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**UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR**

**SPECIAL/SUPPLEMENTARY EXAMINATIONS
YEAR ONE SEMESTER ONE EXAMINATIONS**

**FOR THE DEGREE OF BACHELOR OF SCIENCE
COMPUTER SCIENCE**

COURSE CODE : CSC 121

COURSE TITLE : PROCEDURAL PROGRAMMING

DATE: 08/08/2023 TIME: 2:00 P.M – 4:00 P.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

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QUESTION ONE (COMPULSORY) [30 MARKS]

- a) With the help of an example explain the meaning of the following terms as used in C++
- I. Structure
 - II. Pointer
 - III. Function
 - IV. Syntax error
- b) There are three types of loops in C++. State and Explain any **TWO**? [4 Marks]
[2 Marks]
- c) State and Explain any **FOUR** escape sequence used in C++. [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) Distinguish between [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`
- e) Write a program to calculate Compound Interest in C++ [4 Marks]
[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 **[6 Marks]**
i. the Switch case **[6 Marks]**
ii. if else if control structure as used in C++