



Texas Master Electrician

Practice test

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Time limit: 240 minutes

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Answer key for this session (PDF):

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1. NEC 230.95 requires ground-fault protection of equipment (GFPE) for solidly grounded wye services exceeding 150V to ground but not over 600V phase-to-phase when rated:

- A. 2000A or more
- B. 800A or more
- C. 150A or more
- D. 1000A or more

2. Under NEC Article 600, electric signs must be grounded if operating at voltages above:

- A. 120V
- B. 50V
- C. 150V
- D. 100V

3. A 100A feeder requires an equipment grounding conductor. Per NEC Table 250.122, what is the minimum size copper EGC?

- A. 6 AWG
- B. 12 AWG
- C. 8 AWG
- D. 10 AWG

4. A 480V, 3-phase, 4-wire commercial feeder supplies 150 kVA of balanced load. What is the full-load current per phase?

- A. 120A
- B. 180A
- C. 208A
- D. 150A

5. NEC Article 800 covers communication circuits. The primary protector must be located:

- A. As close as practicable to where conductors enter the building
- B. Within 50 feet of the electrical service
- C. At the main distribution frame only
- D. At the service entrance panel

6. NEC 240.87 requires arc energy reduction for circuit breakers rated 1200A or higher. Which method is NOT an acceptable means?
- A. Differential relaying
 - B. Zone-selective interlocking
 - C. Energy-reducing maintenance switching
 - D. Reducing conductor size to limit fault current
7. NEC 250.24 requires the neutral conductor to be grounded at the service entrance. Where is this grounding connection made?
- A. At the load side of the service disconnect
 - B. At the meter base only
 - C. At the main bonding jumper location in the service equipment
 - D. At the first overcurrent device downstream
8. A Texas electrical contractor is required to carry which types of insurance as a condition of licensure?
- A. Life insurance on all employees
 - B. Professional liability (E&O) insurance only
 - C. Workers' compensation and general liability insurance
 - D. Automobile insurance only
9. For the standard method of calculating a multifamily dwelling service per NEC 220.84, the demand factor from Table 220.84 is applied based on:
- A. Total connected load in kVA
 - B. Number of large appliances
 - C. Total square footage
 - D. Number of dwelling units
10. Under NEC Article 517, what type of grounding system is required in patient care areas of health care facilities?
- A. Standard equipment grounding only
 - B. Equipotential bonding of all conductive surfaces
 - C. Isolated grounding receptacles throughout
 - D. Double insulation on all equipment
11. Under the Texas Electricians Act, a Master Electrician license is required before an individual may obtain which of the following?
- A. Pass the journeyman exam
 - B. Obtain an Electrical Contractor license
 - C. Work as an apprentice on residential wiring
 - D. Supervise journeyman electricians
12. Under NEC Article 550, mobile home service equipment must be rated at a minimum of:
- A. 50A
 - B. 200A
 - C. 150A
 - D. 100A
13. In Texas, which state agency issues Master Electrician licenses?
- A. Texas State Board of Plumbing Examiners (TSBPE)
 - B. Texas Department of Licensing and Regulation (TDLR)
 - C. Texas Workforce Commission (TWC)
 - D. Texas Commission on Environmental Quality (TCEQ)
14. Under NEC Article 424, fixed electric space heating branch circuits must be sized at a minimum of what percentage of the total heating load?
- A. 150%
 - B. 100%
 - C. 115%
 - D. 125%
15. Per NEC 240.4(D), what is the maximum overcurrent protection for 12 AWG copper conductors?
- A. 20A
 - B. 25A
 - C. 30A
 - D. 15A
16. A 200A, 240V single-phase service is installed. What is the total VA capacity of this service?
- A. 40,000 VA
 - B. 32,000 VA
 - C. 24,000 VA
 - D. 48,000 VA
17. Per NEC 430.102, a motor disconnecting means must be within sight from the controller or be lockable open. "Within sight" means visible and not more than:
- A. 25 feet
 - B. 100 feet
 - C. 10 feet
 - D. 50 feet
18. NEC Article 450 covers transformers. A dry-type transformer rated over 112.5 kVA installed indoors must be in a room with a minimum fire resistance rating of:
- A. 3-hour fire rating
 - B. No fire rating required for dry-type transformers
 - C. 2-hour fire rating

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D. 1-hour fire rating

19. Per NEC 230.79, what is the minimum service disconnect rating for a one-family dwelling?

- A. 100A
- B. 150A
- C. 200A
- D. 60A

20. Per NEC 250.53(A)(2), if a single ground rod does not achieve 25 ohms or less resistance to ground, what must be done?

- A. Install a second electrode at least 6 feet away
- B. Install a ground ring
- C. Increase the GEC conductor size
- D. Use a concrete-encased electrode instead

21. A Type S fuse is designed to be non-tamperable. What prevents replacing it with a higher-rated fuse?

- A. Physical size difference between ratings
- B. Time-delay design
- C. Rejection feature requiring a matching adapter
- D. Color coding by ampere rating

22. NEC 250.36 permits high-impedance grounded neutral systems on 3-phase AC systems with a voltage of:

- A. 480V to 1000V
- B. 120V to 240V
- C. 120V to 480V
- D. 277V to 480V

23. Per NEC 430.32, a continuous-duty motor with a service factor of 1.15 or more must have overload protection set at no more than what percentage of full-load current?

- A. 125%
- B. 140%
- C. 150%
- D. 115%

24. A commercial restaurant kitchen has 6 electric cooking units. Per NEC Table 220.56, what demand factor applies?

- A. 70%
- B. 80%
- C. 65%
- D. 100%

25. Under the Texas Electricians Act, which of the following work is exempt from the licensed electrician requirement?

- A. Industrial plant maintenance by unlicensed employees
- B. HVAC contractor installing disconnect switches
- C. Commercial tenant finish-out work
- D. Homeowner performing work on their own single-family residence

26. NEC 220.52(B) requires a laundry branch circuit load of how many VA to be added to a dwelling service calculation?

- A. 0 VA — covered by general lighting load
- B. 3,000 VA
- C. 1,500 VA
- D. 900 VA

27. A 3-phase wye transformer has a secondary voltage of 208Y/120V. A single-phase load connected line-to-neutral operates at:

- A. 277V
- B. 208V
- C. 120V
- D. 240V

28. NEC 220.61 allows a neutral demand factor for 3-wire services. The 70% demand factor applies to the neutral load exceeding:

- A. 200A
- B. 100A
- C. 400A
- D. 300A

29. NEC Article 404 covers switches. In a three-way switch circuit, the traveler conductors:

- A. Connect to opposite legs of a 240V circuit
- B. Must be identified with white tape at each end
- C. Are only energized when the switch is in the ON position
- D. Are always energized regardless of switch position

30. NEC Article 376 covers metal wireways. What is the maximum conductor fill percentage at any cross section?

- A. 60%
- B. 40%
- C. 20%
- D. 50%

31. How many continuing education hours must a Texas Master Electrician complete per renewal period?
- A. 4 hours
 - B. 12 hours
 - C. 16 hours
 - D. 8 hours
32. According to NEC Article 334, NM cable is permitted to be installed in which of the following locations?
- A. One- and two-family dwellings
 - B. Commercial buildings over 3 stories
 - C. Ducts or plenums
 - D. Wet or damp locations
33. Per NEC 342.30, rigid metal conduit (RMC) must be securely fastened within how many feet of each conduit termination?
- A. 3 feet
 - B. 5 feet
 - C. 2 feet
 - D. 10 feet
34. NEC 215.2 requires feeder conductors to supply continuous loads. For a continuous load of 160A, what is the minimum required conductor ampacity?
- A. 225A
 - B. 200A
 - C. 160A
 - D. 175A
35. Per NEC 314.28(A)(1), for conductors 4 AWG and larger making a straight pull, the minimum pull box length must be at least how many times the largest conduit trade size?
- A. Four times the trade size of the largest conduit
 - B. Six times the trade size of the largest conduit
 - C. Eight times the trade size of the largest conduit
 - D. Two times the trade size of the largest conduit
36. Which electrical code does Texas adopt for construction?
- A. The NEC with Texas-specific amendments as adopted by TDLR
 - B. The International Electrical Code (IEC)
 - C. A Texas-specific electrical code developed by TDLR
 - D. The NEC without any state amendments
37. NEC Article 410 governs luminaires in clothes closets. A surface-mounted incandescent luminaire must maintain what minimum clearance from the nearest point of a storage area?
- A. 6 inches
 - B. 18 inches
 - C. 12 inches
 - D. 24 inches
38. The concrete-encased electrode per NEC 250.52(A)(3) must use bare copper conductor not smaller than:
- A. 4 AWG
 - B. 1/0 AWG
 - C. 6 AWG
 - D. 2 AWG
39. Under NEC Article 225, what is the minimum height above a steeply sloped roof (4/12 or greater) for service conductors passing over no more than 6 feet of that roof?
- A. 8 feet
 - B. 10 feet
 - C. 18 feet
 - D. 3 feet
40. How often must a Texas Master Electrician license be renewed?
- A. Every 1 year
 - B. Every 3 years
 - C. Every 4 years
 - D. Every 2 years
41. Per NEC Table 220.42, what demand factor applies to the first 3,000 VA of combined lighting and small appliance load in a dwelling unit service calculation?
- A. 100%
 - B. 70%
 - C. 35%
 - D. 25%
42. NEC Article 501 covers Class I hazardous locations. Seal fittings for conduit entering explosion-proof enclosures must be within how many inches of the enclosure?
- A. 36 inches
 - B. 12 inches
 - C. 18 inches
 - D. 24 inches

43. NEC 240.21 permits the 10-foot tap rule without overcurrent protection at the tap point. Which conditions must be met?
- A. Length "d 10 ft, enclosed in raceway, terminates in a single OCPD
 - B. The tap conductor is enclosed in EMT only
 - C. Conductor ampacity equals the upstream OCPD rating
 - D. The tap connects only to a subpanel
44. NEC 240.6 lists standard ampere ratings for fuses and fixed-trip breakers. Which of the following is NOT a standard rating?
- A. 30A
 - B. 20A
 - C. 15A
 - D. 25A
45. For a 3-phase 4-wire wye system with 277V line-to-neutral, what is the line-to-line voltage?
- A. 208V
 - B. 480V
 - C. 277V
 - D. 347V
46. NEC 220.60 permits only the larger of two loads that are unlikely to operate simultaneously to be used in a service calculation. What is this allowance called?
- A. Optional calculation method
 - B. Standard calculation method
 - C. Noncoincident load allowance
 - D. Demand factor method
47. NEC Article 700 covers emergency systems. What is the maximum time an emergency system generator must transfer power after normal power loss?
- A. 30 seconds
 - B. 60 seconds
 - C. 10 seconds
 - D. 90 seconds
48. According to NEC Article 406, a receptacle in a wet location likely to have a cord connected while in use must be protected by:
- A. An in-use (extra-duty) weatherproof cover
 - B. A standard weatherproof cover
 - C. A basic weatherproof cover rated for wet locations
 - D. GFCI protection only, no cover required
49. NEC Article 430 requires motor overload protection for a motor with a temperature rise marked on the nameplate not over 40°C or a service factor of 1.15 or more to be set at no more than:
- A. 125% of nameplate FLC
 - B. 140% of nameplate FLC
 - C. 115% of nameplate FLC
 - D. 150% of nameplate FLC
50. What is the minimum load per linear foot of show window lighting per NEC 220.14(G) in a commercial occupancy?
- A. 150 VA per linear foot
 - B. 100 VA per linear foot
 - C. 250 VA per linear foot
 - D. 200 VA per linear foot
51. A motor nameplate reads 460V, 3-phase, 25 HP. Per NEC Table 430.250 the FLC is 34A. What is the minimum branch circuit conductor ampacity?
- A. 40A
 - B. 42.5A
 - C. 34A
 - D. 45A
52. NEC 110.9 requires overcurrent devices to have an interrupting rating sufficient for available fault current. This rating is commonly called:
- A. Full-load current rating
 - B. Ampere interrupting capacity (AIC)
 - C. Continuous current rating
 - D. Short-circuit withstand rating
53. According to NEC Article 210, small appliance branch circuits in a dwelling unit kitchen must be rated at a minimum of:
- A. 20A, 120V
 - B. 15A, 120V
 - C. 20A, 240V
 - D. 30A, 120V
54. NEC Article 500 classifies hazardous locations. A location where flammable gases are present only under abnormal conditions is classified as:
- A. Class I, Division 1
 - B. Class I, Division 2
 - C. Class II, Division 1
 - D. Class II, Division 2

55. Per NEC 250.119, how must insulated equipment grounding conductors be identified?
- A. White or gray insulation
 - B. Green, or green with one or more yellow stripes, or bare
 - C. Red insulation
 - D. Orange insulation
56. Per NEC 430.83, a motor controller must have a HP rating not less than the motor for motors rated at or above:
- A. 1/2 HP
 - B. 2 HP
 - C. 1/8 HP
 - D. 5 HP
57. NEC Article 625 covers EV charging. A Level 2 EVSE with a 32A continuous load must be connected to a circuit with minimum ampacity of:
- A. 32A
 - B. 48A
 - C. 40A
 - D. 50A
58. Per NEC 250.122(B), if ungrounded conductors are increased in size above the required minimum, the EGC must be:
- A. Be doubled in size
 - B. Be sized at 50% of the phase conductor
 - C. Remain at the Table 250.122 minimum size
 - D. Be increased proportionally in circular mil area
59. A 460V, 3-phase, 10 HP motor has FLC = 14A. Using NEC Table 430.52 at 250% for Design B, what is the maximum standard inverse time breaker permitted?
- A. 50A
 - B. 30A
 - C. 35A
 - D. 40A
60. NEC Article 760 covers fire alarm circuits. NPLFA conductors must maintain at least what separation from power conductors outside of a raceway?
- A. 6 inches
 - B. 2 inches
 - C. 1 inch
 - D. 12 inches
61. NEC 250.52 lists acceptable grounding electrodes. Which of the following is specifically prohibited as a grounding electrode?
- A. Metal underground water pipe
 - B. Metal frame of a building
 - C. Metal underground gas piping
 - D. Concrete-encased electrode
62. What demand factor does NEC Table 220.42 apply to commercial lighting loads?
- A. 50%
 - B. 100%
 - C. 75%
 - D. 125%
63. A residential electric range rated at 12 kW is connected to a 240V circuit. Using NEC Table 220.55, what demand load is used for service calculation?
- A. 10 kW
 - B. 12 kW
 - C. 14 kW
 - D. 8 kW
64. According to NEC Table 300.5, rigid PVC Schedule 80 conduit buried under a concrete slab at least 2 inches thick requires a minimum burial depth of:
- A. 0 inches — slab provides protection
 - B. 18 inches
 - C. 6 inches
 - D. 12 inches
65. NEC 210.8 requires GFCI protection for receptacles in commercial bathrooms. This requirement applies to circuits rated:
- A. All 125V through 250V receptacles regardless of ampere rating
 - B. 20A circuits only
 - C. 15A and 20A circuits only
 - D. Any circuit within 6 feet of water
66. Per NEC 250.97, bonding of metal raceways on the supply side of service is required to ensure:
- A. The raceway is mechanically secured
 - B. The grounded conductor is not overloaded
 - C. Electrical continuity and capacity to conduct fault current safely
 - D. Proper conduit fill is maintained
67. NEC Article 250 requires equipment grounding conductors sized per the overcurrent device. For a 400A breaker, what is the minimum size copper EGC required?
- A. 1/0 AWG
 - B. 2 AWG
 - C. 1 AWG

D. 3 AWG

68. NEC Article 356 covers LFNC. In general installations, LFNC is limited to a maximum length of:

- A. 12 feet
- B. 6 feet
- C. 3 feet
- D. 8 feet

69. NEC 220.52 requires two 20A small appliance circuits for a dwelling. What load is assigned to these circuits for service calculation?

- A. 3,000 VA total before any demand factor
- B. 2,400 VA total
- C. 1,500 VA each with no demand factor applied
- D. 1,500 VA each, 3,000 VA total

70. NEC Article 100 defines a continuous load as one where maximum current is expected to continue for:

- A. 8 hours or more
- B. 3 hours or more
- C. 2 hours or more
- D. 1 hour or more

71. Per NEC 230.42, what is the minimum ampacity required for service entrance conductors with a calculated load of 220A?

- A. 200A
- B. 275A
- C. 250A
- D. 220A

72. NEC Article 392 covers cable trays. Single conductors 1000 kcmil or larger in ladder-type cable trays must be installed:

- A. Single layer only — no stacking permitted
- B. No fill limit for ladder trays
- C. 50% of tray width
- D. 40% of tray width

73. A balanced 3-phase delta system has a line current of 100A. What is the current flowing through each winding?

- A. 66.7A
- B. 57.7A
- C. 173.2A
- D. 100A

74. Per NEC Article 430, the maximum inverse time circuit breaker rating for motor branch circuit protection on a Design B motor is:

- A. 150% of FLC
- B. 175% of FLC
- C. 250% of FLC
- D. 400% of FLC

75. Under NEC Article 310, what ampacity does a 4 AWG copper THWN conductor have in a conduit with 3 current-carrying conductors at 30°C?

- A. 70A
- B. 85A
- C. 95A
- D. 105A

76. NEC Article 366 covers auxiliary gutters. The maximum conductor fill as a percentage of interior cross-sectional area is:

- A. 40%
- B. 75%
- C. 20%
- D. 50%

77. A 120/240V, single-phase, 3-wire service has a calculated load of 28,800 VA. What is the minimum service ampere rating needed?

- A. 120A
- B. 100A
- C. 200A
- D. 150A

78. What is the purpose of the system bonding jumper in a separately derived system per NEC 250.30?

- A. Ground the secondary of a transformer directly to earth
- B. Connect the transformer case to the grounding electrode
- C. Connect the neutral to the EGC establishing the ground reference
- D. Provide overcurrent protection for the derived system

79. NEC Article 440 covers A/C equipment. The maximum branch circuit OCPD for a hermetic refrigerant motor-compressor rated load current shall not exceed:

- A. 150% of rated load current
- B. 225% of rated load current
- C. 250% of rated load current
- D. 175% of rated load current

80. NEC Article 430 requires motor branch circuit conductors to be sized at a minimum of what percentage of the motor full-load current?
- A. 125%
 - B. 150%
 - C. 100%
 - D. 115%
81. What is the power factor of a circuit where 10 kW of real power is drawn at 12.5 kVA apparent power?
- A. 0.6
 - B. 0.7
 - C. 0.9
 - D. 0.8
82. In Texas, vehicles used by an electrical contracting business must display which of the following?
- A. Only on vehicles used for commercial work
 - B. Vehicle display is optional in Texas
 - C. On all vehicles used in connection with the electrical contracting business
 - D. On vehicles parked at job sites only
83. NEC Article 358 covers EMT. What is the maximum total degrees of bends permitted in a single EMT run between pull points?
- A. 450 degrees (five 90° bends)
 - B. 180 degrees (two 90° bends)
 - C. 270 degrees (three 90° bends)
 - D. 360 degrees (four 90° bends)
84. A commercial occupancy has 50 duplex receptacles. Using NEC 220.14(I), what is the calculated load per duplex receptacle?
- A. 360 VA
 - B. 120 VA
 - C. 180 VA
 - D. 90 VA
85. Under NEC Article 300, conductors of different systems may share a raceway only if:
- A. The raceway is metallic conduit
 - B. The systems have the same phase configuration
 - C. Conductors are separated by insulating barriers
 - D. All conductors are insulated for the highest voltage present
86. What is the minimum journeyman experience required to qualify for the Texas Master Electrician examination?
- A. 5 years as a licensed journeyman
 - B. 4 years as a licensed journeyman
 - C. 2 years as a licensed journeyman
 - D. 3 years as a licensed journeyman
87. Using the optional calculation method for a single-family dwelling per NEC 220.82, what percentage is applied to the remainder of all other loads after the first 10 kVA?
- A. 25%
 - B. 40%
 - C. 70%
 - D. 100%
88. NEC 250.64(B) restricts aluminum grounding electrode conductors from being used where they would be in contact with masonry or earth within:
- A. 24 inches
 - B. 12 inches
 - C. 6 inches
 - D. 18 inches
89. NEC Article 348 covers flexible metal conduit (FMC). What is the maximum length of FMC permitted as a luminaire whip in a lay-in ceiling?
- A. 6 feet
 - B. 4 feet
 - C. 8 feet
 - D. 12 feet
90. NEC Article 110 applies to equipment over 1000V. The minimum working space width for high-voltage switchgear must be:
- A. At least 36 inches wide
 - B. The greater of 30 inches or the width of the equipment
 - C. At least 30 inches wide regardless of equipment size
 - D. Equal to the equipment width only
91. A Texas Master Electrician who allows their license to be used by an unlicensed person is subject to:
- A. A verbal warning only
 - B. License suspension or revocation
 - C. A civil fine with no license action
 - D. Mandatory continuing education only
92. NEC Article 230 requires service entrance conductors to be protected from physical damage. What is the minimum burial depth for a 120/240V residential service lateral using rigid metal conduit?
- A. 24 inches
 - B. 18 inches
 - C. 12 inches

D. 6 inches

93. A 2,400 sq ft dwelling requires a general lighting load calculated at 3 VA per square foot per NEC 220.12. What is the total general lighting load before demand factors?

- A. 12,000 VA
- B. 4,800 VA
- C. 7,200 VA
- D. 9,600 VA

94. Per NEC 250.104(A), the bonding jumper connecting interior metal water piping to the grounding system may be connected:

- A. At any accessible point on the interior piping
- B. At the main panel only
- C. At the water heater only
- D. Within 5 feet of point of entrance

95. NEC Article 362 covers ENT. ENT is NOT permitted in which of the following applications?

- A. Above suspended ceilings in accessible spaces
- B. Concealed in walls of residential buildings
- C. Residential occupancies not exceeding 3 stories
- D. Areas subject to physical damage

96. Per NEC Article 551, the standard electrical supply for recreational vehicle park sites must provide:

- A. 120/240V, single phase, 3-wire, 50A
- B. 240V, single phase, 2-wire
- C. 208Y/120V, three phase, 4-wire
- D. 120V, single phase, 30A

97. According to NEC Article 680, what is the minimum horizontal distance a permanently installed swimming pool must be from overhead conductors operating at 0–750V?

- A. 15 feet
- B. 5 feet
- C. 22.5 feet
- D. 10 feet

98. According to NEC Article 110, what is the minimum working space depth required in front of electrical equipment rated 601V to 2500V where there are exposed live parts on one side and grounded parts on the other?

- A. 4 feet
- B. 6 feet
- C. 5 feet
- D. 3 feet

99. NEC Article 690 covers solar PV systems. The maximum open circuit voltage for a PV system on a one- or two-family dwelling is:

- A. 300V dc
- B. 1000V dc
- C. 600V dc
- D. 1500V dc

100. A 200A panel has 2/0 AWG copper service entrance conductors. Per NEC Table 250.66, what is the minimum copper GEC size?

- A. 4 AWG
- B. 8 AWG
- C. 6 AWG
- D. 2 AWG