CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

EMBU AND CHUKA CAMPUSES

EXAMINATION FOR THE AWARD OF CERTIFICATE IN COMPUTER SCIENCE

COSC 00103: INTRODUCTION TO PROGRAMMING AND ALGORITHMS

STREAMS: CERT COMP SCI. Y1S1   **TIME: 2 HOURS**

DAY/DATE: TUESDAY 4/12/2018   **8.30 A.M – 10.30 A.M.**

INSTRUCTIONS:

- Answer question **ONE** and **TWO** other questions
- Do not write anything on the question paper
- This is a **closed book exam**, no reference materials are allowed in the examination room
- There will be **NO** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely.

SECTION A

Question one (30 marks)

a. Name three properties of an algorithm   [3 marks]
b. List four rules for constructing variable names.   [4 marks]
c. What is the meaning of the following lines of code:
    i.   *#include <stdio.h>*   [2 marks]
    ii.   *#include <math.h>*   [2 marks]
d. Differentiate between do-while and while loop.   [4 marks]
e. Programming errors are likely to appear during program development. Explain two types of such errors   [4 marks]
f. What is the output of the following section of code?   [3 marks]

```
#include <stdio.h>
int main ()
{
int x =30;
int y =x++;
int z =++x;
printf ("%d %d %d", x, y, z);
```

}

g. A function is a group of statements that together perform a task. Mention two ways of calling functions. [2 marks]

h. Using order of precedence evaluate 3 * 4 / 2 % 5 [2 marks]

i. Give four differences between a compiler and an interpreter [4 marks]

SECTION B

Question two (20 marks)

a. Programming practices are the core to successful program design. Explain five good programming practices [10 marks]

b. Write a C program that prompts a user to enter marks of five subjects, computes average and awards the grades as follows. [10 marks]

Marks (%)	grade
70 - 100	A
60 - 69	B
50 - 59	C
40 - 49	D
0 - 39	E

Question three (20 marks)

a. Algorithms are implemented using flowcharts. Draw a flowchart diagram to find the largest of three numbers A, B and C. [5 marks]

b. Highlight five reasons why C programming language is recommended for learning as the first language for the beginners [5 marks]

c. Write a program in C to print the following pattern. [10 marks]

```
        *
      * * *
    * * * * *
  * * * * * * *
* * * * * * * * *
```

Question four (20 marks)

a. Differentiate between local and global variable. [4 marks]

b. C language is called structured programming language because it is based on structured programming approach. Explain three constructs upon which structured programming is built. [6 marks]

c. Using arrays and control constructs, write a C program that accepts and stores ten integers, afterwards computes the largest number from the array. [10 marks]

Question five (20 marks)

    a. Give the corresponding keywords, format and memory space of the following data types in C. [9 marks]

Data type	keyword	format	Memory space
integer			
double			
float			

    b. Explain three types of computer languages   [6 marks]
    c. Define what is a pointer and write the syntax of declaring pointers   [4 marks]
    d. What is an infinite loop   [1 mark]