

**INTRODUCTION TO COMPUTING
(CSEN 1201)**

Time Allotted : 3 hrs

Full Marks : 70

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
any 5 (five) from Group B to E, taking at least one from each group.*

*Candidates are required to give answer in their own words as far as
practicable.*

**Group - A
(Multiple Choice Type Questions)**

1. Choose the correct alternative for the following: **10 × 1 = 10**

(i) What will be the standard SOP expression for the following table?

Inputs			Output
A	B	C	X
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	0

(a) $X = \bar{A}\bar{B}\bar{C} + ABC + A\bar{B}C$

(b) $X = ABC + ABC + ABC$

(c) $X = A\bar{B}C + \bar{A}BC + AB\bar{C}$

(d) $X = \bar{A}\bar{B}C + \bar{A}BC + AB\bar{C}$

(ii) What would be the output of the following code snippet?

```
int main(void)
{
    const int a = 10;
    int *p = &a;
    *p = 20;
    printf("%d", a);
    return 0;
}
```

(a) Compilation error

(b) 10

(c) 20

(d) None of the above.

(iii) What is the default return type of functions?

(a) int

(b) char

(c) float

(d) double.

(x) What will be the output of the following code snippet?

```
#define SQUARE(X) X * X
int main ( )
{
    printf ("\n Square = %d" , SQUARE(10+2) );
    return 0;
}
```

- (a) 144 (b) 32 (c) 122 (d) 12.

Group - B

2. (a) Draw a flowchart to check whether a number is prime or not.

(b) Convert from one number system to the other:

(i) $(29.65)_{10} = (?)_2$ (ii) $(364364364)_8 = (?)_{16}$

(c) Simply the expression: $AB + A(B + C) + B(B + C)$

$$5 + (2 \times 2) + 3 = 12$$

3. (a) What will be 32-bit full precision floating representation for 24.75?

(b) State the differences between compiler and interpreter.

(c) What is a universal logic gate?

(d) Draw a logic circuit to simulate an XOR gate by using only NOR gates. (Minimum number of NOR gates should be used)

$$6 + 2 + 1 + 4 = 12$$

Group - C

4. (a) Write a program to check whether a number is a palindrome or not, without using array.

(b) Explain explicit and implicit type casting with an example. How would you use these techniques to round off a floating point number?

$$6 + (4 + 2) = 12$$

5. (a) Write a C program to print this pattern, where the number of rows will be taken as an input from the user.

```
*
**
***
****
*****
```

(b) Explain the output (error) of the following code snippets:

```
(i) int main ( )
    {
        double degC, degF = 96;
        degC = 5/9 * (degF - 32);
        printf ("%f", degC);
        return 0;
    }
```

```
(ii) int main ( )
    {
        int x = 0, y = 2, z = -1;
        x = x && y || z;
        printf ("%d", x);
        x = y = z = -1;
        ++x || ++y && ++z;
        printf ("%d%d%d", x, y, z);
        return 0;
    }
```

```
(iii) int main ( )
    {
        const int num = 20;
        float x = 10.7356;
        num+ = num;
        printf ("%d", num);
        printf ("%0.0f %8.2f", x, x);
        return 0;
    }
```

```
(iv) int main ( )
    {
        int loop;
        for(loop = 15; loop >= 0; loop--)
        {
            if( (1 << loop) & n)
                printf("1");
            else
                printf("0");
        }
        return 0;
    }
```

$$4 + (4 \times 2) = 12$$