



*(Knowledge for Development)*  
**KIBABII UNIVERSITY**

**UNIVERSITY EXAMINATIONS  
2022/2023 ACADEMIC YEAR**

**MAIN EXAMINATIONS  
YEAR THREE SEMESTER TWO EXAMINATIONS  
FOR THE DEGREE OF BACHELOR OF SCIENCE  
COMPUTER SCIENCE**

**COURSE CODE : CSC 121**  
**COURSE TITLE : PROCEDURAL PROGRAMMING**

**DATE: 20/04/2023 TIME: 2:00 P.M – 4:00 P.M**

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**INSTRUCTIONS TO CANDIDATES**

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

### QUESTION ONE (COMPULSORY) [30 MARKS]

- a) With the help of an example explain the meaning of the following terms as used in C++
- I. Variable
  - II. Identifier
  - III. Keywords
  - IV. Data Type
- [4 Marks]
- b) Comments are ignored by the compiler in a C++ program. Give an example of how comments are done in C++ in TWO ways?
- [2 Marks]
- c) Explain the meaning of the follows escape sequence
- I. `\b`
  - II. `\f`
  - III. `\r`
  - IV. `\n`
- [4 Marks]
- d) Assume variables **first** and **second** are declared to be double and are initialized. Write a sequence of lines that cause the values stored in **first** and **second** to be exchanged if the value of first is not less than second.
- [4 Marks]
- e) Write an if statement to assign the value of x to the variable y only if x is between 1 and 20. Leave y unchanged if x is not in that range.
- [2 Marks]
- f) Using an example, distinguish between the assignment operator and the equality operator
- [4 Marks]
- g) Using a relevant example distinguish between a global variable and local variable
- [4 Marks]
- h) Distinction between passing value and passing by reference. Write relevant programs to distinction the Two.
- [4 Marks]
- i) Describe the difference in the meaning of 7 in `int x [7]`; and the meaning of 8 in `x [8]`.
- [2 Marks]

### QUESTION TWO [20 MARKS]

- a) Give a declaration of a pointer to a double named `double_ptr`.
- [2 marks]
- b) Describe what is meant by NULL Pointer
- [2 Marks]
- c) Define v to be an int, and p to be a pointer to int, initialized in the definition to point to v.
- [4 Marks]
- d) Explain the meaning of the following
- I. `A++`
  - II. `A--`
  - III. `++A`
  - IV. `--A`
- [4 Marks]
- e) Write a program to calculate Compound Interest in C++
- [8 Marks]

### QUESTION THREE [20 MARKS]

- a) Define an array [2 Marks]  
b) Explain how you can incorporate strings in C++ . [4 Marks]  
c) Show how you declare a multidimensional array with relevant example [4 Marks]  
d) Draw relevant flow chart for the program below [10 Marks]

```
#include <iostream>

using namespace std;

int main()
{
    int n,i,sum=0;
    cout << "\n\n Display n terms of natural number and their sum:\n";
    cout << "-----\n";
    cout << " Input a number of terms: ";
    cin>> n;
    cout << " The natural numbers upto "<<n<<"th terms are: \n";
    for (i = 1; i <= n; i++)
    {
        cout << i << " ";
        sum=sum+i;
    }
    cout << "\n The sum of the natural numbers is: "<<sum << endl;
}
```

### QUESTION FOUR [20 MARKS]

- a) Give code to open a file named infile.dat for reading, where the stream variable is in\_stream. Show how to determine whether it is safe to proceed with read operations. You are to terminate the program if it isn't safe to read. Be sure to include necessary #include files. [5 Marks]  
b) You have been writing a file whose external name is outfile.dat, with stream variable out\_stream. You reach a point where you no longer need to send output to the file outfile.dat. How do you close these files? [2 Mark]  
c) You have been writing a file whose external name is outfile.dat, with stream variable out\_stream. You reach a point where you no longer need to send output to the file outfile.dat. What are some reasons why you may need to close these files? [3marks]

- d) Describe the advantages of arrays [4 Marks]
- e) Write a program to calculate the area of Rectangle in C++ [4 Marks]
- f) Explain TWO advantages of Loops in C++ [2 Marks]

**QUESTION FIVE [20 MARKS]**

- a) i. What is function overloading? [2 Marks]
- ii. Write a function called sum that receives two integers and returns the sum of the two integers. [2 Marks]
- iii. Overload the function so as to receive three floats and return the sum of the three. [4 Marks]
  
- b)
- c) Using relevant c++ example to Explain
  - i. the Switch case [6 Marks]
  - ii. if else if control structure as used in C++ [6 Marks]