Ans4 a)
```c
#include <stdio.h>
int main()
{
    int n;
    printf("Enter a number: ");
    scanf("%d", &n);
    int sum = 0, c = 1;
    for(int i=1; i<=n; i++)
    {
        sum += ((i*i)*c);
        c *= (-1);
    }
    printf("Sum is %d \n", sum);
    return 0;
}
```

b)
```c
#include <stdio.h>
int main()
{
    int n;
    printf("Enter a number: ");
    scanf("%d", &n);
    int a=0, b=1; c=0;
    while(n>0)
    {   printf("%d ", c);
        c = a+b;
        a = b;
        b = c;
```

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```c
          }
        printf ( "\n");
        return 0;
      }

Ans a)  # include <stdio.h>
     int main ( )
     {
        int a[10];
        printf (" Enter  10 numbers :");
        for (int i = 0; i < 10; i++)
          {
              scanf ("%d", &a[i]);
          }
        int min = a[0]; int max = a[0];
        float avg = 0.0; int sum = 0;
        for (int i = 0; i < 10; i++)
          {
              min = (min > a[i])? a[i]: min;
              max = (max < a[i])? a[i]: max;
              sum += a[i];
          }
        avg = sum / 10.0;
        printf (" The  minimum is %d\n", min);
        printf (" The  maximum is %d \n", max);
        printf (" The  sum  is %d \n", sum);
```

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```
        printf ("The average is %.f\n", avg);
        return 0;
}


Ans 5b) #include <stdio.h>
    int main ()
    {
        float x;
        printf ("Enter the value of x between 0 and 100:");
        scanf ("%f ", &x);
        if (!((x>=0) && (x<=100)))
        {
            printf ("Invalid Input\n");
            return 0;
        }
        else
        {
            float g = 0.0, h = 0.0, f = 0.0;
            g = 2*x*x + 6;
            h = 6*x*x + 2
            f = x;
            if (f == (g+h))
            {
                printf ("Yes \n");
            }
            else { printf ("No \n"); }
        } return 0; }
```

Ans 1) a) Primary Memory can be subdivided into 2 categories :-

i) RAM : It stores instructions and data related to the programs currently
(Random Access Memory) being executed. All the information stored int it is lost as soon as the power to the computer is switched off. It is volatile memory.

ii) ROM : It does not permit any write operation and the information is
(Read-Only Memory) retained even after the computer is switched off. ~~so it is known~~ ~~as POST (~~ It contains Boot Strap loader and hence is called POST (Power-On-Self-Test). System software that is responsible for loading the memory resident portion of the operating system from the secondary memory to the RAM once the computer is switched on. It is non-volatile in nature.

Secondary memory is large depository of non-volatile storage space. e.g. hard disk, flash drives, mag tapes etc.

b)   S[0] = 49 ('I')
    S[1] = 49 ('I')
    S[2] = 45 ('E')
    S[3] = 53 ('s')
    S[4] = 54 ('T')

c) Gray Code: only one bit in the code group changes when going from one number to another.
    Eg :- Changes from 0100 to 1100 while going from 7 to 8 (In comparison, the binary number changes from 0111 to 1000)

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Ans 1d) 'A' — 041
'a' — 061
'0' — 030
new line — ~~aaa~~ A

Ans 2 a) $f(a,b,c) = \bar{a}b + \bar{c}(a+b)$

$= \bar{a}b + a\bar{c} + b\bar{c}$ (Distributive law)

~~1000~~

$= \bar{a}b(c+\bar{c})$

Ans 3a) i) $(232)_{10} = (11101000)_2$ (Ans)

```
2 | 232   0
2 | 116   0
2 |  58   0
2 |  29   1
2 |  15   0
2 |   7   1
2 |   3   1
        1
```

ii) $(15AB)_{16} = (\underline{000}\ \underline{001}\ \underline{010}\ \underline{110}\ \underline{101}\ \underline{011})_2$

$= (012653)_8$ (Ans)

3b) i) $M = 0110$
$N = 0016$

i) $M = 0110$
$N' = 1101$ (1's complement)

```
  1 0 0 1 1
    +   1
  ─────────
  0 1 0 0
```

Ans :- $M - N = (0100)_2$

ii) $M = 0110$
$N'' = 1110$ (2's complement)

```
  1 0 1 0 0
```

Ans) $M - N = (0100)_2$