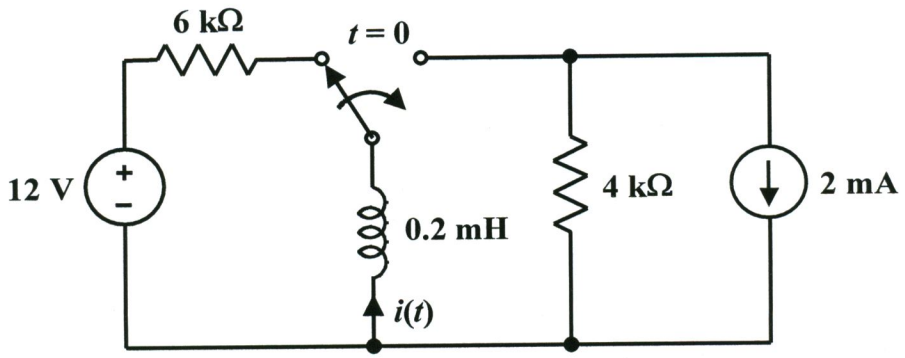
EE 2240

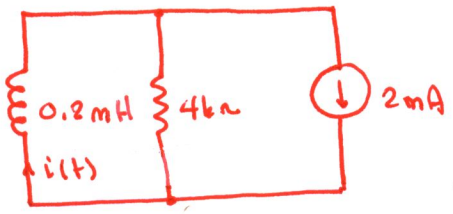
Problem #08

Find $i(t)$ for $t \geq 0$ in the circuit shown and accurately sketch a plot of the response including a brief time interval just prior to switch movement.



Assuming DC steady for $t=0^-$, $i(0) = -\frac{12V}{6k\Omega} = -2mA$

For $t \geq 0$:



$i(\infty) = 2mA$

$\tau = \frac{0.2mH}{4k\Omega} = 50ns$

$$i(t) = [i(0) - i(\infty)]\, e^{-t/\tau} + i(\infty)$$

$$= (-4e^{-2\times10^7 t} + 2)\ mA,\ t \geq 0$$