# California Electrical Exam

## Free Practice Questions Portfolio

Total Questions: 50
Comprehensive Review of NEC, Trade Knowledge, and CA Specifics

**1. What is the minimum burial depth for direct-buried Type UF cable supplying a 120V branch circuit for general use?**

a: 12 inches
b: 18 inches
c: 24 inches
d: 30 inches

**2. According to Ohm's Law, if a circuit has 120 volts and draws 10 amperes, what is the resistance?**

a: 1200 ohms
b: 12 ohms
c: 110 ohms
d: 130 ohms

**3. What is the maximum number of conductors allowed in a conduit according to NEC fill requirements?**

a: 40% fill for 3 or more conductors
b: 50% fill for any number
c: 53% fill for 1 conductor
d: 60% fill for 2 conductors

**4. What is the minimum clearance required for service drop conductors over residential driveways?**

a: 10 feet
b: 12 feet
c: 15 feet
d: 18 feet

**5. Which grounding electrode must have at least 10 feet of direct soil contact?**

a: Ground rod
b: Ground ring
c: Concrete-encased electrode
d: Metal water pipe

**6. What is the minimum number of receptacle outlets required in an attached garage?**

a: None required
b: At least one
c: At least two
d: One per vehicle space

**7. What type of conduit is required for underground installations in corrosive environments?**

a: EMT
b: PVC Schedule 40
c: Galvanized Rigid Metal Conduit
d: Flexible Metal Conduit

**8. What is the maximum voltage drop recommended for branch circuits?**

a: 2%
b: 3%
c: 5%
d: 10%

**9. How many feet must antenna lead-in conductors be separated from power conductors?**

a: 2 feet
b: 4 feet
c: 6 feet
d: 10 feet

**10. What is the minimum height requirement for service equipment in a mobile home?**

a: 18 inches
b: 24 inches
c: 30 inches
d: 36 inches

**11. In a 3-phase system, what is the phase angle between each phase?**

a: 90 degrees
b: 120 degrees
c: 180 degrees
d: 360 degrees

**12. What is the ampacity of a 12 AWG copper conductor with THHN insulation at 75°C?**

a: 15 amperes
b: 20 amperes
c: 25 amperes
d: 30 amperes

**13. What is the required working space clearance in front of a 240V electrical panel?**

a: 2 feet
b: 3 feet
c: 4 feet
d: 6 feet

**14. Which article of the NEC covers grounding and bonding requirements?**

a: Article 210
b: Article 220
c: Article 250
d: Article 300

**15. What is the minimum size equipment grounding conductor for a 20-ampere branch circuit?**

a: 14 AWG
b: 12 AWG
c: 10 AWG
d: 8 AWG

**16. How do you calculate the total load for a dwelling unit?**

a: Add all connected loads
b: Use NEC demand factors
c: Multiply by 1.25
d: Use nameplate ratings only

**17. What is the maximum spacing between receptacles along a wall in a dwelling?**

a: 6 feet
b: 10 feet
c: 12 feet
d: 15 feet

**18. What is the purpose of a GFCI (Ground Fault Circuit Interrupter)?**

a: Prevent overloads
b: Protect against ground faults
c: Reduce voltage drop
d: Increase circuit capacity

**19. What is the minimum size service conductor for a 200-ampere service?**

a: 2/0 AWG copper
b: 3/0 AWG copper
c: 4/0 AWG copper
d: 250 kcmil copper

**20. What is the required height for receptacles above a kitchen countertop?**

a: 12 inches
b: 18 inches
c: 20 inches
d: Not specified

**21. What is the minimum number of lighting outlets required in a habitable room?**

a: None
b: One
c: Two
d: One per 100 sq ft

**22. What is the maximum length of a ground rod that must be driven into the earth?**

a: 6 feet
b: 8 feet
c: 10 feet
d: Full length unless rock bottom is encountered

**23. What is the minimum wire size for a 30-ampere circuit?**

a: 14 AWG
b: 12 AWG
c: 10 AWG
d: 8 AWG

**24. What is the purpose of a neutral conductor in a circuit?**

a: Provide ground fault protection
b: Complete the circuit path
c: Increase voltage
d: Reduce current

**25. What is the maximum number of disconnects allowed for a service?**

a: 2
b: 4
c: 6
d: 8

**26. What is the minimum depth for a junction box installed in a wall?**

a: 1/2 inch
b: 1 inch
c: 1-1/2 inches
d: 2 inches

**27. What is the required AFCI protection for bedroom circuits?**

a: Not required
b: All 15A and 20A circuits
c: Only lighting circuits
d: Only receptacle circuits

**28. What is the minimum clearance between a swimming pool and overhead power lines?**

a: 10 feet
b: 14.5 feet
c: 22.5 feet
d: 25 feet

**29. What is the maximum distance between supports for EMT conduit?**

a: 5 feet
b: 8 feet
c: 10 feet
d: 12 feet

**30. What is the minimum lighting load calculation for a dwelling unit per square foot?**

a: 1 VA
b: 2 VA
c: 3 VA
d: 5 VA

**31. What is the purpose of bonding in electrical systems?**

a: Increase voltage
b: Ensure electrical continuity
c: Reduce current
d: Provide insulation

**32. What is the minimum size neutral conductor for a 100-ampere service?**

a: 6 AWG
b: 4 AWG
c: 2 AWG
d: 1/0 AWG

**33. What is the maximum number of bends allowed in a conduit run between pull points?**

a: 2
b: 3
c: 4
d: 6

**34. What is the required spacing between receptacles in commercial buildings?**

a: 6 feet
b: 10 feet
c: 12 feet
d: 50 feet

**35. What is the minimum cover requirement for PVC conduit under a building?**

a: 0 inches
b: 6 inches
c: 12 inches
d: 18 inches

**36. What is the purpose of a transformer in an electrical system?**

a: Convert AC to DC
b: Change voltage levels
c: Provide overcurrent protection
d: Improve power factor

**37. What is the minimum wire size for a 50-ampere circuit?**

a: 8 AWG
b: 6 AWG
c: 4 AWG
d: 2 AWG

**38. What is the required height for a service mast above a roof?**

a: 18 inches
b: 24 inches
c: 36 inches
d: 48 inches

**39. What is the maximum voltage allowed for a standard residential circuit?**

a: 120V
b: 240V
c: 277V
d: 480V

**40. What is the minimum number of kitchen countertop receptacles required?**

a: One
b: Two
c: Three
d: One per 4 feet

**41. What is the purpose of a disconnect switch?**

a: Provide overcurrent protection
b: Isolate equipment for maintenance
c: Reduce voltage
d: Increase current capacity

**42. What is the minimum size equipment grounding conductor for a 100-ampere circuit?**

a: 10 AWG
b: 8 AWG
c: 6 AWG
d: 4 AWG

**43. What is the required GFCI protection for bathroom receptacles?**

a: Not required
b: All receptacles
c: Only receptacles within 6 feet of sink
d: Only receptacles within 3 feet of sink

**44. What is the minimum working space width in front of electrical equipment?**

a: 24 inches
b: 30 inches
c: 36 inches
d: 48 inches

**45. What is the maximum overcurrent protection for a 12 AWG copper conductor?**

a: 15 amperes
b: 20 amperes
c: 25 amperes
d: 30 amperes

**46. What is the required torque specification for electrical connections?**

a: Hand tight
b: Manufacturer's specifications
c: 10 ft-lbs
d: 20 ft-lbs

**47. What is the minimum size service for a single-family dwelling?**

a: 60 amperes
b: 100 amperes
c: 150 amperes
d: 200 amperes

**48. What is the purpose of a surge protective device (SPD)?**

a: Prevent overloads
b: Protect against voltage surges
c: Reduce harmonics
d: Improve power factor

**49. What is the maximum length of flexible cord allowed for a permanent connection?**

a: 3 feet
b: 6 feet
c: 10 feet
d: Not permitted

**50. What is the required color code for grounding conductors?**

a: Black
b: White
c: Green or bare
d: Red

# Answer Key

**1. Answer: C** - Per NEC 300.5, direct-buried cables must be buried at least 24 inches deep for residential branch circuits under 600V.

**2. Answer: B** - Using Ohm's Law (R = V/I), resistance equals 120V ÷ 10A = 12 ohms.

**3. Answer: A** - NEC 300.17 specifies maximum 40% fill for 3 or more conductors, 31% for 2 conductors, and 53% for 1 conductor.

**4. Answer: B** - NEC 230.24(B) requires a minimum clearance of 12 feet over residential driveways and commercial areas not subject to truck traffic.

**5. Answer: B** - NEC 250.53(G) requires ground rings to have at least 10 feet of direct soil contact.

**6. Answer: B** - NEC 210.52(G) requires at least one receptacle outlet in an attached garage.

**7. Answer: B** - PVC Schedule 40 or Schedule 80 is recommended for corrosive underground environments as it resists corrosion better than metal conduits.

**8. Answer: B** - NEC recommends a maximum voltage drop of 3% for branch circuits and 5% total for feeders and branch circuits combined.

**9. Answer: C** - NEC 810.15 requires antenna lead-in conductors to be separated from power conductors by at least 6 feet.

**10. Answer: B** - NEC 550.32 requires mobile home service equipment to be located at least 24 inches above the ground.

**11. Answer: B** - In a balanced 3-phase system, the phases are separated by 120 degrees.

**12. Answer: C** - Per NEC Table 310.16, a 12 AWG copper conductor with THHN insulation at 75°C has an ampacity of 25 amperes.

**13. Answer: B** - NEC 110.26 requires a minimum working space of 3 feet in front of electrical equipment operating at 150V to 600V.

**14. Answer: C** - NEC Article 250 covers all grounding and bonding requirements for electrical systems.

**15. Answer: B** - Per NEC Table 250.122, a 12 AWG copper equipment grounding conductor is required for circuits protected by 20-ampere overcurrent devices.

**16. Answer: B** - NEC Article 220 provides demand factors for calculating dwelling unit loads, which accounts for diversity and not all loads operating simultaneously.

**17. Answer: C** - NEC 210.52(A) requires receptacles to be installed so that no point along the wall is more than 6 feet from a receptacle, effectively creating 12-foot spacing.

**18. Answer: B** - GFCIs protect against ground faults by detecting current imbalances and interrupting the circuit within milliseconds to prevent electric shock.

**19. Answer: B** - Per NEC Table 310.16, 3/0 AWG copper conductors are required for a 200-ampere service at 75°C.

**20. Answer: D** - NEC does not specify a height requirement for receptacles above countertops, but they must be located to serve countertop surfaces.

**21. Answer: B** - NEC 210.70 requires at least one wall-switched lighting outlet in habitable rooms.

**22. Answer: D** - NEC 250.53(G) requires ground rods to be driven to their full length (typically 8 feet) unless rock bottom is encountered.

**23. Answer: C** - Per NEC Table 310.16, 10 AWG copper conductors are required for 30-ampere circuits at 75°C.

**24. Answer: B** - The neutral conductor completes the circuit path, allowing current to return to the source in AC systems.

**25. Answer: C** - NEC 230.71 allows a maximum of six disconnects for a service, grouped in one location.

**26. Answer: C** - NEC 314.20 requires outlet boxes in walls to be installed so the front edge is not set back more than 1/4 inch from the finished surface. Standard depth is typically 1-1/2 inches or more.

**27. Answer: B** - NEC 210.12 requires AFCI protection for all 15-ampere and 20-ampere branch circuits supplying outlets in dwelling unit bedrooms.

**28. Answer: C** - NEC 680.8 requires overhead conductors to be at least 22.5 feet above the maximum water level of a pool.

**29. Answer: C** - NEC 358.30 requires EMT to be supported at least every 10 feet and within 3 feet of boxes and fittings.

**30. Answer: C** - NEC Table 220.12 specifies a minimum general lighting load of 3 VA per square foot for dwelling units.

**31. Answer: B** - Bonding ensures electrical continuity and conductivity between metal parts to establish an effective ground-fault current path.

**32. Answer: B** - The neutral conductor must be sized based on the maximum unbalanced load. For a 100A service, typically 4 AWG copper is minimum per NEC 220.61.

**33. Answer: C** - NEC 358.26 limits conduit runs to a maximum of 360 degrees (four 90-degree bends) between pull points.

**34. Answer: D** - NEC 210.52 requires receptacles in commercial buildings to be spaced so that no point is more than 50 feet from a receptacle.

**35. Answer: A** - NEC Table 300.5 allows PVC conduit under a building to have 0 inches of cover if it is encased in concrete.

**36. Answer: B** - Transformers change voltage levels by electromagnetic induction, stepping voltage up or down as needed.

**37. Answer: B** - Per NEC Table 310.16, 6 AWG copper conductors are required for 50-ampere circuits at 75°C.

**38. Answer: C** - NEC 230.24(A) requires service conductors to have a minimum clearance of 8 feet above the roof, but the mast typically extends 36 inches minimum.

**39. Answer: B** - Residential circuits typically operate at 120V or 240V. 240V is the maximum for standard residential applications.

**40. Answer: B** - NEC 210.52(C) requires at least two 20-ampere small appliance branch circuits to serve kitchen countertop receptacles.

**41. Answer: B** - A disconnect switch allows equipment to be safely isolated from its power source for maintenance or emergency shutdown.

**42. Answer: B** - Per NEC Table 250.122, an 8 AWG copper equipment grounding conductor is required for circuits protected by 100-ampere overcurrent devices.

**43. Answer: B** - NEC 210.8(A)(1) requires GFCI protection for all receptacles in bathrooms.

**44. Answer: B** - NEC 110.26(A)(2) requires a minimum working space width of 30 inches or the width of the equipment, whichever is greater.

**45. Answer: B** - NEC 240.4(D) limits overcurrent protection for 12 AWG copper conductors to 20 amperes.

**46. Answer: B** - NEC 110.14(D) requires electrical connections to be tightened according to manufacturer's torque specifications.

**47. Answer: B** - NEC 230.79(C) requires a minimum service rating of 100 amperes for a single-family dwelling.

**48. Answer: B** - Surge protective devices protect electrical equipment from voltage surges caused by lightning or switching operations.

**49. Answer: D** - NEC 400.12 prohibits the use of flexible cords as a substitute for fixed wiring. Flexible cords are only permitted for temporary or portable applications.

**50. Answer: C** - NEC 250.119 requires equipment grounding conductors to be green, green with yellow stripes, or bare.