p. 639-42

#1

$I = \frac{q}{t}$

$\frac{10 \times 10^{-6} C}{1 \ s} = \boxed{10 \mu A}$

#7

$I = 1.0 mA$

$T = 0.1 s$

$I = \frac{Q}{T}$

$1.0 \times 10^{-3} = Q / 0.$

$1.0 \times 10^{-4} = Q$

$Q / 1.6 \times 10^{-19} = 6.3 x$

#11

$\frac{220 V}{.15 V} = 1.5 \times 10^{3}$ rows

salt makes current travel ~~faster~~ easier

15) $A = 1\,mm^2 = 1\times10^{-6}\,m^2$ $\quad I = 1\times10^{6}\,A/m^2 \times 1\times10^{-6}$

$I_c =$

Avagadro's # $= 6.02\times10^{23}$ $\quad 1A = 1\,C/s = \dfrac{6.25\times10^{18}\ elect}{s}$

$$\frac{6.02\times10^{23}}{6.25\times10^{18}} = 99200\,s$$

#15

$t = \_\_\_\ s$

$I = \dfrac{Q}{t}$

$\therefore t = \dfrac{Q}{I}$

$I = \text{current density} \cdot A$

$I = \left(1.0\times10^{6}\,\dfrac{A}{m^2}\right)\left(1.00\times10^{-6}\,m^2\right)$

$I = 1.0\,A$

# of electrons $= 6.02\times10^{23}$

$Q = (\#\ \text{of electrons})\,q_e$

$Q = (6.02\times10^{23})(-1.6\times10^{-19}\,C)$

$Q = 96,320\,C$

$\text{current density} = \dfrac{I}{A} = 1.0\times10^{6}\ A/m^2$

$A = 1.00\ mm^2 \Rightarrow$ convert to meters

$$1.00\,mm^2 \left|\frac{(1\,m)^2}{(1000\,mm)^2}\right. = 1.00\times10^{-6}\,m^2$$

$$t = \frac{96{,}320\,C}{1.0\,A}$$

$$t = 96{,}320\,s \left| \frac{1\,h}{3600\,s} \right. = 26.75\,h$$

$$\boxed{\approx 27\,h}$$

#25

$V_T = 1.5V \times 6$

$R = 150\Omega$

$I = \frac{V}{R} = 6.0 \times 10^{-2} A$

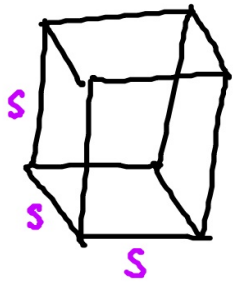
#29

$V = 100V$

$I = 10\,A$

$R = \frac{V}{I} = 10\Omega$

#39



length $\Rightarrow L = s$

area $\Rightarrow A = s$

$$R = \rho \frac{L}{A}$$

$R = \rho$ when $\frac{L}{A} = 1$

so $\frac{s}{s^2} = 1$

$\therefore s = s^2$

s equals 1.0 m