ECE 321 – Electronics I
Skills Review Block II (Circuits)
Fall 2016

Name _____ **Section _____**

ACADEMIC SECURITY. This Skills Review is NEVER released from academic security.

INTEGRITY: Your honor is extremely important. This academic security policy is designed to help you succeed in meeting academic requirements while practicing the honorable behavior our country rightfully demands of its military. Do not compromise your integrity by violating academic security or by taking unfair advantage of your classmates.

Collaboration Policy: No collaboration allowed. This is individual effort. You may not seek help from other cadets, only DFEC faculty members and other DF faculty members. All help must be properly documented.

Permissible References: Any except a Skills Review from previous semesters.

Grading: The Skills Review will count as two quiz grades.

Overview: This exercise is intended to refresh some of the core concepts you learned in circuits, mathematics, physics and chemistry. These subject areas are relevant to the study of semiconductor devices and their use in electronics. The quality/readability of your work is important and points will be deducted if we cannot understand or read your solutions. You may attach additional pages to this handout if you need more space. Regardless of how you complete the problems, you **must** show your work to receive full credit.

Problem 1 (10 pts) _____ (Block I)

Problem 2 (10 pts) _____ (Block I)

Problem 3 (10 pts) _____ (Block I)

Problem 4 (10 pts) _____ (Block II)

Problem 5 (10 pts) _____ (Block II)

Problem 6 (10 pts) _____ (Block II)

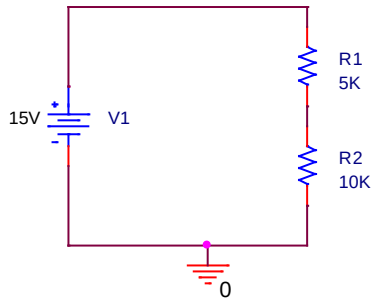
Problem 7 (10 pts) _____ (Block III)

Problem 8 (10 pts) _____ (Block III)

Total _____ **Grade _____**

Problem 4: ECE 231

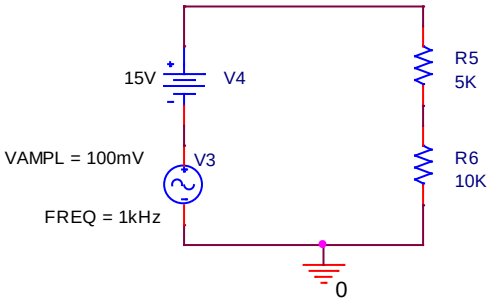
– For each circuit below, provide the requested information. Pay careful attention to the information being requested!



A. Write the equations and solve for values for the requested voltage and current.

V_{R1} =

I_{R1} =



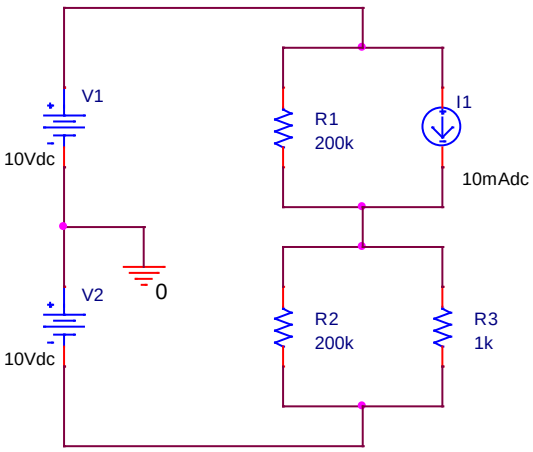
B. Write the equations for the requested voltage and current.

v_{R5} =

i_{R5} =

C. Sketch the waveform for the voltage appearing across R5 in Part B. Label the axes as well as key values in the waveform.

Problem 5: ECE 231

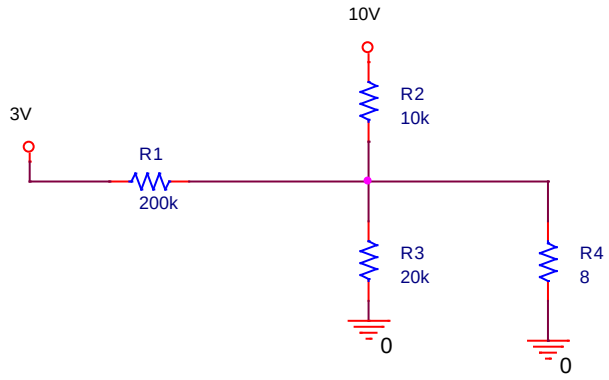


For the circuit shown, determine the current through each resistor and determine the voltage across each resistor. For credit, you must show your work. Answers without work will receive minimal credit.

How much total power is dissipated by the resistors in circuit above?

Problem 6: Circuits Review

Analyze the following circuit and determine the voltage across each resistor and the current through each resistor. You may use any technique that provides answers within 0.5% of the exact values. Note that the voltages at two of the nodes, in addition to the reference node, are provided. Write your answers in the table below. Show polarities of both voltages and currents on the diagram. Again, you MUST show your work to receive credit. Note: the value of R4 is 8 Ω, **not** 8 kΩ.



Resistor	Voltage	Current
R1		
R2		
R3		
R4		