ECE 2210/00 Exam 1 given: Spring 11

Suggestion: Do the last problem first. It's easy.

1. (26 pts) Find the values below. Show your work.
   Note: feel free to show answers & work right on the schematic
   a) $R_3 =$ ?
   b) $P_{R4} =$ ?
   c) $R_5 =$ ?

2. (22 pts) Use the method of superposition to find $V_{R4}$ and $I_{R1}$.
   Be sure to redraw the circuit as needed and to clearly show and circle your intermediate results.

3. (21 pts) a) Find and draw the Thévenin equivalent of the circuit shown. The load resistor is $R_L$.
   b) Find the load current using your Thévenin equivalent circuit.
   c) Choose a different value of $R_L$ so as to maximize the power dissipated in $R_L$. Find that maximum power.
4. (23 pts) Use nodal analysis to find the voltage $V_Y$ and the current $I_X$.

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

![Circuit Diagram]

5. (8 pts) For the waveform shown, find the phase angle in degrees.

![Waveform]

Answers

1. a) $125\,\Omega$  
   b) 200-mW  
   c) 400-Ω

2. 9.75 V  
   1.5-mA

3. a) $4.5\,\text{V}$  
   b) $200-\Omega$  
   c) 15-mA

4. 14-V

5. $-54^\circ$

ECE 2210 / 00 Midterm #1  Arn Stolp

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Name _________________________________

Scores:

Pages 1&2 _________ of a possible  48  pts

Pages 3&4 _________ of a possible  44  pts

Page  5 _________ of a possible  8  pts

Total _________ of a possible 100  pts