THE OPEN UNIVERSITY OF SRI LANKA
B.Sc. DEGREE PROGRAMME : LEVEL 04
DEPARTMENT OF MATHEMATICS & COMPUTER SCIENCE
No Book Test II – 2016/2017
CPU2242 : OBJECT ORIENTED PROGRAMMING USING C++ AND JAVA
DURATION:One and half Hours (1 ½ Hours)

Date: 24.05.2017 **Time : 4.00 pm -5.30 pm**

Answer All Questions.

Q1)

a) What is the purpose of using constructers in a class? Briefly explain three basic types of constructers.

b) Why is it inappropriate to use an inline method when the method has more than two statements?

c) Differentiate between constructer and destructor in C++.

d) Define *private, protected* and *public* access specifies .

Q2)

a) What is meant by operator overloading?

b) Mention two (02) operators that can be overloaded and two(02) operators that cannot be overloaded.

c) Write a C++ **Class** named **Complex** to represent a complex number which includes real and imaginary parts in floating point value. Include the following member functions to the class.

- A constructor to initialize all its data members to zero.
- A constructor to initialize its data members to given user inputs
- A destructor
- A member function to display the complex number
- A member function for overloading + operator to add two complex numbers.

d) Write a suitable **main method** to test the class defined in part(c).

- Create an object called *com1*that initializes the data members to zero.
- Create two objects called *com2* and *com3* and initialize them to (3.5,4.3) and (5.2,6.7) respectively.
- Display the values of *com2*, *com3* objects.
- Add *com2* to *com3* using the operator overloaded member function and display the results.
- Create a dynamic object called *com4* with suitable value and display the value.

Q3)

a) What are the two types of inheritance supported by C++. Explain them by giving suitable examples.

b) What is polymorphism?

c) Create a **C++Base class** called **Vehicle** which includesthe following members

- Integer variable called **num_wheels** to store the number of wheels in the vehicle.
- A constructor to initialize its data members to given user inputs.
- A member function called **Getwheels()** to access the num_wheels of the vehicle.
- A Member function called **showVehicle()** to display the values of the member variables.

Create a **Sub class** called **Car** of Vehicle which includes the following properties.

- Integer variable called **passenger_load** to store the number of passengers a car can carry.
- Overload a constructor which initializes its data members to given user inputs.
- Override the Member function **showVehicle()** to display the values of the member variables.

d) Write a suitable **main method** to print the following output.

```
Car:
Wheels :4
Passenger :5
```