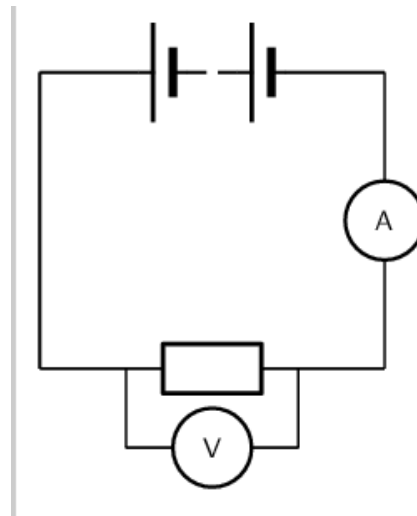


Answer on Question #50519, Engineering, Electric Circuits

A voltmeter is connected in parallel with a variable resistance R which is in series with an ammeter and a cell. For one value of R , the meters read 0.3A and 0.9V . For another value of R the readings are 0.25A and 1.0V . What is the internal resistance of the cell?

1. 0.5ohm
2. 2 ohm
3. 1.2ohm
4. 1ohm

Solution:



If the resistances of the meters are neglected, then the voltmeter reads the potential difference across the cell.

$$\begin{aligned} E - 0.3r &= 0.9 \\ E - 0.25r &= 1.0 \end{aligned}$$

Subtracting we get

$$0.05r = 0.1$$

Thus,

$$r = \frac{0.1}{0.05} = 2\ \Omega$$

Answer: 2.2 ohm