

**PACIFIC GAS AND ELECTRIC COMPANY**

**PG&E** + 245 MARKET STREET • SAN FRANCISCO, CALIFORNIA 94106 • (415) 781-4211

July 21, 1971

Local Union 1245  
International Brotherhood of  
Electrical Workers, AFL-CIO  
P. O. Box 4790  
Walnut Creek, CA 94596

Attention: Mr. L. L. Mitchell, Business Manager

Gentlemen:

This letter cancels and supersedes our letters dated July 27, 1970 and May 14, 1971 on this same subject.

In accordance with Paragraphs A-8 and G-1 of the Master Apprenticeship Agreement, Company proposes the adoption of the Apprenticeship Committee recommended guidelines for the training of Apprentice Control Technicians, as well as the two tests used for qualification for entry into the classification from the Electrician and Instrument Repairman lines of progression.

Part A will be given to all bidders regardless of the classification or line of progression from which employee is bidding. Part B is prepared in two forms to accommodate the lines of progression from which an employee may be bidding. An employee who has not been in either of the above mentioned lines of progression may have his choice of the two Part B's, but will be given only one.

At least four weeks in advance of giving the qualifying examination, Company will distribute copies of the attached "Notification to Prospective Examinees for Apprentice Control Technician" which will serve to announce the test and explore the area to be covered by the examination. A bibliography of textbooks which will cover the subjects to be examined will be attached to this announcement.

An employee will be allowed a maximum of two attempts in which to obtain a passing score on the qualifying examination in accordance with the following schedule:

1<sup>st</sup> Testing - Four (4) weeks, or thereafter, following announcement of the intent to offer the test.

2nd Testing - Three (3) months, or thereafter, following the date of the first testing.

An employee who fails will be advised when he will be eligible for retest. When again eligible, such employee shall request of his Personnel Department to be interested and his retest shall be scheduled within 14 days of his request.

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Company will not be required to give further consideration to the appointment of an employee to fill a job vacancy in the Apprenticeship Control Technician classification when he has failed for the second time to qualify under this testing program.

The above qualification test may be revised or additional requirements may be established by written agreement between Company and Union.

If you are in accord with the foregoing and the attachment and agree thereto, please so indicate in the space provided below and return the executed copy of this letter to Company.

Yours very truly,

PACIFIC GAS AND ELECTRIC COMPANY

By *W. W. Donbright*  
Manager of Industrial Relations

The Union is in accord with the foregoing and it agrees thereto as of the date hereof.

LOCAL UNION NO. 1245, INTERNATIONAL  
BROTHERHOOD OF ELECTRICAL WORKERS, AFL-CIO

August 16, 1971

By *D. L. Mitchell*  
Business Manager

## APPRENTICE CONTROL TECHNICIAN

### NOTIFICATION TO PROSPECTIVE EXAMINEES

This notice is to inform prospective candidates for the position of Apprentice Control Technician that a qualification examination will be held:

On \_\_\_\_\_

At \_\_\_\_\_

A passing grade of 70% is required on the qualifying examination in order for a successful bidder to be awarded the job.

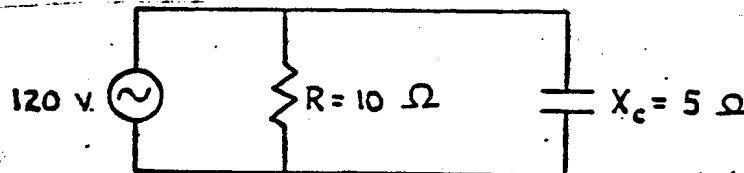
There are two versions of the ACT qualifying exam depending upon whether the candidate is an Electrician or an Instrument Repairman. Both versions of the exam are based upon material contained in the respective apprentice training programs. Therefore, the most appropriate material for a candidate to study would be that provided for the applicable apprenticeship. The current bibliography for these programs is given in the attached table. Most facilities have copies of these books which can be loaned to individuals. If they are not available, see your supervisor.

The qualification examination is based upon the first two years of apprenticeship in either the Apprentice Electrician or Apprentice Instrument Repairman classifications. Prospective candidates will be given the appropriate examination for the line of progression they are in. If a candidate is in neither of these lines of progression, he may have his choice of the two examinations, but will be required to take only one.

In order to prepare for the qualifying examination, candidates are advised to review the apprentice training material for their classification. The examination will be closed book. Slide rules will be the only allowable calculational aid.

Both versions of the examination contain a basic electricity section. Examples of the type of questions found in this portion of the test are given below.

1. What is the total capacitance of two 10 microfarad capacitors in series?
2. What is the total current supplied by the source in the following circuit?



3. Sketch an interference filter and explain how it works.
4. State the Kirchhoff voltage and current laws and explain using appropriate sketches.
5. What voltage is required to produce a current of  $10^{-12}$  amps across a thousand megohm resistor?

The second half of the tests will differ for the two versions, although many common topics will be covered. Example questions for each version are given below:

#### Electrician

1. How do you calibrate an overcurrent relay that has both inverse time overcurrent and instantaneous overcurrent features?
2. What is meant by the term "magnetic arc suppression"?
3. What is an FET? What is it commonly used for and why?
4. Name the six basic gates used in computer work and draw their truth tables.
5. Sketch a basic Darlington amplifier.

#### Instrument Repairman

1. Sketch an E/P converter and explain how it works.
2. What is the principle of the Ledoux bell and how does it work?
3. The Bailey standatrol is a proportional plus reset device. Explain how it works or draw and explain the electronic equivalent.
4. Sketch the  $e_g - i_p$  characteristic curves for a typical triode.
5. Name the six basic computer gates and draw truth tables for each one.
6. Sketch a simple emitter follower amplifier using an NPN transistor. What is the equivalent vacuum tube circuit called?

APPRENTICE TRAINING PROGRAM TEXT BOOKS

<u>BOOK TITLE</u>	<u>AUTHOR</u>	<u>PG&amp;E CODE #</u>	<u>APP. ELECT.</u>	<u>APP. INST. REP.</u>
Basic Mathematics	PG&E Manual	62-0386	x	x
Basic Mathematics	N. M. Cooke	62-0343	x	x
Basic Electricity	A. Marcus	62-0286	x	x
Electronic Communications	Schrader		x	x
Basic Theory and Application of Transistors	Dept. of Army TM-11-690	62-0345	x	x
Description and Operation of Power Plant Electrical Equipment (Set of 4)	PG&E Manual	62-0351	x	
Basic Electronics (Set of 3)	Rider	62-0344	x	x
Relays and Vectors	PG&E Manual		x	
Transformer Course	PG&E Manual		x	
General Operating Orders for Steam Power Plants	PG&E Manual		x	
General Operating Instructions	PG&E Manual		x	
Mechanical Drawing Seventh Edition	French & Svenson	62-0333	x	x
Instruments and Controls Course (Set of 3)		62-0387	x	
Complete Sets, Electrician		62-0319		
Complete Sets, Instrument Repairman		62-0321		