++

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting
atleast TWO questions from each part.**

PART – A

- 1 a. Explain the terms encapsulation, polymorphism and inheritance in object oriented programming. (06 Marks)
- b. Explain the different types of argument passing techniques, with example. (06 Marks)
- c. What is function overloading? Write a C++ program to define three overloaded functions area() to find area of rectangle, area of rectangular box and area of circle. (08 Marks)
- 2 a. What is a constructor? How is a constructor different from member function? Illustrate with an example. (06 Marks)
- b. What are static data members? Explain with an example? What is the use of static data members? (06 Marks)
- c. Write a class 'rectangle' containing two data items 'length' and 'breadth' and four functions setdata(), getdata(), displaydata() and area() to set the length and breadth, to get the user inputs, to display and to find the area of the rectangle respectively. Also write a main program which declares the objects and uses the member functions of the class. (08 Marks)
- 3 a. Define friend function? Explain what are the rules to be used while using a friend function? Illustrate with an example. (10 Marks)
- b. What is operator overloading? Write a C++ program to add two complex numbers by overloading the + operator. Also overload >> and << operators for reading and displaying the complex numbers. (10 Marks)
- 4 a. Explain and write a C++ program, the process when the base class is derived by the following visibility modes : i) public ii) private iii) protected (10 Marks)
- b. What is inheritance? Explain different types of inheritance. Explain the inheriting multiple base classes with an example. (10 Marks)

PART – B

- 5 a. Explain with an example, the order of invocation of constructors and destructors and passing arguments to base class constructors in multilevel inheritance. (10 Marks)
- b. What are the ambiguities that arise in multiple inheritance? How to overcome this? Explain with example. (10 Marks)
- 6 a. What are virtual functions? What is the need of virtual function? How is early binding different from late binding? (06 Marks)
- b. How to inherit a virtual attribute? Explain with example. (06 Marks)
- c. What is pure virtual function? Write a C++ program to create a class called NUMBER with an integer data member and member function to set the value for this data member. Derive three classes from this base class called HEXADECIMAL, DECIMAL and OCTAL. Include a member function DISPLAY() in all these three derived classes to display the value of base class data member in hexadecimal, decimal and octal respectively. Use the concept of pure virtual function. (08 Marks)

- 7 a. Define the concept of iostream provided in C++. Explain in detail IO stream class hierarchy. (06 Marks)
- b. Write a C++ program to define a class called phonebook with data members name, area code, prefix and number and member functions readdata() which reads the values of the data members from the keyboard and writedata() which displays the values of the data members. Enter the data for atleast five phone numbers and store details in binary file phone and read the stored details and display on the screen. (08 Marks)
- c. Explain the following member functions : setf(), unsetf() and fill(). (06 Marks)
- 8 a. What is exception handling? Write a C++ program to demonstrate the “try”, “throw” and “catch” keywords for implementing exception handling. (10 Marks)
- b. Explain the following with respect to STL :
- Containers
 - Types of containers
 - Iterators.
- (10 Marks)
