

STUDY GUIDE FOR APPRENTICE ICE TECHNICIAN

TEST NUMBER: 2177

INTRODUCTION

The **2177 Apprentice ICE Technician 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 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.

The test limit for this test is 3 hours.

A scientific non-programmable calculator will be provided for you to use during the test.

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.

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.

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

Arrive early enough to feel relaxed and comfortable before the test begins.

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.

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.

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 Test 2177 Apprentice ICE Technician 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 the other items on your exam, but they will not affect your score. They are an essential part of ensuring the test remains relevant to successful performance of the job.

There are a total of 99 items on the test and the passing score is 70%. This score was determined during the test validation process.

ELECTRONIC THEORY (12 items)

Knowledge of basic digital and analog control systems and equipment.

References

Jain, R. P. (2010). Modern Digital Electronics. Boston: McGraw-Hill

Plant, M., & Plant, M. (2010). Understand Electronics. New York: McGraw-Hill.

Schultz, M. (2021). Grob's Basic Electronics. New York: McGraw-Hill.

ELECTRICAL & MECHANICAL THEORY (25 items)

Knowledge of basic electrical and mechanical theory as related to process instrumentation and controls.

References

Croft, Terrell, et al. (2013). American Electrician's Handbook. McGraw-Hill.

Herman, S. (2015). Delmar's Standard TextBook of Electricity.

Malvino, A. (2015). Electronics Principles. McGraw Hill.

Miller, C. (2020). Ugly's Electrical References. Jones & Bartlett Learning.

GENERATION TECHNOLOGIES (14 items)

Knowledge of basic generation technologies and their function/purpose.

References

Barnett, D. & Bjornsgaard, K. (2000) Electric Power Generation: A Nontechnical Guide. PennWell Corp

Kiarmeh, P. (2022). Power Generation Handbook : Selection, Applications, Operation, Maintenance. McGraw-Hill Professional

PHYSICS (19 items)

Knowledge of basic principles of physics (e.g., energy conversion, efficiency, units of measure, atomic structure, electron flow, density and specific gravity, force, torque, power, pressure, temperature, fluid behavior, gas laws, and magnetism).

References

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

Lehrman, R. (1995). Physics the Easy Way, 2nd Edition. Barron's Educational Series.

MATH (19 items)

Knowledge of mathematics (e.g., algebra and some trigonometry), including word problems and formulas.

References

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

Downing, D. (2010). Barron's E-Z Trigonometry: 4th ed. Barron's Educational Series.

Prindle, K., & Prindle, A. (2003). Math the Easy Way. (4th Edition). Barron's Publications.

SAFETY (10 items)

Knowledge of safety rules and regulations as well as first aid procedures.

References

[Working Safely with Electricity](#)

[First aid - Mayo Clinic](#)

[OSHA FACTSHEET PPE](#)

STUDY GUIDE FEEDBACK

Please email Southern California Edison's Corporate Testing to notify us of any changes in policies, procedures, or materials affecting this guide.

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COMMENTS: