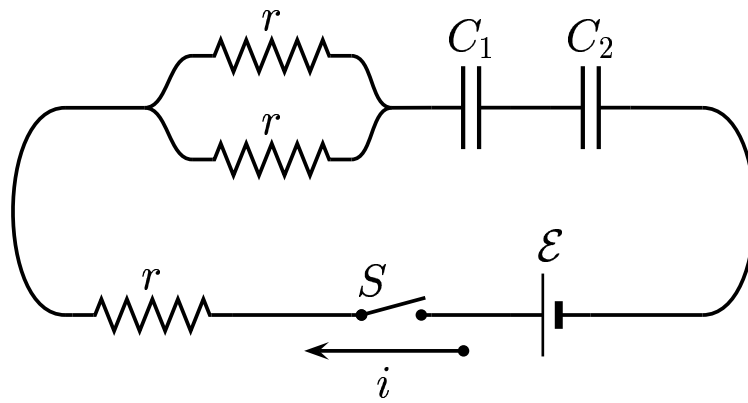


Given: $C_1 = C_2 = C$. Close S at $t = 0$.
 Denote I at $t = 0$ as I_0 .



Find I_0 .

- A) $I_0 = \frac{\mathcal{E}}{r}$
- B) $I_0 = \frac{2\mathcal{E}}{3r}$
- C) $I_0 = \frac{\mathcal{E}}{3r}$
- D) $I_0 = \frac{\mathcal{E}}{2r}$

Consider the equivalent circuit.

$$R = r + \frac{r}{2} = \frac{3r}{2}.$$

$$C_{12} = \frac{1}{\frac{1}{C} + \frac{1}{C}} = \frac{C}{2}.$$

At $t = 0$, no charge is on C_{12} , so $V_{12} = \frac{Q}{C_{12}} = 0$, and $I_0 = \frac{\mathcal{E}}{R} = \frac{2\mathcal{E}}{3r}$.

Answer **B**.

28.04-01 RC Circuit 2004-3-24