(Knowledge for Development)

KIBABII UNIVERSITY

(KIBU)

UNIVERSITY EXAMINATIONS
2021/2022 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: 08/09/2022 **TIME:** 2.00P.M. – 4.00 P.M.

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO

QUESTION ONE [24 MARKS] - COMPULSORY

a. Differentiate between the following as used in C programming: **[6 marks]**
   i. compiler and interpreter
   ii. printf () and scanf ()
   iii. source code and an object code

b. Discuss the steps in the Program Development Cycle? **[5 marks]**

c. Write the output of the program code below: **[3 marks]**

```
1:    #include <stdio.h>
2:
3:    int x, y;
4:
5:    int main (void) {
6:
7:    for (x = 0; x < 5; x++, printf("\n" ) )
8:    for ( y = 0; y < 5; y++ )
9:    printf( "x" );
10:
11:   return 0;
12:
13:   }
```

d. Illustrate the if … else statement flow chart **[2 marks]**

e. Why do you need to include stdio.h when you use printf() or scanf()? **[2 marks]**

f. Outline the two ways you can add program comments in C programming, and why are they used? **[4 marks]**

g. Rewrite the following nested if statements using a single if statement and logical operators. **[2 marks]**

```
if (x < 1)
 {
   if ( x > 10 )
       {
         statement;
       }
 }
```

QUESTION TWO [18 MARKS]

a. Define what is meant by infinite loop? **[2 marks]**

b. Highlight any two events cause program execution to terminate? **[2 marks]**

c. Write an infinite do...while loop. **[3 marks]**

d. What are the different ways of passing parameters to the functions? **[4 marks]**

e. Study the program code below and use it to answer the questions that follow

```
#include <stdio.h>
void print_letter2(void); /* function prototype */
int ctr;
char letter1 = 'x';
```

```
char letter2 = '=';
int main( void )
{
for( ctr = 0; ctr < 10; ctr++ )
{
printf( "%c", letter1 );
print_letter2();
}
return 0;
}
void print_letter2(void)
{
for( ctr = 0; ctr < 2; ctr++ )
printf( "%c", letter2 );
}
```

i. Identify the problems in the code above. **[2 marks]**
ii. Rewrite the code above, correcting the problems you have identified. **[3 marks]**
iii. Write the expected output of the code. **[2 marks]**

QUESTION THREE [18 MARKS]

a. Distinguish between selection and iteration statements in control structures. **[4 marks]**

b. In Kibabii University, in the department of IT, there is a program called Diploma in IT of which students in year one (1) second semester do eight course, namely: DIT058, DIT059, DIT060, DIT061, DIT062, DIT063, DIT064 and DIT065. At the end of the semester, students do the exams on the eight courses and the average score in the eight courses computed with the grading for both individual course and the average score as follows: 70 and above is grade A, 60 – 69 is grade B, 50 – 59 is grade C, 40 – 49 is grade D, and below 40 is grade F. Write a simple and clean C program, using *if … else* statement that:

i. Allows the user to enter the mark/score for each course named above, one at a time
ii. Compute the average score of the eight courses to 2 decimal places
iii. Compute the grade of the average score
iv. Display on the screen the entered eight scores as well as the computed average score and its grade

[14 marks]

QUESTION FOUR [18 MARKS]

a. Explain the difference between the two types of functions that C offers. **[4 marks]**

b. What is your understanding for the terms function prototype and function definition? **[2 marks]**

c. Using examples, explain the types of errors found in C programming **[6 marks]**

d. Write a C program that allows the user to enter two integer numbers then swap the storage locations of those two numbers. **[6 marks]**

QUESTION FIVE [18 MARKS]

a. Define pointers and explain why they are important in C programming. **[2 marks]**

b. What guidelines/rules should you follow in creating names for variables? **[3 marks]**

c. Use an illustrative example to explain the difference between unary and binary operators? **[4 marks]**

d. Using a nested for loop, write a C program that will output the pattern shown below. **[9 marks]**