

Pre-lab Exercise: Ohm's Law

Print Name _____

Lab Section _____ Date _____ TA _____

Show your work. All answers should be given with two decimal places.

1. A current of 3.33 mA ($1\text{mA} = 0.001\text{A}$) passes through a resistor which is at a temperature 22.3°C . As a result, a voltage of 3.00 Volts is generated across the resistor. Calculate the resistance of the resistor in $\text{k}\Omega$.

$$R_{\text{Room}} = \underline{\hspace{2cm}}$$

2. Now the same resistor as in question 1 is immersed in liquid nitrogen ($T = -195.8^\circ\text{C}$). The voltage across the resistor is still 3.00V but the current through the resistor is now 2.67 mA Calculate the resistance of the resistor at this new temperature in $\text{k}\Omega$.

$$R_{\text{LN2}} = \underline{\hspace{2cm}}$$

3. When a voltage of 4.25 Volts is applied across a light bulb, a current of 122.00 mA passes through its filament. Calculate the resistance, R , of the bulb in ohms (Ω) and the power, P , in Watts being dissipated in it.

$$R = \underline{\hspace{2cm}}$$

$$P = \underline{\hspace{2cm}}$$

4. A $3.20\text{ k}\Omega$ resistor has a current of -1.25 mA passing through it. What is the voltage applied to the resistor?

$$V = \underline{\hspace{2cm}}$$