question 1

```
n=input('enter a positive integer: \n')
```

```
n =
4
```

```
fprintf('the factorial of %d is %d',n,recfac(n)); % semi colons are not needed
```

```
the factorial of 4 is 24
```

```matlab
% whenever its an integer write %d or else u will get error
function f=recfac(n)
if n==1
    f=1;
else
f=n*recfac(n-1);
end
end
```

question 7

```matlab
a = input('Enter the base (a): ');
n = input('Enter a positive integer exponent (n): ');
fprintf('%.5f\n', retpow(a, n));
```

```
0.00032
```

```matlab
function f = retpow(a, n)
    if n == 0
        f = 1;
    elseif n > 0
        f = (1/a) * retpow(a,n - 1);
    else
        error('The exponent shud be a positive integer.');
    end
end
```

question 4

```matlab
a = input('Enter base (a): ');
n = input('Enter exponent (n): ');
result = p(a, n);
fprintf('The result of %d^%d is %d\n', a, n, result);
```

```
The result of 6^7 is 279936
```

```matlab
function f = p(a, n)
    if n == 0
        f = 1;
```

```
        else
            f = a * p(a, n - 1);
        end
    end
```

question 5

```
n = input('Enter the position (n) of the Fibonacci number: ');
result = fibonacci(n);
fprintf('The %dth Fibonacci number is %d\n', n, result);
```

The 6th Fibonacci number is 5

```
function f = fibonacci(n)
    if n == 1
        f = 0;
    elseif n == 2
        f = 1;
    else
        f = fibonacci(n - 1) + fibonacci(n - 2);
    end
end
```

question 6

```
n = input('Enter the position (n) in the sequence: ')
```

```
n =
4
```

```
result = sequence(n);
fprintf('The %dth term of the sequence is %d\n', n, result);
```

The 4th term of the sequence is 526

```
function f = sequence(n)
    if n == 0
        f = 6;
    else
        f = 3 * sequence(n - 1) + 1;
    end
end
```

question 2

```
function r = GCD(a,b)
    if(b ~= 0)
        r = GCD(b,mod(a,b));
    else
        r = a;
    end
```

```matlab
    end
function r = LCM_1(a,b)
    r = a * b / GCD(a,b);
end
for i = 0:4
    a = input("Enter number 1: ")
    b = input("Enter number 2: ")
    fprintf("the hcf is %d, and lcm is %d",GCD(a,b),LCM_1(a,b))
    fprintf("answer using lcm() is %d",lcm(a,b))
end
```

```
a =
6
b =
36
the hcf is 6, and lcm is 36
answer using lcm() is 36
a =
4
b =
14
the hcf is 2, and lcm is 28
answer using lcm() is 28
a =
5
b =
46
the hcf is 1, and lcm is 230
answer using lcm() is 230
a =
7
b =
25
the hcf is 1, and lcm is 175
answer using lcm() is 175
a =
120
b =
58
the hcf is 2, and lcm is 3480
answer using lcm() is 3480
```