Practical.no - 3

Title - Implement RSA algorithm for encryption and decryption of given data.

```
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 = (1 + (k*phi))/e

msg = 12.0

print("Message data = ", msg)

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

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

Output:

```
Message data =  12.0
Encrypted data =  3.0
Original Message Sent =  12.0
```