Assignment-13

(1) write a recursive function to calculate sum of first N natural no.

Ans

```
#include<stdio.h>
    int sum(int n);
    int main()
{   int n;
printf("Enter n values");
scanf("%d", &n);
printf("%d", sum(n));
  return 0;
}
int sum(int n)
{   int m;
  if(n>0)
  m = n + sum(n-1);
  return m;
}
```

(2) write a recursive function to calculate sum of first n odd natural numbers.

Ans:

```
#include<stdio.h>
    int sum(int n);
    int main()
{
    int n;
printf("enter n value");
scanf("%d", &n);
printf("%d", sum(n));

    return 0;

}
int sum(int n)

{   int m;
    if(n>0)
    m=(2*n-1)+sum(n-1);

    return m;

}
```

③ write a recursive function to calculate sum of first n even natural no.

Sol:→

```
# include <stdio.h>
int sum (int n);
int main ()
{ int n;
printf ("enter the no");
scanf ("%d", &n);
printf ("%d", sum (n));
    return 0;
}
int sum (int n)
  int m;
{ if (n > 0)
m = 2*n + sum (n-1);
return m;
}
```

(4) Write a recursive function to calculate sum of ~~first~~ square of first n natural no.

Ans →

```
#include<stdio.h>
int sum(int n);
int main()
{
    int n;
    printf("Enter n value");
    scanf("%d", &n);
    printf("%d", sum(n));
    return 0;
}
int sum(int n)
{
    int m;
    if(n>0)
    m = n*n + sum(n-1);
    return m;
}
```

(8) write a recursive function to calculate sum of digits of a given no.

```
#include <stdio.h>
int sum(int n);
int main()
{ int n;
printf("Enter n value");
scanf("%d", &n);
printf("%d", sum(n));
    return 0;
}
int sum(int n)
{ int m;
if(n>0)
{ m= sum(n/10) + n%10;
}
return m;
}
```

(5) Write a recursive function to calculate factorial of a given no.

Ans →

```
#include<stdio.h>
int fact(int n);
int main()
{ int n;
printf("Enter n value");
scanf("%d", &n);
printf("%d", fact(n));
    return 0;
}
int fact(int n)
{ if(n==1)
    return 1;
  return (n-1)*n;
}
```

(1) write a recursive function to calculate H.C.F of two given no.

Ans →

```
#include<stdio.h>
int HCF(int x, int y);
int main()
{ int a, b, c;
printf("Enter a and b values");
scanf("%d%d", &a, &b);
if(a>b)
printf("%d", HCF(a,b));
else
{ c=a;
  a=b;
  b=c;
printf("%d", HCF(a,b));
}
return 0;
}
int HCF(int x, int y)
{ if(x%y==0)
  return y;
```

```
    return hcf(y, x%y);
}
```

⑧ write a recursive function to print n terms of fibonacci series.

Sol:

```
#include<stdio.h>
int fib(int n);
int main()
{
    int n;
    printf("Enter n value");
    scanf("%d", &n);
    for(int i=0; i<=n; i++)
        printf("%d", fib(i));
    return 0;
}
int fib(int n)
{
    if(n==0 || n==1)
        return n;
    return fib(n-1) + fib(n-2);
}
```

(9) write a program in C to count the digits of a given no. using recursion.

Ans:

```
#include <stdio.h>
int co(int n);
int main()
{
  int n;
  printf("Enter n value");
  scanf("%d", &n);
  printf("%d", co(n));
  return 0;
}
int co(int n)
{
  if(n==0)
  return count;
  return co((n/10), +1);
}
```

(10) Write a program in C to calculate the power of any no. using recursion.

Sol^n →

```
#include<stdio.h>
int power(int, int)
int main()
{   int x, y;
printf("Enter x and y");
scanf("%d%d", &x, &y);
printf("%d", power(x,y));
    return 0;
}
int power(int base, int exp)
{   if(n==0)
    return 1;
    return power(base, exp-1)*base;
}
```