

**Chapter 35 Test Electric Circuits**

**True or False Questions**

*Circle the correct answer.*

- T**     **F**     1. Light bulbs connected in series all carry the same current, regardless of their resistances.
- T**     **F**     2. In a series circuit, the total voltage drop across a series of resistors is the sum of voltage drops across each individual resistor.
- T**     **F**     3. In a parallel circuit, current in each branch is the same.
- T**     **F**     4. When resistors are arranged in parallel, their overall resistance is less than that of the smallest resistor.
- T**     **F**     5. A fuse or circuit breaker used in a circuit is usually inserted in parallel.

**Multiple Choice Questions**

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

- \_\_\_\_\_ 6. When two light bulbs are connected in series, the
  - a. same amount of current always flows through each light bulb.
  - b. current through each light bulb is proportional to its resistance.
  - c. neither of these
- \_\_\_\_\_ 7. When one light bulb in a series circuit containing several light bulbs burns out,
  - a. the other light bulbs burn brighter.
  - b. nothing changes in the rest of the circuit.
  - c. none of the other bulbs will light up.
- \_\_\_\_\_ 8. When one light bulb in a parallel circuit containing several light bulbs burns out,
  - a. the other light bulbs burn brighter.
  - b. nothing changes in the rest of the circuit.
  - c. none of the other bulbs will light up.
- \_\_\_\_\_ 9. A 60-W light bulb is connected to a 12-V car battery. When another 60-W bulb is connected in parallel with the first bulb, the battery's output energy
  - a. halves.
  - b. remains the same.
  - c. doubles.
- \_\_\_\_\_ 10. A closed circuit is a circuit in which current
  - a. can flow.
  - b. is prevented from flowing.
- \_\_\_\_\_ 11. When resistors are put in series next to each other, their overall resistance is
  - a. larger than that of any individual resistor.
  - b. the same as the resistance of one of the resistors.
  - c. smaller than the resistance of any of the resistors.

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- \_\_\_\_\_ 12. When resistors are put in parallel with each other, their overall resistance is
- larger than that of any other resistor.
  - the same as the resistance of one of the resistors.
  - smaller than the resistance of any of the resistors.
- \_\_\_\_\_ 13. The total resistance of a 3-ohm resistor and a 6-ohm resistor in series is
- 18 ohms.
  - 9 ohms.
  - 6 ohms.
  - 3 ohms.

**Math Problems**

*Solve the following problems in the space provided. Show all work.*

14. What is the equivalent resistance of a 10-ohm and a 30-ohm resistor connected in parallel?
15. A 50-V battery is connected across a 10-ohm resistor and produces a current of 4.5 A. What is the internal resistance of the battery?

**Essay Question**

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

16. What is a parallel circuit? How do voltages, currents, and resistances add in a parallel circuit? Give an example.