



## CONTRACTORS STATE LICENSE BOARD LICENSE EXAMINATION STUDY GUIDE



### LOW VOLTAGE (C-7)

#### Content of the Examination

The Low Voltage (C-7) Examination is divided into seven major sections:

#### 1. Job Planning and Design (19%)

- Interpret plans and specifications
- Plan wire routes and equipment locations
- Compliance with codes and industry standards
- Knowledge of impact on other trades
- Integration of new and existing infrastructure

#### 2. Material Selection and Estimation (18%)

- Knowledge of materials and their applications
- Knowledge of tools and equipment and their applications
- Estimate project costs and prepare proposals

#### 3. Wire/Cable Installation and Termination (11%)

- Layout, install and support pathways
- Knowledge of tools and methods of termination
- Placement and termination of wires/cables
- Knowledge of labeling schemes for wires/cables

#### 4. Systems Configuration and Installation (15%)

- Install equipment room components
- Install satellite, CCTV, telephone, data, instrumentation, battery systems, audio/video, and fiber optic systems
- Install building automation
- IP networking and VoIP configuration

#### 5. Testing and Project Closeout (12%)

- Tools and methods used to test the functioning of low voltage equipment
- Project closeout, documentation, and training

#### 6. System Troubleshooting and/or Repair or Replacement (8%)

- Troubleshoot various problems and make repairs/replacements

#### 7. Safety (17%)

- Cal/OSHA regulations
- Identification of job site hazards
- Safe work practices

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#### Test Site Policy

This is a closed-book examination. No reference materials may be used during the examination. All materials brought to the examination site must be left in an unmonitored area at your own risk.

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#### Test Strategy

This is a multiple-choice examination with four choices per question. Examination questions are written to provide only one BEST answer. Some questions require mathematical computation. A calculator will be provided.

There is no penalty for guessing. If you are unsure about a particular question, it is better to try to answer the question than to leave the question blank.

Plenty of time is provided to answer all examination questions, so be sure to read each question and its four choices completely and carefully before selecting the BEST possible answer to the question.

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### Sample Questions

Below are three typical examination questions. The correct answer is underlined.

1. A low voltage contractor needs to wire 25 offices with Cat 6 voice and data. The distance between the IT room and the offices is an average of 250'. How many 1,000 foot boxes of cable will the contractor need?
  - a. 7
  - b. 8
  - c. 12
  - d. 13
  
2. Which wire should be used to cross-connect a standard telephone connection?
  - a. 18 AWG stranded
  - b. 18 AWG solid
  - c. 24 AWG stranded
  - d. 24 AWG solid
  
3. What type of jack should be used on a Cat 6 cable installation?
  - a. RJ-45
  - b. RJ-21
  - c. RJ-14
  - d. RJ-11

*\*All questions are written and reviewed by licensed contractors who are actively working in the trade\**

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### Resources

*Publisher information for reference books and code is provided here. Other sources for reference books may be found online. **California code books can be viewed online: [www.bsc.ca.gov](http://www.bsc.ca.gov)***

**2016 California Building Code.** California Code of Regulations, Title 24. International Code Council. PHONE: (800) 786-4452  
INTERNET: [www.iccsafe.org](http://www.iccsafe.org)

**2016 California Electrical Code.** California Code of Regulations, Title 24. BNI Publications, Inc. PHONE: (888) 264-2665  
INTERNET: [www.bnibooks.com](http://www.bnibooks.com)

**2016 California Fire Code.** California Code of Regulations, Title 24. International Code Council. PHONE: (800) 786-4452  
INTERNET: [www.iccsafe.org](http://www.iccsafe.org)

**ANSI/CEA/CEDIA/InfoComm Standard; Audio, Video and Control Architectural Drawing Symbols Standard. ANSI-J-STD-710 (CEA/CEDIA-2039).** 2015. Consumer Electronics Association/Custom Electronic Design and Installation Association/InfoComm International. INTERNET: [https://standards.cta.tech/kwspub/published\\_docs/ANSI-J-STD-710.pdf](https://standards.cta.tech/kwspub/published_docs/ANSI-J-STD-710.pdf)

**BICSI: Residential Network Cabling.** The McGraw-Hill Companies. PHONE: (877) 833-5524  
INTERNET: [www.mhprofessional.com](http://www.mhprofessional.com)

**BICSI: Telecommunications Distribution Methods Manual (TDMM). 11<sup>th</sup> Edition.** BICSI. PHONE: (800) 242-7405  
INTERNET: [www.bicsi.org](http://www.bicsi.org)

**State of California General Industry & Electrical Safety Orders (Cal/OSHA) and State of California Construction & Electrical Safety Orders (Cal/OSHA).** 2015. California Code of Regulations, Title 8. Mancomm. PHONE: (877) 626-2666  
INTERNET: [www.mancomm.com](http://www.mancomm.com)

**TIA Wiring Standards.** Telecommunications Industry Association. PHONE: (800) 447-2273  
INTERNET: [www.global.ihs.com](http://www.global.ihs.com)

**Ugly's Electrical References.** Jones & Bartlett Learning. PHONE: (800) 832-0034  
INTERNET: [www.uglys.net](http://www.uglys.net)

*\*Publisher information is current as of 12/2017\**