(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: 22/12/2021 **TIME:** 9.00 A.M-11.00 A.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO

QUESTION ONE (COMPULSORY) [24 MARKS]

a) Define each of the following as used in computer programming; **[3 Marks]**

- **i.** Library
- **ii.** Function
- **iii.** Statement

b) Constants are values that do not change during the entire execution of the program. Explain the two types of constants as used in C programming. **[2 Marks]**

c) Given the code below,

```
#include <stdio.h>

int Main()
{
        printf("Hello, Kibabii!\n");
        printf("Hello, Kibabii!\n");
        printf("Hello, Kibabii!\n");
        printf("Hello, Kibabii!\n");
        printf("Hello, Kibabii!\n");

        return 0;
}
```

i. Identify the line(s) and state the type of error which may result when the program is compiled and executed. **[1 Mark]**

ii. What is the use of #include statement? **[1 Mark]**

iii. What will be the output of the program if the error is corrected? **[2 Marks]**

iv. Re-write the above code using a single **printf ()** method. **[4 Marks]**

d) Write a program that reads the radius of a sphere from the keyboard, computes the volume of the sphere and displays the volume on the standard output (screen monitor). *Hint:* $V=4/3*PI*R^3$ **[6 Marks]**

e) Explain using a **flow chart**, the structure of do...while loop in C? **[2 Marks]**

f) Highlight using appropriate examples **THREE** rules for naming variables in C? **[3 Marks]**

QUESTION TWO [18 MARKS]

a) Discuss the following types of errors citing relevant examples:

i. Syntax error **[2 Marks]**

ii. Logical error **[2 Marks]**

iii. Runtime error **[2 Marks]**

b) Explain the following:

i. What comments are, and why they are considered important when programming. **[3 Marks]**

ii. The **TWO** different ways to specify comments in C programming. **[4 Marks]**

c) Evaluate the following:

i. 7%2 **[1 Mark]**

ii. 0%2 **[1 Mark]**

d) What is the value stored in the variable **area** after the execution of the expression below? (Provide an explanation to your answer)

area= 1/2*b*h; i.e., take b=10, and h=5 **[3 Marks]**

QUESTION THREE [18 MARKS]

a) Write a C program that will read a number from the user and check whether the number is even. **[4 Marks]**

b) Explain the concept of the **dangling else** in C programming. **[2 Marks]**

c) Write a C program that will read marks from the user and award grades using the following grading system. **[12 Marks]**

Range	Grade
70-100	A
60-69	B
50-59	C
40-49	D
0-39	F

QUESTION FOUR [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 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]**

```
        *
    *   *   *
*   *   *   *   *
    *   *   *
```