[Knowledge for Development]

KIBABII UNIVERSITY

(KIBU)

UNIVERSITY EXAMINATIONS

2020/2021 ACADEMIC YEAR

END OF SEMESTER EXAMINATIONS

YEAR ONE SEMESTER TWO EXAMINATIONS

FOR THE DIPLOMA IN

(INFORMATION TECHNOLOGY)

COURSE CODE : DIT 058

COURSE TITLE : INTRODUCTION TO PROGRAMMING

DATE: 14/06/2021 **TIME: 9.00 A.M. – 11.00 A.M.**

INSTRUCTIONS TO CANDIDATE

ANSWER QUESTION ONE AND ANY OTHER TWO

QUESTION ONE (COMPULSORY) [24 MARKS]

a. Define the following terms **[3 Marks]**

- **i.** Algorithm
- **ii.** Program
- **iii.** Function

b. i. Distinguish between high level language and low-level languages. **[2 Marks]**
ii. Explain one advantage and one disadvantage of each of the languages mentioned in (i) above. **[4 Marks]**

c. There are two simple ways in C to define constants. Using relevant examples, identify the two ways. **[3 Marks]**

d. What would happen to X in this expression: X += 20; (assuming the value of X is 6)? **[2 Marks]**

e. Explain the difference between actual and formal parameters. **[2 Marks]**

f. Define an array and explain its importance in programming. **[3 Marks]**

g. Write down a typical declaration for an array in C that can store 20 values of type char. **[1 Mark]**

h. There are a number of syntax errors in the following program. Fix the errors and rewrite the program. **[4 Marks]**

```
/* What's wrong with this program? */
#include stdio.h
int main();
}
int a, b, c /* Three integers */
a = 3
b = 4
c = a + b
printf("The value of c is %d" + C);
return 0;
}
```

QUESTION TWO [18 MARKS]

a. Write a program that reads the length and the width of the rectangle from the keyboard, computes the area of the rectangle and displays the area on the standard output (screen monitor). The area of a rectangle is the product of the length and the width. **[6 Marks]**

b. To use variables in your C programs, you must know how to create variable names, and the variable names must adhere to particular rules. Outline some of the rules. **[4 Marks]**

c. What does the following program do **[2 Marks]**

```
#include <stdio.h>
int x,y;
main()
{
   for ( x = 0; x < 10; x++, printf( "\n" ) )
```

```
    for ( y = 0; y < 10; y++ )
        printf( "X" );
    return 0;
}
```

d. What are the practical differences between symbolic constants created with the #define directive and those created with the const keyword? **[4 Marks]**

QUESTION THREE [18 MARKS]

a. What are five rules that the ANSI Standard states are always true when allocating size for variables? **[5 Marks]**

b. With an example explain what happens when you assign a number with a decimal to an integer? **[4 Marks]**

c. Write a C program that will be able to produce the following result shown below. The program should accept only numbers between 1 and 10. **[6 Marks]**

Output of the program will appear as:

```
This program prompts you to enter 5 numbers
Each number should be from 1 to 10
Enter number 1 of 5:3
Enter number 2 of 5:6
Enter number 3 of 5:3
Enter number 4 of 5:9
Enter number 5 of 5:2

Value 1 is 3
Value 2 is 6
Value 3 is 3
Value 4 is 9
Value 5 is 2
```

d. Explain what happens when you put a number into a type that isn't big enough to hold it? Give one example. **[3 Marks]**

QUESTION FOUR [18 MARKS]

a. Identify the two types of control structures in programming and explain the difference between them. **[6 Marks]**

b. Explain **function prototyping**, **function definition** and **function calling** using a suitable C example. **[6 Marks]**

c. Write a function named **areaRectangle** that takes length, width as parameter and returns the area of rectangle. Write a program that demonstrates the function by calling it and displays the return value. **[6 Marks]**

QUESTION FIVE [18 MARKS]

a. C has been designed in such a way that data is handled efficiently; using examples, explain various data types that help in achieving the goal above. **[6 Marks]**

b. Explain the structure of for loop in C? **[4 Marks]**

c. The marks obtained by a student in 5 different subjects are input through the keyboard. The student is award a division as per the following rule.

Mean Percentage (%)	Division
Above or equal to 70	First Class Honors
60 and less than 70	Second Class Upper division
50 and less than 60	Second Class Lower division
40 and less than 50	Pass
0 and less than 40	Fail

Write a C program the will prompt the user for mean percentage of a student and award the student accordingly. **[8 marks]**