

Name: _____ (please print)

Signature: _____

ECE 2201 – Quiz #2
June 16, 2021
Online

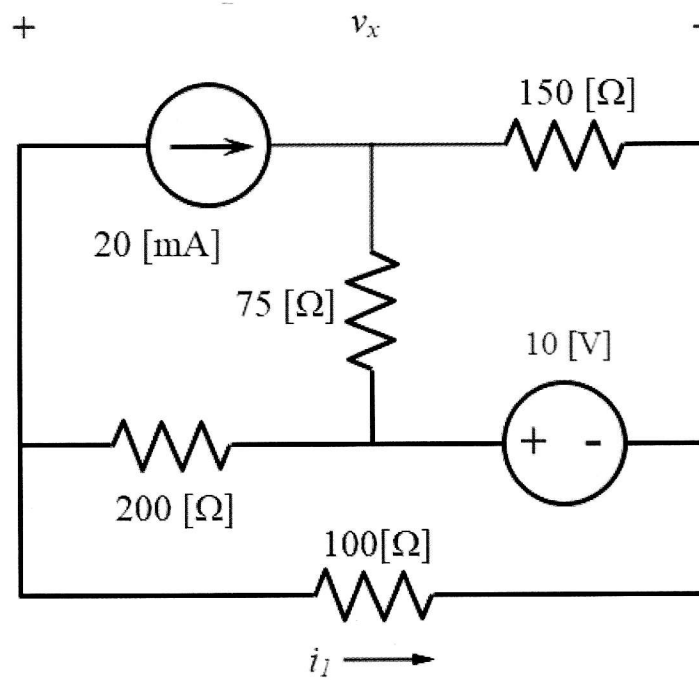
1. This quiz is open book, open notes. You may not work with another person or try to obtain the answer to the quiz online.
2. Show all work on these pages. Show all work necessary to complete the problem. A solution without the appropriate work shown will receive no credit. A solution which is not given 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, i_l is known to be 0.02 [A].

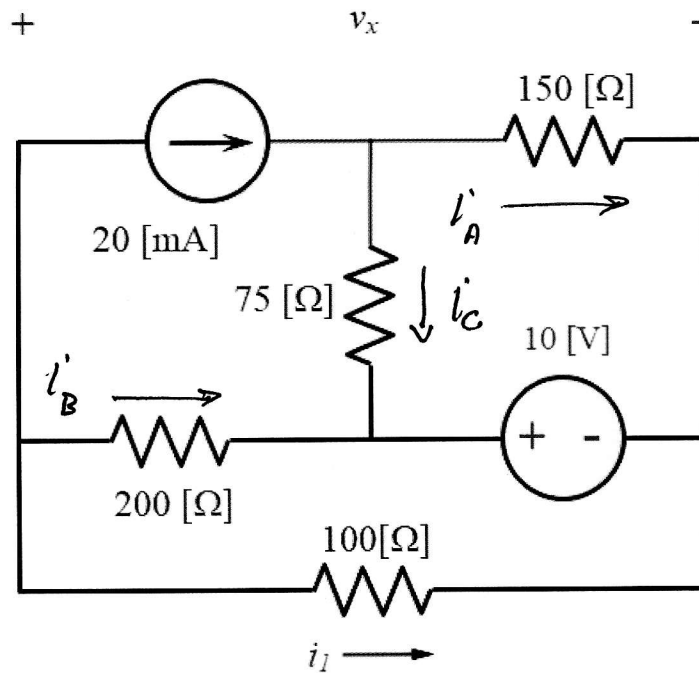
- Label currents in each of the resistors.
- Find v_x .



Room for extra work

In the circuit below, i_l is known to be 0.02 [A].

- Label currents in each of the resistors.
- Find v_x .



a) See diagram.

b) There is an easy solution and a less easy solution.

Easy:

$$\begin{aligned} \text{KVL} \quad v_x - 100 i'_l &= 0 \\ v_x &= 100 i'_l = 2 \text{ [V]} \end{aligned}$$

Less Easy:

$$\left. \begin{aligned} \text{KCL:} \quad i'_A + i'_C &= 0.02 \\ \text{KVL:} \quad 150 i'_A - 10 - 75 i'_C &= 0 \end{aligned} \right\} \begin{aligned} i'_A &= 0.0511 \text{ [A]} \\ i'_C &= -0.0311 \text{ [A]} \end{aligned}$$

Handwritten mark

Room for extra work

$$i_B' = -0.02 - i_1' = -0.0400 \text{ [A]}$$

We can now use two other KVL's to find v_x :

$$v_x - 150 i_A' + 75 i_C' - 200 i_B' = 0$$

-or-

$$v_x - 10 - 200 i_B' = 0$$

We will get $v_x = 2 \text{ [V]}$ in either case.

We could also use another KVL to find the voltage across the current source, we leave that solution to the interested student!