5 Chapter 14: Inductance

1. What is (a) the rate at which the current though a 0.50-H coil is changing if an emf of 0.150 V is induced across the coil?

$$\frac{\text{emf}}{\text{Inductive}} = \frac{0.15}{0.5} = -0.3$$

2. When a camera uses a flash, a fully charged capacitor discharges through an inductor. In what time must the 0.100-A current through a 2.00-mH inductor be switched on or off to induce a 500-V emf?

$$\mathcal{E} = L\frac{dI}{dt} \Rightarrow dt = \frac{L}{\mathcal{E}}dI$$

$$dt = \frac{2.00\ mH}{500\ V}(0.1\ A)$$

$$dt = 4.00 \times 10^{-7}\ s$$