UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2012/2013

COURSE NAME	:	OBJECT ORIENTED PROGRAMMING
COURSE CODE	:	BEC 20702
PROGRAMME	:	2 BEC
EXAMINATION DATE	:	JUNE 2013
DURATION	:	2 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

Q1 (a) Decide whether True or False for the following statement.

    (i) Java language is compiled into byte codes.

    (ii) A class is a description of a group of objects with common properties (attributes), behavior (operations), relationships, and semantics.

    (iii) An object is a concept, abstraction, or thing with sharp boundaries and meaning for an application.

    (iv) Polymorphism is the ability to show many different implementations behind a single interface.

    (v) Encapsulation can be described as a protective barrier that prevents the code and data being randomly accessed by other code defined outside the class.

(5 marks)

(b) Use suitable method of mathematic class to represent the following equation in Java statement.

$$\frac{h^5 - \sqrt{g + k}}{d + c}$$

(6 marks)

(c) Analyze and write the output of the following source code, if data = 345.

```
import java.util.Scanner;

public class Test{
        public static void main (String args[])
        {
                int data;

                Scanner input = new Scanner(System.in);
                System.out.println("Enter a positive integer");
                data = input.nextInt();
                do
                {
                        System.out.println(data %  10);
                        data /= 10;
                } while (data > 0);
        }
}
```

(6 marks)

(d)   Rewrite the following pseudo code into a *switch* statement:

    if (choice equal 10)
            Print "You selected ten."
    else if (choice equal 20 OR choice equal 30)
            Print "You selected twenty or thirty."
    else if (choice equal 40)
            Print "You selected forty."
    else
            Print "Select other please."

(8 marks)

Q2   (a)   One of the Java concepts is encapsulation. Explain the concept with the aid of diagram for the following statement:

   (i)   The transmission of message if the user presses the forward button on a video recorder machine.

   (ii)   The transmission of message if the user set the temperature to 18 degrees Celsius on the air conditioner.

(5 marks)

(b)   A program contains the following method definition:

    public static int square (int num)
    {
            return num*num;
    }

Point out a call statement that passes the value 5 to this method and assign its return value to a variable named *result*.

(2 marks)

(c)   What is the value of *result* for Q2(b)?

(2 marks)

(d)   Construct a method definition to display all the following variables:

    char initial = 'T';
    int age = 25;
    double income = 50000.00;

(6 marks)

(e)   Consider three (3) types of vehicles below with their respective attributes:

Motorcycle   Vehicle_No, Price, Make, Model, Engine_No
Car   Vehicle_No, Price, Make, Model, Engine_No, No_Passenger
Lorry   Vehicle_No, Price, Make, Model, Engine_No, Capacity

Illustrate a class diagram using a general/special hierarchy based on the information described above.

(6 marks)

(f)   List two (2) exception of classes.

(4 marks)

Q3   (a)   Illustrate the Unified Modeling Language (UML) diagram for the class named *Stock* that contains:

- A string data field named *name* for the stock's name
- A double data field named *previousPrice* that stores the stock price for the previous day.
- A double data field named *currentPrice* that stores the stock price for the current time
- A constructor that creates a stock with the specified name, previous price and currentPrice.
- A method named *getChangePercent( )* that returns the percentage changed from *previousPrice* to *currentPrice*.

(6 marks)

(b)   Construct the Stock class using Java code.

(12 marks)

(c)   Develop a test program that creates a stock object with the stock name ABC and the previous closing price of 34.5. Set a new current price to 34.35 and display the price-change percentage.

(7 marks)

Q4 (a) Differentiate between Overloading Method and Overriding Method.

(5 marks)

(b) Based on UML diagram in Figure Q4(b) below,

Rectangle
length : double
width : double
Rectangle(len : double, w : double)
setLength(len : double) : void
setWidth (w : double) : void
getLength ( ) : double
getWidth ( ) : double
getArea( ) : double

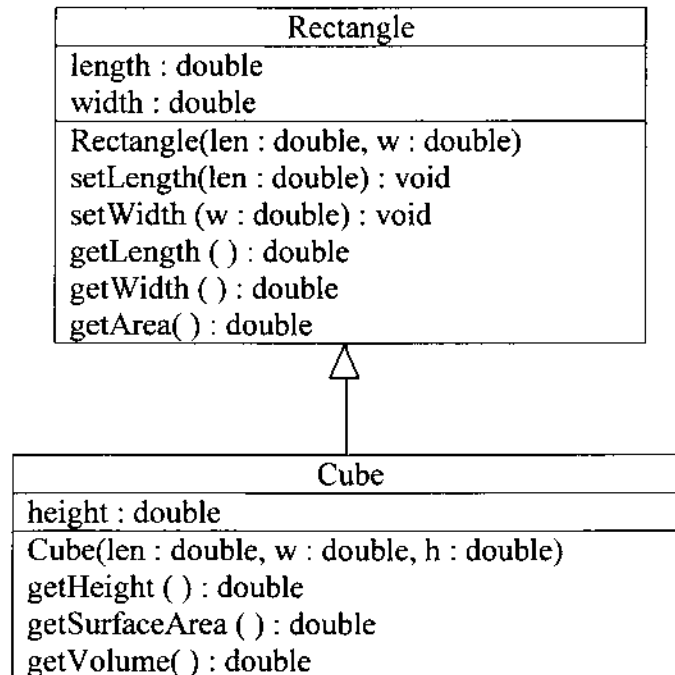| Cube |
| --- |
| height : double |
| Cube(len : double, w : double, h : double) |
| getHeight ( ) : double |
| getSurfaceArea ( ) : double |
| getVolume( ) : double |

Figure Q4 (b)

(i) construct a Java source code of Rectangle superclass.

(10 marks)

(ii) produce a Java source code of Cube subclass that inherits the Rectangle class.

(10 marks)

- END OF QUESTION -