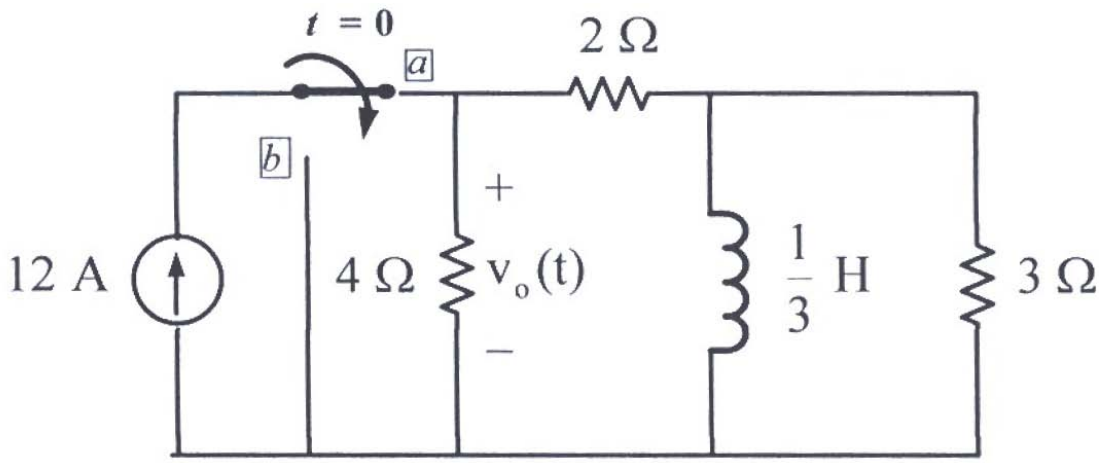
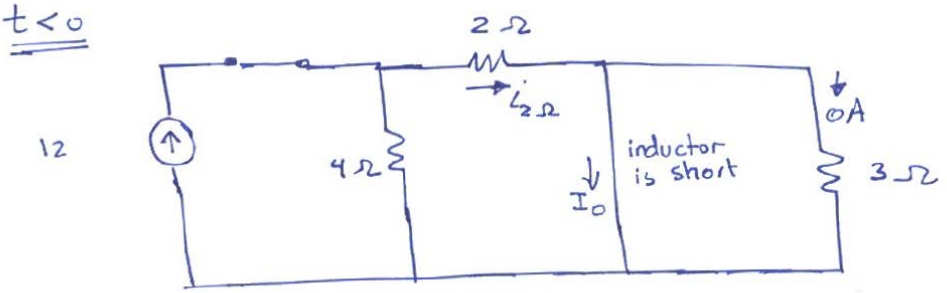
EE 202-02-Winter 2013(132)
QZ5

Sec	Ser	ID	Name **KEY**



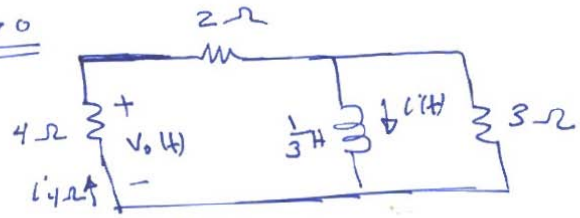
For the circuit shown above, the switch was in position a for a long time Find $V_o(t)$ for all time ?

$t<0$



$i_{2\Omega} \quad I_o = i_{2\Omega} = \frac{4}{4+2}\,12 = 8\ A$

$t>0$



$R_{eq} = 3 \,||\, (2+4) = 3 \,||\, 6 = 2\Omega$ (resistor seen by the indictor)

$\tau = \frac{L}{R_{eq}} = \frac{\frac{1}{3}}{2} = \frac{1}{6}\ s$

$\Rightarrow i(t) = 8\,e^{-6t} \quad t \geq 0$

$\Rightarrow i_{4\Omega}(t) = \frac{3}{(2+4)+3}\, i(t) = \frac{3}{9}\, 8e^{-6t} = \frac{8}{3} e^{-6t}$

$\Rightarrow v_{4\Omega}(t) = 4\, i_{4\Omega}(t) = \frac{32}{3} e^{-6t}\ V \quad t > 0^+$