



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 (TELECOMMUNICATION AND INFORMATION
TECHNOLOGY)**

BACHELOR OF SCIENCE (MATHEMATICS AND COMPUTER SCIENCE)

BACHELOR OF SCIENCE (APPLIED PHYSICS AND TECHNOLOGY)

BACHELOR OF SCIENCE (STATISTICS AND PROGRAMMING)

BACHELOR OF SCIENCE (ACTUARIAL SCIENCE)

BACHELOR OF SCIENCE (MATHEMATICS)

SMA 191: INTRODUCTION TO PROGRAMMING

DATE: 15/12/2020

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Answer question ONE and any other TWO questions.

QUESTION ONE (COMPULSORY) (30 MARKS)

a) Define the following terms as used in Programming. (2 marks)

i. Program

ii. Programming Language

b) Interpret the following sample program line by line. (4 marks)

```
#include <stdio.h>
```

```
main()
```

```
{
```

```
    int *p, q;
```

```
    q = 100;          /* assign q 100 */
```

```
    p = &q;          /* assign p the address of q*/
```

```
    printf("%d", *p); /* display q's value using pointer*/
```

```
    return 0;
```

```
}
```

- c) Using an example explain operator and operand (4 marks)
- d) What is the difference between source code and Object code? (4 marks)
- e) Differentiate between a variable and a constant. (4 marks)
- f) C Language is Portable and efficient. Explain (4 marks)
- g) Suggest, with examples two ways in which constant values can be used in C expression statements. (4 marks)
- h) Use the following code to identify syntactical error. (4 marks)

Code snippet

```
<stdio.h>
#define PI 3.14
main()
{
    FLOAT radius, area
    printf("Enter the radius of the circle \n");
    scanf("%f", &radius);
    area = PI * radius * radius; /* PI is a symbolic constant */
    printf("Area is %f cm squared ",area);
    return 0;
}
```

QUESTION TWO (20 MARKS)

- a) A program is required that accepts the radius and height of a cylinder and computes the volume. Use a function to achieve this. (8 marks)
- b) Describe with examples, four relational operators. (4 marks)
- c) Using an example compare if—else and nested—if. (8 marks)

QUESTION THREE (20 MARKS)

- a) Define the term function as used in programming. (2 marks)

A program is required that accepts marks a student gets in four units and computes the average. Depending on the average the student is graded according to the table below.

70-100 =A

60-69=B

50-59=C

40-49=D

0-39=F

- b) Write a C program to achieve the above task. (8 marks)
- c) What is an array? (2 marks)
- d) After writing a code your friend a programmer complained because the program was not readable. Using example discuss how you can address this problem. (4 marks)
- e) What is the difference between global and local variable? (4 marks)

QUESTION FOUR (20 MARKS)

- a) During a task to develop a program you chose C language. Explain advantages of C as a programming language. (10 marks)
- b) You are required to write a program that displays the days of the month. Use array to achieve this. (6 marks)
- c) Distinguish between assembly language and Machine Language in programming. (4 marks)

QUESTION FIVE (20 MARKS)

- a) Explain TWO Advantages of modular programming. (2 marks)
- b) Explain the reason functions are favored in programming. (8 marks)
- c) Write a program that will output the day of the week when a number is entered from the keyboard. (10 marks)