CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN ELECTRICAL AND ELECTRONICS ENGINEERING

COSC 121: INTRODUCTION TO COMPUTERS AND PROGRAMMING

STREAMS: BSC.ELECT ENGI Y1S1   **TIME:2 HOURS**

DAY/DATE: TUESDAY 17/12/2019   **2.30 P.M – 4.30 P.M**

INSTRUCTIONS:
Answer question 1 and any other two
SECTION A: Answer all questions in this section

QUESTION ONE (30 Marks)

a) With justification, explain which programs run faster between **Compiled** and **Interpreted Programs**.   **[4 Marks]**

b) Using a diagram, simply describe the process of compilation. Give any two examples of compiled programming languages.   **[4 Marks]**

c) John, an established web designer is in the process of designing a web portal for farmers. The portal MUST include a login function for the users.
   i)   What are the activities he must do at this stage?   **[3 Marks]**
   ii) Write an algorithm for the login function.   **[3 Marks]**
   iii) In a language of your choice, convert the algorithm in ii) above into an actual program.   **[4 Marks]**

d) Write a function that converts a whole numeric value entered by the user into the equivalent no of Meters (M) and Centimeters (Cm) and outputs the same. **[6 Marks]**

e) Outline any **FOUR** characteristics of a quality algorithm.   **[2 Marks]**

f) Describe the purpose of any **TWO** pre-processor directives.   **[4 Marks]**

SECTION B: ATTEMPT ANY TWO QUESTIONS (40 MARKS)

QUESTION TWO (20 MARKS)

a) A company requires a program that accepts the first five random prime numbers and outputs them as the winning combination.
   i)   Draw a flowchart that implements this logic.   **[4 Marks]**
   ii) Write a program that solves the problem.   **[6 Marks]**

b) Differentiate between Primary and Derived data types as used in C.   **[4 Marks]**

c) Define the term **SYMBOLIC CONSTANTS** in C and using appropriate code, demonstrate how they are used.   **[6 Marks]**

QUESTION THREE (20 MARKS)

a) Distinguish between Structured programming paradigm form the Object-Oriented paradigm. **[4 Marks]**

b) Write a program that uses a structure to capture the Name, Reg_No, Gender and Year_of_Birth of a student and displays the same on the screen. **[6 Marks]**

c) Describe the logic programming paradigm clearly define the basic terms used in the writing of its code. **[6 Marks]**

d) Distinguish between an algorithm and a pseudocode and demonstrate the same using appropriate examples. **[4 Marks]**

QUESTION FOUR (20 MARKS)

a) Using any **TWO** different data types, show how you can declare variables in the C programming language and the format specifiers associated with each. **[4 Marks]**

b) Outline any **FOUR** basic rules in naming identifiers. **[4 Marks]**

c) A school needs a simple program that captures the Name and Reg_No of 5 students and displays the same together with their respective scores for Maths, Eng and Kisw.
   i) Explain any **TWO** different control structures you would use for the task described above. **[4 Marks]**
   ii) Write a program that solves the problem. **[6 Marks]**

d) Define the term **PROGRAM**. **[2 Marks]**

QUESTION FIVE (20 MARKS)

a) Define the term **SOFTWARE PROCESS** giving any **TWO** examples of common software processes used in software development. **[4 Marks]**

b) Consider the C code snippet below to answer the questions that follow:

```
int main()
{
        Struct County C47;
        C47.Code = Nairobi;
        strcpy(C47.Name, "047");
        printf("Name of county: %c\n",C47.Name);
        printf("Code of county: %f\n",C47.Code)
        return 0;
}
```

   i) Explain what the code does. **[3 Marks]**
   ii) Identify at least **THREE** errors in the code and write the respective correct code for each error identified. **[3 Marks]**
   iii) Rewrite the entire code in complete including the relevant header files and declarations required for the program to run. **[6 Marks]**

e) Define what an integrated development Environment (IDE) is giving popular IDE's used for C programs. **[4 Marks]**