



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
(YR II SEM II)

ECS 2211: OBJECTED ORIENTED PROGRAMMING (C++)

END OF SEMESTER EXAMINATIONS

SERIES: AUGUST/SEPTEMBER 2011

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer booklet*

Answer question **ONE (COMPULSORY)** and any other **TWO** questions

This paper consists of **THREE** printed pages

Question 1 (30 marks)

- a) List **FOUR** components of an object model (4 marks)
- b) State what UML is and outline its importance in system analysis and design (5 marks)
- c) List **FOUR** types of classes (4 marks)
- d) State the meaning of the access specifiers, public, private and protected (3 marks)
- e) Declare a class called Polygon which contains four members: two data members of type int(member x and member y) with private access and two member functions with public access: set_values () and area (). (5 marks)
- f) Write a C++ program that uses the class defined above to instantiate an object called rect and gets the area when the values of x and y are given (5 marks)
- g) Distinguish between a constructor and a destructor and show with code how each can be declared using the class defined above. (4 marks)

Question 2 – (20 marks)

- a) Explain the following terms as used in polymorphism (8 marks)
 - (i) Overloading
 - (ii) Virtual member
 - (iii) Coercion
 - (iv) Abstract base class
- b) Explain the following object oriented design terms (4 marks)
 - (i) State
 - (ii) Behavior
 - (iii) Coupling
 - (iv) Cohesion
- c) Draw a conceptual class diagram for a university showing the association between students, lecturers, lessons and registration for courses (8 marks)

Question 3 - (20 marks)

- a) Describe the use of activity diagrams in objected oriented design (2 marks)
- b) Draw a typical activity diagram for processing an order (5 marks)
- c) Define the following object oriented terms (10 marks)
 - (i) Object
 - (ii) Class
 - (iii) Message

d) Outline **THREE** benefits of object oriented programming (3 marks)

Question 4 - (20 marks)

a) List the **FOUR** basic data types in C++ (4 marks)

b) Outline the **FOUR** steps in object oriented design (8 marks)

c) List **THREE** outputs of the object-oriented design phase (3 marks)

d) Describe **FIVE** qualities of good software (5 marks)

Question 5 - (20 marks)

a) What is a CRC card? (2 marks)

b) Identify **FOUR** characteristics of a CRC card (4 marks)

c) Define the following class terms (6 marks)

(i) Service view

(ii) Behavior

(iii) State

d) Outline **FIVE** benefits of inheritance in object oriented programming (5 marks)

e) Explain the following in relation to inheritance (3 marks)

(i) Specialization

(ii) Specification

(iii) generalization