



Study Guide for Apprentice Electrician Knowledge Test

Test Number: 2100

Human Resources
Southern California Edison Company



Introduction

The 2100 Apprentice Electrician Test is a job knowledge designed to cover the major knowledge areas necessary to perform the apprentice substation electrician job. This guide contains strategies to use for taking tests and a study outline, which includes knowledge categories and study references.

Test Session

It is important that you follow the directions of the Test Administrator exactly. If you have any questions about the testing session, be sure to ask the Test Administrator before the testing begins. During testing, you may NOT leave the room, talk, smoke, eat, or drink. Since some tests take several hours, you should consider these factors before the test begins.

All cellular/mobile phones, pagers or other electronic equipment will NOT be allowed in the testing area.

All questions on this test are multiple-choice format and have four possible answers. All knowledge tests will be taken on the computer. Consult the following link and click on Computer Based Testing for more information: www.edison.com/studyguides.

The test has a 3-hour time limit.

A scientific calculator will be provided for you to use during the test. The calculator provided will be a Texas Instrument TI-36X.

You will NOT be able to bring or use your own calculator during testing.

You will have an opportunity to complete a test comment form during the testing session, should you have comments about test questions.

Study Guide Feedback

At the end of this guide, you have been provided with a study guide feedback page. If a procedure or policy has changed, making any part of this guide incorrect, your feedback would be appreciated so that corrections can be made.

Test Taking Strategies

Introduction

The test contains multiple-choice questions. The purpose of this section is to suggest techniques for you to use when taking one.

Your emotional and physical state during the test may determine whether you are prepared to do your best. The following list provides common sense techniques you can use before the test begins.

Technique	Remarks
<i>Be confident</i>	<ul style="list-style-type: none"> - If you feel confident about passing the test, you may lose some of your anxiety. - Think of the test as a way of demonstrating how much you know, the skills you can apply, the problems you can solve, and your good judgment capabilities.
<i>Be punctual</i>	<ul style="list-style-type: none"> - Arrive early enough to feel relaxed and comfortable before the test begins.
<i>Concentrate</i>	<ul style="list-style-type: none"> - Try to block out all distractions and concentrate only on the test. You will not only finish faster but you will reduce your chances of making careless mistakes. - If possible, select a seat away from others who might be distracting. - If lighting in the room is poor, sit under a light fixture. - If the test room becomes noisy or there are other distractions or irregularities, mention them to the Test Administrator immediately.
<i>Budget your times</i>	<ul style="list-style-type: none"> - Pace yourself carefully to ensure that you will have enough time to complete all items and review your answers.
<i>Read critically</i>	<ul style="list-style-type: none"> - Read all directions and questions carefully. - Even though the first or second answer choice looks good, be sure to read all the choices before selecting your answer.
<i>Make educated guesses</i>	<ul style="list-style-type: none"> - Make an educated guess if you do not know the answer or if you are unsure of it.



- Changing answers* - If you need to change an answer, be sure that the new answer is selected instead of the old one.
- Return to difficult questions* - If particular questions seem difficult to understand, make a note of them, continue with the test and return to them later.
- Double-check math calculations* - Use scratch paper to double check your mathematical calculations.
- Review*
- If time permits, review your answers.
 - Do the questions you skipped previously.
 - Make sure each multiple choice question has your correct answer selected.

Remember the techniques described in this section are only suggestions. You should follow the test taking methods that work best for you.



Job Knowledge Categories

Below are the major job knowledge areas (topics) covered on the **2100 Apprentice Electrician Test**. Listed next to each knowledge category is the number of items on the exam that will measure that topic. You can use this information to guide your studying. Some exams also contain additional pretest items. Pretest items will appear just like all of the other items on your exam, but they will not affect your score. They are an essential part of ensuring the **2100 Apprentice Electrician Test** remains relevant to successful performance of the job.

There is a total of 79 items on the test and the passing score is 75%.

A. Electrical Theory (30 items)

Knowledge of A.C. Theory, including Watt's Law, series, parallel, and series parallel circuits.
Knowledge of D.C. Theory, including Ohm's Law, series, parallel, and series parallel circuits.

B. Conductors and Insulators (4 items)

Knowledge of distinction between a conductor and an insulator. Knowledge of which materials conduct better than others and their respective properties.

C. Symbols and Terminology (4 items)

Knowledge of common, industry-wide electrical terminologies (e.g., resistance, voltage, power) and schematic symbols used in schematic diagrams, electrical prints, equipment manuals, instructions, and blueprints.

D. Tools and their Usage (17 items)

Knowledge of how to inspect (to ensure proper working condition) and operate various types of hand and power tools.

E. Safety (24 items)

Knowledge of general work safety, electrical safety, and first aid.

Study References

Below is a list of references you can use to study as you prepare for the test.

A. Electrical Theory

- Brumbach, M. E. (2005). *Industrial electricity* (7th ed.).
- Croft, T., Hartwell, F. P., & Summers, W. I. (2013). *American electricians' handbook* (16th ed.).
- Henry, T. (2005). *Ohm's law, electrical math and voltage drop calculations*.
- United States Bureau of Naval Personnel. (1960). *Basic electricity*.

B. Conductors and Insulators

- Croft, T., Hartwell, F. P., & Summers, W. I. (2013). *American electricians' handbook* (16th ed.).
- United States Bureau of Naval Personnel. (1960). *Basic electricity*.

C. Symbols and Terminology

- Brumbach, M. E. (2005). *Industrial electricity* (7th ed.).
- California Institute of Technology. *Circuits and symbols of electronic components*.
<http://web.gps.caltech.edu/~als/IRMS/course-materials/lecture-1---electricity/circuit-symbols.pdf>

D. Tools and their Usage

- McDonnell, L. P., & Kaumeheiwa, A. I. (1978). *The use of hand woodworking tools*.
- McDonnell, L. P., & Kaumeheiwa, A. I. (1980). *The use of portable power tools*.
- United States Bureau of Naval Personnel. (1960). *Basic electricity*.

E. Safety

- Croft, T., Hartwell, F. P., & Summers, W. I. (2013). *American electricians' handbook* (16th ed.).
- Mayo Clinic. *First aid*. <https://www.mayoclinic.org/first-aid>
- McDonnell, L. P., & Kaumeheiwa, A. I. (1980). *The use of portable power tools*.



- Occupational Safety & Health Administration. *Eye and face protection.*
<https://www.osha.gov/SLTC/eyefaceprotection/standards.html>
- Occupational Safety & Health Administration. *Controlling electrical hazards.*
<https://www.osha.gov/Publications/osha3075.pdf>
- Occupational Safety & Health Administration. *Construction safety and health: Electrical safety.*
https://www.osha.gov/sites/default/files/2018-12/fy07_sh-16586-07_4_electrical_safety_participant_guide.pdf



Study Guide Feedback

Please use this page to notify us of any changes in policies, procedures, or materials affecting this guide. Once completed, return to:

Southern California Edison
Human Resources – Testing
G.O. 5, 1st Floor
1515 Walnut Ave.
Rosemead, CA 91770

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