THE OPEN UNIVERSITY OF SRI LANKA
B.Sc. DEGREE PROGRAMME : LEVEL 05
CLOSED BOOK TEST 2009/2010
CSU 3279 – OBJECT ORIENTED PROGRAMMING

DURATION: One and Half hours

Date: 15/10/2009 **Time: 4.00pm – 5.30pm**

Answer All Questions

QUESTION 1

1.1) What is a class?
1.2) How does a class accomplish abstraction, encapsulation and data hiding?
1.3) What is the relationship between an object and a class?
1.4) What is a default constructor? What is the advantage of having a default constructor in a class?
1.5) What is function overloading? How does function overloading achieve in C++?

QUESTION 2

2.1) Use `enum` to define a type called Response with the possible values `Yes`, `No`, and `Maybe`. `Yes` should be `1`, `No` should be `0`, and `Maybe` should be `2`.

2.2) Suppose `mike` is a double variable. Declare a pointer variable that points to `mike` and use this pointer to display `mike`'s value.

2.3) The following is a structure template to hold the dimensions of a box:

```
struct {
   float height;
   float width;
   float length;
};
```

a) Write a function that has a reference to a box structure as its formal argument and displays the value of each member.
b) Write a function that has a reference to a box structure as its formal argument and returns the volume of the box.

2.4) a) Write two structure templates to represent a circle and a rectangle.
b) Write two functions with the same function name `area ()` to obtain the area of a circle and area of a rectangle using the structure templates defined in part (a).

2.5) Mr. G.C. Perera runs a pizza-analysis service. For each pizza, he needs to record the following information:

- The name of the pizza company, which can consist of more than one word
- The diameter of the pizza
- The weight of the pizza

Devise a structure that can hold this information and write a simple C++ program that uses a structure variable of that type. The program should ask the user to enter of the above information, and then the program should display that information.

QUESTION 3

3.1) Define a class (named `Time`) to represent the time that includes the following data members

- Hours
- Minutes
- Seconds

3.2) Write the following member functions to the `Time` class

a) A user defined constructor to initialize data members of the class.
b) To convert time in hours, minutes and seconds to the equivalent seconds.
c) Overload + operator for adding two time objects.
d) To display the data members of the class

3.3) Write a main program to test your class.

PQ 2101