

# **STUDY GUIDE FOR CATALINA CONTROL OPERATOR**

**TEST NUMBER: 2878**

## **INTRODUCTION**

The Catalina Control Operator Test (2878) 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](http://www.edison.com/studyguides).

The test has a three hour time limit. A non-programmable 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**

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.

### **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 Catalina Control Operator Test (2878) 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 Catalina Control Operator Test (2878) remains relevant to successful performance of the job.

There are a total of 64 items on the Catalina Control Operator Test (2878) and the passing score is 71%. This score was determined during the test validation process.

### **Reading, Interpreting, and Operation of Equipment (29 items)**

Understanding of how to check equipment and system status, read gauges and switches, compare observed measurements to specifications, interpret a single-line diagram, identify power flow, read distribution line outages and devices, manage Continuous Emission Monitoring System (CEMS), work with generator valves, evaluate electrical capacities, use synchscope to check fuel levels in circuit breakers, check meters, monitor relays, use ohms law calculations in alternate and parallel routes.

### **References**

Air Quality Management District (AQMD). Title V.

Air Quality Management District (AQMD). Regional Clean Air Incentives Market (RECLAIM).

Department of Industrial Relations. Cal/OSHA - Title 8 Regulations.

Section 3314 – Control of Hazardous Energy.

Herman, S. L. (2011). Delmar's Standard Textbook of Electricity (5th ed.). Clifton Park, NY: Delmar.

Lehrman, R. L. (1998). Physics, The Easy Way (3rd ed.). Hauppauge, NY: Barron's Educational Series, Inc.

Power Production Department (PPD) (2011). Capstone Microturbine. Southern California Edison (SCE).

State of California (2013). Johnson Matthey - Operation and Maintenance Manual for SCR Catalyst System. Air Quality Management District (AQMD).

Substation Construction and Maintenance (SC&M) Training (2013). Substation Operator's Manual (SOM). Southern California Edison (SCE).

Sec. 1.7, 2.4, 2.5, 2.7, 3.1, 3.2, 3.4, 3.7, 3.9, 4.1, 4.8, 6.3, & 6.11.

U.S. Environmental Protection Agency (2000). Continuous Emission Monitoring System (CEMS) Field Audit Manual. Lanham, MD: Government Institutes.

### **Operating Equipment for Electrical, Mechanical, and Switch Functions (11 items)**

Understanding of transformers, operating limits of equipment, steps to synch the engine to the grid, microturbine loading criteria, LPG liquid and vapor systems, clearance procedures, load shedding schemes, and system operations.

#### **References**

Boyce, M. P. (2002). Gas Turbine Engineering Handbook. Gulf Professional Publishing.

Herman, S. L. (2011). Delmar's Standard Textbook of Electricity (5th ed.). Delmar.

Power Production Department (PPD) (2011). Capstone Microturbine. Southern California Edison (SCE).

Safety Division (2013). Accident Prevention Manual (APM). Southern California Edison (SCE).

Substation Construction and Maintenance Grid Operations (2013). System Operating Bulletin (SOB). Southern California Edison (SCE).

Sec. 0322 & 0323.

Substation Construction and Maintenance (SC&M) Training (2013). Substation Operator's Manual (SOM). Southern California Edison (SCE).

Sec. 1.4, 1.7, 2.1, 2.4, 3.4, 3.7, 3.10, 4.1, 4.3, & 6.5

### **Record Keeping (3 items)**

Understanding of logging operational information, such as work authorizations and clearances.

#### **References**

Substation Construction and Maintenance Grid Operations (2013). System Operating Bulletin (SOB). Southern California Edison (SCE).

Sec. 133.

Substation Construction and Maintenance (SC&M) Training (2013). Substation Operator's Manual (SOM). Southern California Edison (SCE).

Section 3314. Control of Hazardous Energy.

### **Emergency and Standard Operating Procedures (12 items)**

Understanding of operating procedures during abnormal weather conditions, switching blocks, disconnecting switches, call out procedures, Spill Prevention Control and Countermeasures (SPCC) drainage procedures, relay systems, bus outage testing procedures, distribution line testing procedures, switching sequences, air permits, air systems, carry forward status, and distribution field switching.

#### **References**

Air Quality Management District (AQMD). Title V.

Air Quality Management District. Regional Clean Air Incentives Market (RECLAIM).

Substation Construction and Maintenance Grid Operations (2013). System Operating Bulletin (SOB). Southern California Edison (SCE).

Sec. 3.9, 27, & 133.

Substation Construction and Maintenance (SC&M) Training (2013). Substation Operator's Manual (SOM). Southern California Edison (SCE).

Sec. 2.3, 2.5, 3.1, 4.1, 6.1, 6.3, & 7.1.

U.S. Environmental Protection Agency. Spill Prevention Control and Countermeasures (SPCC), 40CFR Part 110 & 112.

### **Test Procedures and Instruments (23 items)**

Knowledge of test procedures, instruments and equipment including voltmeters, ohmmeters, meggers, transformer turns ratio meters, oscilloscopes, and other electrical and electronic equipment.

### **References**

Craft, Hartwell, Summer (2013). American Electrician's Handbook. New York: McGraw-Hill.

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

Handbook for Electricity Metering. (2014). Washington, D.C.: Edison Electric Institute

### **Safety Procedures (9 items)**

Understand procedures related to isolating hazards, safety, safety regulations, evacuation, confined space, and abnormal conditions.

### **References**

Department of Industrial Relations. Cal/OSHA - Title 8 Regulations.

Section 3314. Control of Hazardous Energy.

Section 5192. Hazardous Waste Operations and Emergency Response.

Section 5194. Hazard Communication.

Morgan, C. S. (2013). National Fire Prevention Association (NFPA).

Safety Division (2013). Accident Prevention Manual (APM). Southern California Edison (SCE).

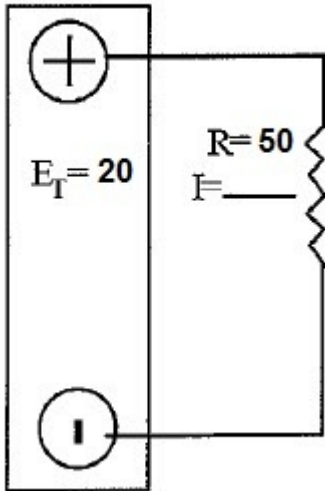
Substation Construction and Maintenance (SC&M) Training (2013). Substation Operator's Manual (SOM). Southern California Edison (SCE).

Sec. 6.6 & 6.8.

## SAMPLE QUESTIONS

The following sample questions should give you some idea of the form the test will take.

1. In the figure below, what is the value of  $I$ ?



- a. 4.4 amps
- b. 4.0 amps
- c. 0.4 amps
- d. 0.04 amps
2. A distribution PMS is:
- a. a poll mounted switch.
- b. a power monitoring source.
- c. a primary metering sequencer.
- d. a Padmount switch.



3. SCRs have been installed to reduce \_\_\_\_\_ and \_\_\_\_\_ emissions from generating station boilers, engine-driven generators, or combustion turbines.
- a. nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO)
  - b. nitrous oxide (NO), oxides (O<sub>x</sub>)
  - c. particulate matter, smoke
  - d. fuel cost, decrease
4. Striped switching blocks indicate \_\_\_\_\_ for electrical clearance.
- a. hot clips
  - b. hot blades
  - c. cold clips
  - d. cold blades
5. In order for the potential differences and the current to be in phase, the circuit must have only:
- a. capacitance.
  - b. resistance
  - c. reactance.
  - d. inductance.

## **SAMPLE QUESTION ANSWERS**

1. C
2. D
3. A
4. B

## **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:

[Edison.Testing@SCE.com](mailto:Edison.Testing@SCE.com)

Test Name: 2878 Catalina Control Operator Test

COMMENTS: