UGANDA MARTYRS UNIVERSITY
NKOZI

UNIVERSITY EXAMINATIONS

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION SYSTEMS

END OF SEMESTER ONE FINAL ASESSMENT
SEMESTER I, 2014/15

SECOND YEAR EXAMINATIONS FOR BACHELOR OF INFORMATION TECHNOLOGY

Programming Methodology I JAVA

DATE: 12TH TH DECEMBER 2014

TIME: 2: 00- 5:00 PM

DURATION: 3HRS

Instructions:

1. *Carefully read through ALL the questions before attempting*
2. ***ANSWER five (5) Questions*** *ONLY. (Each question carries equal marks)*
3. *No* ***names*** *should be written anywhere on the examination book.*
4. *Ensure that your* ***Reg number*** *is indicated on all pages of the examination answer booklet.*
5. *Ensure your work is* ***clear, well spaced*** *and* ***readable****. Untidy work shall be penalized*
6. *Be brief and clear*
7. *Any type of examination Malpractice will lead to automatic disqualification*
8. *Do not write anything on the question paper.*
9. *Begin every question on a fresh page*

Question One

[5 marks each]

(a) Write down a complete Java program to output your name and registration number on the screen. Write this program professionally.

(b) Define a do while loop which sums all even numbers between 2 and 100 inclussive.

(c) Define a method called greatest that accepts two integer values and then returns the integer that is the greatest/biggest.

(d) Define the following terms precisely and briefly:

(i) Object	(iii) Inheritance	(v) Object reference variable
(ii) Class	(iv) Polymorphism	

Question Two

a) What is a default constructor and what is its purpose? [2 marks]

b) Write down a well spaced Java program creating a class called Student. Let that class have two attributes (Name and yearOfBirth) and a function CalculateAge ( ). Do not define any constructor in that class. Note the following :

(i) Create an object called one. [4 marks]

(ii) Assign a value 2010 to the attribute yearOfBirth and Ben to Name. [4 marks]

(iii) Create a function called CalculateAge ( ) which takes the value of the yearOfBirth as the parameter and then returns the age. Assume the current year is 2014. [4 marks]

(iv) Use an object created in (b)(i) above to call the function CalculateAge ( ) [3 marks]

(v) Let your program contain relevant comments. [3 marks]

Question Three

[3 marks each]

Use the program below to answer questions that follow.

```
import java.applet.*; // line one
import java.awt.*;
public class HelloWorld extends Applet // line three
{
public void init( ) {
resize(150,25);
}//init
public void paint(Graphics  g) // line 8
{
g.setFont(new Font("Helvetica", Font.PLAIN, 8));
g.drawString("Hello world!", 50, 25); //line 11
}//paint
}//HelloWorld
```

[2 marks]

(a) What is an applet?

(b) If you only saw line three of the program above, what message does this line portray to you? Be clear and explain what you mean unambiguously.

(b) Assume it was possible to create an object of the class defined above, write one programming statement that will create an object XX of the class above.

(c) In the class above we have invoked many functions. State those functions.

(d) If you were forced to define a function called drawString( ) (see line 11), write down a definition of that function. Leave the body of that function empty.

(e) Describe the meaning and significance of line 8.

(f) Describe the meaning and significance of line 11.

[3 marks each]

Question Four

Use the following code to answer questions that follow.

```
public class Employee
{
string name;
//int age;
```

```
float salary;
public void Employ()
{
system.out.println ("Employee:" + name);
}
}

public class Manager extends Employee
{
int allowances;
int actualpay( )// method
{
return salary+allowances;
}
}

// the normal constructor.
public Manager(string thename, /* int theage,*/ float thesalary, int theallowances) // line 17
{

// information here. Line 19

}

// use of the super keyword.
public Manager(string thename, int theage, float thesalary, int theallowances)
{
super(thename, theage, thesalary)
allowances = theallowances
}
public class Driver
{

//assigning values.
public static void main (String[] args)
{


// assigning values with the help of constructors
```

```
public static void main (String[] args)
{
 //instantiate objects


// output the information of the objects
}
}//end of program.
```

(a) State all the members of class Manager.

(b) Fill in the information missing where there is Line 19

(c) Re-define the function that starts on line 17 using the keyword **this**

(d) Re-define the function that starts on line 17 using the keyword **super**

(d) Instantiate an object of type Manager and initialize all its members

(e) Instantiate an object of Employee initialize all its members

(f) Explain the other use of the word super apart from the one used in this program. [3 marks]

[2.5 marks each]

Question Five

Use the program below to answer questions that follow.

```
import java.util.Scanner;
import java.io.*;
import java.text.DecimalFormat;
public class Program2_1
{
public static void main(String[] args)
{
final double SALESTAX = 0.05; // Line 8
// input streams for the keyboard and a file
Scanner fileIn = null;   // Line 9
```

```
// and so on



}
}
```

(a) Write brief notes about Line 8.

(b) Write brief notes about Line 9.

(c) Create an object of class Scanner.

(d) Explain why it is possible to create an object of class Scanner yet we have not defined it here.

(e) Use the object created in (c) above to call a function that allows you to input a float value from the screen.

(f) What is a static variable and how does it differ from an instance variable.

(g) Complete the program such that it prompts the user to input an integer and then checks if that value is even and between 3 and 21. If this condition is true, the program outputs the word RIGHT if not fulfilled, the program outputs the word WRONG. Please space your code widely. [5 marks]

Question Six.

Write down the output of the following code fragments. [5 marks each]

(a)

```
for (x = 0; x<10; x++)
{
for (y = 5; y > 0; y --)
System.out.print("X");
}
```

(b)

```
int  g =10;
while (g <= 100)
```

```
  {
System.out.println( g );
g = g+10;
  }
```

(c)

```
int counter, sum;
sum = 0;
for (counter =0; counter <=10; (counter+=2))
{
sum += counter;
}
System.out.print("Total : " + sum);
```

(d)

```
int  a, j;
for( a =0; a<=5; a++)
{
for (j = 0; j < = 10; j++)
{
System.out.print (" $ ");
}
System.out.println ( );
}
```

Question Seven [2.5 marks each]

(a) What is multiple inheritance?

(b) Demonstrate the concept of multiple inheritance with diagrams using realistic examples.

(c) Use the information below to answer questions that follow.

```
public class lecturer
        {
String name;
```

```
String name;
float salary;
int age; // line 5
public void Greet( ){
System.out.printIn ("Hi lecturer" +name);
                }
                    }
public class PartTimeLecturer extends lecturer
                {
int hourWorked;
int   Cpay ()
          {
return hoursWorked *1000;
           }
             }
```

(i) Overload the function Greet()

(ii) Given the following statement:

PartTimeLecturer one = new PartTimeLecturer ();

explain the significance of the word one and write brief notes on it regarding stroge of values.

(iii) Rewrite line 5 to ensyre that that attribute is not inherited by any subclass.

(d) Write a java program that calculates the area of a circle. Use a constructor and make use of the this keyword. Rewrite the above program with the help of the **this** keyword. Ensure that pi is a constant as 3.14. The class should have a function Area that calculates the area of a circle and an attribute radius only.

[7.5 marks]

END

'MERRY X – MASS'