

Name: \_\_\_\_\_ (please print)

Signature: \_\_\_\_\_

ECE 2201 – Quiz #2  
September 27, 2018

**Keep this quiz closed and face up  
until you are told to begin.**

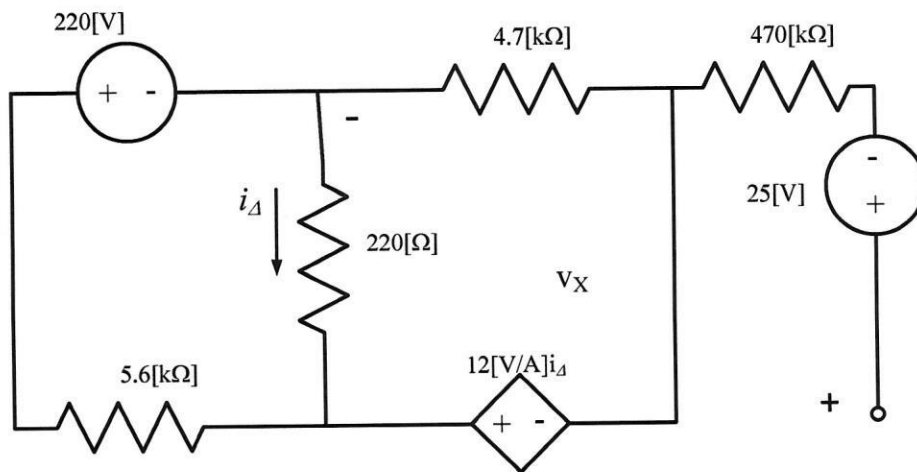
1. This quiz is closed book, closed notes. You may use one 8.5" x 11" crib sheet, or its equivalent.
2. Show all work on these pages. Show all work necessary to complete the problem. A solution without the appropriate work shown will receive no credit. A solution which is not given in a reasonable order will lose credit.
3. Show all units in solutions, intermediate results, and figures. Units in the quiz will be included between square brackets.
4. If the grader has difficulty following your work because it is messy or disorganized, you will lose credit.
5. Do not use red ink. Do not use red pencil.
6. You will have 30 minutes to work on this quiz.

\_\_\_\_\_ /25

Room for extra work

In the circuit below, do the following.

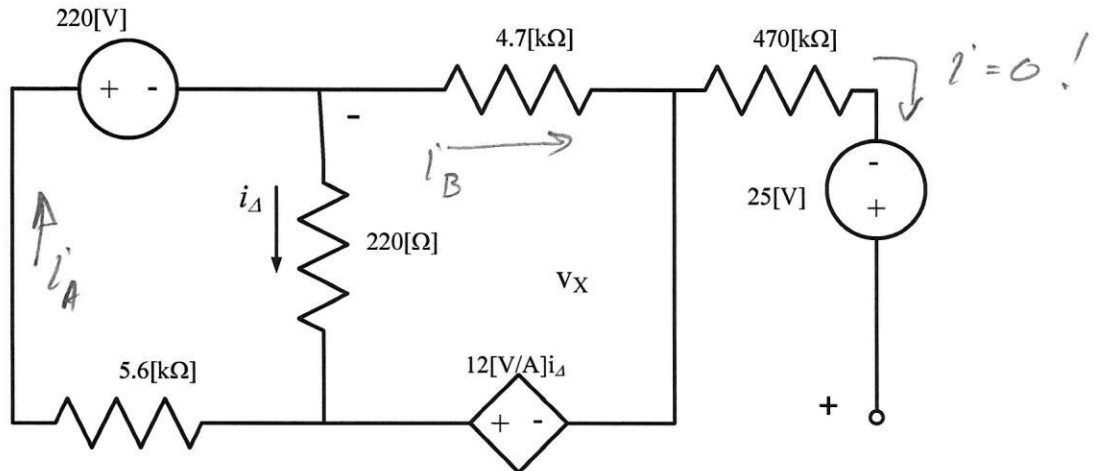
- i) Find the power delivered by the dependent voltage source.
- ii) Find  $v_x$ .



Room for extra work

In the circuit below, do the following.

- i) Find the power delivered by the dependent voltage source.
- ii) Find  $v_x$ .



If we have the branch currents  $i_A, i_\Delta, i_B$ , we can get whatever else we need.

$$\text{KCL} \quad i_A - i_\Delta - i_B = 0$$

$$\text{KVL} \quad 220 + 220i_\Delta + 5600i_A = 0$$

$$\text{KVL} \quad 4700i_B - 12i_\Delta - 220i_\Delta = 0$$

$$\text{Solving gives } i_A = -37.868 \text{ [mA]}$$

$$i_B = -1.781 \text{ [mA]}$$

$$i_\Delta = -36.087 \text{ [mA]}$$

$$\text{a) } P_{\text{del by } 12i_\Delta} = 12i_\Delta \cdot i_B = 0.771 \text{ [mW]} //$$

$$\text{b) } \text{KVL: } v_x + 4700i_B + 470000(0) - 25 = 0$$

$$v_x = 33.37 \text{ [V]} //$$

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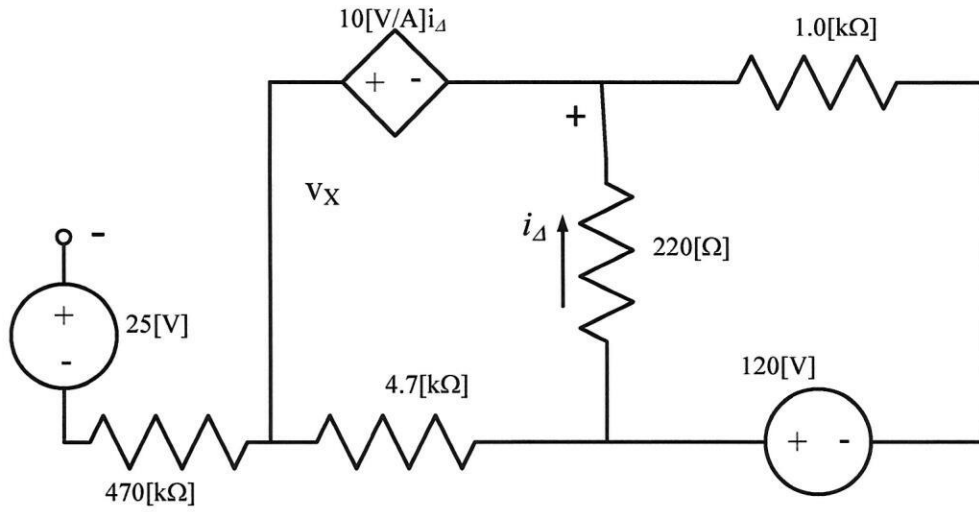
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Room for extra work

In the circuit below, do the following.

- i) Find the power delivered by the dependent voltage source.
- ii) Find  $v_X$ .

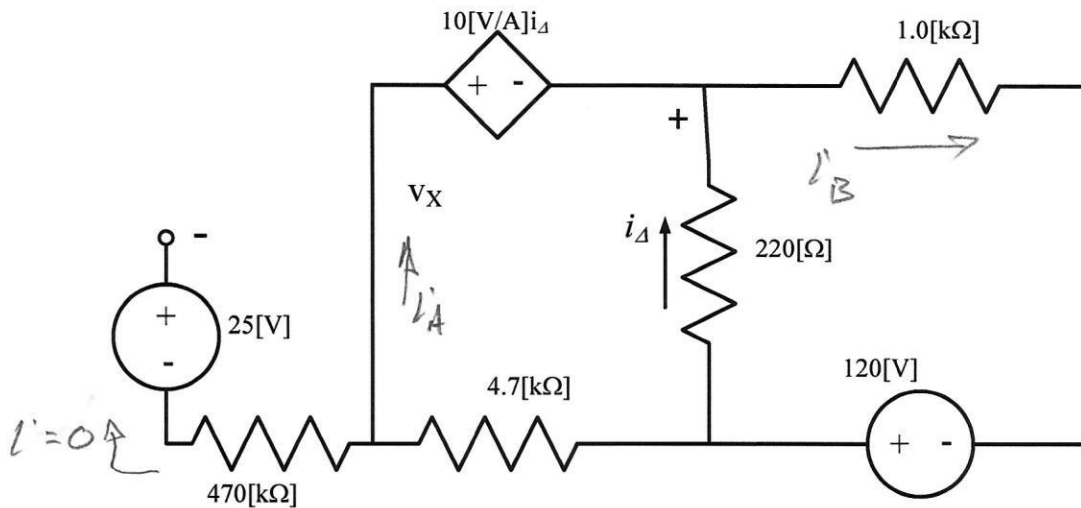




Room for extra work

In the circuit below, do the following.

- i) Find the power delivered by the dependent voltage source.
- ii) Find  $v_x$ .



If we have the branch currents  $i_A$ ,  $i_\Delta$ ,  $i_B$ , we can get whatever else we need.

$$\text{KCL: } i_A + i_\Delta - i_B = 0$$

$$\text{KVL: } 10 i_\Delta - 220 i_\Delta + 4700 i_A = 0$$

$$\text{KVL: } 1000 i_B - 120 + 220 i_\Delta = 0$$

$$\text{Solving gives: } i_A = 4.240 \text{ [mA]} \quad i_B = 99.125 \text{ [mA]}$$

$$i_\Delta = 94.886 \text{ [mA]}$$

$$a) P_{\text{del by } 10 i_\Delta} = -10 i_\Delta i_A = -4.023 \text{ [mW]} //$$

$$b) v_x + 25 + 4700(0) - 4700 i_A + 220 i_\Delta = 0$$

$$v_x = -25.95 \text{ [V]} //$$