

CH8 Homework Problems

- 8.8 Suppose the capacitor in the circuit shown in Fig. 8.1 has a value of $0.1 \mu\text{F}$ and an initial voltage of 24 V . The initial current in the inductor is zero. The resulting voltage response for $t \geq 0$ is

$$v(t) = -8e^{-250t} + 32e^{-1000t} \text{ V.}$$

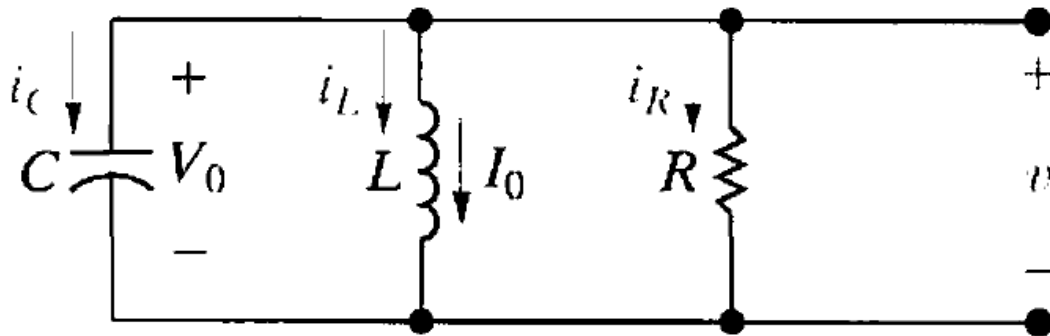
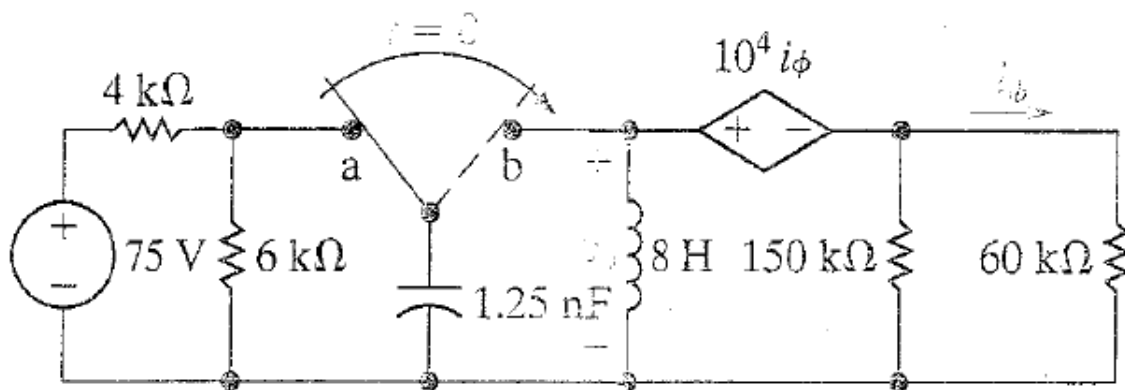


Figure 8.1 ▲ A circuit used to illustrate the natural response of a parallel RLC circuit.

- 8.21 The switch in the circuit of Fig. P8.21 has been in position a for a long time. At $t = 0$ the switch moves instantaneously to position b. Find $v_o(t)$ for $t \geq 0$.

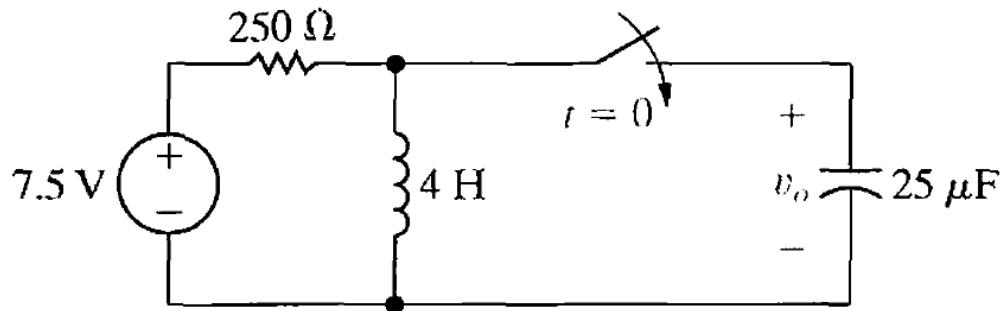
Figure P8.21



PSPICE
MULTSIM

8.36 The switch in the circuit in Fig. P8.36 has been open a long time before closing at $t = 0$. At the time the switch closes, the capacitor has no stored energy. Find v_o for $t \geq 0$.

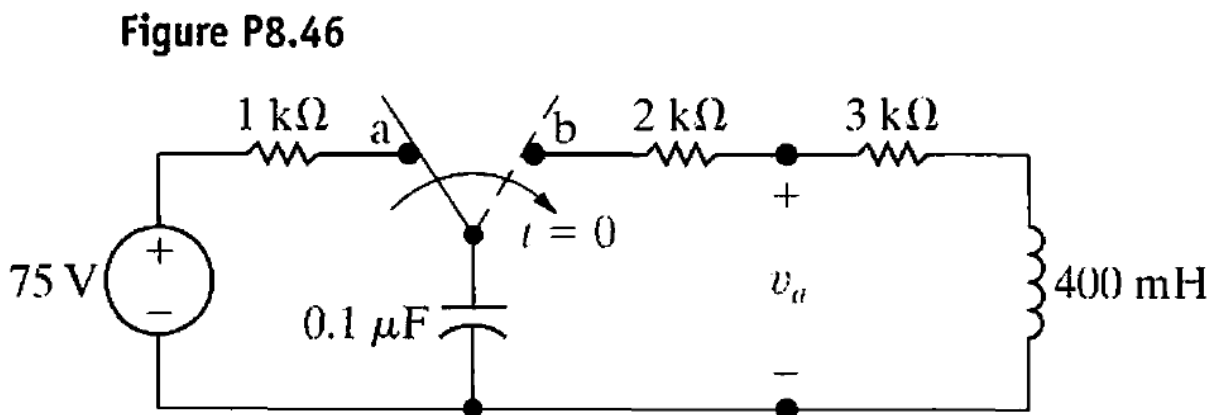
Figure P8.36



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8.46 The switch in the circuit in Fig. P8.46 on the next page has been in position a for a long time. At $t = 0$, the switch moves instantaneously to position b.

- What is the initial value of v_a ?
- What is the initial value of dv_a/dt ?
- What is the numerical expression for $v_a(t)$ for $t \geq 0$?



8.48 The switch in the circuit shown in Fig. P8.48 has been closed for a long time. The switch opens at $t = 0$. Find $v_o(t)$ for $t \geq 0$.

Figure P8.48

