

Ch. 9 Prob. 38

$$D = 8.252 \text{ mm}$$

$$r = \frac{D}{2} = 4.126 \text{ mm}$$

$$L = 1.00 \text{ km} = 1.00 \times 10^3 \text{ m}$$

Find The resistance of the power line

$$\rho_{cu} = 1.68 \times 10^{-8} \Omega \cdot \text{m}$$

Now resistance is given by

$$A = \pi r^2$$
$$R = \frac{\rho L}{A} = \frac{(1.68 \times 10^{-8} \Omega \cdot \text{m})(1000 \text{ m})}{\pi (4.126 \times 10^{-3} \text{ m})^2}$$

$$R = 0.314 \Omega$$