

UGANDA MARTYRS UNIVERSITY  
FACULTY OF SCIENCE  
PROGRAMING METHODOLOGY (JAVA D) FINAL EXAMINATION  
YEAR TWO (GENERAL & IT)  
DATE: WEDNESDAY 19TH DECEMBER 2012-12-18

Time 3 Hours

Instructions:

1. Answer all questions in section A.
2. Answer ONLY THREE questions in section B.
3. Be brief and clear
4. Begin each question in section B on a fresh page
5. Space your work

**SECTION A** (Compulsory number. Write briefly and clearly 40 marks)

a) Define the following terms briefly:

*2marks each*

(i) Class

(ii) JVM

(iii) Method

(iv) Static variable

b) Given the following code, use it to answer the questions that follow.

```
int number =2;

switch(number)

{

    case 1:
System.out.println("O\n\nN\n\n E"); break;
    case 2:
System.out.println("T \n\n W \n\n O"); break;
    case 3:
System.out.println("T\n\n H\n\n R\n\n E\n\n E"); break;
    case 4:
System.out.println("F\n\n O\n\n U\n\n R"); break;
    default:
System.out.println("O\n\n T\n\n H\n\n E\n\n R");
}
```

What is the purpose of the default statement above?.

*2 marks*

c) Rewrite the code in (b) using if else

*3 marks*

d) Write a for loop in Java to output the following as it is. *3 marks*

8            6            4            2            0

e) Write a do while loop to output the above information in (d) above.



3 marks

- f) Use the following code to answer questions that follow:

```
public class Point{  
  
    public int x=0;  
  
    public int y = 0;  
  
    public Point (int a, int b){  
  
        x = a;  
  
        y = b;  
  
    }  
  
}
```

- (i) Rewrite the function(method) you see in the code above using the keyword **this** somewhere. 3 marks

- (ii) Overload the method you see in the above code by only changing the number of parameters. 3 marks

- (iii) Write one programming statement to instantiate an object from the class above as you see it. 3 marks

- (iii) How can you create a null reference from the above class? 3 marks

- (iv) How is the null reference handled by the system? 3 marks

- g) Write a java program to output your name and registration number on the screen (each on a separate line). 3 marks

- h) Write short notes about OBJECT INSTANTIATION. 3 marks

## SECTION B (60 marks. Answer only three questions from this section)

### Question 1.

(a) Define Object oriented Programming clearly.

2 marks

(b) Given the following code, use it to answer questions that follow:

```
Space x = new Space ( );
```

(i) Write short notes about x that help to understand what it is.

3 marks

(ii) What is the significance of the programming statement bolded in

(b) above?

3 marks

(iii) Write down two separate programming statements that would be equivalent to the bolded programming statement in (b) above.

3 marks

(iv) Define a constructor that is relevant to the bolded programming statement in (b) above.

3 marks

(v) In relation to the bolded programming statement in (b) above, what would the statement `x.AddTwo ( );` mean? Explain your answer.

3 marks

### Question 2.

4 marks each

(a) Differentiate a static variable from an instance variable.

4 marks

(b) Given the following code, use it to answer the questions that follow:

```
public class Student { float testOne, testTwo, Avg;  
    //some piece of code here.  
    public float CalcAv( float m, float n)  
    {  
        // some code here  
    }  
    //other code here  
} // end class
```

(i) Instantiate an object from the class above as it appears (use one as the object reference.

(ii) Call the function CalcAv.

(iii) Write down one programming statement that will output the following

The average of test one and test two is: -----

(where ----- will be the average obtained after calling the function CalcAv)

(iv) Rewrite the class Student above again. Ensure you use a constructor and instantiate at least one object and call the function CalcAv.



### Question 3.

- (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 Lecturer. Let that class have two attributes (Age and Name). Do not define any constructor in that class. Note the following
- (i) Create two objects. Call these objects PP and QQ *4 marks*
  - (ii) Assign a value 10 to the attribute Age and Eva to Name. *4 marks*
  - (iii) Create a function called yOfBirth which takes the value of the current year i.e. 2012 as the parameter and then returns the year of birth. *4 marks*
  - (v) Use an objects created in (b)(i) above to call the function yOfBirth *3 marks*
  - (vi) Let your program contain relevant comments. *3 marks*

#### Question 4.

(a) Use the following code to answer the questions that follow *5 marks each*

```
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)); // line 10
        g.drawString("Hello world!", 50, 25); //line 11
    } //paint
} //HelloWorld
```

- (i) What is this code above intended to do?
- (ii) Describe the meaning and significance of line three
- (iii) Describe the meaning and significance of line 8
- (iv) Describe the meaning and significance of lines 10 and 11



### Question 5.

(a) Use the following code to answer the questions that follow *5 marks each*

```
import java.io.* ;

class Tut1 {

    public static void main(String args[])
    {
        InputStreamReader istream = new InputStreamReader(System.in) ;
        BufferedReader bufRead = new BufferedReader(istream); // line (i)

        System.out.println("Welcome To My First Java Program");

        try {
            System.out.println("Please Enter In Your First Name: ");
            String firstName = bufRead.readLine(); //line (ii)

            System.out.println("Please Enter In The Year You Were Born: ");
            String bornYear = bufRead.readLine();

            System.out.println("Please Enter In The Current Year: ");
            String thisYear = bufRead.readLine();

            int bYear = Integer.parseInt(bornYear); // line (iii)
            int tYear = Integer.parseInt(thisYear);

            int age = tYear - bYear ;
            System.out.println("Hello " + firstName + ".
                                You are " + age + " years old");
        }
        catch (IOException err) {
            System.out.println("Error reading line");
        }
        catch (NumberFormatException err) {
            System.out.println("Error Converting Number");
        }
    }
}
```

What is the significance of the following lines as shown in the code above?

- (i) Line (i)
- (ii) Line (ii)
- (iii) What is the significance of the dot operator in Line (iii)?
- (iv) Rewrite line (iii) assuming bYear was of type double.

END