(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR

END OF SEMESTER EXAMINATIONS
YEAR ONE SEMESTER TWO EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF SCIENCE IN RENEWABLE ENERGY AND BIOFUEL

COURSE CODE : REN 123

COURSE TITLE : FUNDAMENTALS TO PROGRAMMING IN TECHNOLOGY

DATE: 15 / 07/2021 TIME: 09:00 A.M – 11:00 A.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO

QUESTION FOUR [20 MARKS]

a) Describe the **properties** of high-level languages **[4 Marks]**

b) Explain the **THREE** features of an algorithm **[6 Marks]**

c) Describe flow of control or decision are handled in C programming language **[4 Marks]**

d) Write a program to grade university students. The Students should be able to Input the marks and the Output should be an appropriate Grade. Given that:

Mark	Grade
Marks>= 0 and Marks < 40	F
Marks>=40 AND Marks<50	D
Marks>=50 AND Marks<60	C
Marks>=60 AND Marks<70	B
Marks>=70 AND Marks<= 100	A

[6 Marks]

QUESTION FIVE [20 MARKS]

a) Analyze the Code below and answer the question that Follow:

```
#include <stdio.h>
void main()
{
  int i, ctr;
    printf ("Input number of terms: ");
    scanf("%d", &ctr);
  for (i=1; i<= ctr; i++)
  {
    printf("Number is  : %d and cube of the %d is:%d \n",i,i, (i*i*i));
  }
return 0;
}
```

i. Write the Pseudocode for the program **[4 Marks]**

ii. Draw an appropriate flow chart for the program **[6 Marks]**

iii. Give the out of the program if the number of terms at input is 5 **[4 Marks]**

b) Differentiate between an interpreter and compiler **[6 Marks]**

QUESTION THREE [20 MARKS]

a) Analyze the program below and answer the questions that follow:

```
#include stdi.h>
sum(int n)
int main() {
  int number, result;
  printf("Enter a positive integer: ");
  scanf("%d", &number);
  result = sum(number);
  printf("sum = %d", result);
  return 0;
}
int sum( n) {
  if (n != 0)
    // sum() function calls itself
    return n + sum(n-1);
  else
    return n
}
```

i. Identify the errors in the above program **[5 Marks]**

ii. Explain What the program achieves after identifying the errors **[5 Marks]**

b) Describe the characteristics, merits, demerits, year of Evolution and examples of the 4th and 5th generation programming languages **[10 Marks]**

QUESTION ONE [COMPULSORY] [30 MARKS]

a) Describe the following terms

I. Algorithm [1 Mark]

II. Compiler [1 Mark]

III. Program [1 Mark]

IV. Pseudocode [1 Mark]

b) Describe the advantages of high-level programming languages [4 Marks]

c) Differentiate between linker and loader [4 Marks]

d) Describe the **THREE** types of errors experienced in programming languages. [6 Marks]

e) The second strategy when designing an algorithm is the "*Stepwise Refinement*". Describe the Stepwise Refinement step. [6 Marks]

f) Write a program in C programming language to calculate compound Interest [6 Marks]

QUESTION TWO [20 MARKS]

a) Identify which one of the following is not a variable and which one is a variable.[4 Marks]

i. Count123

ii. Count_123

iii. Count@123

iv. X_123_Count

b) Say that value has a 19 stored in it, and that extra has a 25 stored in it. Evaluate (to true or false) each of the following expressions:

i. value <= extra [1 Mark]

ii. extra < value [1 Mark]

iii. value > -25 [1 Mark]

iv. value >= extra [1 Mark]

c) Describe the meaning of the statement: **return x = = y? (x + y) *3: x + y;** [4 Marks]

d) Explain the meaning of the Term passing by reference and give appropriate example [4 Marks]

e) Write a pseudocode to calculate area of parallelogram [4 Marks]