



# MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)

SIT 106: PROGRAMMING METHODOLOGY

DATE: 1/3/2021

TIME: 2.00-4.00 PM

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## INSTRUCTIONS

Answer question ONE and any other TWO questions.

### QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Name and explain three basic symbols of a flowchart (6 marks)
- b) Draw a flow chart diagram for a program that checks if a number is prime number or not. (4 marks)
- c) Programming languages use assembler, compiler and interpreter to produce results of the programs given. Explain the function of each of the THREE resources. (6 marks)
- d) We programmers use pre decrement operator and post decrement operators in our programs. Using a simple code snippet, illustrate how each of the above decrement operators can be used correctly in a C program. (6 marks)
- e) Write a program using the WHILE loop to output 1-10 in ascending order. (6 marks)
- f) What will be the output of the following C code? (2 marks)

```
#include <stdio.h>
int main()
{
    float f = 1;
    switch (f)
    {
        case 1.0:
            printf("yes\n");
            break;
        default:
            printf("default\n");
    }
}
```

```
}  
}
```

## QUESTION TWO (20 MARKS)

- a) Most C Programs use a technique called divide and conquer. What do you understand by the statement “divide and conquer” with reference to programming. (4 marks)
- b) Describe four rules for naming a variable in C program (4 marks)
- c) Strings are always enclosed by double quotes. A programmer can use the following declarations while writing a program
- ✓ `char string[20] = “fresh2refresh”;` (or)
  - ✓ `char string [] = “fresh2refresh”;`

**You are required to:**

- i) Differentiate the above declarations (4 marks)
- ii) use **strcpy()** to write a program in C to copy one string to another string (4 marks)
- d) write a code snippet in C program to illustrate the use of assignment operators. (4 marks)

## QUESTION THREE (20 MARKS)

- a) Many programmers use loops in their programs. With the aid of a code snippet, illustrate ONE type of a loop used in C program. (3 marks)
- b) **What is the difference between ++x and x++?** (3 marks)
- c) Write a code program by defining a function called “square” that calculates the square of two given numbers. The user should enter the numbers to be squared. (4 marks)
- d) Write a C program that adds 2 numbers. The user will enter the numbers to be added. (4 marks)
- e) In programming, the use of algorithms cannot be assumed. Explain THREE important features of an algorithm? (6 marks)

## QUESTION FOUR (20 MARKS)

- a) Write a program to print the multiplication table up to ten of the number entered by the user. The table should be displayed in the following format: (6 marks)
- ```
29 * 1 = 29  
29 * 2 = 58
```
- b) Differentiate between pass by reference and pass by value. (4 marks)

- c) What is the explanation for prototype function in C? Illustrate using a code snippet (4 marks)
- d) Enumerate and explain the THREE types of errors that can occur during the execution of a computer program? (6 marks)

**QUESTION FIVE (20 MARKS)**

- a) Main (), and Size of () are used in programming. Explain the meaning of each of the expressions using code snippets. (6 marks)
- b) Storage classes are used in C Programming language. Explain giving two examples why storage classes are used in the program. (4 marks)
- c) Identify four errors in the following code program. (4 marks)

```
#include<stdio.h>
{
int n;
printf("Enter an integer\n");
scanf("",&n);
if ( n%2 == 0 )
printf("Even\n");
else
printf("Odd\n");
return 0;
}
```

- d) Programmers use C programming language on everyday life. Discuss three main areas where C programming language is used. (6 marks)