



MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (MATHEMATICS)

SMA 191/BMS 201/SCO102: INTRODUCTION TO PROGRAMMING

DATE: 26/9/2019

TIME: 11.00-1.00 PM

INSTRUCTIONS

Answer **question ONE** and any other **TWO** questions.

QUESTION ONE (30 MARKS)

- a) Define the following terms as used in Programming. (2 marks)
- Program
 - 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, larea
 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)