PHYS 212 Spring 2014 Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

P = iv = v2/R = i2R Ohm’s law: v = iR $A\_{circle}$= π$r^{2}$ $R=ρ\frac{L}{A}$

1. A 240 W incandescent light bulb is plugged into a standard 120 V outlet. Assume electrical energy costs US$ 0.08/kW · h. **(a)** What is the current in the bulb?
**(b)** What is the resistance of the bulb?
**(c) H**ow much does it cost in dollars per 31-day month to leave the light turned on 1 hour per day?

2. Suppose a kite string of radius 2.00 mm extends directly upward by 0.800 km and is coated with a 0.500 mm layer of water having resistivity 150 *Ω*.m. If the potential difference between the two ends of the string is 160 MV, what is the current through the water layer?

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