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

Date: 26TH JULY 2022
Time: 11:30AM – 1:30PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

- a) Define the following terms.
- i) Source code (2 Marks)
 - ii) object code (2 Marks)
 - iii) Signed Integer (2 Marks)
 - iv) Variable (2 Marks)
 - v) Constant (2 Marks)
- b) Differentiate between Machine language and Assembly language. (4 Marks)
- c) Give **three** examples of object-oriented programming languages you know. (4 Marks)
- d) Study the algorithm below and draw a flowchart to illustrate it. (5 Marks)

An algorithm to find the largest among two different numbers entered by user.

Step 1: Start

Step 2: Declare variables a and b.

Step 3: Read variables a, b and c.

Step 4: If a>b

Display a is the largest number.

Else

Display b is the largest number.

Step 5: Stop

- e) What does the following escape sequences represent in C programming? (4 Marks)
- i) \b
 - ii) \n
 - iii) \t
 - iv) \v
- f) Write a program in C programming to find the sum of integers between 0 and 5 using while loop. (3 Marks)

QUESTION TWO (20 MARKS)

- a) Study the program below and answer the following questions.

```
#include<stdio.h>
Int main()
{
    int num;
    num =1;
    printf(" My favorite number is %d because ", num);
    printf(" it is first number.\n");
    return 0;
}
```

- i) What is the output of the above program (4 Marks)
ii) Which statement indicates variable declaration (2 Marks)
iii) Which statement indicates variable assignment (2 Marks)
- b) What is the difference between variable declaration and variable assignment? (2 Marks)
c) Give the **five** parts of C program structure. (5 Marks)
d) Given the radius of a circle as r cm, write a c program to find the area of a circle. (5 Marks)

QUESTION THREE (20 MARKS)

- a) Differentiate between global variable and local variable (2 Marks)
b) The following program has two variables declared. Study the program and answer the questions that follow.

```
#include <stdio.h>
int area;
int main ()
{
    int a, b;
    a = 10;
    b = 20;
    printf ("\t Side a is %d cm and side b is %d cm long\n", a, b);
    area = a*b;
    printf ("\t The area of your rectangle is : %d \n", area);
    return 0;
}
```

- i) Which variable is local variable and which one is a global variable. (4 Marks)
ii) What is the output of the above program. (4 Marks)
- c) Using for loop, write a program to find the sum of all the integers from 1 to n. where n is an integer. (6 Marks)

- d) The following C program cannot execute when run. Identify two statements with syntax errors in the program. (4 Marks)

```
#include <stdio.h>
int main ()
{
    int a;
    printf("Enter the value of side a: ");
    scanf("%d", &b);
    printf("\t You have entered %d ", a
    return 0;
}
```

QUESTION FOUR (20 MARKS)

- a) Define an array data structure. (2 Marks)
- b) Show how array data structure is declared and initialized in C programming. (4 Marks)
- c) The C program below employs the use of increment operator. What is the output of the program? (4 Marks)

```
#include <stdio.h>
int main ()
{
    int k =5;
    printf("%d\n ", a++);
    printf("%d\n ", ++a);
    return 0;
}
```

- d) Give **two** types of sorting algorithm. (2 Marks)
- e) Distinguish between stack and queue data structures. (8 Marks)

QUESTION FIVE (20 MARKS)

- a) Explain the term Data structure as used in programming. (2 Marks)
- b) Name any **two** types of data structures. (2 Marks)
- c) Explain any **TWO** types of Data structures in computer programming. (4 Marks)
- d) Give two examples of each of following operators as used in C programming?
- i) Assignment Operator (2 Marks)
 - ii) Logical Operators (2 Marks)
 - iii) Relational Operators (2 Marks)
- e) Write a C program demonstrate the use of IF ELSE statement as used in selection control structure. show the output of your program. (6 Marks)