THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

Faculty of Engineering and Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION TECHNOLOGY – DIT 2K 10J

ECS 2211: OBJECT ORIENTED PROGRAMMING (OOP)

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: OCTOBER 2011

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination
- *Answer booklet*

Answer question **ONE (COMPULSORY)** in section A and any other **TWO** questions from section B
Maximum marks for each part of a question are clearly shown.
This paper consists of **THREE** printed page

QUESTION ONE (COMPULSORY)

a) Define the following terms:
      (i) Class.
      (ii) Object.
      (iii) Inheritance.
      (iv) Polymorphism. **[8 marks]**

b) State any **six** benefits of object oriented programming methodology. **[6 marks]**

c) Using a suitable example, show the declaration and implementation section of a class. **[4 marks]**

d) Explain the term 'Data hiding'. **[2 marks]**

e) Distinguish between Constructors and Destructors. **[4 marks]**

f) Explain the term 'Overloading' stating its importance. **[3 marks]**

g) Using a suitable illustration, explain the term Multiple Inheritance. **[3 marks]**

QUESTION TWO (20 MARKS)

a) Explain the **THREE** ways in which an object can be passed as an argument to a function. **[6 marks]**

b) Write a program that declares a student class with three variables stud_id, stud_mark and stud_grade and two functions get_mark and show_grade. The function get_marks gets values for stud_id and stud_mark and then computes and stores the grade 10 stud_grade. The function show_grade then displays all the three values. The grade is calculated as follows:

mrk	grade
mrk < 50	F
mrk < 60	C
mrk < 70	B
mrk > = 70	A

[14 marks]

QUESTION THREE (20 MARKS)

a) State **four** ways in which a constructor differs from a member function. **[4 marks]**

b) Outline the **four** features of destructors. **[4 marks]**

c) Using the class employee with variables id (type int), and salary (type double). Use the functions assign values and display values to write a program to illustrate how a constructor works. **[12 marks]**

QUESTION FOUR (20 MARKS)

a) (i) Using the base classes account and person and suitable subclasses, illustrate the One-level and Two-level Inheritance. **[3 marks]**

(ii) By writing the attributes and methods of the classes person, student and Employee, illustrate the inherited properties where student and employee are subclasses of person. **[4 marks]**

b) The account class is the base class and the current class is the subclass. There are two variables (account_no and name). Each class has its own variables and functions. The functions for the account class are open_account ( ), show_account ( ). The functions for the current account include deposit ( ), show_balance ( ). Write a program to illustrate this. **[13 marks]**

QUESTION FIVE (20 MARKS)

a) Outline **five** rules for overloading operators. **[5 marks]**

b) Create a class called numbers that has a unary operator minus. Overload the operator so that it can be applied to the class Numbers. The functions are get_data ( ), show_data ( ) and operator_ ( ). **[15 marks]**