UNIVERSITY OF ELDORET

UNIVERSITY EXAMINATION

2016/2017 ACADEMIC YEAR

FOURTH YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE INFORMATICS

INF430 PROGRAMMING FOR THE INTERNET AND MOBILE DEVICES II

MAIN EXAMINATION

DATE: DEC 2016 **TIME: 2 HOURS**

INSTRUCTIONS: *Answer Question One (COMPULSORY) and any other TWO questions*

SECTION A

QUESTION ONE [30 MARKS]

a) Define the following terms as used in object oriented programming **[8 marks]**

i. Inheritance
ii. Modularity
iii. Polymorphism
iv. Encapsulation

b) Explain the java program syntax below **[4 marks]**

```
public class Exam1
{
public static void main (String args [])
  {
System.out.println ("My first Java program");
  }
}
```

c) Write a program which performs all the operations named below by using two integer values which are hard coded into the program. **[4 marks]**

i. Addition
ii. Subtraction
iii. Multiplication
iv. Division

d) Write a program which can conversion of values from kilometers to meters **[4 marks]**

e) Write a java code with four classes: main, rectangle, triangle and circle classes. Rectangle, triangle and circle classes should each have methods to calculate area and perimeter of the corresponding shape. From the main method in the main class, the user should be allowed to choose the shape that he/she would want to work on. The user should also choose to either calculate the area or the perimeter of the desired shape. **[10 marks]**

QUESTION TWO [20 MARKS]

a) Re-write the following code using **do while** to produce the same results produced by the code below. **[6 marks]**

```
class Exam3 {
public static void main(String args[]) {
int count;
for(count = 0; count < 5; count = count+1)
System.out.println("This is count: " + count);
System.out.println("Done!");
      }
}
```

b) Casting is the term used when a value is converted from one data type to another. Write a java code to demonstrate type casting. **[7 marks]**

c) Using swing components, write a java program that allows the user to input three numbers and finds the average of the three numbers **[7 marks]**

QUESTION THREE [20 MARKS]

a) Using a program, demonstrate the difference between a **nested – if** conditional statement and **if – else – if** ladder **[8 marks]**

b) Rewrite the following program using the **tenary(?) operator**. **[6 marks]**

```
public class Exam4 {
public static void main(String args[]) {
     int mark=64;
     if(mark>50)
System.out.println("You passed");
else
System.out.println("You failed");
     }
}
```

c) Write a java program that allows a user to select his/her favorite team using **switch case**. What will be the output? **[6 marks]**

QUESTION FOUR [20 MARKS]

a) Differentiate between class and object as used in java **[4 marks]**

b) Write a java code that has two classes. The main class which contains the main function and the addition function and sample class which will contain function product. The main function in the main class should call the addition function from the main class and the product function from the sample class. The program should also allow the user to enter two values to be used in the addition and product functions. **[10 marks]**

c) Describe any three access modifiers using sample code **[6 marks]**

QUESTION FIVE [20 MARKS]

a) There are two types of arrays. Using examples, describe them. **[4 marks]**

b) Write the syntax for declaring and using an array. Explain the different parts of the declaration. **[3 marks]**

c) Explain and illustrate with code the differences between method overloading and method overriding. **[3 marks]**

d) Write a java program that uses math class to calculate the hypotenuse of a right-angled triangle with a base of 4cm and height of 3cm **[3 marks]**

e) Using examples describe the difference between global and local variables **[4 marks]**

f) Write a simple java program to display all odd numbers between 50 and 100 **[3 marks]**