

(*Knowledge for Development*)

**KIBABII UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**2016/2017 ACADEMIC YEAR**

**END OF SEMESTER EXAMINATIONS**

**YEAR ONE SEMESTER ONE EXAMINATIONS**

**FOR THE DEGREE OF**

**COMPUTER SCIENCE**

**Course code :** CSC 210

**Course title :** OBJECT-ORIENTED

PROGRAMMING

**DATE: ../08/2016** **TIME: ..:00 PM – ..:00 PM**

### INSTRUCTIONS TO CANDIDATES

Attempt all questions in section A and ANY TWO (2) questions from section B.

**SECTION A**

**Question One (30 Marks)**

1. Differentiate between procedural programming and objected oriented programming and give an example of programming languages for each (5 Marks)
2. Multiple inheritances are possible in Java. State how this is possible? (1 Mark)
3. Briefly explain each of the following Java terms: static method, protected, this (6 Marks)
4. State three advantages of OOP. (3 Marks)
5. Why is garbage collection important? (2 Marks)
6. What is the difference between method overloading and method overriding? (4 marks)
7. Write down the output of the code bellow (4 marks)

**abstract** **class** DegreeProgram{

**abstract** **int** getCutOffPoints();

}

**class** CS **extends** DegreeProgram {

**int** getCutOffPoints (){**return** 77;}

}

**class** IT **extends** DegreeProgram {

**int** getCutOffPoints (){**return** 68;}

}

**class** HowMuchCuttOff{

**public** **static** **void** main(String args[]){

DegreeProgram p;

p=**new** CS();

System.out.println("Minimum points needed for” "+p.class.getName() + “are: "+p.getCutOffPoints ()+" %");

p=**new** IT();

System.out.println("Minimum points needed for” "+p.class.getName() + “are: "+p.getCutOffPoints ()+" %");

}}

**SECTION B**

**Question Two (20 Marks)**

a) Four key features of object oriented programming are: abstraction, polymorphism, encapsulation and inheritance. Define three of these terms and give an example each of the features in Java. (15 marks)

b) Explain the difference between how method parameters are passed for variables that contain object references and variables that contain primitive data types. (5 marks)

**Question Three (20 Marks)**

Consider the following java class definition:

***public class time***

 ***{***

***private int second; // from 1 to 60***

***private int minute; // from 1 to 60***

***private int hour; // from 0 to 23***

***public void decrease (); // move to previous second***

***};***

1. Implement a constructor that initialises new objects of time class to be set to the 22:45:00. (5)
2. Implement setters for second, minute and hour. (5)
3. Implement the increase method, which moves to the previous second, ensuring that all data members are updated appropriately. (10)

**Question Four (20 Marks)**

1. State the need for the final keyword and give a list of rules for when it should and when it should not be used. (6)
2. Name three restrictions methods declared as static have? (3)
3. Consider the following piece of code: (4)

Student S1 = new Student ("Onyango", 2014);

Student S2 = new Student (S1);

What are the values of the expressions S1.equals(S2) and S1 == S2? Why?

1. Write a class definition for the following scenario. The class is called TheFraction, it works on fractions of the form a/b where ***a*** represents the numerator and ***b*** represents the denominator. Both a and b are integers (i.e. if a = 1 and b = 2, then the fraction will be 1/2). The class should have two constructors: the first one has no parameters but sets a = 0 and b = 1 and the second with 2 integer parameters that sets both a and b. (5 marks)
2. Differentiate between interface and abstract class in Java using examples. (2)

**Question Five (20 Marks)**

1. What is access specifier? Distinguish among them with examples. (10 marks)
2. You create a java class named V*oter* that has four private data – voter id, voter name, sub county and voted. The class should contain a parameterized constructor to initialize its data members. The data members passed as parameter are voter id, voter name and sub county. Voted is not passed as a parameter but it is initialised within the constructor to false. In addition the class should have one method to display the information. Now write a Java program that will use an array of *Voter* objects to represent information about 3 voters. Your program should take input from the keyboard and display the information of the 3 voters. (10 Marks)