

Ch. 14 Prob. 47

$$N = 2000 \text{ turns}$$

$$L = 0.040 \text{ H}$$

$$h = 0.10 \text{ m}$$

Find the current flowing when energy in the field is $2.0 \times 10^{-6} \text{ J}$

$$U_m = \frac{1}{2} LI^2 \quad \rightarrow \quad \sqrt{\frac{2U_m}{L}} = I$$

$$I = \sqrt{\frac{2(2.0 \times 10^{-6} \text{ J})}{0.040 \text{ H}}} = \boxed{0.01 \text{ A}}$$