

Name \_\_\_\_\_

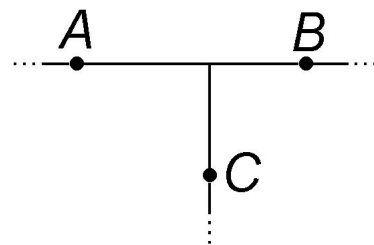
Physics 132  
Spring 2017

Quiz #7  
(10 points)

Prof. Redish  
27.March.17

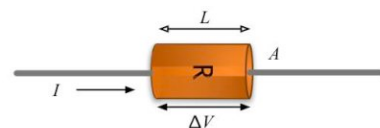
For each problem give all the correct answers for each in the space or box at the right. But be careful! You can lose partial credit on a problem if you include a wrong answer (but it will not affect any other problems). If none of the answers are correct, put N.

1. (5 points) The figure at the right represents a junction, which is a small piece of a complex network consisting of (idealized) batteries, bulbs, and wires. The dotted lines connect to other parts of the network. The letters A, B, and C simply indicate points on the wires. They are not devices. While the network is carrying current in a steady state, which of the following statements can you make with confidence about the points A, B, and C?

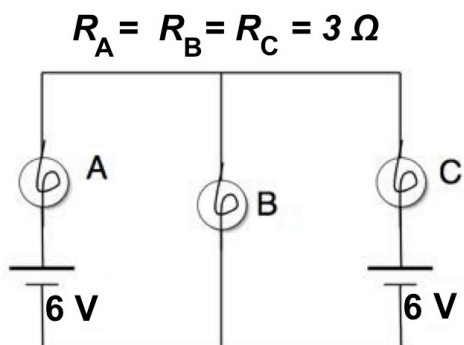


- (a) The magnitudes of the currents flowing through A and B add up to the magnitude of the current flowing through C.
- (b) The magnitudes of the voltages at A and B add up to the magnitude of the voltage at C.
- (c) The sum of the magnitudes of the currents at two of the points adds up to the magnitude of the current of the third (but we can't say which).
- (d) The sum of the magnitudes of the voltages at two of the points adds up to the magnitude of the voltage at the third (but we can't say which).
- (e) The magnitude of the currents flowing through all three points are equal.
- (f) The magnitude of the voltages at all three points are equal.
- (g) We can't say anything without knowing what the rest of the network looks like.

2. (3 points) Consider a single charged particle,  $q$ , that is moving through the resistor as a part of a constant steady current. On the average, the charge moves through the resistor at a constant velocity. Which of the following statements are true while the charge is moving through the resistor?



- A. There is a net force acting on the charge.
- B. The net force acting on the charge is 0.
- C. There is a non-zero electric force on the charge.
- D. We can't say anything without knowing more information.



3. (2 points) In the figure at the right is shown a network with three identical (ideal) bulbs and two identical (ideal) batteries connected by resistanceless wires. Which of the bulbs is the brightest?

- (1) A and C
- (2) B
- (3) A, B, and C are equally bright.
- (4) None of them light.
- (5) You can't tell without more information.