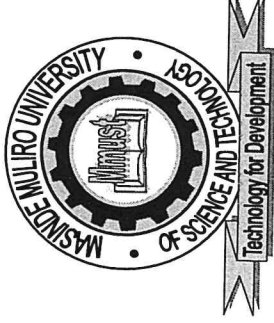


50



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY**

(MMUST)

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR
FOR THE DEGREE**

IN

ELECTRICAL AND COMMUNICATION ENGINEERING

COURSE CODE: ECE 223

COURSE TITLE: OBJECT ORIENTED PROGRAMMING

DATE: 29/04/2022

TIME: 8:00A.M-10:00A.M

INSTRUCTIONS TO CANDIDATES

Answer **Question ONE (1)** and any other **TWO**

TIME: 2 Hours

MMUST observes **ZERO** tolerance to examination cheating

This Paper Consists of 4 Printed Pages. Please Turn Over.

QUESTION ONE [30marks]

- a) Define the following terms:
i. abstraction [4marks]
ii. polymorphism
iii. inheritance
iv. encapsulation
- b) Write the syntax of defining a function. [3Marks]
- c) Write a C++ program using a class function that enables the storing of the following elements. [4Marks]
- Name
 - Age
 - gender
 - Houseno
 - Street
- d) Differentiate between the following terms [6 marks]
i) Class and object.
ii) Function call and message passing.
iii) Single inheritance and multiple inheritance
- e) Write a C++ program that displays the sum of even numbers between 5 and 20. [6 marks]
- e) Write a C++ program that outputs the statement "MY FIRST PROGRAM" ten times. [7 marks]

QUESTION TWO [20 MARKS]

- a) Create a class called rectangle with data members: width, length and area. The class should have functions to allow for setting of both length and width, calculate the area and display the length, width and area. [13 marks]
- b) Write a main function that declares an object from the class above, and use the methods in that class to input the length and width, calculate the area and display the width, length and area. [7 marks]

QUESTION THREE [20 MARKS]

a) A proposed system intends to store the student data (student number, student name and phone number) and also allow for the access of the same data. The data should be hidden and not prone to direct manipulation. The data is read and written using methods.

Required:

i) Create a class called student for the above scenario in C++ [8 marks]

ii) Write a main function in the same C++ program to instantiate an object from the class student, and allow for student data to be inputted through the keyboard and then display the student data. [6 marks]

b) Encapsulation defines the access levels for data elements of a class. Explain the three levels of access, using some examples. [6 marks]

i) Public

ii) Protected

iii) Private

QUESTION FOUR [20 MARKS]

a) Write a C++ program that can use three functions to determine: [20 marks]

i. the square of any number

ii. The product of any three integers

iii. The sum of any two integers.

The program should display the following interface to the user to select an option

1. Square of a number

2. Product of any three integers

3. Sum of any two integers.

Choose option

Implement the choice of options using the **switch** statement in your program.