



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 (STATISTICS AND PROGRAMMING)

SMA 191: INTRODUCTION TO PROGRAMMING

DATE: 26/9/2019

TIME: 2.00-4.00 PM

INSTRUCTIONS

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

QUESTION ONE (30 MARKS) (COMPULSORY)

- a) Briefly describe the following terms as used in structured programming.
- i Pseudo code
 - ii. Assembler
 - iii. Syntax
 - iv. Source code (4 marks)
- b) Describe the work of the C compiler in a computer program. (3 marks)
- c) Outline 3 reserved words in c language. (3 marks)
- d) Using the program code below, identify three tokens used (3 marks)

```
int main()
{
    int x, y, total;
    x = 10, y = 20;
    total = x + y;
    Printf ("Total = %d \n", total);
}
```

- e) Write a C program that adds 2 numbers. The user will enter the numbers to be added. (4 marks)

- f) Briefly explain what is meant by keyword(s) in C Programming Language (3 marks)
- g) Name and explain the three Decision Control statement used in c programming language giving the syntax of each. (10 marks)

QUESTION TWO (20 MARKS)

- a) What is a programmer defined function? (2 marks)
- b) What is the name given to this “/*.....*/” and what is its purpose in C Programming language. (3 marks)
- c) Define the following terms as used in C programming
 - i. Semantics
 - ii. Array
 - iii. Structure (3 marks)
- d) Define following terms as used in structured programming.
 - i. Local variable
 - ii. Global Variable (2 marks)
- e)
 - i) What is an environmental variable? (2 marks)
 - ii) Name and explain three data types used in C programming language. (3 marks)
- f) Using the decrement operator, write a c language programm that prints numbers between 20 and 11 (5 marks)

QUESTION THREE [OPTIONAL, 20 MARKS]

- a) The factorial of a number n is defined as $n*n(n-1)*(n-2)*...*1$ e.g. the factorial of 3 is $3*2*1=6$. Write a program that prompts the user for a number then gets its factorial. (10 marks)
- b) 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. (5 marks)
- c) Write a code program c language using the for loop that prints 1...9 (5 marks)

QUESTION FOUR (20 MARKS)

- a) Define the following terms as used with functions in c language, giving examples in each case:
 - i Built-infunction (2 marks)
 - ii User-definedfunction (2 marks)

- b) State two main reasons why we use comments in a program. (2 marks)
- c) Write a C program that prompts the user to enter four numbers and then compute both the sum and average of these numbers and display the result on the screen. (9 marks)
- d) Convert the code below into a “for loop” (5 marks)

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

```
int main()
{
    int i=3;

    while(i<10)
    {
        printf("%d\n",i);
        i++;
    }

}
```

QUESTION FIVE (20 MARKS)

- a) i Briefly explain the meaning of the word variable in C program. (2 marks)
- ii Give 2(two) examples of storage classes in C Programming language. (2 marks)
- b) i Identify the 2(two) main errors in the following code program. (2 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;
}
```

- ii. Describe briefly the following types of bugs.
 - i. Syntax error
 - ii. Semantic error
 - iii. Run-time error (3 marks)
- iii. Briefly describe the two main types of constants (2 marks)
- c) When and why do we use the word 'break:' in C programming Language? (2 marks)
- d) Distinguish between the following functions:
 - i. Flowchart
 - ii. Arithmetic Operator (2 marks)
- e) Explain the meaning of 'break' in the switch case statement and give an example. (5 marks)