

**HW8:**            **Name:** \_\_\_\_\_

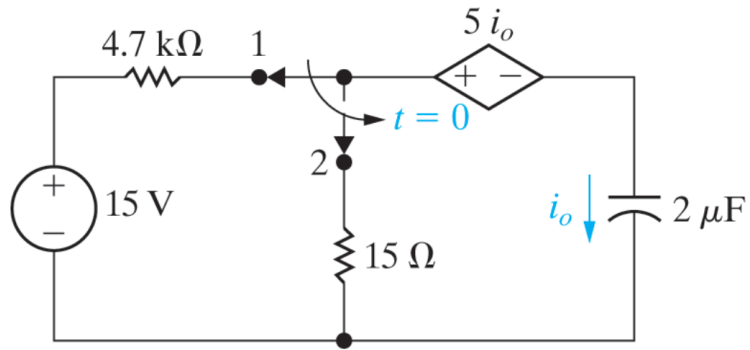
**Lab Section:** \_\_\_\_\_

7.29 PSPICE  
MULTISIM The switch in the circuit in Fig. P 7.29 has been in position 1 for a long time before moving to position 2 at  $t = 0$ . Find  $i_o(t)$  for  $t \geq 0^+$ .

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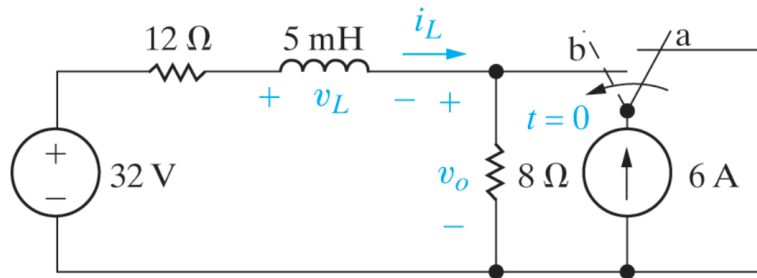
Figure P7.29

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7.38 PSPICE  
MULTISIM The switch in the circuit shown in Fig. P 7.38 has been in position a for a long time before moving to position b at  $t = 0$ .

Figure P7.38



- Find the numerical expressions for  $i_L(t)$  and  $v_o(t)$  for  $t \geq 0$ .
- Find the numerical values of  $v_L(0^+)$  and  $v_o(0^+)$ .

- 7.46 PSPICE  
MULTISIM The switch in the circuit in Fig. P 7.46 has been in position 1 for a long time. At  $t = 0$  it moves instantaneously to position 2. How many milliseconds after the switch moves does  $v_o$  equal 100 V?

Figure P7.46

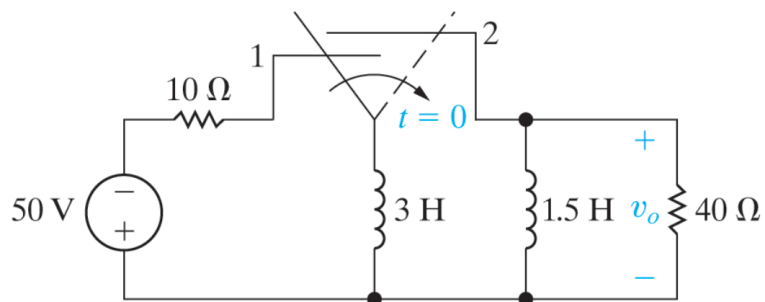
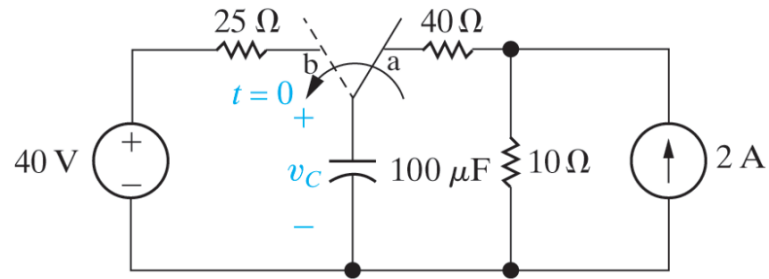


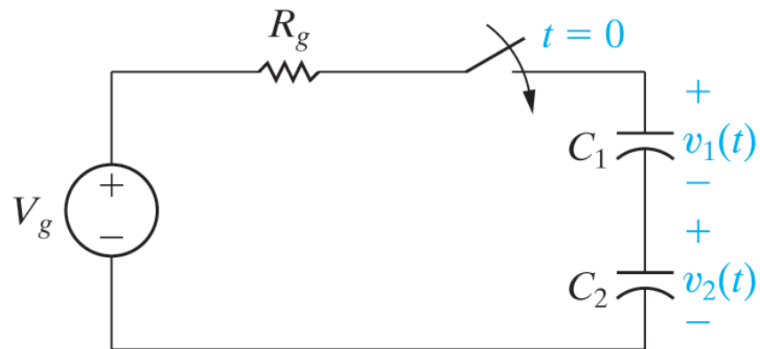
Figure P7.53



- a. The switch in the circuit in Fig. P 7.53 has been in position a for a long time. At  $t = 0$ , the switch moves instantaneously to position b and stays there. Find the initial and final values of the capacitor voltage, the time constant for  $t \geq 0$ , and the expression for the capacitor voltage for  $t \geq 0$ .
- b. Now suppose the switch in the circuit in Fig. P 7.53 has been in position b for a long time. At  $t = 0$ , the switch moves instantaneously to position a and stays there. Find the initial and final values of the capacitor voltage, the time constant for  $t \geq 0$ , and the expression for the capacitor voltage for  $t \geq 0$ .

- 7.66 There is no energy stored in the capacitors  $C_1$  and  $C_2$  at the time the switch is closed in the circuit seen in Fig. P 7.66.

Figure P7.66



- Derive the expressions for  $v_1(t)$  and  $v_2(t)$  for  $t \geq 0$ .
- Use the expressions derived in (a) to find  $v_1(\infty)$  and  $v_2(\infty)$ .

7.73

PSPICE  
MULTISIM

The action of the two switches in the circuit seen in Fig. P 7.73 is as follows. For  $t < 0$ , switch 1 is in position a and switch 2 is open. This state has existed for a long time. At  $t = 0$ , switch 1 moves instantaneously from position a to position b, while switch 2 remains open. Ten milliseconds after switch 1 operates, switch 2 closes, remains closed for 10 ms and then opens. Find  $v_o$  25 ms after switch 1 moves to position b.

Figure P7.73

