

46. The steady state value of the current is also its maximum value, \mathcal{E}/R , which we denote as i_m . We are told that $i = i_m/3$ at $t_0 = 5.00$ s. Eq. 31-43 becomes $i = i_m(1 - e^{-t_0/\tau_L})$, which leads to

$$\tau_L = -\frac{t_0}{\ln(1 - i/i_m)} = -\frac{5.00 \text{ s}}{\ln(1 - 1/3)} = 12.3 \text{ s} .$$