



MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY

UNIVERSITY ORDINARY EXAMINATION

2018/2019 ACADEMIC YEAR

**SECOND YEAR FIRST SEMESTER EXAMINATION FOR DIPLOMA IN
ELECTRICAL ENGINEERING**

SCS 050- INTRODUCTION TO PROGRAMMING & ALGORITHMS

DURATION: 2 HOURS

DATE: 26/4/2019

TIME: 9-11 A.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) Define the following programming concepts:
 - i. Linker
 - ii. Loader
 - iii. Source code
 - iv. Object code
 - v. Programming (5marks)
- b) Differentiate between compiler and an interpreter. (4marks)
- c) With the aid of a well stated example differentiate between constants and data types. (4marks)
- d) Write a pseudo code and draw a flow chart that indicates a program that enters two numbers. Calculate the sum and average the two numbers and display output on the screen. (6marks)
- e) Differentiate between the following conversion characters %d and %f (2marks)
- f) State five rules of naming an identifier in C programming. (4marks)
- g) Using examples, explain the two types of comments used in C programming. (4 marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

- a) Control structures are categorized in three. State the three categories. (3marks)
- b) With the aid of a flow chart differentiate between a WHILE and an IF statement. (6marks)
- c) Using NESTED IF...ELSE statement, write a program that requires the user to enter marks of a student and grades students as below: (10marks)

Marks	grade
70-100	A
60-69	B
50-59	C
40-49	D
39 and below	E

d) Write the syntax of a FOR loop. (1mark)

QUESTION THREE (20 MARKS)

(a) State three reasons why functions are used in programming. (3marks)

(b) Write a C program that prompt a user to enter a radius of a circle, calculates its area and outputs the results. (Use pi=3.142 which must be a constant.) (8marks)

(c) Explain the meaning of the following C standard library header. (5marks)

i. ctype.h

ii. errno.h

iii. math.h

iv. stdio.h

v. time.h

(d) Outline four characteristics of a good algorithm. (4marks)

QUESTION FOUR (20 MARKS)

(a) Define the term algorithm (2marks)

(b) Explain the commonly used programming paradigms today. (4marks)

(c) State the various bugs that programmer might make during programming. (4marks)

(d) Write a pseudo code that can be used to calculate the diameter, circumference and area of a circle and then display the output on the screen. (5marks)

(e) Highlight the guidelines for designing a good pseudo code. (5marks)