University of Portland
School of Engineering

EE 261-Electrical Circuits-3 cr. hrs.
Fall 2012

Midterm Exam # 2

(Monday, October 29, 2012)
(Closed Book Exam, Two Formula Sheets Allowed)
(Total Time: 55 minutes)

Name:_____ ☺

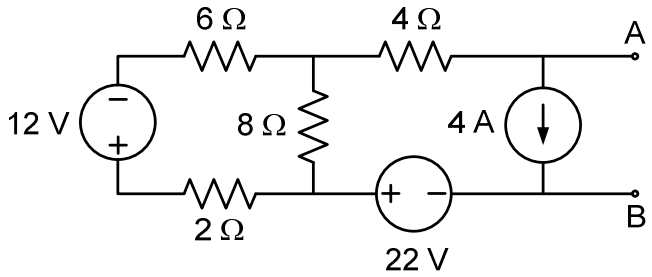
Signature:_____ ☺

"An honest mind possesses a kingdom."
Lucius Annaeus Seneca (4B.C.–65A.D.)

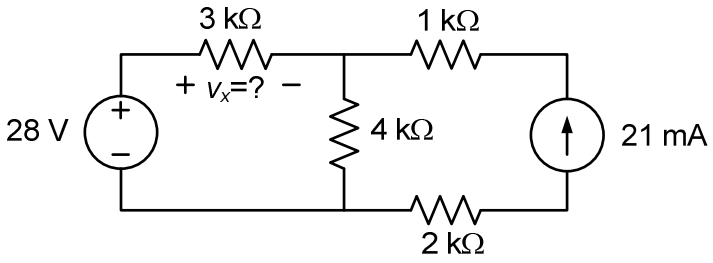
"Honest people are the true winners of the universe."
Anonymous

NOTE: On all the problems, please show your work clearly, and provide the appropriate units for your answers. Also mark on the schematic to show any current or voltage that you define in your solution.

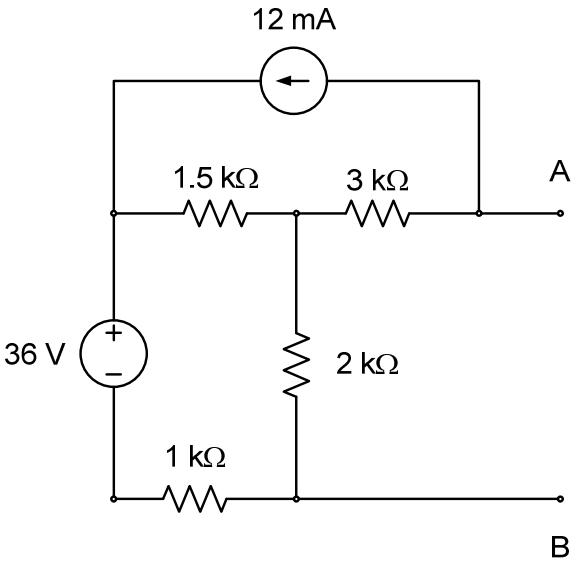
1. (25 points) For the electric circuit shown, find (a) the Thevenin equivalent circuit; and (b) the Norton equivalent circuit seen between terminals A and B. Sketch each equivalent circuit with the appropriate values provided. Please show your work step by step.



2. (25 Points) In the electric circuit shown, determine the value of the voltage v_x across the 3 kΩ resistor. (Again, please show your work clearly and provide brief justifications for the steps you take. Provide units.)



3. (25 Points) Consider the electric circuit shown. Determine the external load resistor R_L to be connected between A-B terminals so that it receives maximum power from this circuit. What is the maximum power delivered to the load resistor chosen? Please provide your work step by step with justifications. <u>Don't forget to calculate the power value!</u>



4. (25 Points) For the op-amp circuit shown, determine the values of voltage v_o and current i_o. Please show your work step by step. Provide the correct unit for each answer.