State Qualifying Exam Preparation Guide

Electrical Construction Wiring (ECW)

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Book Information

Delmar's Standard Textbook of Electricity

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Exam Topics

I. Electrical Occupations.

II. Atomic Structure.

III. Electrical Quantities and Ohm's Law.

IV. Static Electricity.

V. Magnetism.

VI. Resistors.

VII. Series Circuits.

VIII. Parallel Circuits.

IX. Combination Circuits.

X. Kirchhoff's Law, Thevenin's and Norton's Theorems.

XI. Measuring Instruments.
XII. Using Wire Tables and Determining Conductor Sizes.

XIII. Conduction in Liquids and Gases.

XIV. Batteries and Other Sources of Electricity.

XV. Magnetic Induction.

XVI. Basic Trigonometry and Vectors.

XVII. Alternating Current.

XVIII. Inductance in Alternating Current Circuits.

XIX. Resistive-Inductive Series Circuits.

XX. Resistive-Inductive Parallel Circuits.

XXI. Capacitors.

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XXX. Three-Phase Transformers.

XXXI. Direct Current Generators.

XXXII. Direct Current Motors.

XXXIII. Three-Phase Alternators.
XXXIV. Three-Phase Motors.

XXXV. Single-Phase Motors.

Sample Questions

1. Which piece of electrical equipment is NOT considered a device?
   a. receptacle
   b. three-way switch
   c. lamp
   d. disconnect switch

2. Conductor sizes up through 4/0 AWG are expressed in American Wire Gauge (AWG). Conductor sizes larger than 4/0 AWG are expressed in ____.
   a. metric units
   b. kcmil
   c. diameter
   d. radians

3. The NEC requires GFCI protection for ____.
   a. hydromassage tubs and all their associated electrical components
   b. all receptacles located within 15 ft of the inside wall of a hydromassage tub
   c. lighting fixtures located within 5 ft of the inside wall of a hydromassage tub
   d. both a and b

4. Match the following switch types with their drawing symbols.
   a. S4
   b. SDS
   c. S
   d. S3
      
      i. Single-pole
      ii. Three-way
      iii. Four-way
      iv. Dimmer switch

5. NEC 590.6(A)(3) requires that all 125 volt and 125/250 volt, single-phase, 15-, 20-, and 30 ampere receptacle outlets that are a part of a ____ kW or smaller portable generator shall have listed groundfault circuit interrupter protection for personnel.
   a. 10
   b. 15
   c. 25
   d. 50
6. Lengths of flexible metal conduit longer than ____________________ feet are not acceptable as an equipment grounding conductor. In such cases a separate bonding jumper is required to run outside of the flexible conduit to maintain the continuity of the grounding path.

7. In a home office, you will never have enough wall receptacles. Plug-in strips of the ____________________ type are almost always needed.

8. Table ____________________ may only be used for 120/240-volt, 3-wire, residential single-phase service-entrance conductors, underground service conductors, and feeder conductors that serve as the main power feeder to a dwelling unit.

9. What is the difference between Type NM-B and Type NMC-B cable?

10. The NEC considers fixed electric space heating to be a continuous load and the rating of the overcurrent device must not be less than 125 percent of the continuous load. What is the rating of the branch circuit for a 1500-watt space heater on a 120-volt circuit?