University of Information Technology & Sciences (UITS)

Faculty of Science and Engineering

Department of Computer Science and Engineering

Program: B.Sc. in CSE

Final Examination, Spring 2024

Course Title: Structured Programming Language

Course Code: CSE 0613111

Total Marks: 50 **Time: 3 (Three) Hours**

(Answer all of questions.)

			Marks
1	a)	Write the syntax of different types of loops and differentiate among them	[03]
	b)	Analyze the following program and explain the outputs of the program.	[05]

```
int main ( )
{
   int sum = [last digit of your roll];
   int k=2;
   for (int i=1;i<=10;i+=2)
   {
      sum=sum+k;
      k+=sum;
   }
   printf ("k value = %d\n", k);
   printf("value of sum is  %d", sum);
   return 0;
}
```

	c)	Is it possible to return multiple values from a function in C? If yes, write down the possible ways to do this task.	[02]
2	a)	Construct a program in C to identify the first element in the array that is not smaller than its neighbors.	[05]
	b)	Develop a C program to print the following pattern using nested for loops.	[05]

```
1
2 3
4 5 6
7 8 9 10
. . . . . n
```

3	a)	Construct a user-defined function that takes five numbers as input and returns the count of even numbers present in those numbers.	[04]
	b)	Write the output of the given code and explain it	[04]

```
# include <stdio.h>
int main()
{
   int num[26], temp ;
   num[0] = 100 ;
```

```
    num[25] = 200 ;
    temp = num[25] ;
    num[25] = num[0] ;
    num[0] = temp ;

    printf ( "\n%d %d", num[0], num[25] ) ;
    return 0;
}
```

c) Explain call by value and call by reference and differentiate between them [02]

4 a) Suppose we have three strings, string1= "Programming", string2 = "is", string3 = "interesting". Write a code to calculate the length of the 3 strings , copy one string to another, reverse the string1, merge 3 strings, and compare string 1 and string3 by using the string library function. [05]

b) Illustrate how recursion works. Solve the given recursive code by constructing a recursive tree. [05]

```
#include <stdio.h>

int print(int n);

int main()
{
   print(5);
   return 0;
}
```

```
int print(int n)
{
  if(n = = 0)
   {
      return 0;
   }
  print(n - 1);
  printf("%d ", n);
}
```

5 a) You have to build a system that will keep track of the records of all the books in a library. For each book, you have to store the ID, Title, Price, Author Name, and Genre. Create a structure for this purpose. [05]

b) Write the output of the given code with proper explanation [05]

```
#include <stdio.h>
int main()
{
  int* pc, c; // suppose given address of the variable c is 160532
  c = 22;
  printf("&c: %d \n", &c);
  printf("c: %d \n\n", c);
  pc = &c;
  printf("pc: %d \n", pc);
  printf("*pc: %d \n\n", *pc);
  c = 11;
  printf("pc: %d \n", pc);
  printf("*pc: %d \n\n", *pc);
  *pc = 2;
  printf("&c: %d \n", &c);
  printf("c: %d \n\n", c);
  return 0;
}
```