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**TEST INFORMATION GUIDE**

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This test information guide provides a summary of concepts that are tested on the written (multiple choice) examination for the **Communications Equipment Technician I** job. This information can be reviewed in combination with the class specification and examination announcement to assist you in preparing for the examination.

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**I. PRACTICAL ELECTRONICS****(22 Questions)**

Employees in this job are responsible for installing and maintaining a wide variety of electronic devices. The job may require employees to study service literature and schematic diagrams and, utilizing electronic test equipment, locate circuit faults in mobile and base station two-way radios, portables, radar speed meters, video equipment and replace defective components using various hand tools. These critical tasks require one to possess knowledge of what can be considered practical electronics. Test question topics covered in this section include:

- Common symbols used in electronic circuit schematics (i.e., symbols used to denote diodes, transistors, amplifiers, etc.);
- Calculating resistance;
- Measuring electric current;
- Alternating current and direct current characteristics;
- Characteristics and functions of transistors;
- Digital radio modulation techniques.

**II. TWO-WAY RADIO COMMUNICATION SYSTEMS****(14 Questions)**

Employees in this job diagnose and correct circuit faults in two-way mobile, portable and fixed radio equipment. This important responsibility requires the employee to know the principles of two-way radio communication. Test question topics in this section of the exam include:

- Using test equipment;
- Purpose of a “squellch” circuit;
- Characteristics of VHF frequency bands;
- Modulation and demodulation of radio signals;
- Two-way communication terms (e.g., selectivity; emphasis, de-emphasis; impedance; etc.);
- Antenna and transmission line characteristics.

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### **III. ELECTRONIC TESTING EQUIPMENT**

**(16 Questions)**

This job requires employees to repair, adjust and calibrate a variety of two-way radio equipment and related communications circuitry. These tasks require the use of hand tools, soldering guns and various electronic test equipment. In order to perform these tasks effectively, the employee must be knowledgeable of various electronic testing equipment and its application to electronic communication tasks. The questions in this section of the exam test cover topics such as:

- Communications test equipment such as: service monitors, oscilloscopes, spectrum analyzers; voltmeters, impedance meters, ammeters;
- Soldering electrical equipment;
- Low-pass filters;
- Equipment used to check the state of charge of a lead acid battery.

### **IV. MAINTENANCE AND REPAIR OF RADIO COMMUNICATION EQUIPMENT**

**(10 Questions)**

Employees in this job are responsible for maintaining and programming two-way radio equipment and related equipment. It is critical that employees be able to maintain and repair such equipment as the need arises. This section of the exam presents questions that test your ability to repair and maintain radio communication equipment. Test question topics covered in this final section of the exam include:

- Measuring the CTCSS tone deviation on a VHF FM transmitter;
- Frequency synthesis;
- Use of a frequency counter;
- Methods commonly used to measure receiver sensitivity in VHF FM receivers;
- Use of tone control signaling.