THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

Faculty of Engineering and Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

HIGHER DIPLOMA IN COMPUTER STUDIES – HDIP 2K 9A
YR 2 SEM II

EIT 3210: OBJECT-ORIENTED ANALYSIS & DESIGN

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)** in section **A** and any other **TWO** questions from section **B**
This paper consists of **THREE** printed pages

SECTION A (30 marks)

Question 1 (Compulsory)

a) Explain the following terms
   i) Software Object
   ii) Notation (4 marks)

b) Explain the following features of Object-Oriented Programs

   i) Encapsulation
   ii) Polymorphism
   iii) Data Abstraction
   iv) Inheritance (8 marks)

c) Explain the **THREE** types of software objects (6 marks)

d) Explain the difference between Object-oriented analysis and the conventional data analysis (4 marks)

e) Give a brief description of the following UML diagrams
   i) Use case diagrams
   ii) Class diagrams
   iii) Interaction diagrams
   iv) Activity diagrams (8 marks)

SECTION B (40 marks)

Question 2 (20 marks)

In a simple watch, one may consult the time or set it. In case the battery of the watch needs to be changed, only the watch repair person can change the battery.

a) State the following items
   i) Actors
   ii) Use cases

b) Represent this information using:
   i) Class Diagram
   ii) Sequence Diagram (20 marks)

Question 3 (20 marks)

Draw Use case diagram representing the following:

a) An ATM System

b) A ticket distributor for a train system. The system includes a traveler who purchases different types of tickets and a central computer system that maintains (updates) a reference

database for the tariff. The traveler can buy one way ticket, weekly card or monthly card. Also include the following exceptional cases: Timeout (when a traveler takes too long to insert the right amount), Transaction Aborted (when a traveler selects the cancel button without completing the transaction), DistributorOutOfChange and DistributorOutOfPaper. (20 marks)

Question 4 (20 marks)

a) Differentiate activity diagrams and Statechart diagrams (4marks)

b) Consider the process of ordering a pizza over the phone. Draw an activity diagram representing each step of the process, from the moment you pick up the phone to the point where you start eating the pizza. Do not represent any exceptions (16 marks)

Question 5 (20 marks)

Discuss the following Object design concepts:

a) Reuse

b) Service specification

c) Object model restructuring

d) Object model optimization (20 marks)