



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE IN ELECTRICAL & ELECTRONIC ENGINEERING

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

EEE 102 & EVC 201 – COMPUTER PROGRAMMING I

DATE: 14/12/2020

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer question ONE and any other TWO questions.

QUESTION ONE (30 MARKS)

- a) Define the following terms as used in programming. (3 marks)
- i. Programming language
 - ii. Linker
 - iii. Semantic
- b) State the purpose of the following directives in C (3 marks)
- i. `return 0;`
 - ii. `int main()`
 - iii. `printf`
- c) Explain the following sample program line by line. (6 marks)
- ```
#include <stdio.h>

main()
{
 int *p, q;
```

```

 q = 100;
 p = &q;
 printf("%d", *p);

 return 0;
}

```

- d) Using an example distinguish operator from operand (4 marks)
- e) Differentiate between:- (4 marks)
  - i. Source code and Object code
  - ii. Variable and constant.
- f) State TWO ways in which constant values can be declared in a C program. (2 marks)
- g) Write C program that computes the area of a rectangle, given its dimensions. It should prompt the user for the length and width of the rectangle. [Area of rectangle is given by the formula Area=length x width] (4 marks)
- h) Write a simple program to display a character and a float number typed in through the key board. (4 marks)

### QUESTION TWO (20 MARKS)

- a) Explain TWO Advantages of modular programming. (4 marks)
- b) After writing a code, your friend complained that the program was not readable. Identify possible causes of this problem. (4 marks)
- c) Differentiate between global and local variable (2 marks)
- d) Using a function called addNumbers write a program to add TWO integers and display their sum in the main() function. (8 marks)
- e) Highlight TWO common data types in C language (2 marks)

### QUESTION THREE (20 MARKS)

- a) You are required to write a program that displays the days of the month for each of the 12 months. Use an array to achieve this. (6 marks)
- b) Distinguish between assembly language and Machine Language in programming (4 marks)
- c) During a task to develop a program you chose C language. Explain FOUR advantages of C as a programming language. (4 marks)

- d) i. Define Pseudo-code (2 marks)
- ii. Write pseudo-code that can be used for comparing three numbers and displaying the largest number. (4 marks)

#### QUESTION FOUR (20 MARKS)

- a) State the functions of the following translators. (3 marks)
- i) Assembler
- ii) Compiler
- iii) Interpreter
- b) With the aid of examples, describe three types of errors that a programmer can encounter when programming. (6 marks)
- c) Write a C program that allows the user to enter any positive integer (comprising of two or more digits) and then the program will reverse the number using *while* loop. (7 marks)
- d) Using *for* loop, write a C program to display odd numbers between 1 and 70. The program should not have user input (4 marks)

#### QUESTION FIVE (20 MARKS)

Table 1 shows East African countries with their corresponding staple foods. Use it to answer the questions that follow

| Country code     | Name           | Staple Food |
|------------------|----------------|-------------|
| 1                | Tanzania       | Rice        |
| 2                | Kenya          | Ugali       |
| 3                | Uganda         | Matoke      |
| 4                | Sudan          | Bread       |
| Any other Number | Invalid number |             |

Table 1

- a) Draw a flowchart to represent the logic displaying the name of the country and its staple food when supplied with the country number (7 marks)
- b) Write a C program to accept the country code. The program should then display the country name and the staple food for the country based on the code entered. Use switch statement (8 marks)
- c) State THREE advantages of high-level languages (3 marks)
- d) Outline TWO ways in which comments can be represented in a C program. (2 marks)