Name: _____ (please print)

Signature: _____

ECE 2202 – Practice
September 3, 2020

Online

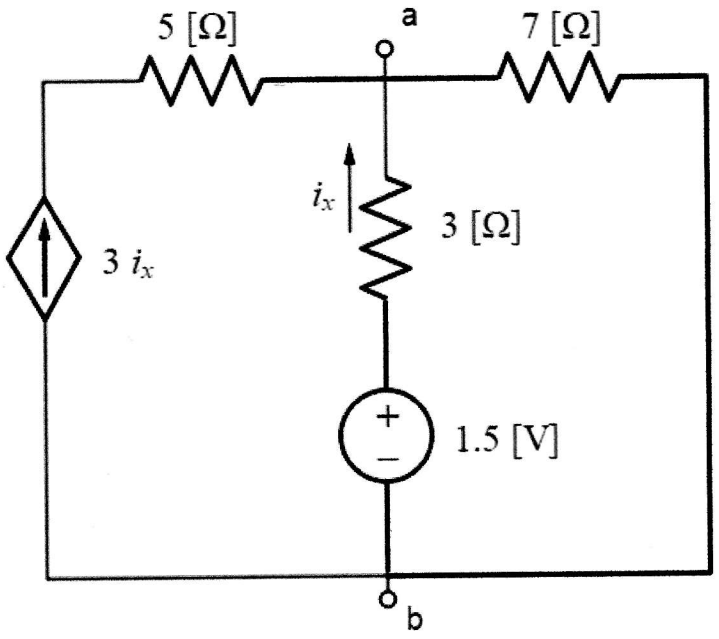
This is a practice quiz, and will not count for credit. I have included all the instructions so that you can see what the real quizzes will look like.

1. This quiz is open book, open notes.
2. 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 20 minutes to work on this quiz, and 15 minutes to download/print, scan and submit.

_____/25

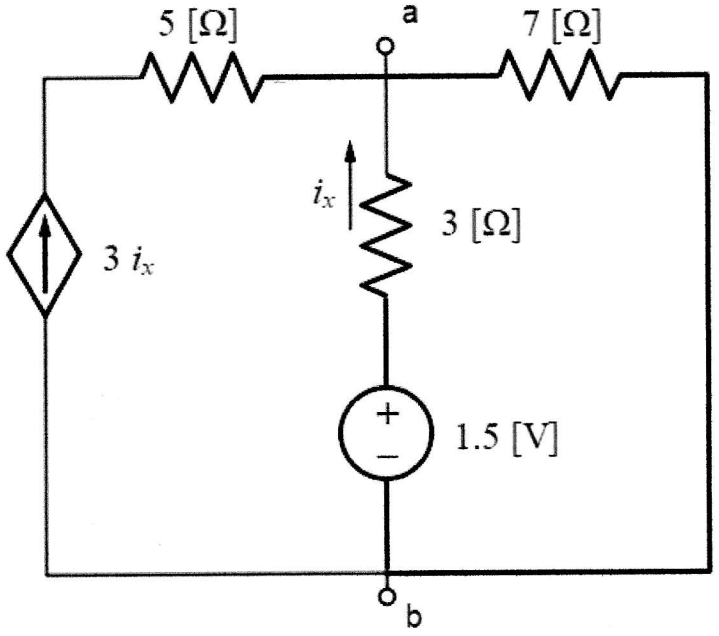
Room for extra work

In the circuit below, find the Thevenin equivalent of the circuit at terminals a, b. Include a diagram showing your equivalent circuit with the terminals clearly labeled.

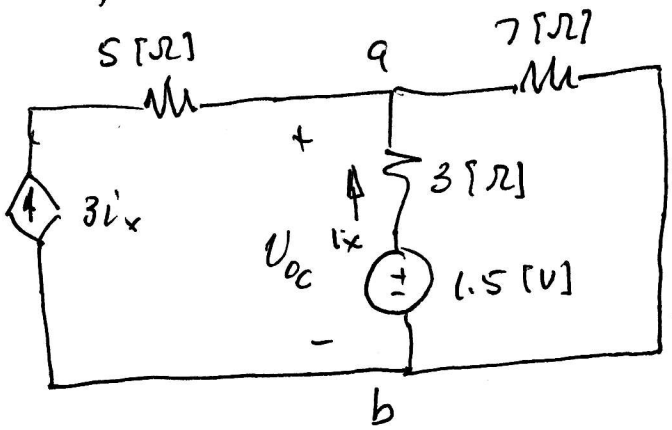


Room for extra work

In the circuit below, find the Thevenin equivalent of the circuit at terminals a, b. Include a diagram showing your equivalent circuit with the terminals clearly labeled.



We need two of V_{oc}, i'_{sc}, test source. We will do all three, just to be sure we got it! But you get full credit for any two (done correctly, of course).



$$\frac{V_{oc}}{7} - 3i'_x + \frac{V_{oc} - 1.5}{3} = 0$$

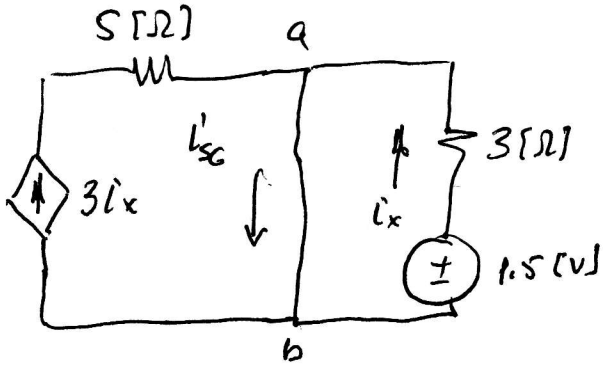
$$i'_x = -\frac{V_{oc} - 1.5}{3}$$

$$i'_x = 48.38\ [mA]$$

$$V_{oc} = V_{TH} = 1.355\ [V]$$

(5 [Ω] is in series w/ a current source and could have been ignored.)

Room for extra work



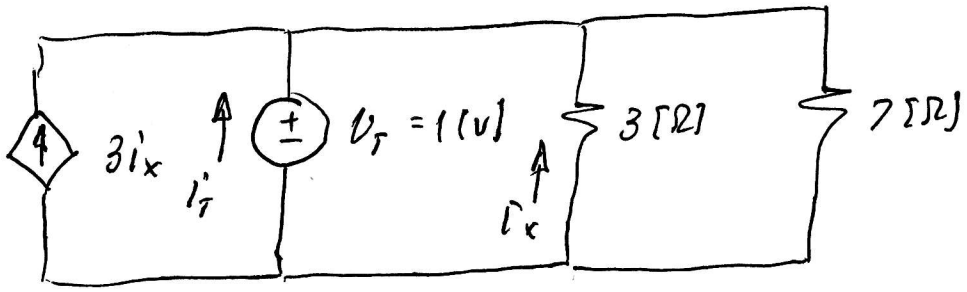
7 [Ω] is shorted and can be ignored.

$i'_{sc} = 4i'_x$

$i'_x = \frac{1.5}{3} = 0.5\ [A] \Rightarrow i'_{sc} = 2\ [A]$

So $R_{TH} = \frac{V_{oc}}{i'_{sc}} = \frac{1.355}{2} = 0.677\ [\Omega]$

Let's check with test source: (we left out 5 [Ω] this time)



$-i'_T - 4i_x + \frac{1}{7} = 0 \qquad i'_x = -\frac{1}{3} \Rightarrow i'_T = 1.476\ [A]$

$\therefore R_{TH} = \frac{1}{i'_T} = 0.677\ [\Omega]$ ✓