Key terms to choose from for Questions 1 and 2:

A. current  
B. voltage  
C. resistance  
D. series circuit  
E. transformer  
F. proton  
G. electric charge  
H. electrons  
I. ampere  
J. ohm

1. (2 points)
   a. A quantity usually expressed in units of volts  \( \mathbf{B} \)
   b. A positive particle located in the nucleus of an atom  \( \mathbf{F} \)

2. (2 points) Write the letter corresponding to a key term from above that best matches each description below.
   a. \( \mathbf{E} \) Steps voltages up and down.
   b. \( \mathbf{A} \) Time rate of flow of electric charge

3. (2 points) Circle the best answer for each of the following multiple choice questions.
   a. What is the unit of electric charge?
      i) volt
      ii) ampere
      iii) **coulomb**
      iv) Newton

   b. Two equal positive charges are placed equidistant on either side of another positive charge. What would the middle positive charge experience?
      i) a net force to the left
      ii) **a zero net force**
      iii) a net force to the right

\( \text{Ô O V E R Û} \)
4. (2 points) Fill in the blanks below.
   a. The unit of electric current is the **ampere**
   b. The unit of resistance is called the **ohm**

5. (2 points) A 5 ohm $R$ and a 15 ohm $R$ resistor are connected in parallel and are connected to a 10.0 V battery.
   a. What is the equivalent resistance of this system?
      
      \[
      \frac{1}{R_1} + \frac{1}{R_2} = \frac{1}{R_p} \Rightarrow \frac{1}{5 \ \Omega} + \frac{1}{15 \ \Omega} = \frac{1}{R_p} \Rightarrow 0.2 \ \Omega^{-1} + 0.0667 \ \Omega^{-1} = \frac{1}{R_p} \Rightarrow \\
      
      0.2667 \ \Omega^{-1} = \frac{1}{R_p} \Rightarrow R_p = \frac{1}{0.2667 \ \Omega^{-1}} = 3.75 \ \Omega \\
      
      \]
   
   b. What is the current in the system?
      
      \[
      V = IR \Rightarrow I = \frac{V}{R} = \frac{10.0V}{3.75\Omega} = 2.7A \\
      
      \]

\[
R_s = R_1 + R_2 + R_3 + \ldots \quad \frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \ldots \\
V = IR \quad P = IV \\
\]