

13. (a) After the switch is thrown to position b the circuit is an LC circuit. The angular frequency of oscillation is $\omega = 1/\sqrt{LC}$. Consequently,

$$f = \frac{\omega}{2\pi} = \frac{1}{2\pi\sqrt{LC}} = \frac{1}{2\pi\sqrt{(54.0 \times 10^{-3} \text{ H})(6.20 \times 10^{-6} \text{ F})}} = 275 \text{ Hz} .$$

- (b) When the switch is thrown, the capacitor is charged to $V = 34.0 \text{ V}$ and the current is zero. Thus, the maximum charge on the capacitor is $Q = VC = (34.0 \text{ V})(6.20 \times 10^{-6} \text{ F}) = 2.11 \times 10^{-4} \text{ C}$. The current amplitude is

$$I = \omega Q = 2\pi f Q = 2\pi(275 \text{ Hz})(2.11 \times 10^{-4} \text{ C}) = 0.365 \text{ A} .$$