ECE 301
Fall Semester, 2006
HW Set #5

Due: Sept 28, 2006 Name _____
wlg Print(last, first)

circle: 2:10 section 3:40 section

Use Engineering Paper. Work only on one side of the paper. Use this sheet as your cover sheet, placed on top of your work and stapled in the top left-hand corner. Number the problems at the top of the page, in the center of the sheet. **Do neat work**. **Underline your answers. Show how you got your equations**. **Be sure to show how you got your answers.**

Each problem counts 15 points.

(1) You are given the circuit of Figure 1.

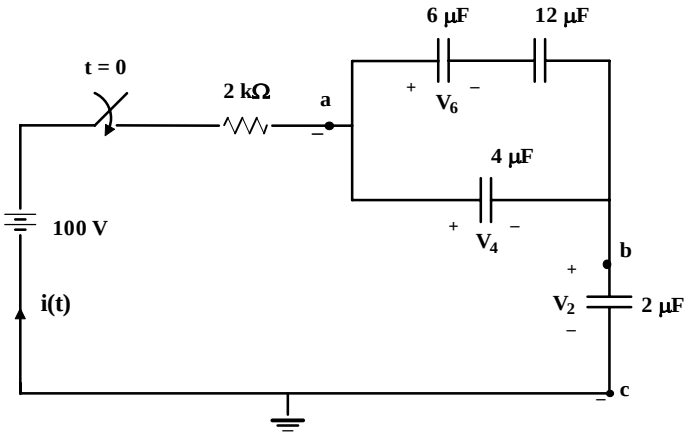

Figure 1: Circuit for problem 1.

(a) Find the steady state voltages, V_2, V_4 and V_6. Ans: 80 V, 20 V and 13.33 V.
(b) Find the value of $i(\infty)$, that is, the steady state value of i(t). Ans: on your own
(c) Find the value of $i(0^+)$. Explain your answer. Ans: 50 mA

(2) For the circuit of Figure 2.
(a) Determine the steady state voltage, v_x. Ans: On your own
(b) Determine $v_x(0^+)$. On your own.
(c) Determine $i_2(0^+)$ (explain your answer). Ans: 0

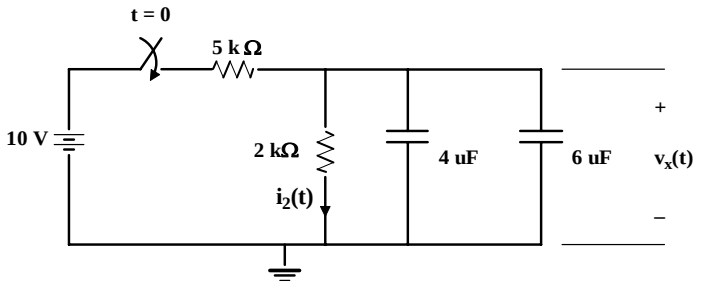

Figure 2: Circuit for problem 2.

(3) You are given the circuit of Figure 3. It is known that $C_{eq} = 10\,\mu F$.

(a) Determine q_{eq}, q_1, and q_2 in steady state. Ans: $500\,\mu C$, $200\,\mu C$, $300\,\mu C$ 500 uC.

(b) Determine V_x in steady state. Ans: 20 V

(c) Determine $i_2(\infty)$. On your own

(d) Determine $i(0^+)$. Explain your answer. Ans: 10 mA

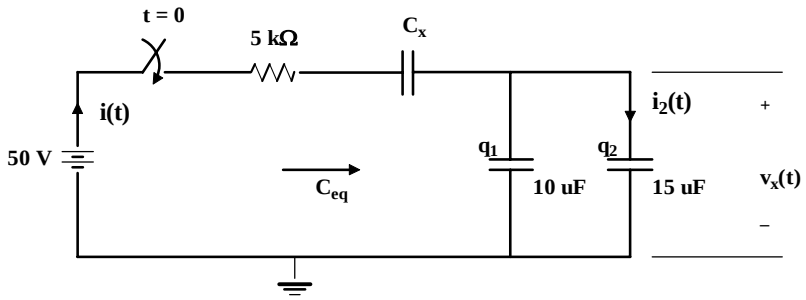

Figure 3: Circuit for problem 3.

(4) You are given the circuit of Figure 4.

(a) Find $v_o(t)$ for $t = 0^+$. Ans: 6 V

(b) Find $v_o(\infty)$. Ans: On your own

(c) Find $i(0^+)$. 1 mA

(d) Find $i_a(0^+)$ Ans: On your own

(c) Find $i(\infty)$. Ans: On your own

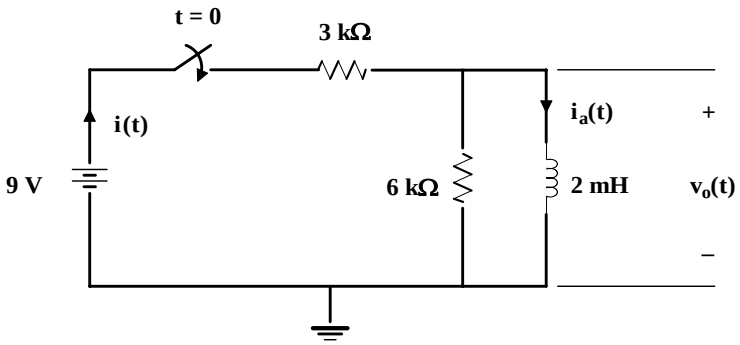

Figure 4: Circuit for problem 4.