ECE 2210/00 Exam 1 given: Fall 19

(The space between problems has been removed.)

Closed Book, Closed notes, Calculators OK, Show all work to receive credit

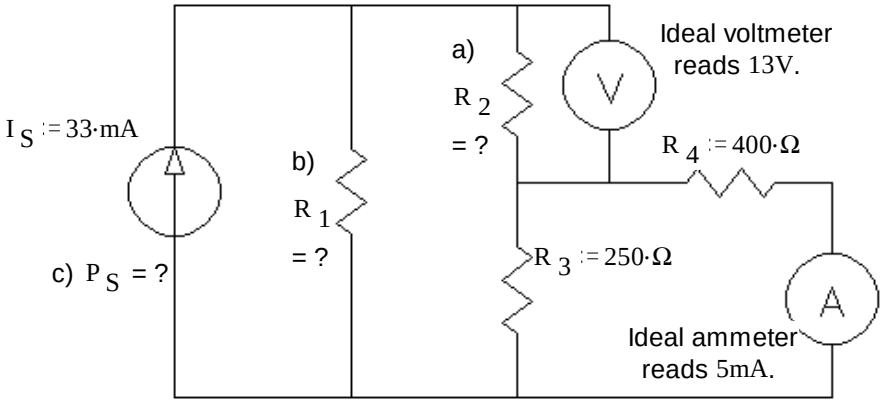
Circle answers, show units, and round off reasonably

1. (25 pts) Find the values below. Show your work, which may appear right on the schematic.

   a) R_2 = ?

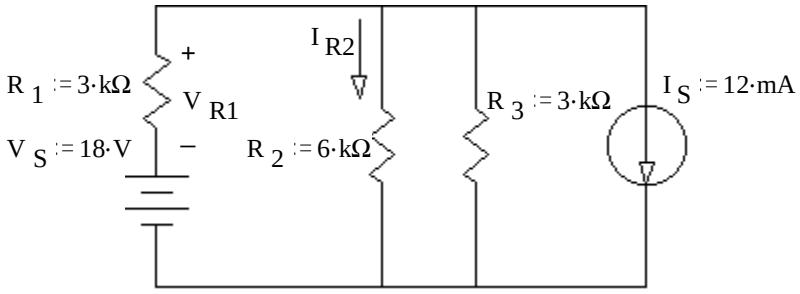
   b) R_1 = ?

   c) P_S = ?

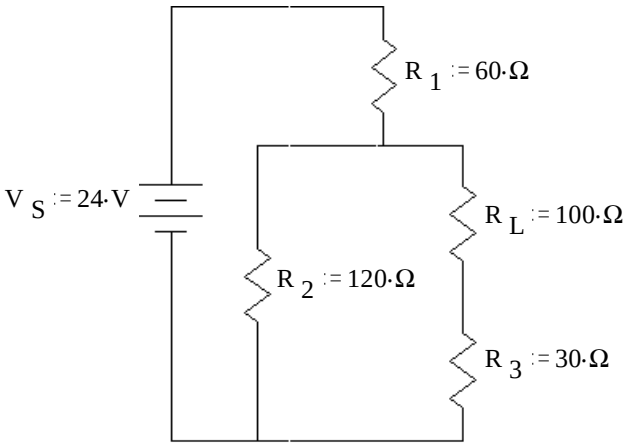


2. (25 pts) a) Use the method of superposition to find I_{R2} and V_{R1}. Be sure to clearly show and **circle** your intermediate results.

   I_{R2} = ? V_{R1} = ?

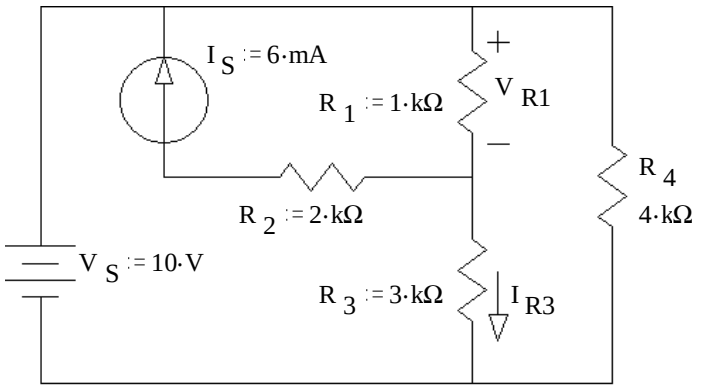


3. (25 pts) a) Find and draw the Thévenin equivalent of the circuit shown. The load resistor is R_L.
   b) Find and draw the Norton equivalent of the same circuit.
   c) Find the load current using your Thévenin equivalent circuit.
   d) Choose a different value of R_L so as to maximize the power dissipated in R_L. Find that maximum power, P_L.



4. (25 pts) Use nodal analysis to find V_{R1} and I_{R3} .

   You **MUST** show all the steps of nodal analysis work to get credit, including drawing appropriate symbols and labels on the circuit shown.



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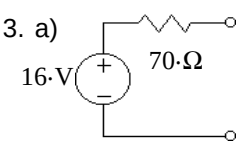
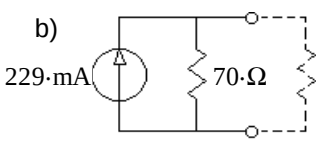
Answers

1. a) 1·kΩ b) 750·Ω c) 495·mW 2. 1.2·mA – 2.4·mA = −1.2 •mA - 10.8·V – 14.4·V = −25.2 •V

3. a)



b)



c) 94.1·mA d) 914·mW

4. 7·V 1·mA