

Quiz.

1. Electric current always flows from
 - a) left to right
 - b) one end of a wire to another
 - c) high to low voltage
 - d) ground to positive

2. According to Ohm's law, if the voltage is high, but the current is low
 - a) the resistance must also be high
 - b) the resistance must also be low

3. A good analogy for a diode is
 - a) a piston in a combustion chamber.
 - b) a check valve.
 - c) a spring.
 - d) a waterfall.

4. Electrical resistance in a thick wire is _____ resistance in a thin wire.
 - a) less than
 - b) greater than
 - c) the same as

5. Electrons move at the speed of light.
 - a) True
 - b) False

6. Amperes (also called amps) are units of
 - a) voltage
 - b) resistance
 - c) electric power
 - d) current

7. The greek letter Ω (omega) is the symbol for the ohm, a unit of
 - a) resistance
 - b) electrical power
 - c) current
 - d) voltage

8. For series circuits
 - a) each device has the same voltage drop
 - b) current gets divided at each intersection
 - c) there is only one pathway through the circuit
 - d) the more "branches," the less overall resistance

9. For the branches in a parallel circuit
- a) there is only one pathway through the circuit
 - b) current gets divided at each intersection
 - c) there is increasing resistance across each device
 - d) if one light goes out, none work!

Answer Key.

1. c)

Just as heat is a flow of thermal energy from hot to cold objects, electric current is a flow of charge from high to low voltage.

2. a)

Electrical resistance resists electric current. The more resistance in a circuit, the lower the electric current.

3. b)

We use diodes to convert alternating current to direct current by causing the current to flow in one direction. They act as check valves much like those in heart or tire valves, which only allow blood or air to only flow in one direction.

4. a)

Remember the pipe analogy. Water flows more readily through a wide pipe than a narrow pipe. It also slows down more in a long pipe than in a short pipe. Resistance in wires opposes current in a similar manner.

5. b)

Electrons have mass and cannot move at the speed of light. However, they aren't very massive so they do move on the order of only a thousand times slower than the speed of light. The signal (electromagnetic wave) that tells the charges to move in a circuit does travel at the speed of light.

6. d)

The standard unit of electrical current is named after Andre-Marie Ampere.

7. a)

The unit of electrical resistance is named after Georg Simon Ohm.

8. c)

This is why an entire strand of Christmas lights wired in series goes out if only one light goes out.

9. b)

Because of this, and because of Ohm's law, the more light bulbs added in parallel, the brighter each bulb shines! This is also why a car can drive around with only one working headlight--each light has its own complete circuit.