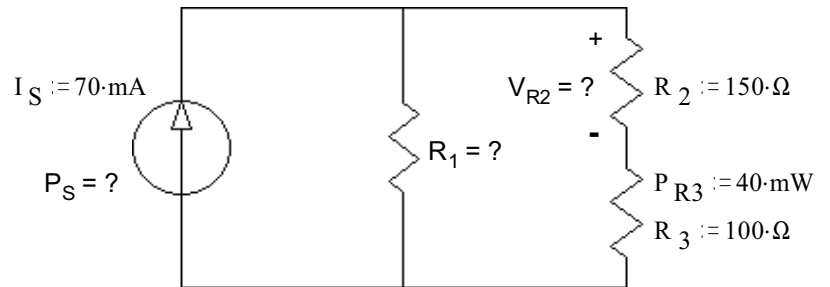


ECE1050/60 Exam 1 given: Spring 03 (The space between problems has been removed.)

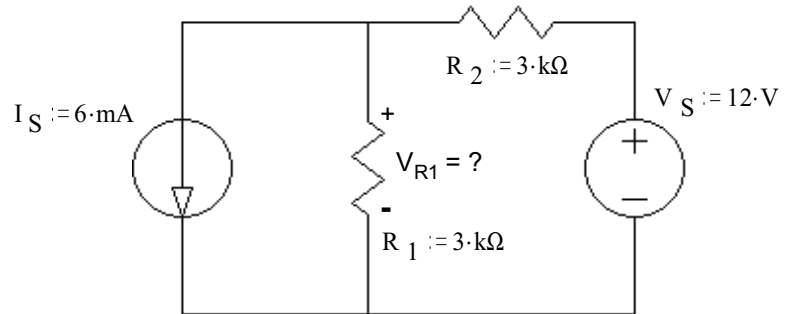
Remember, to get the most possible partial credit, always show all the intermediate values that you can calculate. If further calculations depend on a value that you can't figure out, just use a letter (like I_{R1}) or a guessed value and proceed.

1. (20 pts) In the circuit shown find the power input by the source (P_S), the resistor value; R_1 , and the voltage across R_2 (V_{R2}).

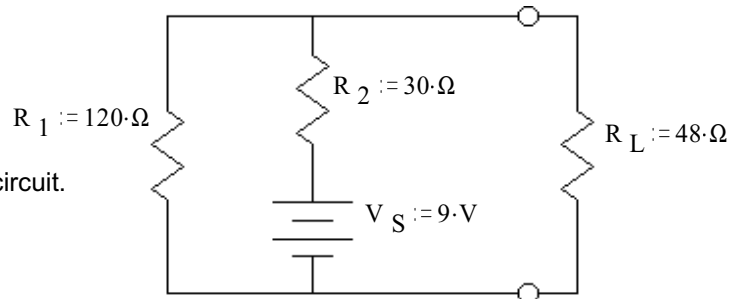


Note: feel free to show answers & work right on the schematic

2. (16 pts) a) Use the method of superposition to find the voltage across R_1 . Be sure to clearly show and **circle** your intermediate results.

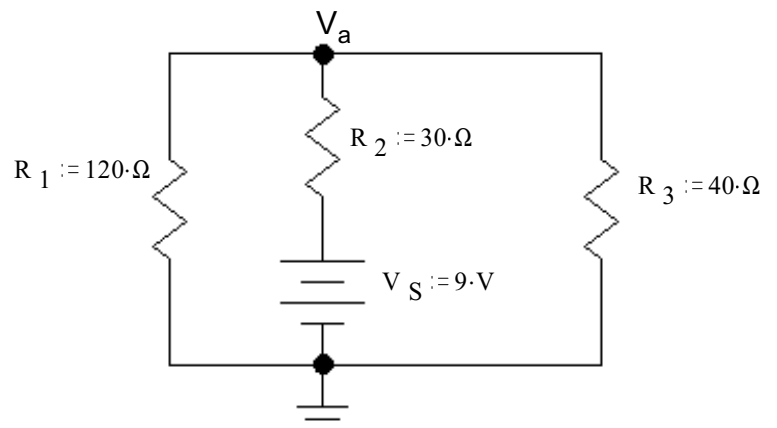


3. (21 pts)
a) Find and draw the Thévenin equivalent of the circuit shown. The load resistor is R_L .



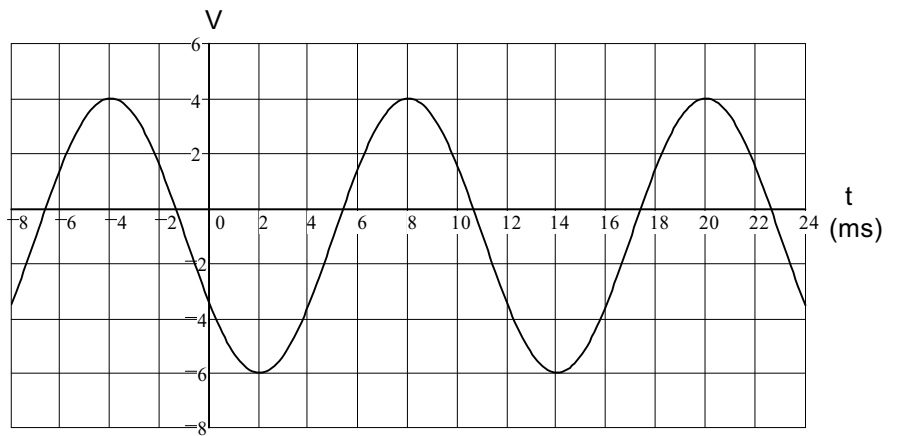
- b) Find and draw the Norton equivalent of the same circuit.
c) Find the power dissipated by the load.

4. (16 pts) Use nodal analysis to find V_a .



ECE 1050/60 Exam 1 Spring 03 p2

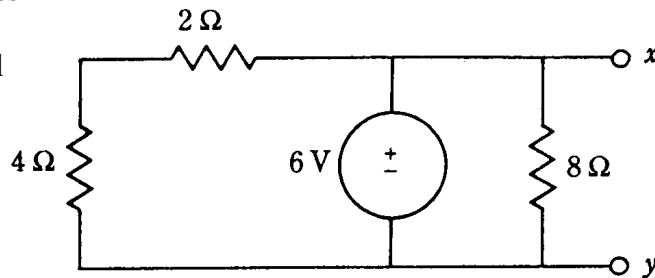
5. (18 pts) For the waveform shown, find:
 a) peak-to-peak voltage or current, V_{pp}
 b) amplitude, A
 c) period, T
 d) frequency f in cycles/sec or Hz
 e) frequency ω in radians/sec
 f) the phase angle in degrees
 g) a complete expression for $v(t)$, include numbers and units



6. (8 pts) The questions below are similar to what you might see on the FE exam. They expect you to average about 2 minutes per question.

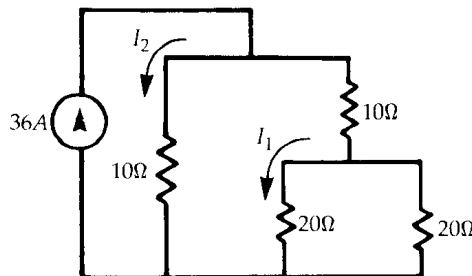
- a) If a 12-ohm resistor is connected across terminals xy in the circuit shown, the current through it would be most near!

- (A) 0.5 A
- (B) 1.25 A
- (C) 2.0 A
- (D) 2.25 A
- (E) 5.75 A



- b) Find I_2 in amps.

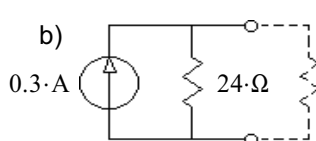
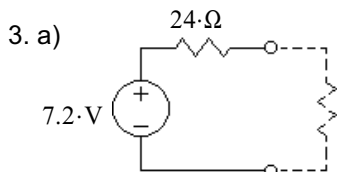
- (A) 9
- (B) 12
- (C) 18
- (D) 24
- (E) 27



Answers

1. $V_{R2} := 3 \cdot V$ $P_S := 0.35 \cdot W$ $R_1 := 100 \cdot \Omega$

2. $-9 \cdot V + 6 \cdot V = -3 \cdot V$



c) 0.48 W

4. 4.8 V

5. a) 10 V b) 5 V c) 12 ms d) 83.3 Hz e) $524 \cdot \frac{\text{rad}}{\text{sec}}$

f) 120 deg g) $5 \cdot V \cdot \cos\left(524 \cdot \frac{\text{rad}}{\text{sec}} \cdot t + 120 \cdot \text{deg}\right) - 1 \cdot V$

6. a) A b) D

ECE 1050 / 60 Midterm #1 Arn Stolp

Name _____

Scores:

Pages 1&2 _____ of a possible 36 pts

Pages 3&4 _____ of a possible 37 pts

Pages 5&6 _____ of a possible 27 pts

Total _____ of a possible 100 pts