

10 D.C. circuits – Part 2 — Answers

Answers

10.1 $R = 3.0 + 6.0 = 9.0 \, \Omega$.

10.2 $\frac{1}{R} = \frac{1}{6.0} + \frac{1}{3.0} = \frac{1+2}{6} = \frac{1}{2}$, so $R = 2.0 \, \Omega$.

10.3 It falls (decreases).

10.4 (a) the e.m.f. of the cell; (b) minus the internal resistance ($-r$).

10.5 $V = \varepsilon - Ir = 1.5 - (0.60)(0.50) = 1.2 \, \text{V}$.

10.6 A parallel resistor gives the current an *extra* path. With more paths, more current can flow for the same voltage, and more current for the same voltage means a lower overall resistance.

10.7 Largest: all three in series $= 6 + 6 + 6 = 18 \, \Omega$. Smallest: all three in parallel $= 6/3 = 2.0 \, \Omega$.