CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS
CHUKA /EMBU

FIRST YEAR 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 :WEDNESDAY 11/12/2019   **2.30 P.M – 4.30 P.M**

INSTRUCTIONS:

   a) Answer question **ONE** and **TWO** other questions
   b) Do not write anything on the question paper
   c) This is a **closed book exam**, No reference materials are allowed in the examination room
   d) There will be **NO** use of mobile phones or any other unauthorized materials
   e) Write your answers legibly and use your time wisely.
   f) Marks are awarded for clear and concise answers.

SECTION A (ANSWER ALL QUESTIONS IN THIS SECTION)

QUESTION ONE (30MARKS)

   a) Define the following terms.   (6marks)
      i. Computer program
      ii. Algorithm
      iii. Interpreters

   b) List and explain the two main categories of programming languages.   (4marks)
   c) Explain the use of the following operators.   (3marks)

      i. /
      ii. %
      iii. ++

   d) List three types of operators.   (3marks)

   e) Write the meaning of the following Escape sequences.   (5mks)
      i.i. \b -
      i.ii. \n
      i.iii.   \r
      i.iv.   \t

i.v. \v

f) Draw a flow chart for a C program that accepts a number X,outputs it if it is greater than zero and requests for a new number if it is less than zero. (4marks).

g) Write a C Program that prompts a user for radius, then calculates the area and circumference of a circle and outputs the results. (5 marks)

SECTION B (ANSWER ANY TWO QUESTIONS)

QUESTION TWO (20MARKS)
a) With examples explain the following terms (4marks)
   i. Syntax Errors
   ii. Semantic Errors

b) Define the following terms (4marks)
   i. Modular Programming
   ii. Function call
c) List and Explain the six phases of the program development life cycle (12marks)

QUESTION THREE (20MARKS)
a) List the characteristics of an algorithm (5marks)
b) List four good programming practices (4marks)
c) Design an algorithm and its corresponding flow chart for finding the average of six numbers, and the sum of the numbers is given. (6marks)
d) Write a C program that prompts for two numbers and outputs their sum. (3marks)
e) Explain why java is termed as platform independent. (2marks)

QUESTION FOUR (20MARKS)
a) Explain the difference between the do while loop and the while do loop. (3marks)
b) Define the following terms (4marks)
   i. Flowchart
   ii. Variable
c) Write a C program that accepts three numbers (a,b and c), finds the greatest number between them and then outputs the greatest number. (7marks)
d) Write a C program to find factorial of a number. (6marks)

QUESTION FIVE (20MARKS)
a) Using switch, write a program that accepts a student's grade and outputs the following according to the grades entered. (10marks)
   A - Excellent, your grade is A
   B - Well done, your grade is B
   C - Well done, your grade is C
   D - You passed, your grade is D
   F - Better try again, your grade is F

   For any other letter not in this list the output should be;

Invalid grade, your grade is (grade entered)

b) Write a C program that prompts a user for the interest rate,principle,time and then computes the simple interest. (5marks)
c) Write a C Program to find whether a given number is even or odd. (5marks)