CIS 3223 Short Quiz | **Name: Solutions**

Dr Anthony Hughes | **Temple ID (last 4 digits:**

1 Answer the following (circle answer).

(a) If $f(n)$ and $g(n)$ are two positive increasing functions, then can $f(n) = O(\ln g(n))$? [True] False

$f(n) = \ln n$

$g(n) = e^n$, $\ln g(n) = n$

$g(n) = n!$ $\ln g(n) = \theta(n \log n)$

(b) Is $1234_5 \geq 650$? True [False]

If x is an n digit base-b number, then $b^{n-1} \leq x < b^n$.

For example, $10^3 = 1000 \leq 2024 < 10^5 = 10,000$

So $5^3 = 125 \leq 1234_5 < 5^4 = 625 < 650$

(c) The peasant multiplication algorithm was first recorded in which country?

Russia Italy Greece [Egypt] Mesopotamia

1/2 pt for Russia

(d) The bit-length of $n!$ is

$\theta(\log n)$ $\theta(n)$ [$\theta(n \log n)$] $\theta(n^2)$