



MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

UNIVERSITY ORDINARY EXAMINATION

2023/2024 ACADEMIC YEAR

THIRDYEAR FIRST SEMESTER EXAMINATION FOR BACHELOR OF
TECHNOLOGY IN MECHANICAL ENGINEERING

SCS310: COMPUTER PROGRAMMING

DURATION: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

1. Answer QUESTION ONE and any other TWO Questions.
2. Mobile phones are not allowed in the Exam room.
3. You are not allowed to write on this examination question paper.

SECTION A – ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE (30MARKS)

- a. Define the following terms. (5 Marks)
- Computer
 - A program
 - Programming Language
 - Computer Programming
- b. Each programming language has a set of rules that must be strictly followed when writing a program. Identify any four such rules for C/C++ language. (4 Marks)
- c. Define an operator. Using examples explain five operators. (5 Marks)
- d. Write a C/C++ program to prompt user to key in a number then reverse the digits and display the new number with the reversed digits. e.g. if a user keys in 345 the program will display 543. (10 Marks)
- e. Consider the program below and explain it's components. State the output also. (6marks)

```
# include <stdio.h>
Void main()
{
Int x, sum;
Printf("enter two integers to get sum:");
Scanf("%d%d", di, dx");
Sum=i+x;
Printf("sum I %d",sum);
}
```

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

- a. A computer programmer intends to create a program. State the program development stage in which s(he) could: (5marks)
- Choose the identifiers
 - Adjust the program to meet new demands
 - Check whether the program is giving the desired results
 - Create flow charts
 - Implement actual program
- b. Write a program to calculate area of a triangle given the base and height. (5marks)
- c. Explain what a loop is and explain three types of loops commonly used. (5 marks)
- d. Discuss the advantages and disadvantages of high-level language and give examples of high-level language. (5marks)

QUESTION THREE (20 MARKS)

- a. Write a program to display the first 10 multiples of five on a single line. (5marks)
- b. Write a program to take the price and quantity of items as an input for a given customer during the checking out stage. The program should use four functions as follows:
 - i. Function called “compute” to calculate the total of the prices. Function called “Calc Discount” to calculate the discount according to the following rules:
 - For total less than KSh. 1,000, no discount
 - For total greater than KSh. 1,000 but less than KSh.10000, discount is 6%
 - For total greater than KSh. 10,000 discount is 10%
 - ii. Function called “Display” to print the individual items prices, sub-total, discount and the grand-total.
 - iii. “Main” function where execution begins. (15marks)

QUESTION FOUR (20 MARKS)

- a. Write a program to calculate the sum of the first (10) positive integers (1-10) using a for loop. (6marks)
- b. Discuss the types of data types used in C/C++ programming. (6marks)
- c. Define a variable giving an example. (3marks)
- d. Write a program that will read two numbers from the user keyboard and calculate the sum and average of the numbers. (5marks)