

Code :

```
import math
```

```
def isprime(num):  
    if num > 1:  
        for i in range(2, int(num/2)+1):  
            if (num % i) == 0:  
                return False  
            break  
        else:  
            return True  
    else:  
        return False
```

```
while 1:  
    p = int(input("Enter prime number P:"))  
    q = int(input("Enter prime number Q:"))  
    if isprime(p) is True and isprime(q) is True:  
        break  
    else:  
        print("One of them is not prime number please enter again:")
```

```
n = p*q  
phin = (p-1)*(q-1)
```

```
while 1:  
    e = int(input("Enter value of e:"))  
    if e > 1 and e < phin and math.gcd(e, phin) == 1:  
        break  
    else:  
        print("GCD not 1 please try again:")
```

```
k = 0  
d = (1+(k*phin))/e  
while not (d).is_integer() is True:  
    k = k+1  
    d = (1+(k*phin))/e
```

```
p = int(input("Enter message:"))
```

```
c = pow(p, e, phin)  
print("CipherText:", c)
```

```
p = pow(c, int(d), phin)  
print("Message:", p)
```

Output :

```
Enter prime number P:11
Enter prime number Q:13
Enter value of e:17
Enter message:50
CipherText: 80
Message: 80
```