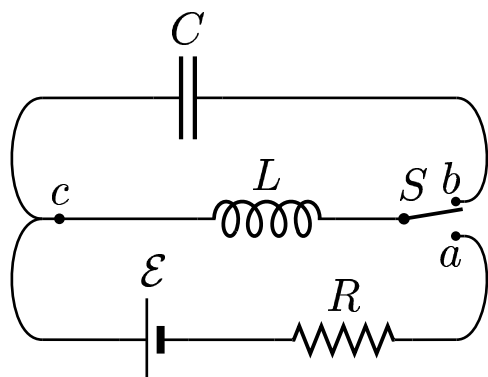


Given: A network containing a battery  $\mathcal{E}$ , and capacitor  $C$ , and resistor  $R$  and an inductor  $L$ .



Denote the angular frequency of the “LC” circuit by  $\omega = \frac{1}{\sqrt{LC}}$ .

The switch  $S$  is left at position  $a$  for a long period of time. The switch  $S$  is then moved from position  $a$  to  $b$  at  $t = 0$ .

Find the sign of  $Q_{right}$ , the charge on the right-hand plate of the capacitor  $C$  and the current direction in the “LC”-loop at the time  $t = \frac{3}{8} T$ .

- A) Sign of  $Q_{right}$  is  $-$  and current is clockwise.
- B) Sign of  $Q_{right}$  is  $-$  and current is counter-clockwise.
- C) Sign of  $Q_{right}$  is  $+$  and current is clockwise.
- D) Sign of  $Q_{right}$  is  $+$  and current is counter-clockwise.

At  $t = \frac{1}{4} T$ ,  $i = 0$  and  $Q_{right} = +$ . Immediately after that (i.e.,  $t = \frac{3}{8} T$ ) the sign of  $I$  is reversed and  $Q_{right}$  remains positive.  
 Answer **C**.