Multiple Choice

Identify the choice that best completes the statement or answers the question.

____  1. Coaxial cable shall be permitted to deliver power to equipment that is directly associated with the radio frequency distribution system if the voltage is not over ___ volts and if the current is supplied by a transformer or other device that has power-limiting characteristics.
   1) 90  2) 25  3) 70  4) 60  5) 30

____  2. A minimum of ___% of all recreational vehicle sites, with electrical supply, shall each be equipped with a 50-ampere, 125/250-volt receptacle.
   1) 70  2) 25  3) 50  4) 30  5) 20

____  3. Grounding electrode conductor connections to a concrete-encased or buried grounding electrode ___ required to be readily accessible.
   1) are  2) are not

____  4. Fire pump supply conductors on the load side of the final disconnecting means and overcurrent devices shall be permitted to be routed through a building if they are ___.
   1) encased by at least 2 inches of concrete
   2) protected by a fire-rated assembly listed to achieve a minimum fire rating of 2 hours and dedicated to the fire pump circuit
   3) a listed electrical circuit protective system with a minimum 2-hour fire rating
   4) any of these

____  5. In a partially completed building, an electrician plugs into a receptacle with an extension cord. To comply with the NEC®, the electrician must ___.
   1) be sure that the receptacle has GFCI protection
   2) have permission from the occupants of the building
   3) be sure the cord has twist-lock connections
   4) use a minimum size cord of 12/4 AWG

____  6. Listed communications cables installed in risers shall be ____.
   1) encased in a metal raceway
   2) located in a fireproof shaft having firestops at each floor
   3) either a or b
   4) neither a nor b

____  7. The equipment grounding terminal buses of the normal and essential branch-circuit panelboards serving the same individual patient care vicinity shall be connected together with an insulated continuous copper conductor not smaller than ___ AWG.
   1) 14  2) 12  3) 10  4) 8

____  8. The power supply to the mobile home shall be a feeder assembly consisting of not more than one listed ___-ampere mobile power-supply cord with an integrally molded or securely attached plug cap or a permanently installed feeder.
   1) 50  2) 30  3) 60  4) 20  5) 100

____  9. Communications cables permitted where installed in vertical runs and penetrating more than one floor, or cables installed in vertical runs in a shaft, shall be Type ____.
   I. CMP  II. CMG  III. CMR
10. Class I locations are those in which ___ are or may be present in the air in quantities sufficient to produce explosive or ignitible mixtures.
   1) combustible dust
   2) easily ignitible fibers or flyings
   3) flammable gases or vapors

11. The wiring of an outdoor sign that is portable or mobile and is in a wet location shall be ___.
   1) provided with factory-installed ground-fault circuit-interrupter protection for personnel
   2) protected by a 20-ampere overcurrent protective device
   3) provided with ground-fault circuit-interrupter protection for personnel
   4) none of the these

12. In a recreational vehicle park, what percentage of the spaces supplied with electricity must have 30-amp, 125-volt receptacles?
   1) 60%
   2) 100%
   3) 20%
   4) 30%
   5) 70%

13. Each general care area patient bed location shall be provided with at least ___ receptacle(s).
   1) 1
   2) 2
   3) 3
   4) 4
   5) 6

14. In an area in which patients are normally cared for, the patient care vicinity is the space with surfaces likely to be contacted by the patient or an attendant who can touch the patient. Typically in a patient room, this encloses a space within the room not less than ___ feet beyond the perimeter of the bed in its nominal location, and extending vertically not less than ___ feet above the floor.
   1) 6      6
   2) 7/2     7/2
   3) 6       5
   4) 6       7/2

15. Where cable trays support individual conductors and where the conductors pass from one cable tray to another, or from a cable tray to raceway(s) or from a cable tray to equipment where the conductors are terminated, the distance between cable trays or between the cable tray and the raceway(s) or the equipment shall not exceed ___ feet.
   1) 1/2
   2) 6
   3) 1/2
   4) 1
   5) 3

16. Which of the following is not true concerning temporary wiring?
   1) All lamps shall be protected by a suitable fixture or guard.
   2) Handle ties are permitted to disconnect multiwire branch circuits.
   3) Tests shall be performed on cords and receptacles and plugs for correct attachment to the equipment grounding conductor.
   4) Temporary power for Christmas decorative lighting shall not exceed 60 days.

17. Fixed stage switchboards (within theaters) shall be of the ___ type and shall comply with Part IV of Article 408 unless approved based on suitability as a stage switchboard as determined by a qualified testing laboratory and recognized test standards and principles.
   1) dimmer
   2) dead-front
   3) portable
   4) weatherproof

18. A ___ is any building that is of closed construction and is made or assembled in manufacturing facilities on or off the building site for installation, or for assembly and installation on the building site, other than manufactured homes, mobile homes, park trailers, or recreational vehicles.
   1) building system
   2) temporary installation
   3) manufactured building
   4) none of these

19. A transformer rated not over 600 volts requires ___.

1) overcurrent protection set at not more than 125 percent of the rated primary current of the transformer
2) secondary overcurrent protection at not more than 125 percent of the rated secondary current of the transformer if the primary overcurrent device is set at not more than 250 percent of the rated primary current of the transformer
3) either a or b
4) none of these

20. The collector ring used for grounding of an irrigation machine shall have a current rating of NOT less than ____% of the full-load current of the largest device served plus the sum of the other devices served.
   1) 75  2) 80  3) 100  4) 125

21. The overall length of a mobile home power-supply cord, measured from the end of the cord, including bared leads, to the face of the attachment plug cap shall not be less than ____ feet and shall not exceed ____ feet.
   1) 20  50  2) 12  30  3) 11  20  4) 21 36\(\frac{1}{2}\)

22. Ground-fault protection of equipment shall be provided in accordance with 230.95 for solidly-grounded, wye, electrical services of more than 150 volts to ground, but not exceeding 600 volts phase-to-phase for each service disconnect rated ___ amperes or more.
   1) 1000  2) 1500  3) 2000  4) 2500

23. Manufactured wiring system cable shall be listed armored cable or metal-clad cable containing nominal 600-volt copper-insulated conductors with a bare or insulated copper equipment grounding conductor equivalent in size to the ungrounded conductor. These conductors shall be permitted to be ___ AWG.
   I. 10  II. 12  III. 14
   1) II only  3) I only  5) II or III only
   2) I, II, or III  4) I or II only

24. For industrial X-ray equipment, size 18 AWG or 16 AWG fixture wires and flexible cords shall be permitted for the control and operating circuits where protected by not larger than ____-ampere overcurrent devices.
   1) 15  2) 20  3) 25  4) 30

25. Where installed in cable tray in industrial establishments, single conductors used as equipment grounding conductors shall be insulated, covered, or bare, and they shall be ___ AWG or larger.
   1) 1  2) 1/0  3) 4/0  4) 4

26. In any anesthetizing area, all metal raceways and metal-sheathed cables and all normally non–current-carrying conductive portions of fixed electrical equipment shall be ___.
   1) isolated from adjacent metal raceways, metal cables, and non–current-carrying conductive surfaces
   2) connected to an equipment grounding conductor
   3) secured by nonconductive means
   4) elevated above the hazardous (classified) zone

27. Fixed outdoor electric deicing and snow-melting equipment shall be protected by ___.
   1) ground-fault circuit-interrupter protection for personnel
   2) ground-fault circuit-interrupter protection for equipment
   3) being installed in rigid nonmetallic conduit for protection
   4) being installed in rigid metal conduit for protection

28. Switches, flashers, and similar devices controlling transformers and electronic power supplies shall be rated for controlling inductive loads or have a current rating not less than ___ percent of the current rating of the transformer.
29. A feeder tap less than 25 feet in length is not required to have overcurrent protection if the ampacity of the tap conductors is at least ___ percent of the feeder overcurrent device.
   1) 50  
   2) 40  
   3) $33\frac{1}{3}$  
   4) 20

30. ___ are those special care units, intensive care units, coronary care units, angiography laboratories, cardiac catheterization laboratories, delivery rooms, operating rooms, and similar areas in which patients are intended to be subjected to invasive procedures and connected to line-operated, electromedical devices.
   1) Nursing homes  
   2) General care areas  
   3) Critical care areas  
   4) Ambulatory health care facilities

31. In a data-processing room, the disconnecting means for the computers shall be ___.
   1) within sight of the equipment  
   2) at the main disconnect  
   3) at the principal exit doors  
   4) within 30 feet of the equipment

32. The critical branch of the emergency system shall supply power for ___, selected receptacles, and special power circuits serving areas and functions related to patient care.
   I. task illumination  
   II. fixed equipment  
   1) both I & II  
   2) I only  
   3) II only  
   4) neither I nor II

33. Overcurrent protection for feeders and branch circuits supplying electric vehicle supply equipment shall have a rating of not less than ___% of the maximum load of the electric vehicle supply equipment.
   1) 200  
   2) 150  
   3) 100  
   4) 125  
   5) 80

34. A single-family residence is served with insulated 120/240-volt service-drop conductors, supported with a grounded messenger wire from the utility company. This service drop crosses the pool and the pool has a diving board that is 5 feet above the water level. The minimum height above water level of the service drop as permitted by the NEC® is ___ feet.
   1) 25  
   2) $14\frac{1}{2}$  
   3) $22\frac{1}{2}$  
   4) $19\frac{1}{2}$

35. The entire area of an aircraft hangar, including any adjacent and communicating areas not suitably cut off from the hangar, shall be classified as a Class I, Division 2 or Zone 2 location up to a level ___ inches above the floor.
   1) 24  
   2) 4  
   3) 36  
   4) 12  
   5) 18

36. In a health care facility, low-voltage equipment that is frequently in contact with the bodies of persons or has exposed current-carrying elements shall operate on a voltage of ___ volts or less if the equipment is not approved as intrinsically safe, double insulated, or moisture resistant.
   1) 10  
   2) 24  
   3) 100  
   4) 120

37. Where a permanently installed pool is installed at a dwelling unit, at least one 125-volt, 15- or 20-ampere receptacle on a general-purpose branch circuit shall be located a minimum of ___ feet from and not more than ___ feet from the inside wall of the pool.
   1) 5  
   2) 10  
   3) 6  
   4) 20  
   5) 3  
   6

38. Circuits from portable switchboards (within theaters) directly supplying equipment containing incandescent lamps of not over ___ watts shall be protected by overcurrent protective devices having a rating or setting of not over 20 amperes.
   1) 250  
   2) 300  
   3) 400  
   4) 100  
   5) 500
39. A ___ location is a location in which volatile flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors are handled, processed, or used, but in which the liquids, vapors, or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or systems or in case of abnormal operation of equipment.

1) Class I, Division 1  
2) Class I, Division 2  
3) Class II, Division 1  
4) Class II, Division 2

40. Essential electrical systems for nursing homes and limited care facilities shall be comprised of two separate branches capable of supplying a limited amount of lighting and power service, which is considered essential for the protection of life safety and effective operation of the institution during the time normal electrical service is interrupted for any reason. These two separate branches shall be the ____.

   I. emergency system      II. critical branch      III. life safety

1) I & II only  
2) I & III only  
3) II & III only

41. Network-powered broadband communications systems shall be classified as having ___-power sources where the dc power source exceeds 150 volts to ground, does not exceed 200 volts to ground, and the current to ground is limited to 10 mA.

1) medium  
2) low  
3) high

42. The ___ is a subsystem of the emergency system consisting of feeders and branch circuits supplying energy to task illumination, special power circuits, and selected receptacles serving areas and functions related to patient care and that are connected to alternate power sources by one or more transfer switches during interruption of the normal power source.

1) emergency system  
2) alternate power source  
3) essential electrical system  
4) critical branch

43. In which of the following locations is a cable tray prohibited to be installed?

1) basements  
2) storage rooms  
3) sealed ceiling spaces  
4) when passing through a wall

44. If a construction trailer with a computed load of 32 amps arrives on the construction site and the trailer has no power supply cord, which of the following is permitted by the NEC®?

   I. Install a service on the trailer.  
   II. Run a feeder to the trailer from the adjacent service equipment.

1) I only  
2) neither I nor II  
3) either I or II  
4) II only

45. ___ optical fiber cables contain optical fibers and current-carrying electrical conductors.

1) Composite  
2) Nonconductive  
3) Conductive

46. Portable amusement rides and amusement attractions shall be maintained not less than ___ feet in any direction from overhead conductors operating at 600 volts or less, except for the conductors supplying the amusement ride or attraction.

1) 8  
2) 10  
3) 12  
4) 15  
5) 18

47. For AC adjustable voltage, variable torque drive motors, the ampacity of conductors, or ampere ratings of switches, circuit breakers, or fuses, and ground-fault protection shall be based on the operating current marked on the nameplate. If the current does not appear on the nameplate, the ampacity determination shall be based on ___ of the values given in tables 430.149 and 430.150.

1) 80%  
2) 100%  
3) 125%  
4) 150%

48. All switches and circuit breakers used as switches shall be installed such that the center of the grip of the operating handle, when in its highest position, is not more than ___ above the floor or working platform.
49. Which of the following wiring methods is/are approved for use as fixed wiring in an area above Class I locations in a major repair garage?
1) Type MI cable
2) Type TC cable
3) Type MC cable
4) all of these

50. Heating assemblies employing resistance heating elements intended to heat nonmetallic pipelines or vessels may use the factory-installed attachment plug as the disconnecting means when ___ and the voltage is 150 volts or less.
1) it is operating at 20 amps or less
2) it is a ground-fault protected circuit
3) it is operating at 30 amps or less and is GFCI protected
4) it is operating at 20 amps or less and is GFCI protected

51. A motor is installed as part of a factory-wired piece of equipment. It is required to be grounded, and no additional connections are required at the motor terminal housing during the equipment installation. A separate means for motor grounding at the motor terminal housing shall ___.
1) be required
2) not be required
3) be sized to the wire
4) be bonded to the equipment

52. A feeder tap over 10 feet long, but less than 25 feet long, is permitted without overcurrent protection at the tap point, providing the ___.
1) ampacity of the tap conductors is not less than one-third of the rating of the overcurrent device protecting the feeder conductors
2) tap conductors terminate in a single circuit breaker or a single set of fuses that limit the load to the ampacity of the tap conductors
3) tap conductors are protected from physical damage
4) all of these
MULTIPLE CHOICE

1. ANS: 4  
   2011 NEC: 820.15  
   PTS: 1  REF: 2011 NEC: 820.15

2. ANS: 5  
   2011 NEC: 551.71  
   PTS: 1  REF: 2011 NEC: 551.71

3. ANS: 2  
   2011 NEC: 250.68(A) Exc 1  
   PTS: 1  REF: 2011 NEC: 250.68(A) Exc 1

4. ANS: 4  
   2011 NEC: 695.6(B)  
   PTS: 1  REF: 2011 NEC: 695.6(B)

5. ANS: 1  
   2011 NEC: 590.6(A)  
   PTS: 1  REF: 2011 NEC: 590.6(A)

6. ANS: 3  
   2011 NEC: 800.154(B)(2)  
   PTS: 1  REF: 2011 NEC: 800.154(B)(2)

7. ANS: 3  
   2011 NEC: 517.14  
   PTS: 1  REF: 2011 NEC: 517.14

8. ANS: 1  
   2011 NEC: 550.10(A)  
   PTS: 1  REF: 2011 NEC: 550.10(A)

9. ANS: 6  
   2011 NEC: 800.154(B)(1) & T. 800.154(E)  
   PTS: 1  REF: 2011 NEC: 800.154(B)(1) & T. 800.154(E)

10. ANS: 3  
    2011 NEC: 500.5(B)  
    PTS: 1  REF: 2011 NEC: 500.5(B)

11. ANS: 1  
    2011 NEC: 600.10(C)(2)  
    PTS: 1  REF: 2011 NEC: 600.10(C)(2)

12. ANS: 5  
    2011 NEC: 551.71
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26. ANS: 2
   2011 NEC: 517.62
   PTS: 1  REF: 2011 NEC: 517.62

27. ANS: 2
   2011 NEC: 426.28
   PTS: 1  REF: 2011 NEC: 426.28

28. ANS: 4
   2011 NEC: 600.6(B)
   PTS: 1  REF: 2011 NEC: 600.6(B)

29. ANS: 3
   2011 NEC: 240.21(B)&(B)(2)(1)
   PTS: 1  REF: 2011 NEC: 240.21(B)&(B)(2)(1)

30. ANS: 3
    2011 NEC: 517.2
    PTS: 1  REF: 2011 NEC: 517.2

31. ANS: 2
    2011 NEC: 645.10
    PTS: 1  REF: 2011 NEC: 645.10

32. ANS: 1
    2011 NEC: 517.33(A)
    PTS: 1  REF: 2011 NEC: 517.33(A)

33. ANS: 4
    2011 NEC: 625.21
    PTS: 1  REF: 2011 NEC: 625.21

34. ANS: 3
    2011 NEC: Fig. 680.8 & T. 680.8
    PTS: 1  REF: 2011 NEC: Fig. 680.8 & T. 680.8

35. ANS: 5
    2011 NEC: 513.3(B)
    PTS: 1  REF: 2011 NEC: 513.3(B)

36. ANS: 1
    2011 NEC: 517.64(A)(1)(2)&(3)
    PTS: 1  REF: 2011 NEC: 517.64(A)(1)(2)&(3)

37. ANS: 2
    2011 NEC: 680.22(A)(3)
    PTS: 1  REF: 2011 NEC: 680.22(A)(3)

38. ANS: 2
    2011 NEC: 520.52
    PTS: 1  REF: 2011 NEC: 520.52

39. ANS: 2
40. **ANS:** 3  
   **PTS:** 1  
   **REF:** 2011 NEC: 500.5(B)(2)(1)

41. **ANS:** 1  
   **PTS:** 1  
   **REF:** 2011 NEC: 517.41(A)

42. **ANS:** 4  
   **PTS:** 1  
   **REF:** 2011 NEC: 830.15(2)

43. **ANS:** 3  
   **PTS:** 1  
   **REF:** 2011 NEC: 392.6(G)&(H)

44. **ANS:** 4  
   **PTS:** 1  
   **REF:** 2011 NEC: 550.32(A) w/ 550.4(A)

45. **ANS:** 1  
   **PTS:** 1  
   **REF:** 2011 NEC: 770.2

46. **ANS:** 4  
   **PTS:** 1  
   **REF:** 2011 NEC: 525.5(B)(1)

47. **ANS:** 4  
   **PTS:** 1  
   **REF:** 2011 NEC: 430.6(C)

48. **ANS:** 4  
   **PTS:** 1  
   **REF:** 2011 NEC: 404.8(A)

49. **ANS:** 4  
   **PTS:** 1  
   **REF:** 2011 NEC: 511.7(A)(1)

50. **ANS:** 1  
   **PTS:** 1  
   **REF:** 2011 NEC: 427.55(B)

51. **ANS:** 4  
   **PTS:** 1  
   **REF:** 2011 NEC: 430.12(E) Exc

52. **ANS:** 4  
   **PTS:** 1  
   **REF:** 2011 NEC: 420.21(B)(2)
PTS: 1       REF: 2011 NEC: 240.21(B)(2)