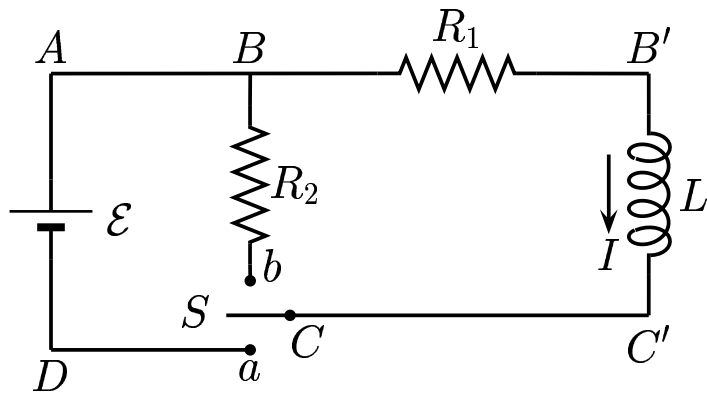


Consider the setup. Close  $S$  to the position “ $a$ ” at  $t = 0$ .



Find  $I_\infty$ , i.e. the current flowing through  $L$  at a large  $t$ .

- A)  $I_\infty = \frac{\mathcal{E}}{R_1}$ .
- B)  $I_\infty = \frac{\mathcal{E}}{R_2}$ .
- C)  $I_\infty = \mathcal{E} \left( \frac{1}{R_1} + \frac{1}{R_2} \right)$ .
- D)  $I_\infty = \mathcal{E} \left( \frac{1}{R_1 R_2} \right)$ .

At large  $t$ , one expects that the current through  $L$  should reach a steady state. So the potential drop across  $L$  is 0. Here the inductor may be considered as a piece of wire. Therefore current through  $L$  is given by  $\frac{\mathcal{E}}{R_1}$ .

Answer **A**.