Program & Output:

```
import math
def gcd(a, h):
    temp = 0
    while(1):
        temp = a % h
        if (temp == 0):
            return h
        a = h
        h = temp

p = 3
q = 7
n = p*q
e = 2
phi = (p-1)*(q-1)

while (e < phi):
    if(gcd(e, phi) == 1):
        break
    else:
        e = e+1

k = 2
d = int((1 + (k*phi))/e)

msg = int(input('\n\nEnter message to be encrypted: '))
```

```
print("Message data = ", msg)
print(f"Private Key is {d},{n}")
print(f"Public Key is {e},{n}")



c = pow(msg, e)
c = math.fmod(c, n)
print("Cipher = ", c)

m = pow(c, d)
m = math.fmod(m, n)
print("Original = ", m)
```

Output:

```
Enter message to be encrypted: 67
Message data =  67
Private Key is 5,21
Public Key is 5,21
Cipher =  16.0
Original =  4.0
```