Answer on Question #69407-Physics-Other

In an LCR circuit, L = 2 mH, c = 5'mu'F and

R = 40 Ohm comment on the nature of damping.

Solution

$$\omega_0 = \frac{1}{\sqrt{LC}} = \frac{1}{\sqrt{(2 \cdot 10^{-3})(5 \cdot 10^{-6})}} = 10^4 \frac{rad}{s}.$$

$$\alpha = \frac{R}{2L} = \frac{40}{2(2 \cdot 10^{-3})} = 10^4 \frac{rad}{s}.$$

$$\alpha = \omega_0$$

Thus, this circuit is **critically-damped.**