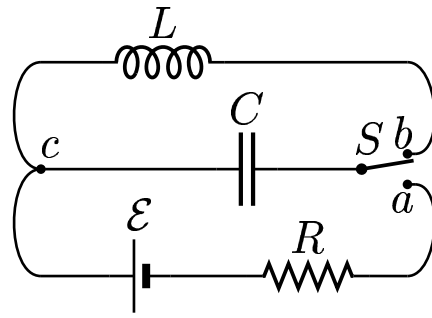


Given: A network containing a battery \mathcal{E} , and capacitor C , and resistor R and an inductor L .



The switch S is left at position a for a long period of time. Find the plate charge on the capacitor C .

- A) $Q = \mathcal{E} C$
- B) $Q = \frac{\mathcal{E} C}{2}$
- C) $Q = 0$
- D) $Q = \frac{\mathcal{E}}{C}$
- E) $Q = \frac{\mathcal{E}}{2C}$

The loop equation of the bottom loop is

$$\mathcal{E} - R_1 I_1 - \frac{Q}{C} = 0.$$

When S is at the position a , after a long time, the capacitor will be fully charged, which implies that $I_1 = 0$. From the loop equation, we have

$$Q = Q_{max} = \mathcal{E} C.$$

Answer A.

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