Silicon Institute of Technology

Silicon Hills, Bhubaneswar

[An Autonomous Institute]

1st Semester B.Tech. End Term Examination 2019-2020
COMPUTER PROGRAMMING(18ES1T03)

Duration: 03:00   Full Marks: 60

1 *Answer All*

a   Describe any two Escape Sequences used in C language with suitable examples.   1

b   Find the output for the following C program.   1

```c
#include <stdio.h>
main()
{
    int x = 2, y = 6, z = 6;
    x = y == z;
    printf("%d", x);
}
```

c   Find the output for the following C program.   1

```c
main()
{
    int a = 2, b = 3, c = 4;
    if(a = b)
        c++;
    printf(" a = %d\t b = %d\t c = %d", a, b, c);
}
```

d   Find the output for the following C program.   1

```c
#include <stdio.h>
main()
{
    int a = 11, b = 5;
    if (a % 5 != 0) { b++; }
    printf(" %d %d ",a++ , b++);
}
```

e   Find the output of the following program.   1

```c
#include <stdio.h>
main()
{
    char str[] = "PROGRAMMING IN C";
    int i = 0;
    while(str[i] != '\0' )
    {
        if(i % 2 == 0)
            printf("%c", str[i]);
        i++;
    }
}
```

[P. T. O.]

f Find out the output of the following program. Assume the necessary header files already included.

```
main()
{
    char str1[15] = "Good";
    char str2[]   = "Evening";
    strcpy(str1, str2);
    printf("%s", str1);
}
```

g What is the difference between strcpy() and strncpy() string library functions in C?

h What will be the output of the following code?

```
#include <stdio.h>
main()
{
  msg1();
  printf("\n What a Beautiful day");
}
void msg1()
{
 printf("\n Good Morning");
 main();
}
```

i What will be the output of the following program?

```
#include <stdio.h>
struct test
{
    int x, *y;
};
main()
{
    struct test a = {10}, b = {20}, c = {30};
    a.y = &b.x;
    b.y = &c.x;
    c.y = &a.x;
    printf("Result = %d\n", *a.y + *b.y - *c.y);
}
```

j What will be the output of the program?

```
#include <stdio.h>
void main()
{
    char str[20] = "Hello";
    char * p = str;
    *p = 'M';
     printf("%s\n", str);
}
```

2 **Answer any One**

a Write a program to swap the values of two variables without using a third variable. 3

b Draw a flowchart to compute the greatest among the three given numbers. 3

[P. T. O.]

3 *Answer any One*

a Write a program to compute the floor and celing of a given number without using any library function. 3

b Write a program to accept two integers for a coordinate point and determine its quadrant. 3

Example:
1. Input: 5,6   Output: 1st quadrant
2. Input: -5,7   Output: 2nd quadrant

4 *Answer any One*

a Write a program to find the index of the maximum element in an array inputted by the user. 3

b Write a program to input a matrix, transpose it and then display the resulting matrix. 3

5 *Answer any One*

a What is the storage class in C? What are the different Storage Classes exist in C? Explain each of the storage classes with examples. 3

b Write a program to find the sum of natural numbers from 1 to n using a used defined function by passing a suitable parameter. 3

6 *Answer any One*

a Write a program to find out the sum of a list of numbers supplied from the command line. For example, if the program is executed by entering ./a.out 2 3 4 5, then the output will be Sum = 14. 3

b What are the differences between malloc( ) and calloc( ) function in C. 3

7 *Answer any One*

a Write a program to generate a following numbers structure by using loops: 7
Sample Input: 4
Sample Output:
1
1 2
1 2 3
1 2 3 4

b Write a program to print all prime numbers between 10 and 1000. 7

8 *Answer any One*

a Write a program to find all possible roots of a quadratic equation $ax^2 + bx + c = 0$ by considering all possible cases. 7

b What are the different types of operators available in C? Explain about the following operators with suitable examples: 7
i)   Relational operators
ii) Assignment operators
iii) Bitwise operators

[P. T. O.]

9 *Answer any One*

  a Write a program to find out and print the grades of 20 students in a class for 3 subjects where a student structure should have at least name, marks in 3 subjects, total marks, percentage, and grade as its members. The total marks are 100 in each subject. The grades are determined as follows: 7

Percentage	Grade
>=90	O
>=80	A
>=60	B
>=50	C
>=40	D
<40	F

  b Write a program to print n^{th} term of Fibonacci series using a recursive function.   7

10 *Answer any One*

  a Write a program to copy the contents of a file to another file by using file handling concept. The names of the source file and destination file should be entered by the user.   7

  b Define a structure for storing student data comprising of Roll Number, Name, Branch Code, and CGPA. Write a program that will take inputs for 20 students and display all 20 students details.   7

11 *Answer any One*

  a Write a program to multiply two matrices and store the result in a third matrix after checking suitable conditions for multiplication. Print the resultant matrix.   7

  b Define the following string handling functions.   7

    i. Computing length of a string

    ii. Copy content of one string to another

    iii. Reversing a string

    Write an appropriate main function to test the above functions.

****