

# ECE 2210/00 Exam 1 given: Fall 20

(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

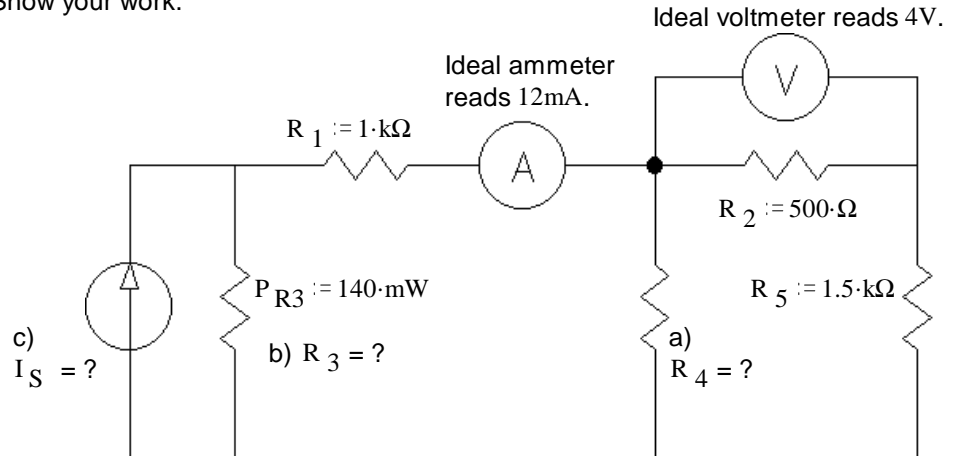
1. (26 pts) Find the resistor values. Show your work.

Note: feel free to show answers & work right on the schematic

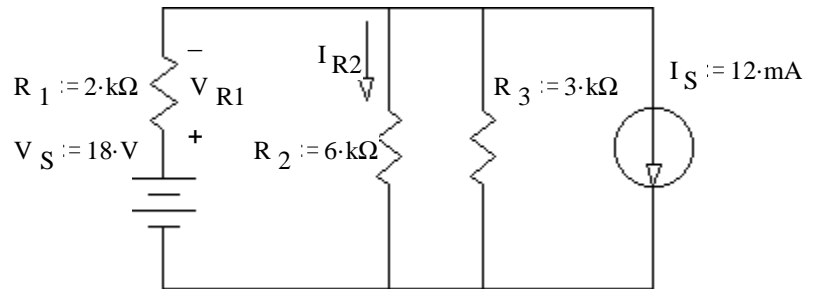
a)  $R_4 = ?$

b)  $R_3 = ?$

c)  $I_S = ?$

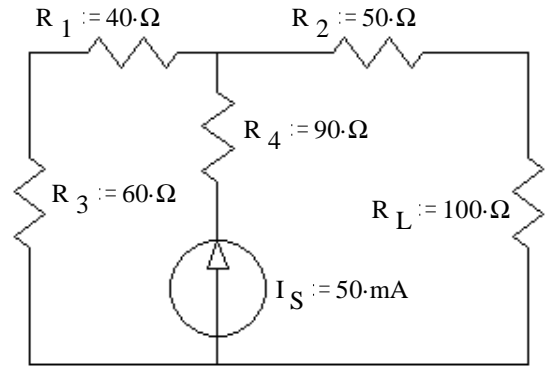


2. (24 pts) a) Use the method of superposition to find  $V_{R1}$  and  $I_{R2}$ . Be sure to clearly show and **circle** your intermediate results.

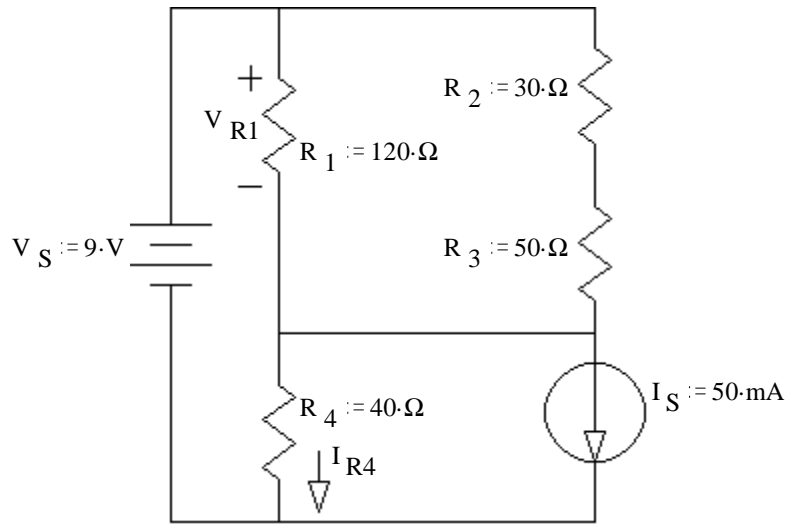


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3. (24 pts) a) Find and draw the Thévenin equivalent of the circuit shown. The load resistor is  $R_L$ .  
 b) Find and draw the Norton equivalent of the same circuit.  
 c) Find the load voltage using your Norton equivalent circuit.  
 d) Choose a different value of  $R_L$  so as to maximize the power dissipated in  $R_L$ . Find that maximum power

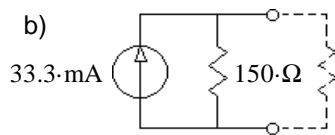
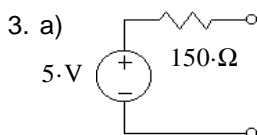


4. (26 pts) Use nodal analysis to find  $V_{R1}$  and  $I_{R4}$ .  
 You **MUST** show all the steps of nodal analysis work to get credit, including drawing appropriate symbols and labels on the circuit shown.



**Answers**

1. a)  $4 \cdot k\Omega$     b)  $5.6 \cdot k\Omega$     c)  $17 \cdot mA$



2.  $21 \cdot V$      $-0.5 \cdot mA$

- c)  $2 \cdot V$   
 d)  $150 \cdot \Omega$   
 $41.7 \cdot mW$

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4. a)  $6 \cdot V$     b)  $75 \cdot mA$