THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)
(A Centre of Excellence)
Faculty of Engineering & Technology

DEPARTMENT OF MECHANICAL & AUTOMOTIVE ENGINEERING

UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING
(BSC ME)

EMG 2210: COMPUTER PROGRAMMING II

END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2012
TIME: 2 HOURS

Question One (Compulsory)

a) Illustrate **TWO** data types used java. Give examples.   **(4 marks)**

b) Provide definitions for the following terms/phrases.   **(10 marks)**
   (i)   Java Bytecode
   (ii)   Java Virtual Machine
   (iii)   Java Garbage Collector
   (iv)   Java Class
   (v)   Java Object

c) Identify the **FOUR** access modifiers used in Java.   **(4 marks)**

d) Write a Java program prompts the user for a surname and prints it in uppercase. **(6 marks)**

e) Write a java program that uses string concentration to output the following. **(6 marks)**

```
        a
        a b a
        ab ac ab a
        ab ac ab ad ab ac ab a
        12
```

Question Two

a) Explain the following java programming terms/phrases. **(10 marks)**
   (i)   Public
   (ii)   Static
   (iii)   Void
   (iv)   Main ()
   (v)   String args [ ]
   (vi)   Args [ ]

b) List **FIVE** characteristics of a constructor method. **(5 marks)**

c) Outline **FIVE** characteristics of a destructor method. **(5 marks)**

Question Three

a) Explain the term method overloading and give its **TWO** advantages. **(4 marks)**

b) Differentiate between the **THREE** types of access specifiers, private, public and protected.
   (6 marks)

c) Write a java program that prompts the user for a number and gets its factorial. **(10 marks)**

Question Four

a) State **THREE** characteristics of a static data member. **(4½ marks)**
b) Define the following terms:
   (i)   Inheritance
   (ii)   Base class
   (iii)   Sub class **(4½ marks)**

c) List **THREE** types of errors in Java programming. **(3 marks)**
d) Write a C program that prompts the user for students marks and displays grade A if marks is > = 70, B
   if marks greater than 60 but less than 70, C if marks greater than 50 but less than 60, D if marks
   greater than 40 but less than 50 and F if marks less than 40. **(8 marks)**

Question Five

a) Explain how exceptions are handled in java. **(4 marks)**

b) List **THREE** similarities and **THREE** differences between an interface and a class. **(6 marks)**

c) Write a java program to compute loan repayment period based on the following formula.

   Monthly Repayment = Loan Amount * Monthly Interest/(1 − Math.pow(1/1+monthly interest),
   number years *12 **(10 marks)**