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**GARISSA UNIVERSITY**

**UNIVERSITY EXAMINATION 2020/2021 ACADEMIC YEAR ONE**

**SECOND SEMESTER EXAMINATION**

**SCHOOL OF PURE AND APPLIED SCIENCES**

**FOR THE DEGREE OF BACHELOR OF INFORMATION SCIENCE**

**COURSE CODE: COM 121**

**COURSE TITLE: FUNDAMENTALS OF COMPUTER PROGRAMMING**

**EXAMINATION DURATION: 2 HOURS**

**DATE: 26/08/2021 TIME: 09.00-11.00 AM**

**INSTRUCTION TO CANDIDATES**

* **The examination has FIVE (5) questions**
* **Question ONE (1) is COMPULSORY**
* **Choose any other TWO (2) questions from the remaining FOUR (4) questions**
* **Use sketch diagrams to illustrate your answer whenever necessary**
* **Do not carry mobile phones or any other written materials in examination room**
* **Do not write on this paper**

**This paper consists of FOUR (4) printed pages *please turn over***

**QUESTION ONE (COMPULSORY)**

1. Explain the following terms as used in programming: **(4 Marks)**
2. Variable
3. Data type
4. Function
5. array
6. Explain what the following statements mean in C programming:
   1. **#include <stdio.h>:**
   2. **printf ( *)***
   3. **main ( )** **(3 Marks)**
7. A good programmer follows certain steps in programming. What are these steps **(4 Marks)**
8. There are **FIVE** mistakes in the following snippet of code, list them. **(5 Marks)**

*#include<studio.h>*

*main();*

*{*

*int count=1, remainder=0*

*while (count<20)*

*{*

*count=count+1;*

*remainder=count%2;*

*if (remainder==0)*

*{*

*print("%d ", count);*

*}//end if*

*}/end while*

1. Define the following terms giving examples
   1. Pseudo code:
   2. Algorithm:
   3. Variable: **(6 Marks)**
2. What function would be used to input values from the keyboard? Illustrate using an example.
3. Write an algorithm in pseudo code to add the squares of the first n positive integers, where the number n is determined by asking the user of the program. **(4 Marks)**
4. Write a program using the **while** loop to output the values from 0…10. **(4 Marks)**

**QUESTION 2**:

1. Define the term “Array” (2 Marks)
2. List the steps that one should do when reading a data file. (4 Marks)
3. Define the term Integrated Development Environment. (2 Marks)
4. Using an if statement, write a C program that asks a user to enter age of patients. If the age entered is above 18, the program then prints Adult, if less then prints Child. **(7 Marks)**
5. Write an algorithm to give grades to student marks. (5 Marks)

**QUESTION 3**:

1. What is the purpose of a pointer? **(2 Marks)**
2. Differentiate between the following using examples:
3. Programming problem and Programming Language
4. Low level and high level programming language
5. Local and Global variables
6. Array and a structure **(10 Marks)**
7. Consider the following program and write down the output: **(3 Marks)**

#include <stdio.h>

int main(void)  
{

int value1 = 12, value2 = 5;  
float answer = 0;

answer = value1 / value2  
printf(“The value of %d divided by %d is %f\n”, value1, value1, answer);

return 0;

}

1. Using diagram represent the following:
2. Sequence
3. Repetition
4. Selection  **(5 Marks)**

**QUESTION 4**:

1. As a programmer of a library system, how best would you store large set of data that is of different data types? **(1 Mark)**
2. From (**a i**) above, the details to be stored include **four** fields namely *title, author pages and price*. Represent this information using the answer to (**a i**) **(5 Marks)**
3. Describe the contents of a Function **(3 Marks)**
4. What are the features of a good program **(5 Marks)**
5. In solving complex computer problems, we require **stepwise refinement**. What is a **stepwise refinement** and its advantages? **(6 Marks)**

**QUESTION 5:**

1. Write a C program using **switch** statement that allows a user to input two numbers and provides the user with a menu that a user selects to either add or subtract and gives the results (1**0 Marks)**
2. What are the advantages of writing out programs in pseudo code before coding them in an actual programming notation? **(3 Marks)**
3. What are the two major sources of errors in computer programs, and how are they best prevented? **(5 Marks)**
4. What is the difference between top-down and bottom-up design? **(2 Marks)**