True or False Questions

Circle the correct answer.

T F 1. Charge will move in a conductor when there is a difference in potential between the ends of the conductor.
T F 2. The unit of electric current is the ampere.
T F 3. Most of the electricity we buy through power companies is DC current.
T F 4. When you turn on a light, electrons move at speeds near the speed of light in order to light up the light bulb.
T F 5. Electrical outlets in our walls are a source of electrons to run electrical appliances.

Multiple Choice Questions

Choose the best answer to each question and write the appropriate letter in the space provided.

6. An example of a voltage source is
   a. a dry cell.
   b. rubbing a rubber rod with fur.
   c. a car battery.
   d. all of the above

7. Electrical resistance in a wire depends on the wire’s
   a. conductivity.
   b. length.
   c. thickness.
   d. all of the above

8. Compared to thin wires, electrical resistance in thick wires is
   a. greater.
   b. less.
   c. the same.

9. When connected to a 120-volt power supply, how much current exists in a light bulb that has a resistance of 240 ohms?
   a. 28,800 A
   b. 240 A
   c. 120 A
   d. 0.5 A

10. If you accidentally grabbed the prongs of a partially plugged-in 120-V electrical plug on a day when your skin resistance was 120,000 ohms, how much current would pass through your body?
    a. 12,000,000 A
    b. 1000 A
    c. 120 A
    d. 0.001 A
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11. The primary reason a bird can perch harmlessly on bare high voltage wires is that
   a. a bird has a very large electrical resistance.
   b. a bird’s feet are close together.
   c. there is no potential difference across the bird’s feet.
   d. all of these

12. In an alternating current circuit, electron flow is
   a. slower than a snail’s pace.
   b. almost the speed of light.
   c. simply back and forth, going nowhere.

13. Current from a battery is
   a. DC.
   b. AC.

Math Problems
Solve the following problems in the space provided. Show all work.

14. How much voltage is required to make 10 amperes flow through a 10-ohm resistor?

15. What is the power dissipated by a toaster that has a resistance of 20 ohms plugged into a 120-V outlet?

Essay Question
On a separate sheet of paper, answer the following question.

16. What is the difference between direct current and alternating current? When we plug a light bulb into a wall outlet, where do the electrons come from?