

# ECE 2210/00 Exam 1 given: Fall 21

(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.

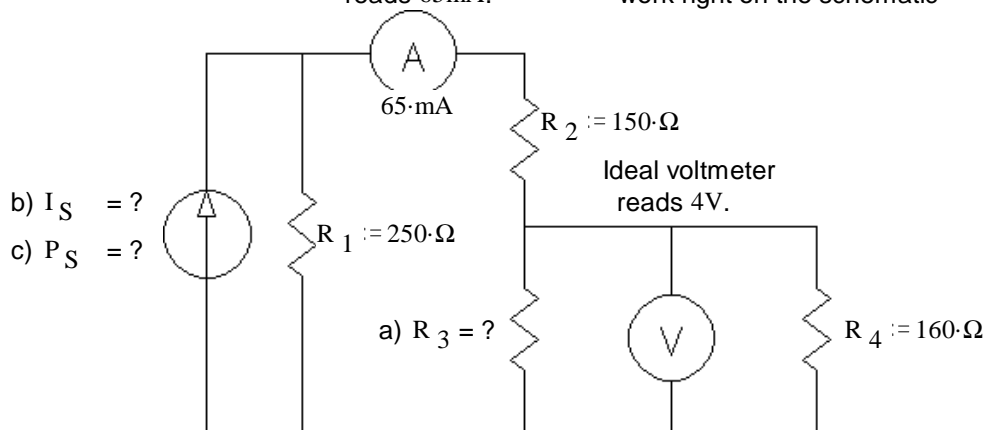
a)  $R_3 = ?$

b)  $I_S = ?$

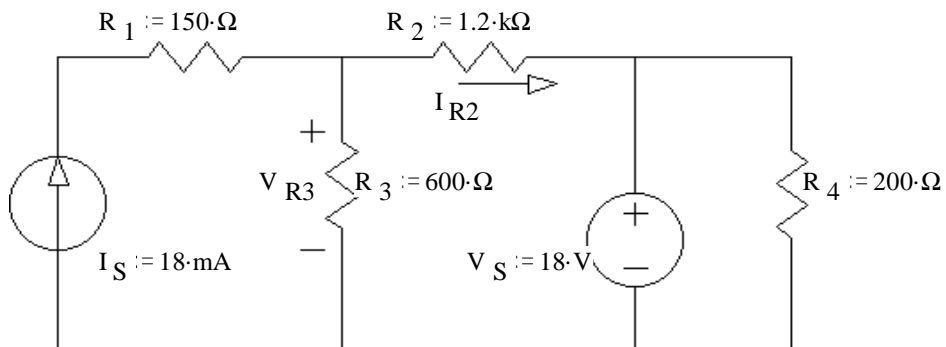
c)  $P_S = ?$

Ideal ammeter  
reads 65mA.

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

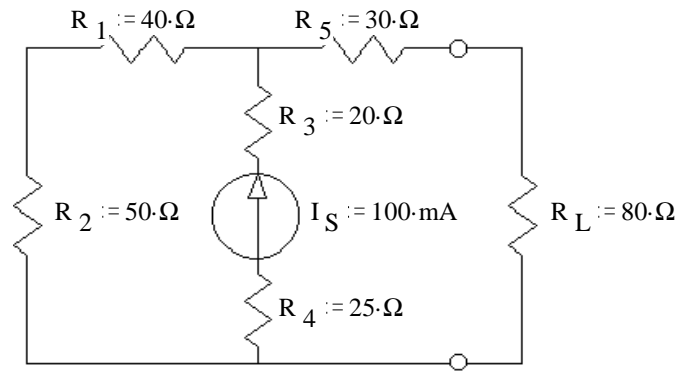


2. (25 pts) Use the method of superposition to find the voltage across  $R_3$  ( $V_{R3}$ ) and the current through  $R_2$  ( $I_{R2}$ ).  
Be sure to clearly show and **circle** your intermediate results.



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3. (24 pts) a) Find and draw the Thévenin equivalent of the circuit shown. The load resistor is  $R_L$ .



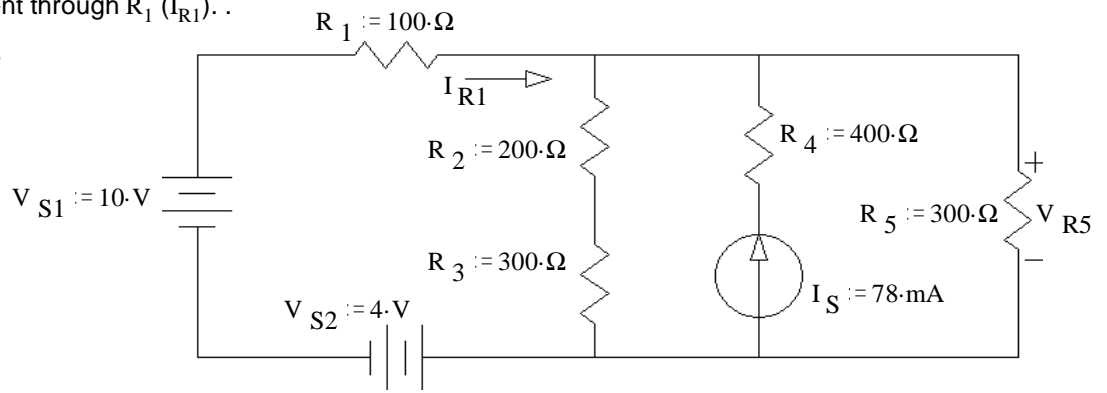
- b) Find and draw the Norton equivalent of the same circuit.

- c) Find power dissipated in the load ( $R_L$ ).

- d) What value of load resistor ( $R_L$ ) would you choose if you wanted to maximize the power dissipation in the load.

4. (26 pts) Use nodal analysis to find the voltage across  $R_5$  ( $V_{R5}$ ) and the current through  $R_1$  ( $I_{R1}$ ).

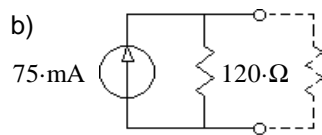
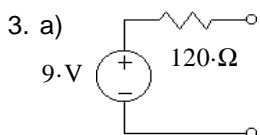
You **MUST** show all the steps of nodal analysis work to get credit, including drawing appropriate symbols and labels on the circuit shown.



**Answers**

1. a)  $100\cdot\Omega$     b)  $120\cdot\text{mA}$     c)  $1.65\cdot\text{W}$

2.  $13.2\cdot\text{V}$      $-4\cdot\text{mA}$



c)  $162\cdot\text{mW}$   
d)  $120\cdot\Omega$

4. a)  $9\cdot\text{V}$     b)  $-30\cdot\text{mA}$