

Chapter 20 Electricity

## Section 20.4 Electronic Devices

(pages 618–622)

*This section discusses how various electronic devices operate and what they are used for.*

### Reading Strategy (page 618)

**Summarizing** Copy the table on a separate sheet of paper. As you read, complete the table to summarize what you learned about solid-state components. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

Solid-State Components		
Solid-State Component	Description	Uses
Diode		
Transistor		
Integrated Circuit		

### Electronic Signals (pages 618–619)

*Match each term to its definition.*

- | Definition   | Term                 |
|--|----------------------|
| _____ 1. Information sent as patterns in the controlled flow of electrons through a circuit              | a. electronics       |
| _____ 2. The science of using electric current to process or transmit information                        | b. analog signal     |
| _____ 3. A smoothly varying signal produced by continuously changing the voltage or current in a circuit | c. electronic signal |
| _____ 4. A signal that encodes information as a string of 1's and 0's                                    | d. digital signal    |
| 5. Which type of signal is usually used by an AM radio station?  |                      |
| _____  |                      |

6. Is the following sentence true or false? Analog signals are more reliable than digital signals. \_\_\_\_\_

**Chapter 20 Electricity**

**Vacuum Tubes (page 619)**

7. Circle the letter of each item that is true about vacuum tubes.
  - a. can change alternating current to direct current
  - b. never burn out
  - c. can increase the strength of a signal
  - d. can turn a current on or off
8. Is the following sentence true or false? An image is produced in a CRT when phosphors glow red, green, and blue in response to electron beams. \_\_\_\_\_

**Semiconductors (page 621)**

9. What is a semiconductor? \_\_\_\_\_  
\_\_\_\_\_
10. Name the two types of semiconductors.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
11. Circle the letter of each sentence that is true about a p-type semiconductor.
  - a. It can be made by adding a trace amount of boron to a silicon.
  - b. Electrons are attracted to positively charged holes at each boron atom.
  - c. As the electrons jump from hole to hole, it looks like a flow of positive charge.
  - d. Boron atoms provide weakly bound electrons that can flow.
12. Is the following sentence true or false? In an n-type semiconductor, weakly bound electrons can conduct a current. \_\_\_\_\_

**Solid-State Components (pages 621–622)**

*Match each term to its definition.*

Term	Definition
_____ 13. diode	a. A solid-state component with three layers of semiconductors
_____ 14. transistor	b. A thin slice of silicon that contains many solid-state components
_____ 15. integrated circuit	c. A solid-state component that combines an n-type and p-type semiconductor

16. A chip or microchip is another name for a(n) \_\_\_\_\_.

**Communications Technology (page 622)**

17. Why is it useful for communication devices to use microchips? \_\_\_\_\_  
\_\_\_\_\_
18. A mobile phone can store data such as phone numbers because \_\_\_\_\_  
\_\_\_\_\_