

# Electronics Technician E-5 Advancement Practice Exam (Sample)

## Study Guide



**Everything you need from our exam experts!**

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# Table of Contents

<b>Copyright</b> .....	<b>1</b>
<b>Table of Contents</b> .....	<b>2</b>
<b>Introduction</b> .....	<b>3</b>
<b>How to Use This Guide</b> .....	<b>4</b>
<b>Questions</b> .....	<b>5</b>
<b>Answers</b> .....	<b>8</b>
<b>Explanations</b> .....	<b>10</b>
<b>Next Steps</b> .....	<b>16</b>

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# Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

# How to Use This Guide

**This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:**

## 1. Start with a Diagnostic Review

**Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.**

## 2. Study in Short, Focused Sessions

**Break your study time into manageable blocks (e.g. 30 - 45 minutes). Review a handful of questions, reflect on the explanations.**

## 3. Learn from the Explanations

**After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.**

## 4. Track Your Progress

**Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.**

## 5. Simulate the Real Exam

**Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.**

## 6. Repeat and Review

**Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.**

**There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!**

## **Questions**

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- 1. Which device samples energy from within a waveguide for measurement?**
  - A. Amplifier**
  - B. Directional coupler**
  - C. Power divider**
  - D. Demodulator**
  
- 2. Which type of temperature regulating valve is used where seawater is the primary cooling medium in the heat exchanger?**
  - A. Two-way**
  - B. Three-way**
  - C. Four-way**
  - D. Bypass**
  
- 3. Which amplifier class has the highest efficiency of the four classes of amplifier operations?**
  - A. Class B**
  - B. Class A**
  - C. Class C**
  - D. Class AB**
  
- 4. What state is the atom said to be in when it loses electrons or gains electrons?**
  - A. Neutral**
  - B. Ionic**
  - C. Ionic Bond**
  - D. Ionized**
  
- 5. Which theory states that all matter is composed of smaller particles called protons, electrons, and neutrons?**
  - A. Quantum Theory**
  - B. Atomic Theory**
  - C. Electron Theory**
  - D. Nuclear Theory**

**6. Which type of synchros are designed to handle the movement of heavy loads?**

- A. Control**
- B. Torque**
- C. Feedback**
- D. Position**

**7. What is the primary function of a transistor in a circuit?**

- A. To store energy**
- B. To amplify signals**
- C. To convert AC to DC**
- D. To act as a switch**

**8. What is used to test and align various types of transmitters and receivers?**

- A. Signal Generators**
- B. Frequency Meters**
- C. Oscilloscopes**
- D. Power Meters**

**9. What is a basic tool used to solve electrical problems?**

- A. Calculus**
- B. Geography**
- C. Algebra**
- D. Statistics**

**10. How many units categorized into four major subsystems does the AN/SPN-46(V)1 system consist of?**

- A. 20**
- B. 24**
- C. 26**
- D. 30**

## **Answers**

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1. B
2. B
3. C
4. D
5. C
6. A
7. B
8. A
9. C
10. C

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## **Explanations**

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**1. Which device samples energy from within a waveguide for measurement?**

- A. Amplifier**
- B. Directional coupler**
- C. Power divider**
- D. Demodulator**

A directional coupler is designed specifically to sample energy from a waveguide for measurement purposes. It works by allowing a portion of the signal power traveling through the primary line, or waveguide, to be coupled into a secondary line or port. This sampling action makes it possible to measure parameters like signal strength or reflection without disturbing the main signal flow. In contrast, an amplifier is used to increase the power of a signal, and while it can be part of a measurement setup, it does not directly sample the energy for measurement. A power divider's primary function is to split an input signal into multiple output signals with equal power distribution, not to sample energy for measurement. A demodulator is used to extract information from modulated signals, but it does not deal with sampling energy from a waveguide for measurement purposes. Therefore, the directional coupler is the most appropriate choice for the task of sampling energy within a waveguide.

**2. Which type of temperature regulating valve is used where seawater is the primary cooling medium in the heat exchanger?**

- A. Two-way**
- B. Three-way**
- C. Four-way**
- D. Bypass**

The three-way temperature regulating valve is particularly suitable for applications where seawater is the primary cooling medium in a heat exchanger. This valve functions by enabling the mixing of hot water returning from the system with cooler seawater, allowing for precise temperature regulation of the water that circulates back into the heat exchanger. In a three-way valve setup, the valve controls the flow from two inlets to one outlet, permitting it to blend the warmer and cooler fluids effectively. This feature is essential when working with seawater as it helps maintain the desired operating temperature of the heat exchanger by adjusting the proportions of the two incoming streams based on the temperature measurements. This versatility is especially beneficial in marine environments, where seawater temperatures can vary significantly. In contrast, other types of valves such as two-way, four-way, or bypass valves do not provide the same level of control over mixing two different fluid temperatures. A two-way valve typically directs flow from one source to one outlet, lacking the mixing capacity required for effective temperature management. Four-way valves are designed for directing flow in multiple paths but do not specifically facilitate temperature regulation in the same manner as a three-way valve. Bypass valves may reroute fluid but do not mix fluids to achieve a specific temperature outcome. This combination

### 3. Which amplifier class has the highest efficiency of the four classes of amplifier operations?

- A. Class B
- B. Class A
- C. Class C**
- D. Class AB

Class C amplifiers are designed for high efficiency, making them suitable for applications where maximizing power output while minimizing heat generation is crucial. In a Class C amplifier, the output stage conducts for less than half of the input signal cycle, resulting in higher efficiency than Class A or Class AB amplifiers, which conduct over a greater portion of the signal waveform. This operation allows Class C amplifiers to achieve efficiencies of up to 80% or more, particularly in RF applications where distortion can be managed, as they are not typically used for audio signals due to their non-linear characteristics. In contrast, Class A amplifiers, while providing high fidelity, operate on the linear range over the entire signal cycle, resulting in significant power losses as heat, and thus have efficiencies typically around 25-30%. Class B amplifiers improve on Class A by conducting only for half of the signal cycle, increasing efficiency to around 50-70%, but they still cannot match the efficiency of Class C. Class AB amplifiers strive to combine the benefits of both Class A and Class B, achieving efficiencies between the two but still falling short of Class C. Given this context, Class C amplifiers stand out for their ability to operate efficiently in specific scenarios, particularly in RF transmission

### 4. What state is the atom said to be in when it loses electrons or gains electrons?

- A. Neutral
- B. Ionic
- C. Ionic Bond
- D. Ionized**

The atom is said to be in an ionized state when it loses or gains electrons. Ionization refers to the process of an atom becoming an ion, which occurs when there is an imbalance between the number of protons (positively charged particles) and electrons (negatively charged particles) within the atom. When an atom loses electrons, it becomes positively charged and is referred to as a cation. Conversely, when it gains electrons, it becomes negatively charged and is known as an anion. Thus, the term "ionized" specifically denotes that the atom has undergone a change in its electron count, resulting in a net electric charge. This concept is fundamental in understanding chemical reactions, as ionized atoms often have different properties compared to their neutral counterparts and can engage in bonding and interactions more readily. The other options refer to different concepts in chemistry. "Neutral" describes atoms with equal numbers of protons and electrons, "ionic" pertains to the nature of compounds formed from the attraction between cations and anions, and "ionic bond" specifically refers to the electrostatic force that holds these ions together. None of these accurately describe the state of an atom in terms of its electron loss or gain.

**5. Which theory states that all matter is composed of smaller particles called protons, electrons, and neutrons?**

- A. Quantum Theory**
- B. Atomic Theory**
- C. Electron Theory**
- D. Nuclear Theory**

The correct answer, which states that all matter is composed of smaller particles called protons, electrons, and neutrons, is grounded in Atomic Theory. Atomic Theory is a fundamental principle in chemistry and physics that provides the framework to understand the composition and structure of matter. This theory posits that matter is made up of atoms, which consist of a nucleus containing protons and neutrons, with electrons orbiting around this nucleus. Protons carry a positive charge, neutrons have no charge, and electrons carry a negative charge. The interplay between these particles gives rise to the various properties of different elements and compounds. While other theories, like Quantum Theory, focus on the behavior of particles at very small scales, Atomic Theory is specifically concerned with the structure of matter itself, making it the most accurate choice in this context. Electron Theory primarily deals with the behavior and properties of electrons, while Nuclear Theory focuses on the components and interactions at the nucleus level. Hence, none of those options comprehensively addresses the entirety of matter's composition as Atomic Theory does.

**6. Which type of synchros are designed to handle the movement of heavy loads?**

- A. Control**
- B. Torque**
- C. Feedback**
- D. Position**

The correct answer is torque synchros. Torque synchros are specifically designed to handle and transmit rotational movement while supporting heavier loads. These devices operate on the principle of electromagnetic induction and are constructed to generate a torque proportional to the input signal, allowing them to effectively manage the demands of heavier mechanical systems. They facilitate accurate positioning in various applications, making them ideal for situations where significant weight or resistance is involved. Control, feedback, and position synchros serve different functions. Control synchros are primarily used for signal processing and controlling mechanisms, rather than managing heavy loads. Feedback synchros are typically found in systems that require data to indicate the status or position of another component, ensuring accuracy without the need for high load-bearing capacity. Position synchros, while also useful in determining angular position, do not inherently have the robust capacity needed for handling heavy loads that torque synchros possess.

## 7. What is the primary function of a transistor in a circuit?

- A. To store energy
- B. To amplify signals**
- C. To convert AC to DC
- D. To act as a switch

The primary function of a transistor in a circuit is to amplify signals. Transistors are semiconductor devices that can control the flow of electrical current. When a small input signal is applied to the base of a transistor, it allows a much larger output current to flow from the collector to the emitter. This amplification property makes transistors essential components in various applications, such as audio amplifiers, radio frequency transmitters, and signal processing circuits. In addition to amplification, transistors can serve other functions, such as acting as switches and enabling digital logic in computing devices. However, their ability to increase the amplitude of a signal is considered their fundamental role in circuits. Understanding this principle is crucial for electronics technicians working with analog and digital signals.

## 8. What is used to test and align various types of transmitters and receivers?

- A. Signal Generators**
- B. Frequency Meters
- C. Oscilloscopes
- D. Power Meters

Signal generators are essential tools in testing and aligning various types of transmitters and receivers because they produce specific frequencies and signals that can be used to assess the performance of the devices under test. By supplying a known signal, technicians can evaluate how effectively the receiver captures and processes that signal, or how well a transmitter modulates and broadcasts it. Signal generators can offer a wide range of frequencies and signal types, enabling the simulation of various real-world conditions that the transmitter or receiver might encounter. This makes them invaluable in alignment procedures where precise tuning is required to ensure optimal performance and adherence to specifications. While frequency meters measure the frequency of signals, oscilloscopes visualize waveforms, and power meters quantify output power, none of these tools generates signals specifically designed for testing and aligning transmitters and receivers. Thus, signal generators stand out as the appropriate choice for this purpose.

## 9. What is a basic tool used to solve electrical problems?

A. Calculus

B. Geography

**C. Algebra**

D. Statistics

Algebra is a fundamental tool for solving electrical problems because it provides the mathematical framework necessary to manipulate equations and expressions that describe electrical circuits. In electronics, various laws and principles, such as Ohm's Law ( $V = I \times R$ ), rely on algebraic operations to calculate values like voltage, current, and resistance. For instance, if you have a circuit and know two of these values, algebra allows you to rearrange the equation to solve for the missing variable. This skill is crucial for troubleshooting and designing circuits, as it helps technicians understand and predict how electrical components will behave under different conditions. The other options, while useful in their respective fields, do not directly apply to the immediate mathematical needs found in solving electrical issues. Calculus is more geared toward understanding changes and functions rather than basic circuit calculations; geography pertains to the study of places and environments, which is unrelated to electrical problems; and statistics focuses on data analysis and interpretation rather than on the specific calculations needed for electrical troubleshooting.

## 10. How many units categorized into four major subsystems does the AN/SPN-46(V)1 system consist of?

A. 20

B. 24

**C. 26**

D. 30

The AN/SPN-46(V)1 system is an advanced radar system used primarily in naval operations, particularly for aircraft carrier landing support. This system is essential for improving flight operations by providing precision in aircraft landings aided by its radar capabilities. The system consists of four major subsystems, and each of these subsystems comprises various units that work together harmoniously to provide the overall functionality required for its operations. When considering the individual units across these subsystems, the total reaches 26. Each of the subsystems contributes to the overall operation, ensuring that communications, radar data processing, and navigational accuracy are maintained for safe and efficient aircraft landings. The other choices reflect incorrect counts of either too few or too many units. The design and architecture of the AN/SPN-46(V)1 system are tailored specifically to incorporate this certain number of units, which ensures that it operates effectively in various conditions. Therefore, understanding the structure and functionality of the subsystems is crucial in appreciating how the overall unit count leads to enhanced operational capabilities in the field.

# Next Steps

**Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.**

**As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.**

**If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at [hello@examzify.com](mailto:hello@examzify.com).**

**Or visit your dedicated course page for more study tools and resources:**

**<https://electronicstech35advancement.examzify.com>**

**We wish you the very best on your exam journey. You've got this!**

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