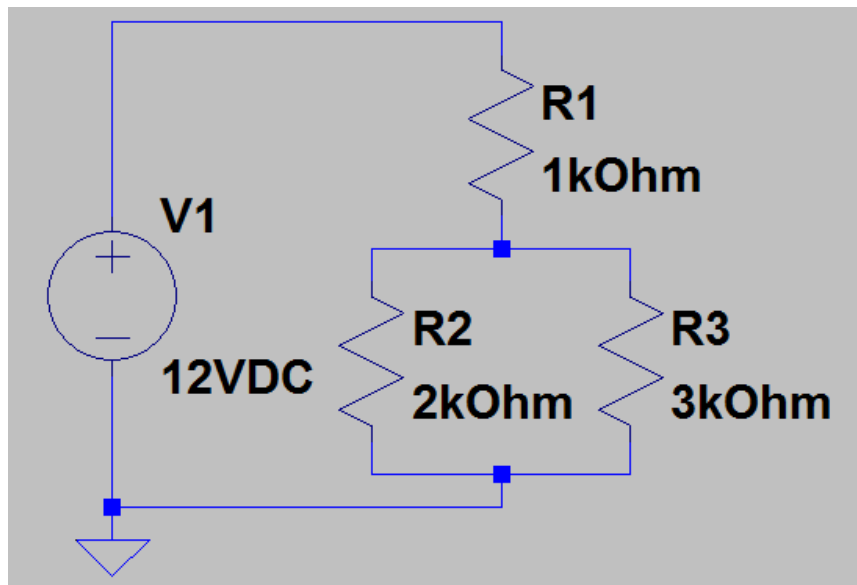


Practice Electronics Exam #1

Passive devices, meters and power

- Please give complete answers that explain/justify your result. You will not receive partial credit without doing so. You are free to use your notes and book but no other source.
 - Write all work on the blank paper provided and staple your exam questions to your solutions.
1. For the following circuit calculate all voltages and currents through the elements (battery R1, R2, R3)



2. A real volt meter with $1M\Omega$ input impedance is placed across R3, what voltage does it read?
3. A current $i = 500mA \cos\left(\frac{200rad}{s}t\right)$ passes through a $10pF$ capacitor, what is voltage across it?
4. What is the impedance of a $30mH$ inductor at $5kHz$?
5. What simple thing can you do to reduce fatal shocks when in the lab?
6. Explain how the ground of the oscilloscope probes (e.g., black clip on coax with combination black and red alligator clip ends) in our lab and the ground of the power grid are related to each other.
7. How do the amplitude of a signal and V_{rms} relate to each other for a sinusoidal signal?
8. What is the instantaneous and average power in question 3?