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KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2022/2023 ACADEMIC YEAR
FOR THE CERTIFICATE IN INFORMATION TECHNOLOGY
CIT 1002 - STRUCTURED PROGRAMMING

Date: 20th April, 2022.
Time:8.30am-10.30pm

INSTRUCTIONS TO CANDIDATES
ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

a) Differentiate between: (12 Marks)
   i) a pseudocode and a flow chart and give their general name
   ii) between global and local variable
   iii) Compiler and debugger
   iv) Operator and operand
   v) Variable and constant
   vi) Source code and machine code

b) Suppose a, b, c are integer variables that have been assigned the values a =8, b = 3 and c = - 5, x, y, z are floating point variables with values x =8.8, y = 3.5, z = -5.2. Determine the value of each of the following expressions using the operator Precedence: (6 Marks)
   i) a / b
   ii) 2 * b + 3 * (a – c)
   iii) (a * c) % b
   iv) (x / y) + z
   v) x % y
   vi) 2 * x / (3 * y)

c) Explain the three types of high-level languages. (6 Marks)

d) List and explain the four types of data types. (4 Marks)

e) Define (2 Marks)
   i) Statements
   ii) Key words
   iii) Preprocessor directive
   iv) Function

QUESTION TWO (20 MARKS)

a) A retail shop offers discounts to its customers according to the following rules:

Purchase Amount >= Ksh. 10,000 - Give 10% discount on the amount.
Ksh. 5, 000 <= Purchase Amount < Ksh. 10,000 - Give 5% discount on the amount.
Ksh. 3, 000 <= Purchase Amount < Ksh. 5,000 - Give 3% discount on the amount. 0 > Purchase Amount < Ksh. 3,000 - Pay full amount.

Write a program that asks for the customer's purchase amount, then uses *if* statements to recommend the appropriate payable amount. The program should cater for negative purchase amounts and display the payable amount in each case. (10 Marks)

b) Explain the seven steps in program development. (7 Marks)
c) List three basic examples of C functions (3 Marks)

QUESTION THREE (20 MARKS)

a) Given the following code find five errors using the guidelines to good C programming and write the code in the correct format. (10 Marks)

```
include <stdio.h>
main()
{
  int j,;
  printf("Input the number (Table to be calculated) : ")
  scanf("%",&n);
  printf("\n");
  for(j=1;j<=10;j++)
  {
    print("%d X %d = %d \n",n,j,n*j);
  }
}
```

b) List the two types of low level languages. (2 Marks)
c) Define control structures and explain the three control structures used in Structured programming. (8 Marks)

QUESTION FOUR (20 MARKS)

a) Write a *while* loop that will calculate the sum of every fourth integer, beginning with the integer (that is calculate the sum 3 + 7 +11 + 15 + ...) for all integers that are less than 30. (10 Marks)
b) Name and explain the following C operator. (6 Marks)
   i) %
   ii) ++
   iii) ==
   iv) !=
   v) /n
c) Differentiate between; (4 Marks)
   i) Global and local variable
   ii) Print() and Scanf()

QUESTION FIVE (20 MARKS)

a) Give the output of the following code; (10 Marks)

```
#include <stdio.h>
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;
 }
```

b) Define a program and list three characteristics of a good programming language. (5 Marks)
c) List and explain five types of Operators. (5 Marks)