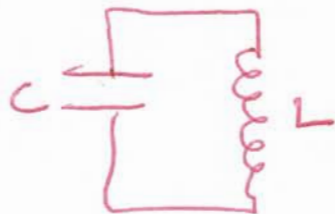


**Problem 3:** (20 pts.) An oscillating LC circuit consists of a 10 mH inductor in parallel with a capacitor. The current has its maximum value of 0.60 A at time  $t = 0$  s. A short time later, the capacitor has its maximum potential difference of 60 V. What is the value of the capacitance?

**Problem 2:** (20 pts.) An oscillating LC circuit consists of a 10 mH inductor in parallel with a capacitor. The current has its maximum value of 0.60 A at time  $t = 0$  s. A short time later, the capacitor has its maximum potential difference of 60 V. What is the value of the capacitance?



Conserve energy

$$\frac{1}{2} L I_{\max}^2 = \frac{1}{2} Q V_{\max} = \frac{1}{2} C V_{\max}^2$$

$$\therefore C = \frac{L I_{\max}^2}{V_{\max}^2} = \frac{(10 \times 10^{-3}) (0.6)^2}{(60)^2} = 10^{-6} \text{ F} \\ = \boxed{1.0 \mu\text{F}}$$