

Given Information,

$$\left. \begin{array}{l} \text{Full range voltage of} \\ \text{the Instrument (V)} \end{array} \right\} = 50\text{V}$$

$$\left. \begin{array}{l} \text{Full scale Deflection of} \\ \text{the current (I}_m\text{)} \\ \text{OR} \\ \text{(I}_{f\text{sd}}\text{)} \end{array} \right\} = 200\mu\text{A} \\ = 200 \times 10^{-6}\text{A}$$

$$\left. \begin{array}{l} \text{Internal Resistance of the} \\ \text{coil (R}_m\text{)} \end{array} \right\} = 100\Omega$$

We know that,

$$V = I_m (R_s + R_m)$$

$$\Rightarrow R_s + R_m = \frac{V}{I_m}$$

$$\Rightarrow R_s = \frac{V}{I_m} - R_m$$

Here, R_s = Multiplier Resistance

$$\begin{aligned} \text{So, } R_s &= \frac{50}{200 \times 10^{-6}} - 100 \\ &= \underline{\underline{249.9\text{ k}\Omega}} \end{aligned}$$