

PART 1

ELECTRICAL THEORY EXAM (4 HOURS)

The questions for this exam are extracted from *Mike Holt's Illustrated Guide to Basic Electrical Theory* textbook.



CHAPTER 1—ELECTRICAL FUNDAMENTALS

UNIT 1—MATTER

1. Providing a path to the earth often helps reduce electrostatic charge.
(a) True
(b) False
2. Lightning frequently terminates to a point of elevation and strikes nonmetallic as well as metallic objects with the same frequency.
(a) True
(b) False
3. The termination of the lightning stroke is unlikely to ignite combustible materials.
(a) True
(b) False

4. Lightning protection is intended to protect the building itself, as well as the electrical equipment on or inside the structure.
(a) True
(b) False

UNIT 3—MAGNETISM

5. Nonmagnetic metals are ferrous, meaning they do not contain any iron, and cannot be magnetized.
(a) True
(b) False
6. Magnetic lines of force can cross each other and they are called flux lines.
(a) True
(b) False

UNIT 4—ELECTRICITY

7. It is not the force of the magnetic field through a conductor that produces electricity; it is the relative motion of the field to the electrons within the conductor that produces the movement of electrons.
(a) True
(b) False
8. People become injured and death occurs when voltage pushes electrons through the human body causing the heart to go into ventricular fibrillation.
(a) True
(b) False

PART 2

NATIONAL ELECTRICAL CODE EXAM (4 HOURS)



Please use the 2014 Code book to answer the following questions. If you need a copy of the Code book, visit www.MikeHolt.com/14Code or call 888.632.2633

1. HDPE conduit shall not be subjected to ambient temperatures in excess of _____, unless listed otherwise.
 - (a) 50°C
 - (b) 60°C
 - (c) 75°C
 - (d) 90°C
2. Fixed wiring in an aircraft hangar not in a Class I location shall be _____.
 - (a) installed in metal raceways
 - (b) Type MI, TC, or MC cable
 - (c) installed in nonmetallic raceways
 - (d) a or b
3. The fuel cell system shall be evaluated and _____ for its intended application.
 - (a) approved
 - (b) identified
 - (c) listed
 - (d) marked
4. Emergency systems are generally installed where artificial illumination is required for safe exiting and for panic control in buildings occupied by large numbers of persons, such as _____ and similar institutions.
 - (a) hotels
 - (b) theaters and sports arenas
 - (c) health care facilities
 - (d) all of these
5. Listed fittings and connectors that are intended to be concealed at the time of on-site assembly are permitted for on-site interconnection of PV modules or other array components.
 - (a) True
 - (b) False
6. Types _____ nonconductive and conductive optical fiber cables shall be listed as being suitable for general-purpose use, with the exception of risers, plenums, and other spaces used for environmental air, and shall also be listed as being resistant to the spread of fire.
 - (a) OFNP and OFCP
 - (b) OFNR and OFCR
 - (c) OFNG and OFCG
 - (d) OFN and OFC

PART 3

ELECTRICAL CALCULATIONS EXAM (5 HOURS)

Questions 1–51 relate directly to *Mike Holt's Illustrated Guide to Electrical Exam Preparation*, based on the 2014 NEC textbook. Questions 52–65 relate to *Mike Holt's Illustrated Guide to Understanding Basic Motor Controls* textbook.

CHAPTER 1—ELECTRICAL THEORY

UNITS 1–4—ELECTRICAL THEORY

1. If the output is 160W and the equipment is 88 percent efficient, what are the input amperes if the voltage is 120V?
 - (a) 0.75A
 - (b) 1.50A
 - (c) 2.275A
 - (d) 3.25A
2. A transformer winding that is 97 percent efficient produces _____ output for every 1 kW input.
 - (a) 970W
 - (b) 1,000W
 - (c) 1,030W
 - (d) 1,300W

CHAPTER 2—NEC CALCULATIONS

UNIT 5—RACEWAY AND BOX CALCULATIONS

3. A 200A feeder installed in Schedule 80 rigid nonmetallic conduit has three 3/0 THHN conductors, one 2 THHN conductor, and one 6 THHN conductor. What trade size raceway is required?
 - (a) 2
 - (b) 2½
 - (c) 3
 - (d) 3½
4. What trade size rigid metal nipple is required for three 4/0 THHN conductors, one 1/0 THHN conductor, and one 4 THHN conductor?
 - (a) 1½
 - (b) 2
 - (c) 2½
 - (d) 3

UNIT 6—CONDUCTOR SIZING AND PROTECTION

5. What is the ampacity of four current-carrying 1/0 THHN conductors in a raceway?
 - (a) 111A
 - (b) 136A
 - (c) 153A
 - (d) 171A