



# **MURANG'A UNIVERSITY OF TECHNOLOGY**

## **SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY**

DEPARTMENT OF COMPUTER SCIENCE

UNIVERSITY ORDINARY EXAMINATION

2021/2022 ACADEMIC YEAR

**FIRST YEAR FIRST SEMESTER EXAMINATION**

**SCS 101 – INTRODUCTION TO 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 examination room.
3. You are not allowed to write on this examination question paper.

## SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

### QUESTION ONE (30 MARKS)

- a) List and explain any four datatypes used in C (4 marks)
- b) Use illustrations to explain the following loop structures (6 marks)
  - i. Pretest loop
  - ii. Posttest loop
- c) Write a pseudocode for a program which accepts a set of four marks of a student as input, and then grade the student as FAIL if the average is less than 50, or PASS otherwise. (5 marks)
- d) Write a C program which accepts two integers, calculates their sum and displays the sum. (7 marks)
- e) Explain the logical operators used in C programming. (6 marks)
- f) Use an example to explain and show how an array is initialized. (2 marks)

## SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

### QUESTION TWO (20 MARKS)

- a) Compare parameter passing “by value” and “by reference” (4 marks)
- b) Use an example to explain how structs and unions are used in C programming. (6 marks)
- c) Write a program in C to calculate the sum of the first ten positive integers (1 – 10) using a do-while loop. (5 marks)
- d) Give any five (5) rules used in declaring variables in C programming. (5 marks)

### QUESTION THREE (20 MARKS)

- a) Table below shows the status of two expressions after their execution in C programming language. Use the table to answer the question that follows.

Table 1

Expression 1	Expression 2	OR	AND
False	False		
False	True		
True	False		
True	True		

Evaluate the effects of combining the two expressions through the use of logical operator AND and OR. (4 marks)

- b) write a simple program in C that will accept an integer value from the keyboard using scan ( ) and display the value on the monitor as the output using Print f ( ). (5 marks)

- c) (i) Write a pseudocode for a program which accepts a set of (3) marks of a student as input, calculate the average, and grades the student into FAIL if the average is less than 50, or PASS if otherwise. (4 marks)
- (ii) Draw an equivalent flowchart for above pseudocode. (5 marks)
- d) Explain the meaning of the following escape sequences (2 marks)
- i. *Ib*
  - ii. *IU*

#### **QUESTION FOUR (20 MARKS)**

- a) With the aid of an example, discuss two classifications of programming languages. (4 marks)
- b) Using examples, discuss two types of variables used in C programming language. (4 marks)
- c) Write a program that will prompt user to enter two numbers and calculate the sum and average of two numbers. (6 marks)
- d) Using a flow chart, explain the difference between an if and if...else control structures. (6 marks)