

## Homework 5

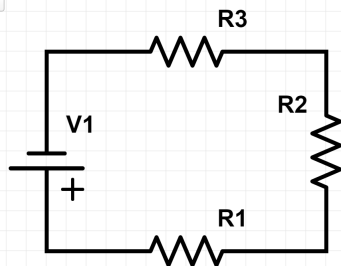
Complete Part I first, by taking notes that you will keep for yourself. (*Do not turn these in.*) Type up your answers to each of the questions in Part II and submit it in one double-spaced, Word document with your name on the top under the title. Use 12-point Times New Roman Font with 1" margins on all sides. If you have to do a calculation, solve the problem by hand on a separate sheet of paper. Then take a picture of your work and paste it into your word document in an appropriate place. When you are done upload this into the [Dropbox on Blazeview](#). If you are unable to use Word for the assignment, you may use another software package and upload a pdf instead.

### PART I: Notes

1. Read and take notes on the video “Energy and Electricity and Magnetism”.

### PART II: Assignment (25 points total)

1. Describe in your own words the different types of conductors and insulators. (4 points)
2. In one region of space, two identical charges of 30 mC sit near each other. If the force produced between the charges was 75,000 N, how far apart are the charges placed? (3 points)
3. What is meant by the term “Charge is Quantized”? (4 points)
4. A capacitor of 15 F is attached to a battery with a voltage of 25 V. What is the charge on the capacitor and what is the potential energy stored in the capacitor? (4 points)
5. What is the equivalent resistance for the circuit shown below? Assume that  $R_1 = 15 \Omega$ ,  $R_2 = 10 \Omega$ , and  $R_3 = 20 \Omega$ . (5 points)



6. What is the equivalent capacitance for the circuit shown below? Assume that  $C_1 = 10 \text{ mF}$ ,  $C_2 = 25 \text{ mF}$ , and  $C_3 = 5 \text{ mF}$ . (5 points)

