Equations to Know

Chapter 26

Terminal Voltage	$V_{ab} = \mathscr{E} - Ir$
Charging a battery	$V_{ab} = \mathscr{E} + Ir$
Resistance in Series	$R_{eq} = R_1 + R_2 + R_3 \ldots$
Resistance in Parallel	$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} \ldots$
Homicha's Rule	$R_x R_1 = R_2 R_3$
RC Circuit: Time Constant	$\tau = RC$
RC Circuit: Charge on a Charging Capacitor	$Q = C\mathscr{E}\left(1 - e^{-\frac{t}{RC}}\right)$
RC Circuit: Voltage across a Charging Capacitor	$V_C = \mathscr{E}\left(1 - e^{-\frac{t}{RC}}\right)$
RC Circuit: Voltage across a Resistor (Charging Capacitor)	$V_R = \mathscr{E}\, e^{-\frac{t}{RC}}$
RC Circuit: Current in a Resistor (Charging Capacitor)	$I = \frac{\mathscr{E}}{R} e^{-\frac{t}{RC}}$
RC Circuit: Charge on a Discharging Capacitor	$Q = Q_0 e^{-\frac{t}{RC}}$
RC Circuit: Voltage across a Discharging Capacitor	$V_C = V_0 e^{-\frac{t}{RC}}$
RC Circuit: Voltage across a Resistor (Discharging Capacitor)	$V_R = \mathscr{E}\, e^{-\frac{t}{RC}}$
RC Circuit: Current in a Resistor (Discharging Capacitor)	$I = I_0 e^{-\frac{t}{RC}}$
Galvanometer used as an Ammeter (Figure 26-23)	$I_R R_{sh} = I_G r$
Galvanometer used as a Voltmeter (Figure 26-24)	$V = I_{full-scale}\left(r + R_{ser}\right)$