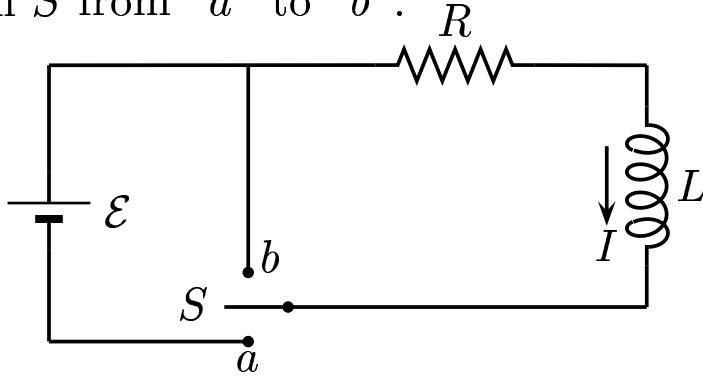


Leave  $S$  in “ $a$ ” to build up  $I$  in  $L$  to  $I_{max}$ . Then at some new time  $t = t_1$ , switch  $S$  from “ $a$ ” to “ $b$ ”.



Determine total dissipation energy in the time interval from  $t = t_1$  to a very large time,  $t = \infty$ .

- A) The energy dissipated is  $\frac{L}{2} \left( \frac{\mathcal{E}}{R} \right)^2$ .
- B) The energy dissipated is  $\frac{\mathcal{E}^2}{R}$ .
- C) 0

The maximum current built up when  $S$  is at the position “ $a$ ” is:  $I_{max} = \frac{\mathcal{E}}{R}$ . Correspondingly, the total energy stored in  $L$  at the maximum current is:

$$U_L = \frac{1}{2} I_{max}^2 L = \frac{L}{2} \left( \frac{\mathcal{E}}{R} \right)^2.$$

The energy stored at the maximum current will totally be dissipated. In other words, the total dissipation energy equals  $\frac{L}{2} \left( \frac{\mathcal{E}}{R} \right)^2$  also.

Answer **A**.