THE OPEN UNIVERSITY OF SRI LANKA
B.Sc. DEGREE PROGRAMME: LEVEL 05
**CLOSED BOOK TEST**: 2015/2016
**CPU3279: OBJECT ORIENTED PROGRAMMING**
DURATION: **ONE AND HALF HOURS (1 1/2 HOURS)**

**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 f 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 ***