

STUDY GUIDE FOR LABORATORY TECHNICIAN A

TEST NUMBER: 2682

INTRODUCTION

The 2682 Laboratory Technician A test is a job knowledge test designed to cover the major knowledge areas necessary to perform the job. This Guide contains strategies to use for taking tests and a study outline, which includes knowledge categories, major job activities, 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.

Mobile phones 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 is divided into two parts and has a total time limit of six and a half hours. The first part of the test has a three-hour time limit while the second part of the test has a three and a half hour time limit. After completion of part one, you are provided with an optional half hour break.

A scientific calculator will be provided for you to use during the test. The calculator provided during the test session will be one of these models:

- Casio fx-250HC,
- Texas Instruments TI-30XA,
- Texas Instruments TI-36X

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

You will receive a Test Comment form so that you can make comments about test questions. Write any comments you have and turn it in with your test when you are done.

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.

ASSESSMENT TAKING STRATEGIES

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

CONFIDENCE

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.

PUNCTUALITY

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CONCENTRATION

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.

BUDGET YOUR TIME

Pace yourself carefully to ensure that you will have enough time to complete all tasks/functions.

READ CRITICALLY

Read all directions and questions carefully.

Remember that the techniques described in this section are only suggestions. You should follow the test taking methods that work best for you. If particular questions seem difficult to understand, make a note of them, continue with the test and return to them later.

MAKE EDUCATED GUESSES

Make an educated guess if you do not know the answer or if you are unsure of it.

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 AND STUDY REFERENCES

Below are the major job knowledge areas (topics) covered on the 2682 Laboratory Technician A test and the associated study references. 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 2682 Laboratory Technician A test remains relevant to successful performance of the job.

There are a total of 80 items on the 2682 Laboratory Technician A test and the passing score is 67%. This score was determined during the test validation process.

ELECTRICAL AND METERING THEORY (13 items)

Knowledge of and the application of: AC and DC Theory; series and parallel circuits; metering theory including Blondell's theory; digital logic and micro processing theory; vectoring single phase and polyphase metering systems; semi-conductor and solid state theory; transformer theory, including losses excitation and core loss; knowledge of current induction; knowledge of magnetic flux; knowledge of procedures for testing and calibrating watt hour meters; knowledge of metering formulas; knowledge of operating standards for potential transformers and current transformers; knowledge of various meter burdens; and knowledge of common electrical/electronic formulas.

References

Edison Electric Institute. (2014). Handbook for Electricity Metering.

Fowler, R. J. (2013). Electricity: Principles and Applications. New York: McGraw-Hill.

Gibilisco, S. (2016). Teach Yourself Electricity and Electronics. McGraw- Hill.

ELECTRONICS (19 items)

Knowledge of the following: inductive, resistive, and capacitive circuits; amplifiers; repairing and calibrating hi pot equipment; transducers; basic troubleshooting techniques for electronic components; rectifiers for power supplies; Kirchoff's law; Thevenin's theorem; logic circuits; impedance; amplifiers; transistors; diodes; analyzing electronic components and determining defects. Ability to read and analyze phase diagrams as well as read electrical drawings, schematics, and procedures

References

Edison Electric Institute. (2014). Handbook for Electricity Metering.

Fowler, R. J. (2013). Electricity: Principles and Applications. New York: McGraw-Hill.

Gibilisco, S. (2016). Teach Yourself Electricity and Electronics. McGraw- Hill.

Tomal, D., & Widmer, N. (2004). Electric Troubleshooting. McGraw- Hill.

Tokheim, R. (2013). Digital Electronics. McGraw-Hill.

TESTS, EQUIPMENT, AND CALIBRATORS, (24 items)

Knowledge of the operation of test equipment, such as meters, power supplies, and scopes. Knowledge of the following: transducers; panel meters; procedures for performing accuracy testing of electrical and electronic test equipment; testing and troubleshooting procedures for tools, instruments, and equipment (functionality and failure; basic functions of CTs and PTs including watt hour standards and comparators; ammeter; watt-meter; voltmeter; shunts; accuracy requirements for test equipment; effects of temperature variations on instrumentation; knowledge of phantom loads; the operation of various three phase power sources; and power meters. Ability to select the proper tools and equipment needed to do a job. Ability to diagnose and troubleshoot equipment failures.

References

Edison Electric Institute. (2014). Handbook for Electricity Metering.

Fowler, R. J. (2013). Electricity: Principles and Applications. New York: McGraw-Hill.

Gibilisco, S. (2016). Teach Yourself Electricity and Electronics. McGraw- Hill.

MATH AND SCIENCE (16 items)

Knowledge of the following mathematical concepts: trigonometry; precalculus; algebra; geometry; logarithms; scientific notation, and exponents. Knowledge of phasor analysis and common physics formulas.

References

Cusick, T. (2003). Mathematics made simple: 6th ed. New York: Broadway Books.

Cutnell, J. D., Johnson, K. W., Young, D., & Stadler, S. (2018). Physics. John Wiley & Sons, Australia.

Edison Electric Institute. (2014). Handbook for Electricity Metering.

Safety (8 items)

Knowledge of the application of personal protective equipment. Knowledge of safety procedures for testing, repairing, and calibrating equipment, working with high voltage. Ability to evaluate hazards, perform hazard analysis, and determine appropriate safety precaution.

References

[1910.334 - Use of equipment. | Occupational Safety and Health Administration \(osha.gov\)](https://www.osha.gov/1910.334)

[Hazard Communication - Overview | Occupational Safety and Health Administration \(osha.gov\)](https://www.osha.gov/hazard-communication)

<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.137>

<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.268>

STUDY GUIDE FEEDBACK

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

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Test Name: 2682 Lab Tech A Knowledge Test

COMMENTS: