

Basic Electricity and Electronics

Name: _____ Date: _____

Instructor: _____ Score: _____ Textbook pages 94–107

Objective: After studying this chapter, you will be able to understand the basic principle related to automotive electricity and electronics.

Electricity

1. _____ is the movement of electrons from atom to atom. 1. _____

2. What is an *insulator*? _____

3. _____ is the flow of electrons through a conductor. 3. _____

4. Explain the *electron theory of current*. _____

5. Define *voltage*. _____

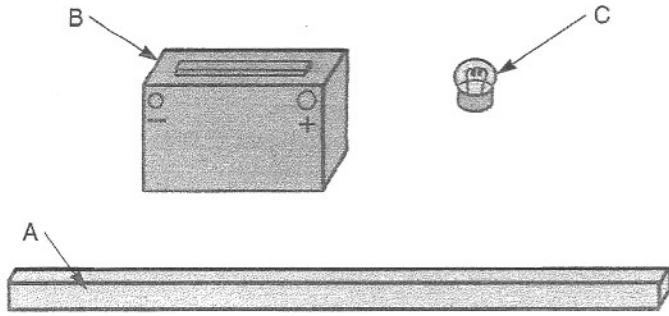
6. _____ is needed to control the flow of current in a circuit. 6. _____

7. What does a *simple circuit* consist of? _____

8. A(n) _____ circuit has more than one load connected in a single electrical path. 8. _____

9. A(n) _____ circuit has more than one electrical path. 9. _____

10. Identify the parts and draw in the missing wires of the following frame ground circuit. Use arrows to show current flow.



- (A) _____
- (B) _____
- (C) _____

11. What is *Ohm's law*? _____

Using Ohm's law, solve the following problems.

12. If a circuit has 12 volts and 2 ohms, what is the current in this circuit? 12. _____

13. If a circuit has 6 amps and 2 ohms, what is the voltage in this circuit? 13. _____

14. If a circuit has 12 volts and .2 amps, what is the resistance in this circuit? 14. _____

15. Name four automotive components that operate on the magnetic field principle. _____

16. A(n) _____ allows an electric circuit to be turned on or off. 16. _____

17. A(n) _____ circuit is an accidental low-resistance connection that results in excessive current flow. 17. _____

18. A(n) _____ protects a circuit against damage caused by a short circuit. 18. _____

19. A(n) _____ is a small section of wire designed to burn in half when excess current is present in the circuit. 19. _____

Automotive Electronics

20. In electronic systems, the components are _____ and do *not* have _____ parts. 20. _____

21. What is a *semiconductor*? _____

22. A(n) _____ only allows current to flow in one direction. 22. _____

23. A transistor acts as a(n) _____ switch or current amplifier. 23. _____

Name _____

24. In your own words, how does a *transistor* operate? _____

25. _____ are used to absorb unwanted electrical pulses in a circuit. 25. _____

26. Explain the difference between an integrated circuit and a printed circuit. _____

27. A(n) _____ is designed to use a very small current to control a very large current. 27. _____

Automotive Wiring

28. Define *primary wire*. _____

29. A(n) _____ wire is only used in a vehicle's ignition system for spark plug or coil wires. 29. _____

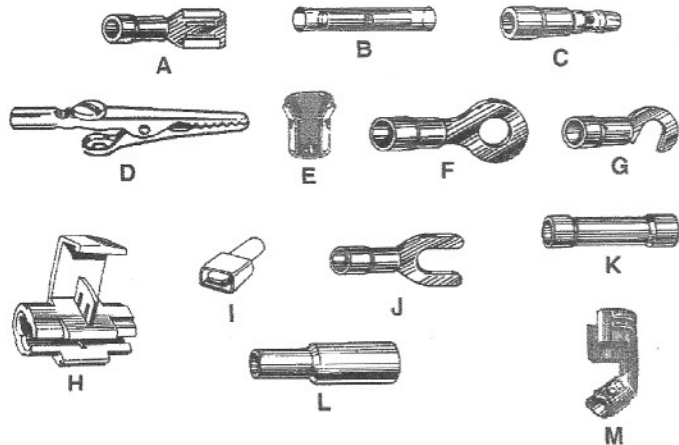
30. How much current does a starting motor normally draw? 30. _____

31. _____ connect electrical components to the chassis or ground of the car. 31. _____

32. _____ are multiwire terminals that connect several wires together. 32. _____

33. What type of solder should be used when performing electrical repairs? 33. _____

34. Identify the following wire terminals and connectors.



- (A) _____
- (B) _____
- (C) _____
- (D) _____
- (E) _____
- (F) _____
- (G) _____
- (H) _____
- (I) _____
- (J) _____
- (K) _____
- (L) _____
- (M) _____

35. Explain how to use a *soldering gun*. _____

Basic Electrical Tests

36. What is a *jumper wire* used for? _____

37. How is a *test light* used? _____

38. A modern inductive _____ is clipped over the wire insulation to measure amps. 38. _____

39. To prevent damage, an ohmmeter must never be connected to a source of _____. 39. _____

40. What is another name for a *multimeter*? 40. _____

41. A(n) _____ displays voltage readings as a trace, or white line, on a display screen. 41. _____

42. How is a *scanner* used as a diagnostic tool in automotive repair? _____

