

Paper-Eight
Module-XV
Full Marks-25
Time-1hr
Date-23.04.2020

Answer any *two* from **Q. No. 1 to 4:**

1. a) Write down the differences between Compiler and Interpreter. 2
- b) Convert the hexadecimal no. $(B16A.D4)_{16}$ into equivalent octal number. 2
- c) Evaluate $(1110.1001)_2 - (1010.011)_2$ using 2's complement method. 2
- d) What will be the value of sum(10) if the following program segment is executed? 3

```
int sum(int n)
{
    int i,c=0;
    for(i=1;i<=n;i++){
        if(i%3==0)
            c=c+i++;
    }
    return(c);
}
```

2. a) Write a flow-chart to obtain the maximum of n given real numbers. 4
- b) Write a program to compute and display the sum of all integers lying between 0 to 100 that are divisible by 4 but not divisible by 6. Also display the count and value of all such integers. 5
3. a) Write a program to read a 3×3 matrix A from the keyboard. Display the trace of A and the sums of each row and each column of the matrix. 4

- b) Find the error(s), if any in the following program segment: 2

```
main()
{
    float a=3.5, b=2;
    int l=10,m=5,n=9;
    printf("%f",a%b);
    printf("%d", (l+m>n&&!m==0));
}
```

- c) Write down the output of the following program segment. 3

```
main()
{
    int i=0, m, n=37246,d;
    while(n>0)
    {
        printf("%d",n);
        m=n;
        while(m>0)
        {
            d=m%10;
            i++;
        }
    }
}
```

```

        m=m/10;
    }
    n=n-d*pow(10,(i-1));
    i=i+1;
}
}

```

4. a) Write an algorithm to print the numbers which are divisible by 3 among the first m numbers of the following sequence

1,1,2,3,5,8,13,21, ... 4

b) Write an efficient C program to find a real root of the following equation by Bisection Method:

$$x^x + 0.2 \log_{10}(x^2 + 1) - 3.4 = 0. \quad 5$$

Answer any *one* from **Q. No. 5 and 6:**

5. a) Using the laws of Boolean Algebra, simplify the expression

$$x \cdot y + (x \cdot z)' + x \cdot y' \cdot z \cdot (x \cdot y + z) \quad 3$$

b) Define max term. Write down the function $(x + y + z) \cdot (x \cdot z + x' \cdot y)'$ as product of max terms. 4

6. a) Design a switching circuit connecting two wall switches and a light bulb in such a way that either switch may be used to control the light independently of the state of the other. 4

b) Convert $(a + b + c) \cdot (a' + b' + c) \cdot (a + b' + c') \cdot (a' + b + c')$ from FCNF to FDNF. 3