



Date: 14th May, 2016

Time: 10.30 am – 12.00 noon

Answer ALL questions.

Q1.

- a) Write five (05) advantages of using object-oriented programming over procedure-oriented programming.
- b) Briefly explain the following terms in object-oriented programming.
 - i. Encapsulation
 - ii. Inheritance
 - iii. polymorphism
- c) Explain the following basic concepts of object-oriented programming using an example.
 - i. Classes
 - ii. Objects
- d) Define a class to represent a bank account which includes the following members.

Data members:

- Name of the depositor
- Account number
- Type of account (current, saving, etc.)
- Balanced amount in the account

Member functions:

- To assign initial values
- To deposit an amount
- To withdraw an amount after checking the balance
- To display name and balance

Q2.

- a) Explain different types of inheritance with suitable examples.
- b) What are the various types of access specifiers of base class? Explain their usage with an example for each.
- c) Create a base class called **shape** which includes the following members:
 - Two double type value that could be used to compute the area of a figure.
 - Member function to initialize the base class data members.
 - Member function `display_area()` to compute and display the area of the figure.

Derive two classes called **triangle** and **rectangle** from the base class **shape**. Make `display_area()` as a virtual function and re-define this function in the derived classes to compute the area of each figure.

(*Hint*: Area of rectangle = $x * y$)

Area of triangle = $\frac{1}{2} * x * y$)

Q3.

- a) What is meant by operator overloading?
- b) Explain unary and binary operator overloading with an example for each.
- c) What is the friend function? List out its advantages over a normal function.
- d) Write a member function or a friend function to add two complex numbers (complex number contains real and imaginary parts) by overloading + operator.

*** All Rights Reserved ***