KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR
SECOND YEAR, FIRST SEMESTER EXAMINATION
FOR THE BACHELOR OF BUSINESS AND INFORMATION TECHNOLOGY
KBI 2204 OBJECT ORIENTED DESIGN & PROGRAMMING

Date: 8TH AUGUST 2024
Time: 8:30AM – 10:30AM

INSTRUCTIONS TO CANDIDATES
ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS
QUESTION ONE (30 MARKS)

a) Briefly explain the difference between the following pair of terms, you should include small example to illustrate your answers
   i)   Class and object   **(3 Marks)**
   ii) Encapsulation and data hiding   **(3 Marks)**
   iii) Message and method   **(3 Marks)**
   iv) Subclass and superclass   **(3 Marks)**
b) Describe six advantages of object-oriented programming concept   **(6 Marks)**
c) What is constructor, explain four major advantages of using constructor in object-oriented design
                                                                                (5 Marks)
d) Briefly explain the encapsulation in object-oriented context and its benefits **(7 Marks)**

QUESTION TWO (20 MARKS)

a) By use of UML notation describe the elements of a use of a use case diagram   **(5 Marks)**
b) Highlight four limitations of the structured approach to software development   **(5 Marks)**
c) State the significance of the unified modeling language (UML) in object orientation and describe its main building blocks   (**10 Marks)**

QUESTION THREE (20 MARKS)

a) Reuse and maintainability are the two advantages of object orientation. Explain what these two concepts mean   **(5 Marks)**
b) A class declaration in object-oriented programming I said to illustrate several OOP concepts. Using python programming language write a code to implement the following concepts

   i)   Encapsulation   **(5 Marks)**
   ii) Inheritance   **(5 Marks)**
   iii) Polymorphism   **(5 Marks)**

QUESTION FOUR (20 MARKS)

a) Draw an activity diagram, for borrowing money from SME SACCO   **(5 Marks)**

b) Draw a use case diagram for a ticket distributer sub-system of the train system. The system includes two actors: a traveler who purchases different types of tickets, and a central computer system which maintains a reference database for the tariff.   Use cases should include: buyonewayticket, buywheeklycard, buymonthlycard, updatetariff   **(8 Marks)**

c) What is data abstract and describe some of its benefits in system development. Write a python code implementing data abstract   **(7 Marks)**

QUESTION FIVE (20 MARKS)

Explain the following object oriented programming and design terms using suitable examples

a) Use case   **(4 Marks)**
b) Behavioral View   **(4 Marks)**
c) Sequence diagram   **(4 Marks)**
d) Class diagram stereotypes   **(4 Marks)**
e) Multiplicities   **(4 Marks)**