

(*Knowledge for Development*)

**KIBABII UNIVERSITY**

**(KIBU)**

**UNIVERSITY EXAMINATIONS**

**2016/2017 ACADEMIC YEAR**

**END OF SEMESTER EXAMINATIONS**

**YEAR THREE SEMESTER ONE EXAMINATIONS**

**FOR THE DEGREE OF**

**BACHELORS OF SCIENCE**

**(COMPUTER SCIENCE/INFORMATION Technology)**

**Course code:** CSC 210

**Course title:** OBJECT ORIENTED PROGRAMMING

**DATE: 19/01/2017**  **TIME: 2.00 p.m. - 4.00 p.m.**

### INSTRUCTIONS TO CANDIDATES

Answer **Questions ONE a**nd **ANY OTHER TWO**

**QUESTION ONE (COMPULSORY) [30 MARKS]**

1. Different programming languages have a defined structure of coding. Explain the following line used in Java Program. **[6 Marks]**

public static void main (String args[ ])

1. Briefly explain any two common Java exceptions.  **[4 Marks]**
2. State any five features of Java. **[5 Marks]**
3. Explain the difference between static and non-static variables. **[2 Marks]**
4. Distinguish between error and an exception. **[2 Marks]**
5. Explain the difference between function overloading and function overriding. **[2 Marks]**
6. Discuss the importance of inheritance. **[3 Marks]**
7. Outline any three common run time errors in Java. **[3 Marks]**
8. Study the following code and list all its output. **[3 Marks]**

public class Test {

public static void main(String args[]) {

int x = 10;

while( x < 20 ) {

System.out.print("value of x : " + x );

x++;

System.out.print("\n");

}

}

}

**QUESTION TWO [20 MARKS]**

1. Java is Architectural Neutral. Discuss. **[2 Marks]**
2. Define a class. **[1 Marks]**
3. Write signature used when creating a class. **[5 Marks]**
4. Distinguish between abstract class and concrete class. **[2 Marks]**
5. With the help of a diagram explain the if…else statement **[4 Marks]**
6. i. Explain Java interface. **[2 Marks]**
7. Write a program to implement interface. **[4 Marks]**

**QUESTION THREE [20 MARKS]**

1. Define the term object. **[1 Mark]**
2. Outline the three steps for creating an Object for a class. **[3 Marks]**
3. Using a flow diagram and a suitable example explain do .. while statement. **[6 Marks]**
4. To maintain strategic fit Safaricom Mobile phone provider is introducing a tariff called the *Pap tariff* that will lower calling costs.

Calls to Safaricom networks will be charged according to the time of the day as listed below:

* Between 8am to 12 noon – 2.0 Kshs
* Between 12 noon to 2pm – 1.0 Kshs
* Between 2pm to 6pm – 1.50 Kshs
* Between 6 to 1am– 0.5 Kshs
* Between 1am to 8am – 0.8 Kshs

Internal calls to other networks will be charged at a fixed rate of 2.50 Kshs while international calls will be charged at a rate of 10 Kshs between 8am to 8pm and Kshs 15 for the rest of the day. All calls are charged per minute usage.

Mr. Oteng’o Rangaga a business man who makes both internal and international calls would like to make maximum use of this tariff. Write a program that would display the charges of calls with an appropriate label when he inputs the type of call and the time of call where appropriate. Use a 24 hour clock. **[10 Marks]**

**QUESTION FOUR [20 MARKS]**

1. String class is considered immutable. Discuss. **[3 Marks]**
2. i. Describe a Package. **[2 Marks]**

ii. Explain why Packages are used in Java. **[2 Marks]**

1. i. Describe a constructor. **[2 Marks]**

ii. Explain the difference between constructors and other methods. **[2 Marks]**

iii. Explain the usage of this () with constructors. **[2 Marks]**

1. Write a program takes n number of element from user (where, n is specified by user), stores data in an array and calculates the average of those numbers. **[7 Marks]**

**QUESTION FIVE [20 MARKS]**

1. Using valid signatures, discuss the following object oriented concepts. **[6 Marks]**

i. Inheritance.

ii. Encapsulation

iii. Polymorphism

1. i. Create a superclass called car. The car class has the following fields and methods; int speed, double regularprice, string color, double getSalePrice() **[6 Marks]**

ii. Create a subclass of the car class and name it as truck. The truck class has the following field and methods; int weight, double getSalePrice() **[4 Marks]**

iii. Create a subclass of a car class and name it as ford. The ford class has the following fields and methods; int year, int manufacturerdiscount, double getSalePrice() **[4 Marks]**