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## ELECTRICAL CONTROLS, INSTRUMENTATION AND CALIBRATION EXAMINATION

# of Questions	Minimum Passing Score	Time Allowed
50	35 (70%)	120 Minutes

### CONTENT OUTLINE

Content Area	# Items Test
General Electrical Knowledge	5
Control Wiring and Equipment	7
Class 1, 2, and 3 Control Circuits	6
HVAC Control Wiring	6
Manual Control Circuits	4
Raceways and Enclosures	4
Automatic Control Wiring	3
Transformers	3
Test Equipment	2
Fire Alarm Systems	6
Safety	4

### EXAMINATION STUDY MATERIALS

The reference materials listed below were used to prepare the questions for this examination. The examination may also contain questions based on trade knowledge or general industry practices. Except for Code books, you can base your answers on later editions of references as they become available. For Code questions, the examinations will be based only on the edition of the Code book that is listed.

This examination is OPEN book. The following references are allowed in the test room.

National Electrical Code, 2020, National Fire Protection Association, 1 Batterymarch Park, Quincy, Massachusetts 02169, (800) 344-3555, [www.nfpa.org](http://www.nfpa.org)

NFPA 72 - National Fire Alarm Code, 2013, National Fire Protection Association, 1 Batterymarch Park, Quincy, Massachusetts 02169, (800) 344-3555, [www.nfpa.org](http://www.nfpa.org)

Code of Federal Regulations - 29 CFR Part 1926 (OSHA), with latest available amendments, U.S. Government Printing Office, (866) 512-1800 or <https://www.osha.gov/laws-regs/regulations/standardnumber/1926>

**OR**

Code of Federal Regulations - 29 CFR Part 1926 Selections by PSI, with latest available amendments, [www.pSIONlinestore.com](http://www.pSIONlinestore.com), (866) 589-3088

Control Systems for Heating, Ventilating, and Air Conditioning, Sixth Edition, 2006, Kluwer Academic Publishers, Order Department, P.O. Box 358, Accord Station, Hingham, MA 02018

American Electricians' Handbook, 16th Edition, 2013, McGraw-Hill, (800) 262-4729, [shop.mcgraw-hill.com](http://shop.mcgraw-hill.com)

Telecommunications Wiring, Clyde Herrick, 2001, 3rd Edition, Prentice-Hall PTR, (800) 382-3419, [www.prenhall.com](http://www.prenhall.com)

Understanding and Servicing Alarm Systems, 1999, 3rd Edition, Butterworth-Heinemann (Reed Publishing), (800) 545-2522, [www.bh.com](http://www.bh.com)

Ugly's Electrical References, George V. Hart, 2017 edition, Jones and Bartlett, (800) 832-0034, [www.uglys.net](http://www.uglys.net)

Candidates are responsible for bringing their own references to the examination center. Reference materials may be highlighted, underlined, **annotated**, and/or indexed prior to the examination session. However, references may not be written in during the examination session. Any candidate caught writing in the references during the examination will have the references confiscated and will be reported to the department. Furthermore, candidates are not permitted to bring in any additional papers (loose or attached) with their approved references. Any additional materials will be removed from the references and confiscated. References may be tabbed/indexed with permanent tabs only. Temporary tabs, such as Post-It notes, are not allowed and must be removed from the reference before the exam will begin.