

Name: EECE 210

April 25, 2007

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(EECE 210) ELECTRIC CIRCUITS & ELECTRONICS

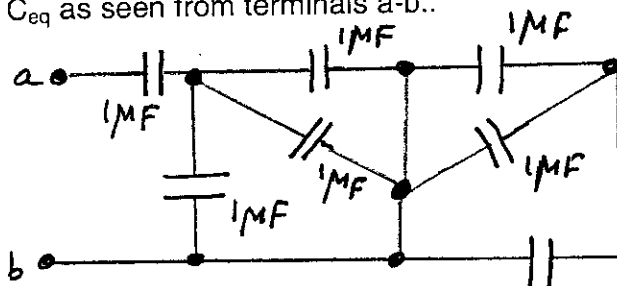
CLOSED BOOK (1 ½ HRS)

Programmable Calculators are not allowed
Provide your answers on the computer's card only
Return the computer's card attached to the question sheet
Mark with a pencil your name and your ID-No
Use pencil for marking your answers
When using eraser, be sure that you have erased well

TEST ID 2000

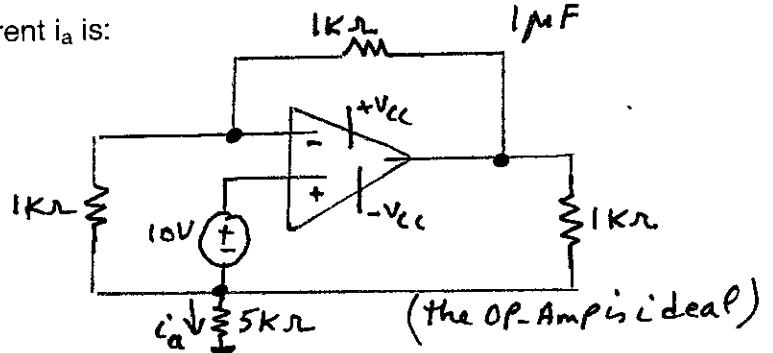
1. For the circuit shown, find C_{eq} as seen from terminals a-b..

- a. $2/7 \mu F$
- b. $5/3 \mu F$
- c. $3/4 \mu F$
- d. $1/4 \mu F$
- e. None of the above



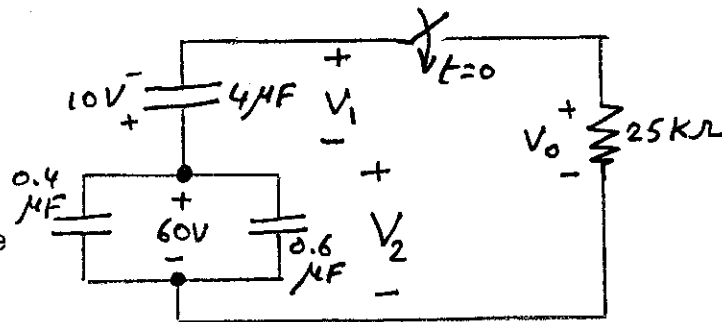
2. In the circuit shown, the current i_a is:

- a. 5.8 A
- b. 17.5A
- c. 20A
- d. 30 A
- e. None of the above



3. In circuit shown, the switch has been open for a long time. It closes at $t=0$. Find $V_o(t)$ for $t \geq 0$.

- a. $50 e^{-50t} V, t \geq 0$
- b. $600 e^{-50t} V, t \geq 0$
- c. $-70 e^{-50t} V, t \geq 0$
- d. $-50 e^{-50t} V, t \geq 0$
- e. None of the above

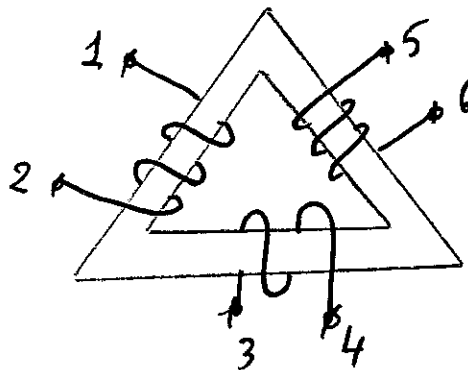


4. In circuit shown in problem 3, find $V_1(t)$ for $t \geq 0$.

- a. $10 e^{-50t} - 10, t \geq 0$
- b. $20 e^{-50t} - 60, t \geq 0$
- c. $10 e^{-50t} - 20, t \geq 0$
- d. $30 e^{-50t} - 70, t \geq 0$
- e. None of the above

5. In the circuit shown, indicate the dots location that is wrong:

- a. 4 and 2
- b. 4 and 1
- c. 3 and 6
- d. 1 and 3
- e. None of the above



6. The current in a 2H inductor is:

$$i = 25 \text{ A at } t \leq 0$$

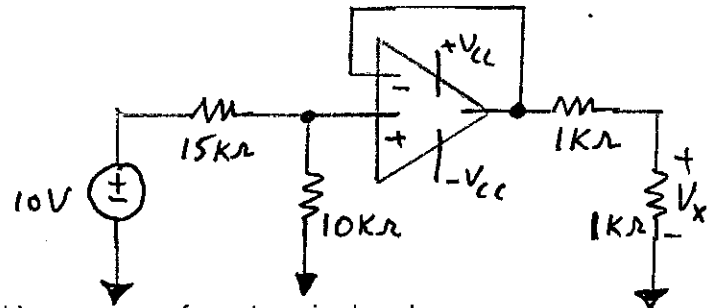
$$i = (B_1 \cos 5t + B_2 \sin 5t) e^{-11t} \text{ A, } t \geq 0$$

Find B_1 and B_2 if the voltage across L is 100V at $t=0$ (i.e. $V_L(0) = 100\text{V}$)

- a. $B_1 = 25$ and $B_2 = 15$
- b. $B_1 = 30$ and $B_2 = 10$
- c. $B_1 = 20$ and $B_2 = 20$
- d. $B_1 = 12.4$ and $B_2 = 26.3$
- e. None of the above

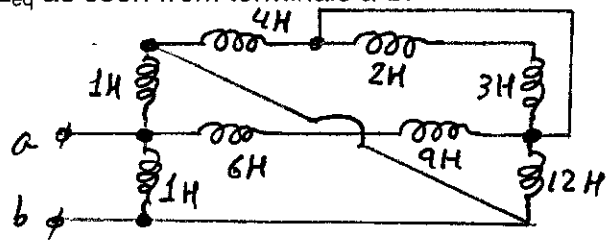
7. For the circuit shown find V_x assuming ideal Op-Amp.

- a. 4V
- b. 3V
- c. 2V
- d. 1V
- e. None of the above



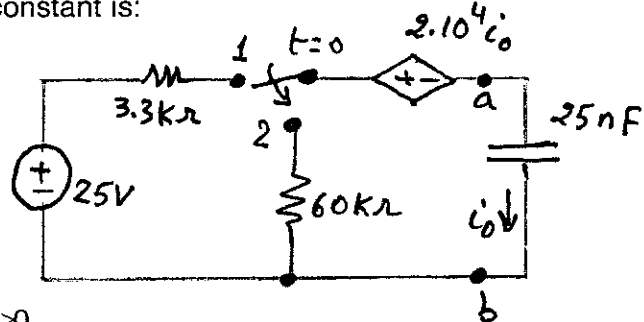
8. For the circuit shown, find L_{eq} as seen from terminals a-b.

- a. 0.486 H
- b. 0.113 H
- c. 0.739 H
- d. 0.235 H
- e. None of the above



9. In circuit shown, the switch has been at position 1 for a long time. It moves to position 2 at $t=0$. The time constant is:

- a. 20 ms
- b. 4 ms
- c. 2 ms
- d. 40 ms
- e. None of the above

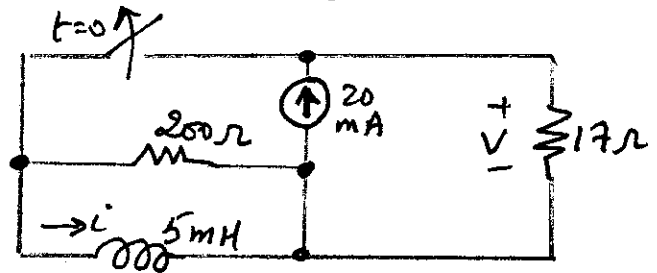


10. In problem 9, find $i_0(t)$ for $t \geq 0$.

- a. $-175 e^{-50t} \mu\text{A, } t \geq 0$
- b. $-415.2 e^{-250t} \mu\text{A, } t \geq 0$
- c. $-77.84 e^{-25t} \mu\text{A, } t \geq 0$
- d. $-312.5 e^{-500t} \mu\text{A, } t \geq 0$
- e. None of the above

11. In circuit shown, the switch has been closed for a long time. It opens at $t=0$. Find $i(0^+)$.

- a. 40 mA
- b. 30 mA
- c. 20 mA
- d. 10 mA
- e. None of the above



12. In circuit shown in problem 11, Calculate $V(0^+)$.

- a. 0.15 V
- b. 0.34 V
- c. 0.62 V
- d. 0.27 V
- e. None of the above

13. In circuit shown, the switch has been closed for a long time. It opens at $t=0$. Find $V(0^+)$.

- a. 5V
- b. 4V
- c. 3V
- d. 2V
- e. None of the above

