CHUKA UNIVERSITY

UNIVERSITY EXAMINATIONS

Y1S2 EXAMINATION FOR THE AWARD OF DIPLOMA IN COMPUTER SCIENCE

COSC 0140: FUNDAMENTALS OF PROGRAMMING

STREAMS: DIP. COMP. SCI **TIME: 2 HOURS**

DAY/DATE: WEDNESDAY 31/03/2021 **2.30 P.M. – 4.30 P.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 (ATTEMPT ALL QUESTIONS IN THIS SECTION)

QUESTION ONE (30 MARKS)

a. Define what is a function. [1 marks]

b. Differentiate between declaring and defining a function. [4 marks]

c. Using functions, write a C++ program that reads length and width of a rectangle and gives an output of the area and perimeter respectively. [4 marks]

d. What is the main difference between while loop and do-while loop? [4 marks]

e. Distinguish two ways of calling C++ functions. [4 marks]

f. Name four rules a programmer should adhere to while naming variables [4 marks]

g. State the difference between pre and post increment/ decrement operations. [2 marks]

h. Describe the use of a linker and a loader during program execution process. [4 marks]

i. What are comments in a C++ program and show two ways of writing comments in C++ program. [3 marks]

SECTION B

QUESTION TWO (20 MARKS)

a. Write a program in C++ to calculate the volume of a cylinder. [5 marks]

Input the radius of the cylinder : 6

Input the height of the cylinder : 8

b. What will i and j equal after the code below is executed? Explain your answer. [5 marks]

```
int i = 5;
int j = i++;
```

c. Write the description of the following escape sequence [10 marks]

- *i.* \n
- *ii.* \t
- *iii.* \r
- *iv.* \\
- *v.* \”

QUESTION TWO (20 MARKS)

a. Using flow diagrams, write the syntax for the following decision structures

- i. For-loop [5 marks]
- ii. Switch statement [5 marks]

b. Generally, there are stages involved in developing and implementing a solution. Explain five main stages of a software development process. [10 marks]

QUESTION THREE (20 MARKS)

a. Write a language program in C++ which accepts the user's first and last name and print them in reverse order with a space between them. [5 marks]

b. Design a flowchart to find the highest of three numbers X, Y and Z. [5 marks]

c. Distinguish between human language, machine language and assembly language. [6 marks]

d. What is the meaning of line 1, 2, 3 and 6 in the program below? [4 marks]

```
1. #include <iostream>
2. using namespace std;
3. int main ()
4. {
5. cout << "Hello World";
6. return 0;
7.}
```

QUESTION FOUR (20 MARKS)

a. Giving an example, distinguish between syntax, run time, and logical error experienced in programming. [9 marks]

b. Draw and describe five symbols used in flow charts [10 marks]

c. What is the meaning of the term pointer in programming? [1 mark]

QUESTION FIVE (20 MARKS)

a. Tabulate two differences between a compiler and an interpreter [2 marks]

b. What is the difference between equal to (==) and assignment operator (=)? [4 marks]

c. Using switch statements, write a C++ program that reads marks from a keyboard and then outputs the grade as per the scale below [10 marks]

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

d. All variables that we intend to use in a program must be declared. Distinguish between local and global scope of variables [4 marks]