(1) Prove that if $m > 4$ is not prime then $(m-1)! \equiv 0 \pmod m$
(2) Find all possible values of $(n, n+6)$ where n is a natural number.
(3) Use Euclidean algorithm to find $(66, 56)$ and $(900, 120)$
(4) Find the Euler function ϕ of each of the following numbers 48, 51, 101.
(5) Let p, q be distinct primes. Without using the general formula prove that $\phi(pq) = (p-1)(q-1)$.
(6) Find $10^{5^{101}} \pmod{21}$.
(7) Find $35^{25} \pmod{42}$.
Hint: Note that $(35, 42) \neq 1$. Find $35^{24} \pmod 6$ first.