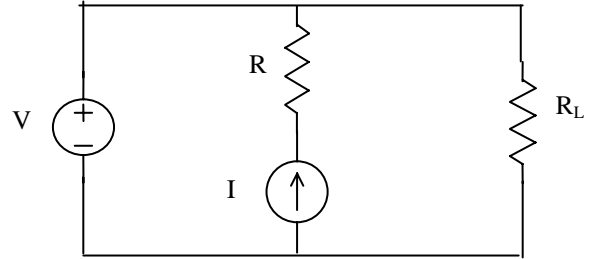


THESE TEN PROBLEMS HAD A LOW (<60%) CORRECT RESPONSE RATE ON THE MID-TERMS AND WILL BE REVISITED IN MODIFIED FORM IN THE FINAL EXAM

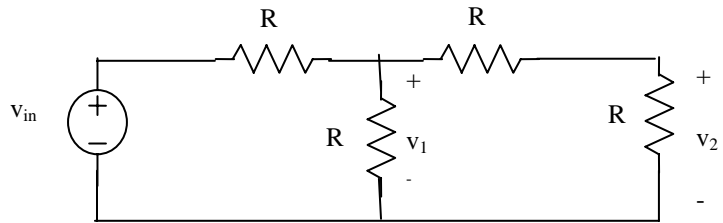
1. Which ckt elements have **no effect** on the power consumed by the resistor R_L ?

- (a) V (only)
- (b) R (only)
- (c) I (only)
- (d) I and R
- (e) None of the above are true



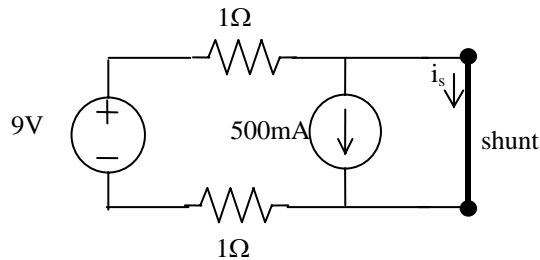
2. Which of the following is true about the ckt shown?

- (a) $v_1 = 0.5v_{in}$
- (b) $v_2 = 0.5v_1$
- (c) Both (a) and (b) are true
- (d) None are true



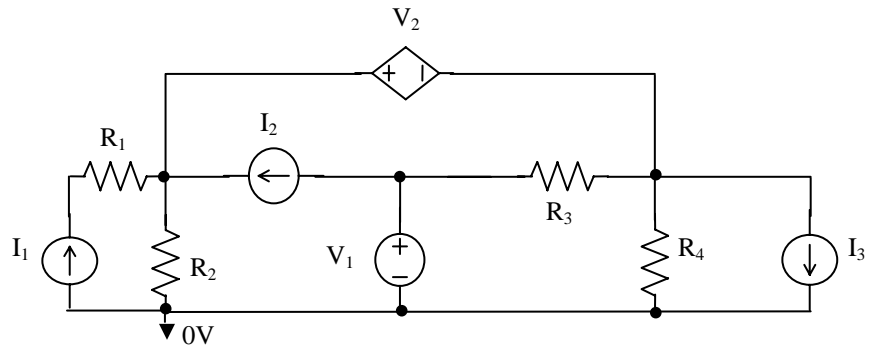
3. How much current (i_s) would flow through the shunt wire (short ckt) in this ckt?

- (a) -500mA
- (b) 4.5A
- (c) 4 A
- (d) 5A
- (e) None of these



4. Identify one element that has no effect on the node voltages in this ckt.

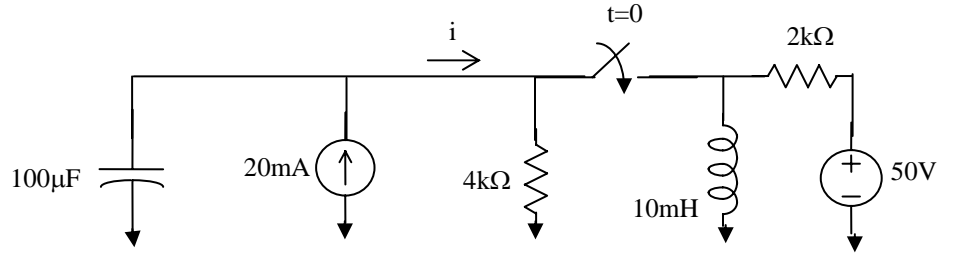
- (a) I_1
- (b) I_2
- (c) R_1
- (d) R_2
- (e) V_2

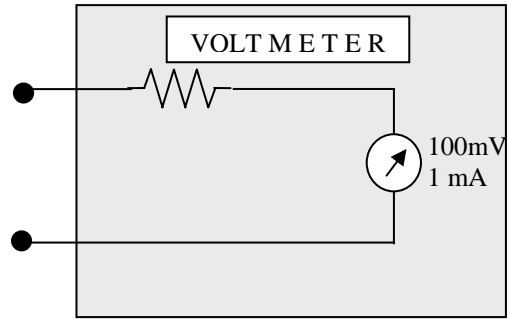


4/27/2005

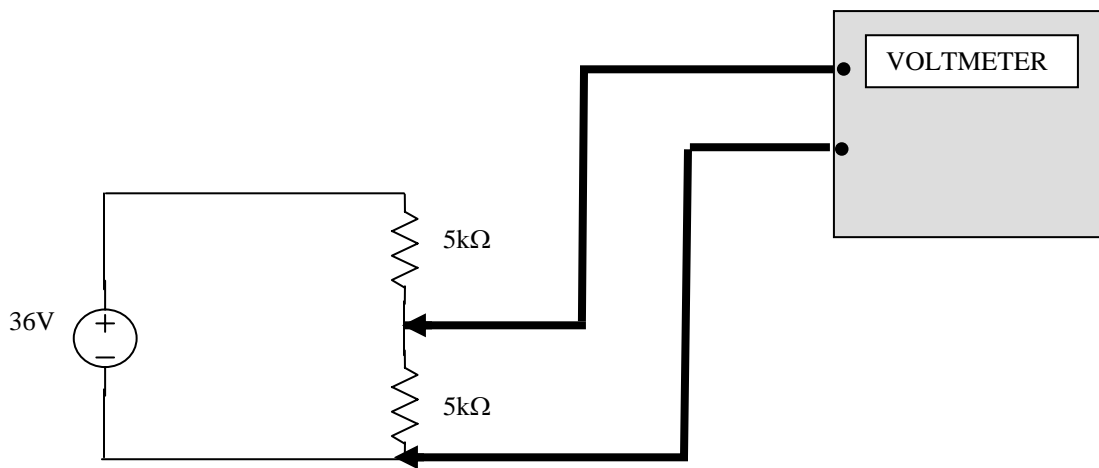
5. What is the value of $i(0^+)$? (The ckt is in steady-state at $t=0^-$.)

- (a) $i(0^+) = 15 \text{ mA}$
- (b) $i(0^+) = 40 \text{ mA}$
- (c) $i(0^+) = 60 \text{ mA}$
- (d) $i(0^+) = 20 \text{ mA}$
- (e) None of these





6. The above voltmeter was designed for a full-scale reading of 20V. The voltmeter is used (as shown below) to measure the voltage across one of the $5k\Omega$ resistors. What is the value of the voltmeter reading?

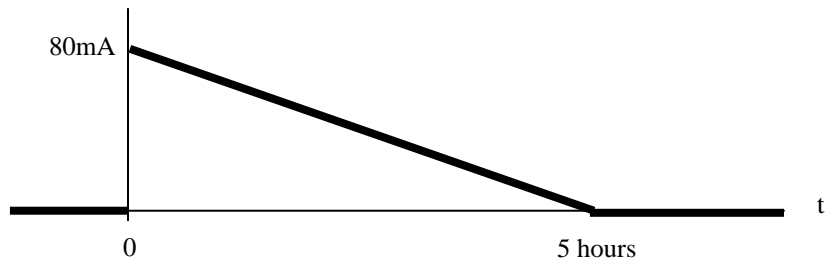


- (a) 18V (b) 17.2V (c) 16.67V (d) 16V (e) None of these

4/27/2005

7. The graph shows the current supplied by a capacitor as the capacitor slowly discharges over an interval of 5 hours. How much charge was stored on the capacitor at $t=0$?

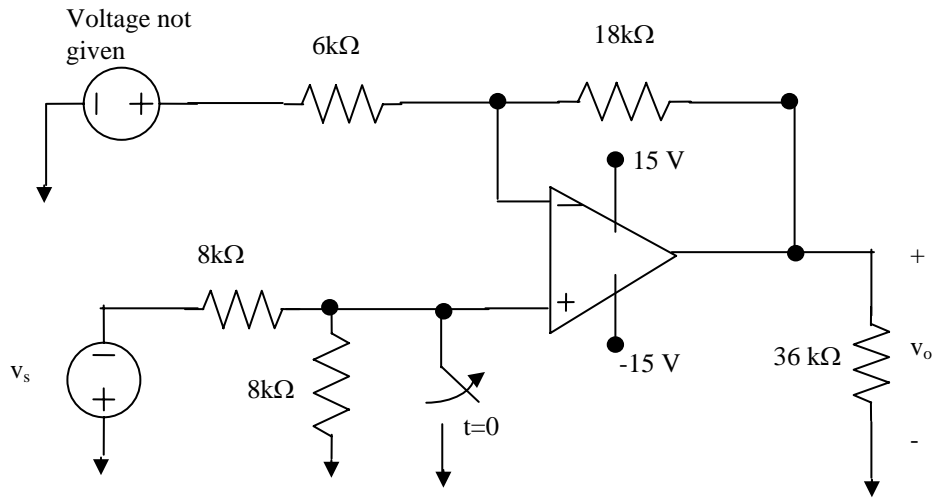
- (a) 500C (b) 660C(c) 680C (d) 720C(e) None of these



8. Opening the switch causes v_o to drop by 4V. Find the value of v_s .

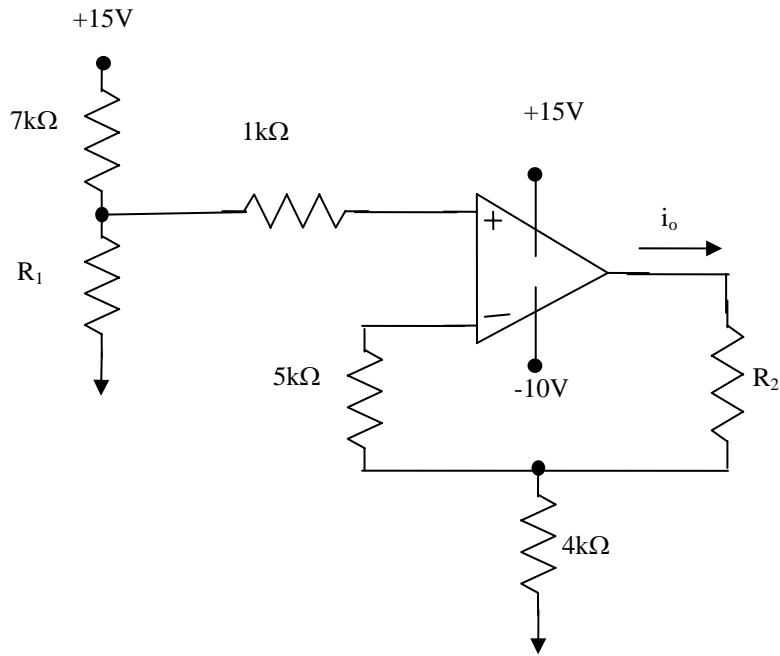
(Assume op-amp is ideal and not saturated.)

- (a) 2V (b) 1V (c) -2V (d) 4V (e) None of these



9. Which combination of R_1 and R_2 gives $i_o = 2\text{mA}$ in this ideal op-amp ckt?

- (a) $R_1 = 7\text{k}\Omega$, $R_2 = 3.5\text{k}\Omega$
- (b) $R_1 = 8\text{k}\Omega$, $R_2 = 3\text{k}\Omega$
- (c) $R_1 = 8\text{k}\Omega$, $R_2 = 4\text{k}\Omega$
- (d) $R_1 = 9\text{k}\Omega$, $R_2 = 4\text{k}\Omega$
- (e) None of these



4/27/2005

10. The ckt is in steady-state at $t=0^-$. Find the value of the current i_o at $t = 25\text{ms}$.

- (a) 1.82mA (b) 2.59mA (c) 3.11mA (d) 3.48mA (e) None of these

