

Chapter 19

Electric and Electronic Components



Name _____

Date _____

Instructor _____

Score _____

Objective: After studying this chapter, you will be able to identify electric components and explain the function and operation of electric components.

Electric Components

1. A(n) _____ limits and controls current flow in a circuit. _____
2. A resistor's _____ indicates how much the resistance value of the resistor may vary. _____
- _____ 3. A _____ has a set ohms value that does not change.
 - (A) variable resistor
 - (B) fixed resistor
 - (C) rheostat
 - (D) potentiometer
- _____ 4. A _____ has a range of internal resistance that can be adjusted.
 - (A) variable resistor
 - (B) fixed resistor
 - (C) rheostat
 - (D) potentiometer
- _____ 5. A _____ has two electrical terminals (connections).
 - (A) variable resistor
 - (B) transistor
 - (C) potentiometer
 - (D) rheostat
- _____ 6. A _____ has three electrical connections.
 - (A) variable resistor
 - (B) photoresistor
 - (C) potentiometer
 - (D) rheostat
7. A(n) _____ is used to connect or disconnect the power supply in a circuit. _____
8. Name four types of switches.

9. A storage device for electrons is called a(n) _____. _____
10. When the charge in the capacitor equals the _____
from the battery, electrons can no longer flow
through the capacitor. _____
- _____ 11. The size of a capacitor is rated in _____.
(A) amps
(B) volts
(C) farads
(D) Ohms
12. A picofarad equals a _____ of a farad. _____
13. What is the function of a fuse?

14. Define a *short circuit*.

15. Explain why you should not install a fuse with a higher fuse rating than specified.

16. How does a circuit breaker differ from a fuse link?

17. Explain a circuit breaker's amp rating.

18. A(n) _____ consists of insulated wire loops placed
close together. _____
19. A(n) _____ uses two sets of coils to transform voltage
and current to higher or lower levels. _____
20. _____ is resistance to alternating current at a given
frequency. _____
21. The _____ represents the relationship between the
number of windings of wire in each transformer coil. _____

Name _____

22. A (step-up, step-down) _____ transformer has fewer windings than the first coil. _____
23. A (step-up, step-down) _____ transformer is one in which the second coil has more windings than the first coil. _____
24. When a transformer reduces voltage, current (increases, decreases) _____. _____
25. A(n) _____ is a device that uses a small input current to control a larger current in a circuit. _____
26. Define *solenoid*.

27. Solenoids use electric current to produce _____. _____
28. Electric motors use _____ to produce a powerful rotating action. _____
29. The ends of the armature coil are connected by two semicircular _____. _____

Electronic Components

30. Define *semiconductor*.

31. A P-type semiconductor is doped so that it has excess _____. _____
32. An N-type semiconductor is doped so that it has excess _____. _____
33. A(n) _____ is made by joining a piece of N-type semiconductor with a piece of P-type semiconductor. _____
34. When a diode is connected so that it acts as a(n) _____, it is said to have a forward bias. _____
35. When a diode is connected so that it acts as a(n) _____, it is said to have a reverse bias. _____
36. Define *rectification*.

37. Diodes are commonly used inside a vehicle's charging system _____ to rectify ac voltage to dc voltage.

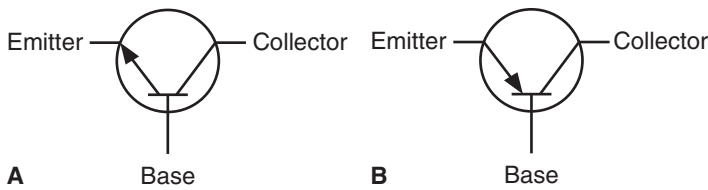
_____ 38. What type of diode is a special type of diode that serves as a voltage regulator?
(A) Forward bias
(B) Reverse bias
(C) Rectified
(D) Zener

39. A(n) _____ is a semiconductor device that regulates current or voltage in a circuit.

_____ 40. A bipolar junction transistor (BJT) is made by joining _____ semiconductor materials.
(A) two
(B) three
(C) four
(D) five

41. What is the difference between an NPN transistor and a PNP transistor?

42. Identify the types of transistors shown below.



(A) _____
(B) _____

43. Explain the similarities and differences between a transistor and a relay.

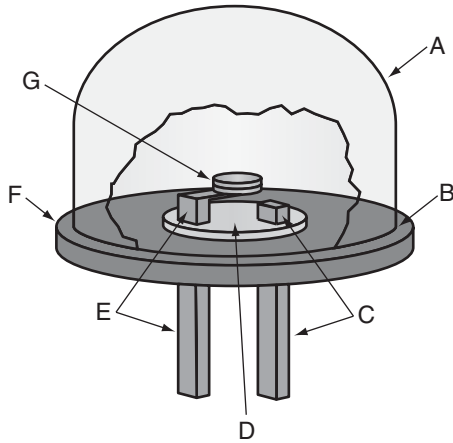
_____ 44. A _____ device produces a low current output when physical pressure is applied.
(A) light emitting diode (LED)
(B) photonic
(C) piezoelectric crystal
(D) photovoltaic cell

_____ 45. A _____ device can emit or detect light.
(A) light emitting diode (LED)
(B) photonic
(C) piezoelectric crystal
(D) photovoltaic cell

Name _____

46. A(n) _____ is a photonic semiconductor that emits light when it is electrically energized.

47. Identify the parts of the light emitting diode shown below.



- (A) _____
- (B) _____
- (C) _____
- (D) _____
- (E) _____
- (F) _____
- (G) _____

For questions 48–51, match the following terms and identifying phrases.

- _____ 48. A photonic device that converts light directly into current.
- _____ 49. A semiconductor that acts as a resistor in the dark but changes to a conductor when exposed to light.
- _____ 50. A PN junction device that can function in one of two ways, depending on how it is connected in a circuit.
- _____ 51. When light strikes it, the emitter-collector junction conducts current.

- (A) Photodiode
- (B) Photovoltaic cell
- (C) Phototransistor
- (D) Photoresistor

52. A(n) _____ is a device that has a fluid crystal material sandwiched between two sealed glass plates.