**Question:**

Calculate the resistance of $180\ m$ of silver wire having a cross section of $0.33\ mm^2$. The resistivity of silver is $1.6 \cdot 10^{-8}\ \Omega \cdot m$.

a) $11.2\ \Omega$

b) $9.6\ \Omega$

c) $14.6\ \Omega$

d) $7.5\ \Omega$

**Solution:**

The resistance $R$ of the wire of length $l$ and cross-sectional area $A$ is given by the formula:

$$R = \rho \frac{l}{A},$$

here, $\rho$ is the constant called the resistivity and is a characteristic of the material from which the wire is made.

Then, from this formula we can calculate the resistance of the wire:

$$R = \rho \frac{l}{A} = 1.6 \cdot 10^{-8}\ \Omega \cdot m \cdot \frac{180\ m}{0.33 \cdot 10^{-6}\ m^2} = 8.73\ \Omega.$$

**Answer:**

None of these answers are correct. The correct answer is $R = 8.73\ \Omega.$