ECE 2210/00 Exam 1 given: Fall 18

(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

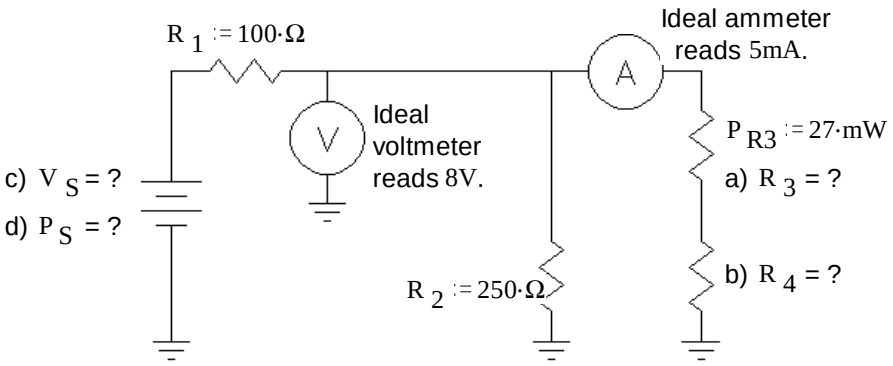
1. (24 pts) Find the values below. Show your work. Feel free to show answers & work right on the schematic.

   a) R_3 = ?

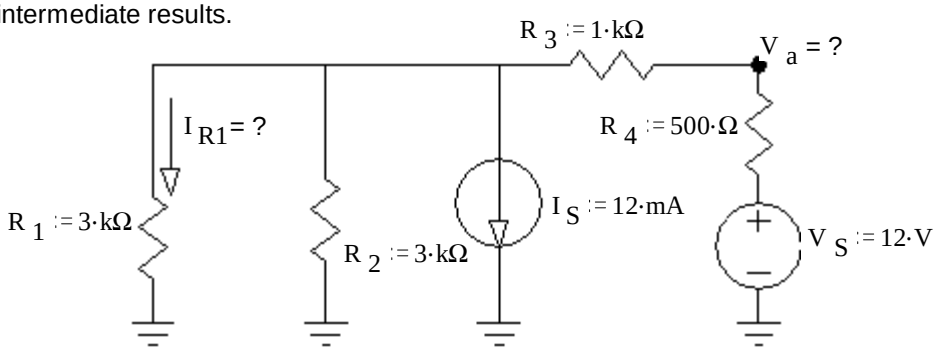
   b) R_4 = ?

   c) V_S = ?

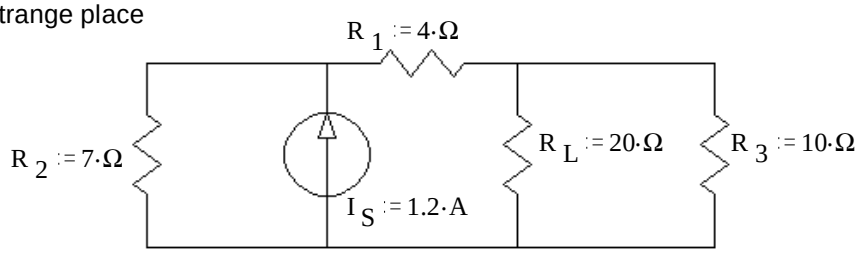
   d) P_S = ?



2. (27 pts) Use the method of superposition to find the nodal voltage, V_a and the current through R_1 (I_{R1}). Be sure to clearly show and **circle** your intermediate results.



3. (23 pts) a) Find and draw the Thévenin equivalent of the circuit shown. The load resistor is R_L. Be careful, it is in a strange place

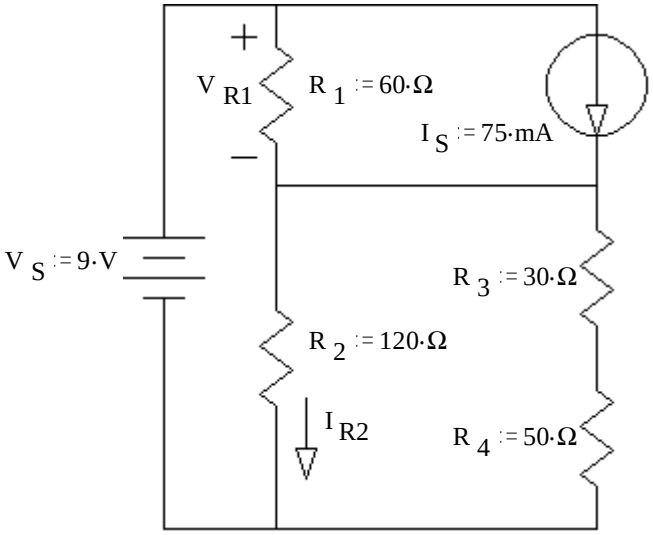


b) Find the load current using your Thévenin equivalent circuit.

c) Select a load resistor to maximize the power delivered to the load and find that maximum power. P_{RLmax} = ?

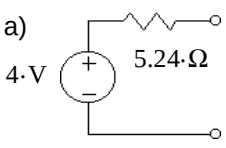
4. (26 pts) Use nodal analysis to find V_{R1} and I_{R2}.

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



Answers

1. a) 1080·Ω b) 520·Ω c) 11.7·V d) 433·mW

3. a) 

b) 158.5·mA
c) 5.24·Ω 764·mW

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2. 7·V - 1·mA

4. a) 3.8·V b) 43.33·mA