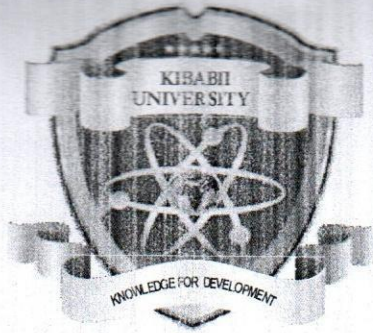


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*(Knowledge for Development)*

**KIBABII UNIVERSITY**

**UNIVERSITY EXAMINATIONS  
2020/2021 ACADEMIC YEAR**

**SPECIAL/SUPPLEMENTARY EXAMINATIONS  
YEAR ONE SEMESTER ONE EXAMINATIONS  
FOR THE DEGREE OF  
(COMPUTER SCIENCE)**

**COURSE CODE : CSC 111  
COURSE TITLE : INTRODUCTION TO  
PROGRAMMING**

**DATE: 01 / 10 / 2021 TIME: 02.00 P.M – 04.00 P.M**

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**INSTRUCTIONS TO CANDIDATES**

**ANSWER QUESTIONS ONE AND ANY OTHER TWO.**

## QUESTION ONE (COMPULSORY) [30 MARKS]

- a)
- i. Describe the following terms [4 marks]
    - a. Identifier
    - b. Interpreter
    - c. Assembler
    - d. Variable
  - ii. Explain the meaning of the Two braces {and} used in C. [3 Marks]
  - iii. Distinguish between a compiler and an Assembler [4 Marks]
  - iv. Using an Example illustrate the nested loop programming concept using while loop. [2 marks]

b)

- i. Suppose we take as input an integer x.

```
int x;
```

```
cin >> x;
```

Write the if statement that runs under the specified condition. The first one is done for you as an example.

K is a negative Number

If ( $k < 0$ )

[8 Marks]

- a) x is between 3 and 30, including 3 and 30
  - b.) x is an even number, not counting zero
  - c.) x is a number that ends in a zero, such as 420
  - d) x is a positive number
- ii. Explain the three types of programming errors. [6 marks]
  - iii. Differentiate between Coding and Debugging [3 Marks]

## QUESTION TWO [20 MARKS]

- i) Differentiate between First generation and Second-generation programming languages [6 Marks]
- ii) Explain the Steps followed when you need to develop a program [8 Marks]
- iii) Write the output of the following segments of code. [6 Marks]

```
a) double b = 5;
   printf("%lf", b/2); printf("%d", b%2);
```

```
b) int c = 1;
   while (c < 20) {
       if (c%4 == 0 && c%3 != 0)
           printf("%d", c); printf("x");
       c++;
   }
```

```
c.) int d = 28;
   while (d%2 == 0 || d > 1) {
       d = d / 2;
       printf("%d", d); printf("\n");
   }
```

### QUESTION THREE [20 MARKS]

i) Write a full program (starting from #include) and draw equivalent flow chart that takes as input the number of seconds after midnight. It then displays the time in hours: minutes: seconds format. Assume the time is displayed in military time, e.g. 06:06:06 or 23:05:57. Note the placement of the zeros for numbers less than 10, which your program should properly display. Your program should show output as in the example below.

Enter number of seconds after midnight: 3601

The time is 01:00:01

[20 Marks]

### QUESTION FOUR [20MARKS]

- i. Write a C program that uses a nested For loop to find the prime numbers from 2 to 100  
[10 Marks]
- ii. Write a portion of code (not a full program) that computes the sum of the even numbers 2 through 100.  $2 + 4 + 6 + 8 + \dots + 98 + 100$   
Store the value in a variable called sum. You do not have to print out anything.

[10 Marks]

## QUESTION FIVE [20 MARKS]

i. Write a program (starting from #include) that repeatedly collects positive integers from the user, stopping when the user enters a negative number or zero. After that, output the product of all positive entries. A sample run should appear on the screen like the text below.

Enter a number: 3

Enter a number: 10

Enter a number: 2

Enter a number: -213

The product of all your positive numbers is 60.

[10 Marks]

ii) Briefly explain and correct the error(s) in each of the code segments below.

[10 Marks]

a.) `int w;`

`printf("Enter a w ");`

`scan("%f",w)`

b.) `printf( "Two plus two is " 2+2;`

c.) `if ( int x = 1 );`

`printf( x);`

d.) `if (int x = 1 or 2 )`

`printf("%d ", x;`

e.) `//This code is supposed to compute 10!`

`int N = 10;`

`int factorial = 1;`

`while ( N >= 1 ) {`

`factorial = factorial * N;`

`N--;`

`Printf( "10! is ");printf("%d", factorial , "\n";`

`}`