EE 202-Fall 2012(121)

HW6

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Due 15/12/2012

Q1 In the circuit of Fig. 1, determine:

(a) $i_R(0^+)$, $i_L(0^+)$, and $i_C(0^+)$,

(b) $di_R(0^+)/dt$, $di_L(0^+)/dt$, and $di_C(0^+)/dt$,

(c) $i_R(\infty)$, $i_L(\infty)$, and $i_C(\infty)$.

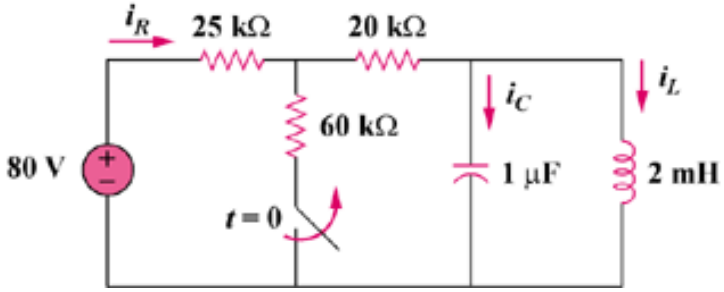

Figure 1

Q2 In the circuit in Fig. 2, calculate $i_o(t)$ and $v_o(t)$ for $t > 0$.

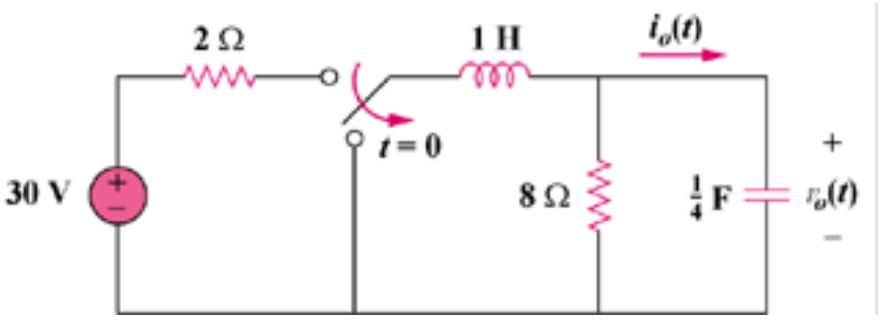

Figure 2

Q3 The responses of a series *RLC* circuit are

$$v_C(t) = 30 - 10e^{-20t} + 30e^{-10t} \text{ V}$$

$$i_L(t) = 40e^{-20t} - 60e^{-10t} \text{ mA}$$

where v_C and i_L are the capacitor voltage and inductor current, respectively. Determine the values of R, L, and C.

Q4 Find $v(t)$ for $t > 0$ in the circuit in Fig. 3.

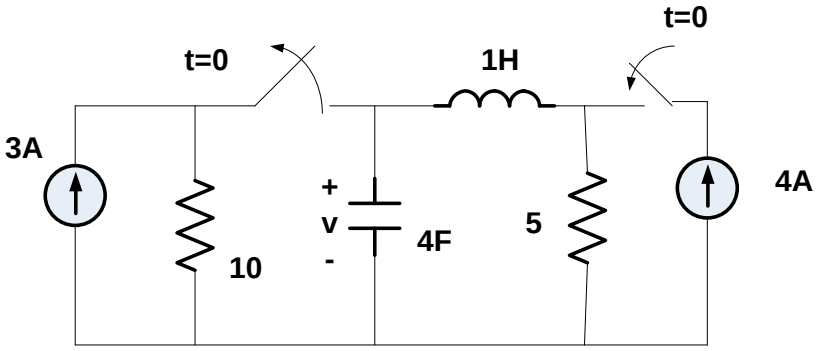

Figure 3

Q5 Given the circuit in Fig. 4, find $i(t)$ and $v(t)$ for $t > 0$.

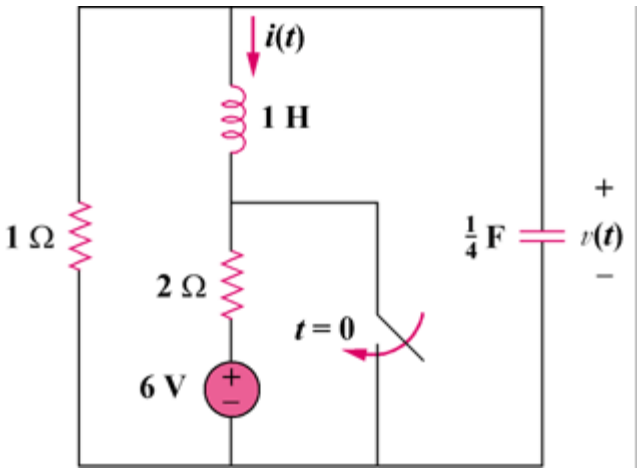

Figure 4