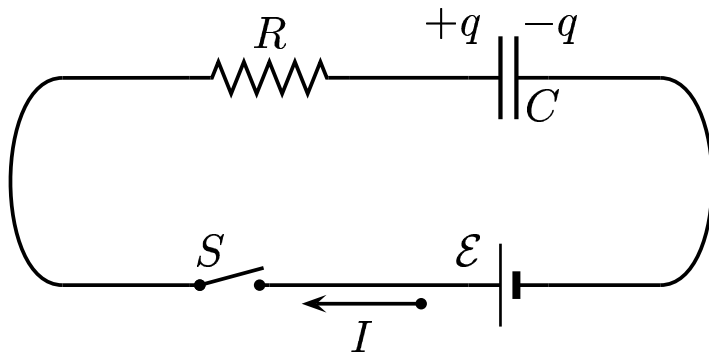


Consider the RC circuit shown.

The loop equation is given by $\mathcal{E} - \frac{q}{C} - i R = 0$.



Determine Q and I immediately after closing S at $t = 0$.

- A) $Q_0 = 0$ and $I_0 = \frac{\mathcal{E}}{R}$
- B) $Q_0 = 0$ and $I_0 = \mathcal{E} R$
- C) $Q_0 = \mathcal{E} C$ and $I_0 = \frac{\mathcal{E}}{R}$
- D) $Q_0 = \mathcal{E} C$ and $I_0 = \mathcal{E} R$

The present case corresponds to charging a capacitor. There is no charge initially; *i.e.*, at $t = 0$, $Q = Q_0 = 0$. From the loop equation $I = I_0 = \frac{\mathcal{E}}{R}$.

Answer **A**.