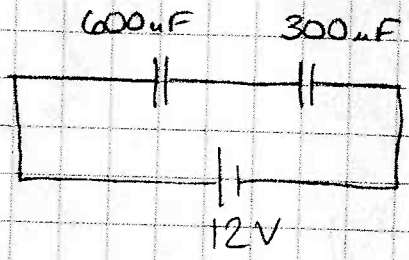
P #R

Ch 16

a) $C_1 = 600\ \mu F$
$C_2 = 300\ \mu F$

$V = 12.0\ V$



$C_{eq}^{-1} = \sum C_x^{-1}$ (series)

$C_{eq}^{-1} = (600\ \mu F)^{-1} + (300\ \mu F)^{-1}$ $\quad C_{eq} = 200\ \mu F$

b) $C_{eq} = 200\ \mu F$
$V_{eq} = 12\ V$

$C_{eq} = \frac{Q_{eq}}{V_{eq}}$

$(200\ \mu F) = \frac{Q_{eq}}{12\ V}$ $\quad Q_{eq} = 2400\ \mu C$

For series: $Q_1 = Q_2 = Q_{eq}$ so $\quad Q_1 = Q_2 = 2400\ \mu C$

c) $Q_1 = Q_2 = 2400\ \mu C$
$C_1 = 600\ \mu F$
$C_2 = 300\ \mu F$

$C_1 = \frac{Q_1}{V_1}$ $\quad C_2 = \frac{Q_2}{V_2}$

$600\ \mu F = \frac{2400\ \mu C}{V_1}$ $\quad 300\ \mu F = \frac{2400\ \mu C}{V_2}$

$\boxed{V_1 = 4\ V}$ $\quad \boxed{V_2 = 8\ V}$