EASTERN UNIVERSITY, SRI LANKA

DEPARTMENT OF MATHEMATICS

FIRST EXAMINATION IN SCIENCE -2009/2010

SECOND SEMESTER (April /May, 2012)

CS 104 – OBJECT ORIENTED PROGRAMMING TECHNIQUES

ANSWER ALL QUESTIONS — TIME ALLOWED: TWO HOURS

Q1)

a) What do you meant by the *Object Oriented Programming*?

b) Briefly describe any five features of the *Object Oriented Programming*.

c) Describe the *access specifiers* in C++ programming Language.

d) Explain the difference between a *Constructor* and a *Destructor*.

e) Write a **class** batsman with the following specifications:

Private members:

bcode	4 digits code number
bname	20 characters
innings, notout, runs	integer type
batavg	it is calculated according to the formula batavg = runs/(innings-notout)
calcavg()	function to compute batavg

Public members :

readdata()	function to accept value for bcode, name, innings, notout and invoke the function calcavg().
displaydata()	function to display the data members on the screen.

Q2)

a) Write the definition of *inheritance* in your own words and describe the features of *inheritance*.

b) List five types of *inheritance*

c) Describe each type of *inheritance* using diagrammatic representation and general syntax representation.

d) Define a class Publication which has attributes title and price, functions: getData(), print().

Derive the following sub-classes from the Publication class:

a sub-class Book which has an attribute: accession number and functions: getData(), print();

a sub-class Magazine which has an attribute: volume number and functions: getData(), print().

With these two sub-classes as bases, derive another sub-class Journal which has an attribute: Journal Name and functions: getData(), print().

In main() create an object for the class Journal. Invoke the getData() and print() functions for this object.

Q3)

a) What is meant by an *operator overloading*?

b) Write a c++ sample *operator overloading* program for the following operators:

i. *Unary;*

ii. *Binary.*

c) Describe the following types of storage class variables in C++:

i. *Automatic;*
ii. *External;*
iii. *Static.*

d) What are the differences between *character constants* and *string literals*?

Q4)

a) What is meant by a *Polymorphism*?

b) What is the difference between *function Overloading* and *function Overriding* in c++?

c) Write a sample program to describe a *friend function* in c++?

d) Describe the *virtual function* in c++.

e) Write a C++ program to calculate area of a Circle and a Sphere by using the concepts of class and pointers.

Class name	:	// CPolygon
Derived class name	:	// CCircle
		// CSphere
virtual member	:	//virtual int area().
Function names	:	//setup()
		//area().