



# **MACHAKOS UNIVERSITY**

**University Examinations for 2019/2020 Academic Year**

**SCHOOL OF ENGINEERING AND TECHNOLOGY**

**DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY**

**SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR**

**BACHELOR OF SCIENCE (COMPUTER SCIENCE)**

**BACHELOR OF COMMERCE**

**BMS 201/SMA 191: INTRODUCTION TO PROGRAMMING**

**DATE: 22/1/2021**

**TIME: 2.00-4.00 PM**

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## **INSTRUCTIONS**

**Answer Question ONE and any other TWO Questions**

### **QUESTION ONE**

- a) Define the following terms as used in programming, giving an example of each.
- i. Alpha Testing
  - ii. Beta Testing
  - iii. Compiler
  - iv. Variable
  - v. Loop (1 mark each)
- b) Using examples, explain FOUR major methodologies used in programming (2 marks each)
- c) Explain any FIVE data types used in C language (5 marks)
- d) Develop a flow chart that accepts marks scored by a student in three units; calculate the total marks and average marks. Depending on average marks the grades are assigned as follows:
- A = 70 – 100
  - B = 60 – 69
  - C = 50 – 59
  - D = 40 – 49
  - E = 1 – 39 (9 marks)

## QUESTION TWO

- a) What is the difference between a local and global variable in C? (6 marks)
- b) Write the syntax of IF - ELSE statement (4 marks)
- c) What is polymorphism? (4 marks)
- d) What is a null pointer in programming? (6 marks)

## QUESTION THREE

- a) In this question, where appropriate, you may use a short fragment of code to complement your explanation.
  - i. What is the difference between declaration and definition? (6 marks)
  - ii. Write a C program to calculate total marks for 5 subjects and the average score (6 marks)
- b) What is an array? State three rules used to declare the array (8 marks)

## QUESTION FOUR

- a) An algorithm is a tool that assists in programming. Explain four considerations in the design of an algorithm (8 marks)
- b) Design a pseudocode that accepts the two sides of a rectangle; calculate the area and the perimeter. The program should display the area and the perimeter. (6 marks)
- c) Program control structures dictate the flow and execution of the program. Explain the following types of control structures (6 marks)
  - i. Sequence
  - ii. Selection
  - iii. Iteration

## QUESTION FIVE

- a) Using examples, explain FIVE major Classifications of programming languages (2 marks each)
- b) Write and explain the output of the following c program. (7 marks)

```
#include<stdio.h>
main()
{
i. int a=6, b=10;
ii. printf("a=%d\n,a++);
iii. printf("b=%d\n,++b);
}
```
- c) Differentiate between a compiler and an interpreter. (4 marks)