Note Title 03/05/2011

A 60 W light bulb is connected to a 120 V power supply.

a.) How much current flows through it?

b.) What is the resistance of the bulb?

c.) How many electrons flow through it in 1 hour?

a) $P = IV$ $\quad I = \frac{P}{V} = \frac{60W}{120V} = 0.50A$ ✓

b) $V = IR$ $\quad R = \frac{V}{I} = \frac{120V}{0.50A} = 240\Omega$ ✓

c) $I = \frac{q}{t}$ $\quad q = I \cdot t = (0.50A)(1h \cdot \frac{60min}{h} \cdot \frac{60s}{min})$

$= 1800C$

$1800C \times \frac{1e^-}{1.6\times10^{-19}C} = 1.1\times10^{22}e^-$ ✓