THE OPEN UNIVERSITY OF SRI LANKA
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
B.Sc. DEGREE PROGRAMME :Level04
CLOSED BOOK TEST – 2 (CBT-2)2012/2013
CPU2242: OBJECT ORIENTED PROGRAMMING USING C++ AND JAVA
DURATION: ONE AND HALF HOURS ONLY (1.5 HRS)

Date: 07th March, 2013 Time: 4.00pm – 5.30 pm

Answer ALL THREE questions.

1)

a) Briefly explain syntax errors, logical errors, and run time errors with examples.

b) What are the three basic **principles of object oriented programming**? Explain them briefly.

c) Fill in the blanks in each of the following statements by using the words given inside the brackets underneath.(Write only the suitable word for the blank in your answer sheet.)

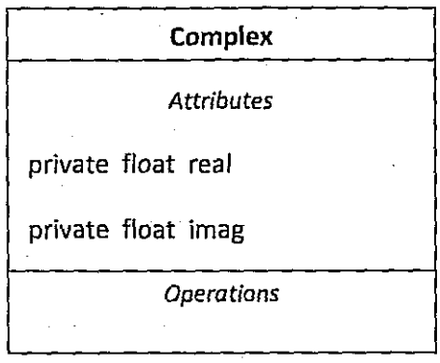
(public, private, protected, multiple inheritance, inheritance)

I. _____is a form of software reuse in which new classes absorb the data and behaviours of existing classes and embellish these classes with new capabilities.
II. A base class's _____ members are accessible within that base class and anywhere that the program has a handle to an object of that class or one of its derived classes.
III. A base class's protected access members have a level of protection between those of public and _____access.
IV. C++ provides for _____, which allows a derived class to inherit from many base classes, even if the base classes are unrelated.
V. When deriving a class from a base class with public inheritance, public members of the base class become _____ members of the derived class, and protected members of the base class become _____ of the derived class.
VI. When deriving a class from a base class with protected inheritance, public members of the base class become _____ members of the derived class, and protected members of the base class become _____ of the derived class.

2)

a. Why we need constructors in a class?
Briefly explain about the three basic types of the constructor.

b. Consider the following Complex class to provide answers for questions b) I and b) II and c).



I. Write the coding required to overload the default constructor for the above class named "complex", which initialises all its data members to zero.

II. Write the coding required to overload a user defined constructor for the Complex class, which initialises its data members to given user inputs.

c. Write the coding required to overload the + operator for the above Complex class.

3) Consider the following '**BankAccount**' class to answer the questions below.

BankAccount
Attributes
private string accountHolder
private int accountNumber
private float balance
Methods
public BankAccount()
public void setAccountHolder (string name)
public void setAccountNumber (int number)
public void setBalance(float amount)
public string getAccountHolder ()
public int getAccountNumber ()
public float getBalance()
public void deposit(float amount)
public void withdraw(float amount)

The method definitions of withdraw and deposit are as follows.

```
//deposit allows a parameter value to be added to the current
balance
void BankAccount::deposit(float amount)
{
    balance = balance + amount;
}

//withdrawal allows a parameter value to be subtracted from the
balance
void BankAccount::withdrawal(float amount)
{
    balance = balance - amount;
}
```

a. Write complete coding required to represent two subclasses called **'SavingsAccount'** and **'CurrentAccount'** ***inheriting*** **'BankAccount'** publicly, according to the following descriptions. You may use either Java or C++.

- A savings account has a special attribute called interest rate.
- A current account has a special attribute called over draft amount.

- Override the withdraw () method in Savings Account Class. A customer must maintain a minimum balance of Rs. 10000/= in a Saving Account.

- Override the deposit () method in Current Account class. When customer who has obtained an over draft facility deposits money to his/her account, the bank first settle the over draft facility. If an amount remains, then the remaining amount will be added to the balance.