

## KNOWLEDGE PROBE 1: WIRING AND CABLING

### Wire and Power Wiring

#### Learning Objectives

- Identify and distinguish between the various types of wiring and cabling applications.
- Identify the different types of wire, sizes, insulation, and specifications.
- Select a wire type and size for a given application.
- Name the types of wire and cables used DC and AC power connections.

1. A 12-volt battery is connected to a light bulb through two 50 foot wires. The measured voltage across the bulb is 11.2 volts. What is the voltage drop across each wire?
  - a. 0 volts
  - b. 0.2 volts
  - c. 0.4 volts
  - d. 0.8 volts
2. Hook up wire can be either solid or stranded.
  - a. True
  - b. False
3. Stranded wire is generally preferred because it
  - a. Comes in more different sizes and colors
  - b. Has lower resistance.
  - c. Is easier to work with
  - d. Is more flexible and less likely to break when flexed
4. AC power wiring, speaker wires, keyboard and mouse cables, and microphone cables are most likely made of
  - a. Solid wire
  - b. Stranded wire
5. What does the designation 9/30 mean?
  - a. 30 size 9 wires
  - b. 9 amps maximum over 30 feet maximum
  - c. 9 size 30 solid wires made into a stranded wire
  - d. 9 stranded wires each with 30 smaller wires
6. The most common wire insulator is
  - a. Enamel
  - b. Polyvinyl
  - c. Rubber
  - d. Teflon



7. Enameled wire is NOT used for
  - a. Antennas
  - b. Hook up wire
  - c. Motor windings
  - d. Transformer windings
8. Which wire is larger in diameter?
  - a. # 6
  - b. #12
  - c. #22
  - d. #30
9. What is the resistance of a #24 wire 350 feet long?
  - a. 0.026 ohms
  - b. 9.16 ohms
  - c. 26.27 ohms
  - d. 9160 ohms
10. You discover a large roll of wire but do not know what size or how long it is. You measure the diameter and find it to be 64 mils. Then you measure the resistance between the two ends and find it to be 2.1 ohms. What is the length of the wire?
  - a. 37.5 feet
  - b. 293 feet
  - c. 814 feet
  - d. 1560 feet
11. Which of the following is NOT a good reason to use smaller wire in a power cable?
  - a. Cable is less expensive
  - b. High voltage drop in the cable
  - c. Potential overheating of the cable
  - d. Power loss in the cable
12. What guidelines should you use when selecting a safe wire or cable for a specific power application?
  - a. American National Standards Institute
  - b. Institute of Electrical and Electronic Engineers standards
  - c. National Electrical Code
  - d. State and local regulation
13. What is the smallest size wire you would use to carry a current of 4 amperes?
  - a. #10
  - b. #12
  - c. #14
  - d. #18



14. A 240-volt AC line must run for a distance of 60 feet and the current is 5 amperes. Assuming a maximum voltage drop of 2%, what is the minimum size wire?
- a. #10
  - b. #12
  - c. #14
  - d. #18
15. Most wire, solid or stranded is made with
- a. Copper
  - b. Steel
  - c. Aluminum
  - d. Zinc