



MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

UNIVERSITY ORDINARY EXAMINATION

2018/2019 ACADEMIC YEAR

**FIRST YEAR SECOND SEMESTER EXAMINATION FOR BACHELOR OF
SCIENCE APPLIED STATISTICS WITH PROGRAMMING, ACTUARIAL
SCIENCE AND BACHELOR OF TECHNOLOGY (ENGINEERING)**

SCS 101– INTRODUCTION TO COMPUTER PROGRAMMING

DURATION: 2 HOURS

DATE: 17/4/2019

TIME: 2-4 P.M.

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) State two reasons why main function is special in C. Write a simple program that displays the message “Welcome to MUT” on the screen to illustrate the use of main function. (6 marks)
- b) State the difference between global variables and local variables and illustrate the two concepts using suitable C code. (6 marks)
- c) State and explain three types of errors that a programmer can encounter when writing computer programs. (6 marks)
- d) Write a program which inputs principal, rate and time from a user and calculate compound interest using the formula

$$CI = P\left(1 + \frac{R}{100}\right)^T - P$$

Where CI is compound interest, P is principal, R is rate and T is time (6 marks)

- e) Write a program to display the following output using printf statements. (6 marks)

Subject	Marks
Maths	90
Computer	77
Chemistry	69

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

- a) Describe giving examples the five types of tokens used by C programming. (5 marks)
- b) Write a C program that uses a function which accepts two integers as arguments and returns the sum. Call this function from main () and print the results in main (). (5 marks)
- c) Your mathematics teacher wants to write a program to solve the following quadratic

equation: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

In order to help him, you are required to:

- i. Develop a pseudocode to solve the equation above. (5 marks)
- ii. Write a program in C programming language to implement the developed algorithm. (5 marks)

QUESTION THREE (20 MARKS)

- a) State four rules that should be followed when writing identifiers in C programming. (4 marks)
- b) Outline the elements necessary while declaring structure variables in C programming. Illustrate with an example declaration. (4 marks)
- c) Compare and contrast arrays and structures as used in C programs. (4 marks)
- d) Write an algorithm and a program in C to accept a student's Reg-no, marks in three subjects M1, M2, and M3 and display the same along with the total and average marks. (8 marks)

QUESTION FOUR (20 MARKS)

- a) Define human computer interface (HCI) and state why HCI is an important function of a software regardless of whether or not it is an operating system or an application. (4 marks)
- b) State and explain the four main types of user interfaces giving examples. (8 marks)
- c) Write a program that reads integers using the do/while loop, if statement, break and continue keywords given the listed conditions. If the given number is smaller than zero, the program should print an error message and stop reading the numbers. If the given number is bigger than 100, it should be skipped and program should read another number. All the other numbers should be read and printed. The program must stop reading numbers when zero or errors shows up. (8 marks)