

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1. Which of the following makes the best conductor ?

- a. Rubber
- b. Aluminum
- c. Glass
- d. Plastic

2. Which of the following is an excellent conductor but too expensive to use on a large scale ?

- a. Silver
- b. Aluminum
- c. Brass
- d. Copper

3. What is the average number of valence electrons in a conductor atom ?

- a. One or two
- b. Three or four
- c. Five or six
- d. More than six

4. Silicon is widely used as a semiconductor because it _____.

- a. has no valence electrons
- b. only has one valence electron
- c. has a negative charge
- d. withstands heat

5. What is the name given to the areas where P-type materials join N-type materials to form a diode ?

- a. PN junction
- b. Solid—State Area
- c. NPN junction
- d. Gate junction

6. Convert AC power to DC power using _____.

- a. diacs
- b. NPN transistors
- c. rectifier diodes
- d. triacs

7. How many diodes are required to convert three-phase AC power to high-efficiency DC power ?

- a. Two
- b. Four
- c. Six
- d. Eight

8. How many diodes are required to form a transformer center-tap full-wave rectifier circuit ?

- a. One
- b. Two
- c. Three
- d. Four

9. How many diodes are required to form a bridge rectifier ?
- a. One
 - b. Two
 - c. Three
 - d. Four
10. The two basic types of diodes are the silicon and the _____.
- a. aluminum
 - b. germanium
 - c. tungsten
 - d. magnesium
11. The point at which avalanche breakover occurs in a diode is known as the _____.
- a. forward bias
 - b. forward peak voltage
 - c. peak inverse voltage
 - d. gate voltage
12. One end of a diode has a beveled end which indicates that it is the _____.
- a. anode
 - b. cathode
 - c. collector
 - d. emitter
13. When used in a circuit, an LED is generally operated at about _____.
- a. 5mA or less
 - b. 10mA or less
 - c. 15mA or less
 - d. 20mA or less
14. The process of giving off light by applying an electrical source of energy is called _____.
- a. electroluminescence
 - b. forward bias
 - c. photon emission
 - d. reverse bias
15. The schematic symbol for an LED is the same as that of a diode with the addition of a(n) _____.
- a. arrow pointing toward the diode
 - b. arrow pointing away from the diode
 - c. positive sign at the base of the triangle
 - d. negative sign at the base of the triangle
16. In order to permit the emergence of the maximum number of photons in an LED, the conducting surface _____.
- a. is given a forward bias
 - b. is given a reverse bias
 - c. connected to the P-type material is much smaller
 - d. connected to the N-type material is much smaller

17. On a transistor, control voltages are applied to the _____.

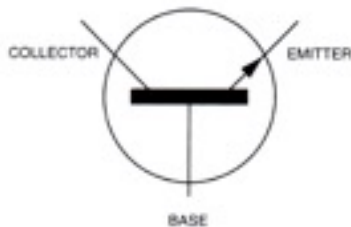
- a. base
- b. collector
- c. emitter
- d. PN junction

18. A transistor is made by joining how many layers of semiconductor material ?

- a. Two
- b. Three
- c. Four
- d. Five

19. What semiconductor material comprises the base of an NPN transistor ?

- a. Copper
- b. P-type germanium
- c. N-type germanium
- d. Aluminum



20. The figure above shows the electrical symbol for a(n) _____.

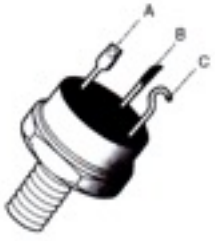
- a. diac
- b. NPN transistor
- c. PNP transistor
- d. SRC

21. When possible, transistor casings will have some marking to indicate _____.

- a. the rated voltage
- b. which leads are connected to the emitter, collector, or base
- c. the direction of current flow
- d. total amperage

22. High-power transistors are manufactured in which configuration ?

- a. Studs and heat sinks
- b. Top hat
- c. Small can
- d. Plastic body



23. In the figure above, the lead marked 'A' is the transistor _____.

- a. base
- b. cathode
- c. collector
- d. emitter

24. In the figure above, the lead marked 'C' is the transistor _____.

- a. base
- b. cathode
- c. collector
- d. emitter

25. The difference between an N-channel and a P-channel IFEI is _____.

- a. that the P—channel IFET contains a drain terminal
- b. that the N-channel IFEI' contains a drain terminal
- c. the allowable ampacity
- d. the polarity of the voltage

26. An SRC is made from adjoining layers of semiconductor material in the _____.

- a. PN arrangement
- b. PNP arrangement
- c. NPN arrangement
- d. PNPN arrangement

27. The difference between an SCR and a diode is that an SCR _____.

- a. has three terminals
- b. is bidirectional
- c. has a drain connected to the negative terminal
- d. is normally open

28. Which of the following can be thought of as an AC switch ?

- a. Diac
- b. LED
- c. Triac
- d. SCR

29. The applied voltage does not have to exceed the breakover voltage in order for conduction to begin on a(n) _____.

- a. diac
- b. junction field-effect transistor
- c. SRC
- d. triac

30. Which of the following can be viewed as a diac with a gate terminal added ?

- a. Pin
- b. SCR
- c. LASCR
- d. Triac

National Electrical Code Questions

31. What is the ampacity for a #18 THW conductor ?

- a. 7 amps
- b. 10 amps
- c. 12 amps
- d. 15 amps

32. In both exposed and concealed locations, where a cable-or raceway-type wiring method is installed through bored holes in joists, rafters, or wood members, holes shall be bored so that the edge of the hole is not less than _____ from the nearest edge of the wood member.

- a. 1 ¼"
- b. 2"
- c. 2 ½"
- d. 2 ¾"

33. What is the cover required for a UF cable buried under a building ?

- a. not allowed under a building
- b. shall be in a raceway
- c. 2"
- d. 6'

34. Can an SJ cord be used on a portable highway sign ?

- a. must have a grounding conductor
- b. must be junior hard-service
- c. must be hard-service
- d. all of these

35. Where a duplex receptacle is rated 15 or 20 amps the branch circuit shall be rated a maximum of _____ amps.

- a. 15
- b. 20
- c. 25
- d. 30

36. If a service has a grounding electrode reading 35 ohms. How many more electrodes can be added to meet code requirements ?

- a. 1
- b. 2
- c. 3
- d. 4

37. A box contains two #14, and two #12 conductors, a single-pole switch and two #12 ground conductors. What size metallic 4" square box is required ?

a. 4" x 1 ¼"

c. 4" x 2 ⅛"

b. 4" x 1 ½"

d. 4" x 2 ⅛" x 1 ½"

38. Two #6 conductors, one #10 neutral, and two #12 grounds. What size metallic 4" square box is required ?

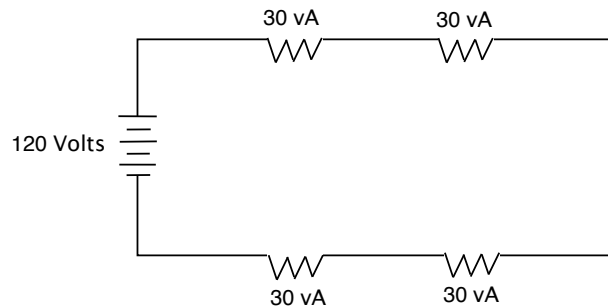
a. 4" x 1 ¼"

c. 4" x 2 ⅛"

b. 4" x 1 ½"

d. 4" x 2 ⅛" x 1 ½"

Electrical Theory Questions



39. There are four 30 volt-amps resistors in series (above) with a total of 120 volts. What is the ampacity of the circuit ?

a. .1 amps

c. .5 amps

b. .25 amps

d. 1 amp

40. A series circuit has two 10 ohm resistors in parallel and one 5 ohm resistor in series. What is the total resistance in the circuit ?

a. 20 ohms

c. 10 ohms

b. 15 ohms

d. 5 ohms