

ARRL TECHNICIAN PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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 of the following describes the muting of receiver audio controlled solely by the presence or absence of an RF signal?**
 - A. CTCSS
 - B. Carrier squelch
 - C. Voice-operated switch
 - D. Automatic gain control

- 2. What is the approximate bandwidth of a single sideband voice signal?**
 - A. 1 kHz
 - B. 3 kHz
 - C. 6 kHz
 - D. 10 kHz

- 3. What effect might allow radio signals to be heard despite obstructions between the transmitting and receiving stations?**
 - A. Ground reflection
 - B. Knife-edge diffraction
 - C. Skywave propagation
 - D. Groundwave propagation

- 4. What may result when correspondence from the FCC is returned as undeliverable due to an incorrect mailing address?**
 - A. A warning notice issued by the FCC
 - B. Revocation of the station license or suspension of the operator license
 - C. A fine imposed by the FCC
 - D. Automatic renewal of the license

- 5. What is the current flow in a circuit with an applied voltage of 120 volts and resistance of 80 ohms?**
 - A. 1.0 amperes
 - B. 1.5 amperes
 - C. 2.0 amperes
 - D. 2.5 amperes

- 6. What is a transceiver?**
- A. A device for storing radio frequencies
 - B. A unit combining the functions of a transmitter and a receiver
 - C. A type of antenna
 - D. A circuit for amplifying signals
- 7. What is the primary advantage of single sideband over FM for voice transmissions?**
- A. SSB signals have wider bandwidth
 - B. SSB signals have narrower bandwidth
 - C. FM is clearer than SSB
 - D. SSB is easier to implement
- 8. If something in a neighbor's home is causing harmful interference to your amateur station, what should you consider doing?**
- A. Contact a local repair shop
 - B. All of these choices are correct
 - C. Change your operating frequency
 - D. Ignore the problem
- 9. For what purpose is a dipole antenna commonly used?**
- A. Television reception
 - B. Satellite communication
 - C. Broadband internet access
 - D. General amateur radio communication
- 10. Which of the following methods is encouraged by the FCC when identifying your station when using phone?**
- A. Sending DTMF tones
 - B. Use of a phonetic alphabet
 - C. Repeating your call sign multiple times
 - D. Using a Morse code identifier

Answers

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

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Explanations

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1. Which of the following describes the muting of receiver audio controlled solely by the presence or absence of an RF signal?

- A. CTCSS
- B. Carrier squelch**
- C. Voice-operated switch
- D. Automatic gain control

The correct answer is the method known as carrier squelch. Carrier squelch is a technique used in radio receivers to mute the audio output. It operates by monitoring the presence of a carrier signal at the input of the receiver. When no RF signal is detected—meaning there is no continuous carrier signal—the squelch circuit keeps the audio output muted, essentially eliminating extraneous noise. When a valid

2. What is the approximate bandwidth of a single sideband voice signal?

- A. 1 kHz
- B. 3 kHz**
- C. 6 kHz
- D. 10 kHz

The approximate bandwidth of a single sideband (SSB) voice signal is about 3 kHz. This is due to the way SSB modulation works, where it transmits only one sideband of the frequency spectrum and typically requires a bandwidth of around 2.7 to 3 kHz to properly accommodate the voice signal. In SSB transmission, speech frequencies range from approximately 300 Hz to 3 kHz. The effective bandwidth of the SSB signal is determined by the frequency components of the audio signal being transmitted, as well as the necessary guard band for signal clarity. A 3 kHz bandwidth allows for effective transmission of human voice while keeping the signal bandwidth efficient, making it suitable for radio communication where bandwidth conservation is important. In contrast, other options provided either overestimate or underestimate the required bandwidth for effective SSB voice communication, making 3 kHz the most accurate representation of the typical bandwidth used for this type of signal.

3. What effect might allow radio signals to be heard despite obstructions between the transmitting and receiving stations?

- A. Ground reflection
- B. Knife-edge diffraction**
- C. Skywave propagation
- D. Groundwave propagation

Knife-edge diffraction is a phenomenon that occurs when radio waves encounter an obstruction that has a sharp edge, such as a hill or a tall building. As these waves travel, they can bend around the edge of the obstruction, allowing the signal to be received on the other side. This bending can enable reception of the signal even when there are physical barriers present between the transmitter and receiver. In contrast, ground reflection refers to radio waves bouncing off the ground, which impacts signal propagation but does not specifically address obstructions. Skywave propagation involves signals bending back to the Earth's surface after bouncing off the ionosphere, which allows for long-distance communication but does not directly relate to overcoming physical barriers. Groundwave propagation pertains to signals that travel along the surface of the Earth, which can be affected by obstacles but does not exploit the edge diffraction phenomenon that specifically enables reception behind obstacles. Thus, knife-edge diffraction effectively allows signals to bypass obstructions entirely, making it the correct response to the question.

4. What may result when correspondence from the FCC is returned as undeliverable due to an incorrect mailing address?

- A. A warning notice issued by the FCC
- B. Revocation of the station license or suspension of the operator license**
- C. A fine imposed by the FCC
- D. Automatic renewal of the license

When correspondence from the FCC is returned as undeliverable due to an incorrect mailing address, it can lead to the revocation of the station license or suspension of the operator license. This is because the FCC requires all licensees to maintain accurate and up-to-date contact information. If the FCC cannot reach a licensee because correspondence is undeliverable, it indicates that the licensee may not be fulfilling their obligations, such as responding to important communications regarding their license status. Maintaining correct contact information is essential for ensuring compliance with regulations, and failing to do so may result in serious consequences regarding the validity of the licenses held.

5. What is the current flow in a circuit with an applied voltage of 120 volts and resistance of 80 ohms?

- A. 1.0 amperes
- B. 1.5 amperes**
- C. 2.0 amperes
- D. 2.5 amperes

To determine the current flow in a circuit when given an applied voltage and resistance, Ohm's Law can be applied. Ohm's Law states that the current (I) in amperes is equal to the voltage (V) in volts divided by the resistance (R) in ohms: $I = \frac{V}{R}$. In this case, with an applied voltage of 120 volts and a resistance of 80 ohms, the calculation would be as follows: $I = \frac{120 \text{ volts}}{80 \text{ ohms}}$. Performing the division results in: $I = 1.5 \text{ amperes}$. This correctly indicates that the current flowing through the circuit is 1.5 amperes. This approach is grounded in basic electrical principles, and by understanding the relationship between voltage, current, and resistance, one can easily ascertain the current in any given circuit scenario using Ohm's Law.

6. What is a transceiver?

- A. A device for storing radio frequencies
- B. A unit combining the functions of a transmitter and a receiver**
- C. A type of antenna
- D. A circuit for amplifying signals

A transceiver is a unit that integrates the functions of both a transmitter and a receiver into a single device. This combination allows for bidirectional communication, meaning it can both send and receive signals, which is essential for effective two-way radio communication. In practical terms, the transceiver can convert electrical signals into radio waves for transmission and then revert incoming radio waves back into electrical signals to be processed. This function is crucial in amateur radio and various other communication systems where compact and efficient devices are preferred. The other choices do not accurately describe the function of a transceiver. For instance, a device for storing radio frequencies does not capture the essence of what a transceiver does, as it lacks the ability to both transmit and receive signals. Similarly, a type of antenna is a separate component that focuses solely on radiating or receiving radio waves, without the capability to process or convert those signals. Lastly, a circuit for amplifying signals refers to a process or component that boosts the strength of signals but does not encompass the combined capabilities of transmission and reception found in a transceiver.

7. What is the primary advantage of single sideband over FM for voice transmissions?

- A. SSB signals have wider bandwidth
- B. SSB signals have narrower bandwidth**
- C. FM is clearer than SSB
- D. SSB is easier to implement

Single sideband (SSB) modulation is known for its narrow bandwidth compared to frequency modulation (FM). This characteristic is crucial for voice transmissions, especially in amateur radio and communications where spectrum efficiency is important. The primary advantages of SSB's narrower bandwidth include allowing more simultaneous conversations within the same frequency spectrum, reducing the likelihood of interference, and utilizing power more efficiently. By occupying less bandwidth, SSB can transmit more channels over a given frequency range, which is particularly beneficial in crowded bands. This makes SSB the preferred choice for long-distance communications, where conserving bandwidth is essential. While there are merits to FM, such as its resistance to noise and the clarity it can provide in certain conditions, SSB's efficiency in bandwidth usage stands out as its primary advantage for voice transmissions.

8. If something in a neighbor's home is causing harmful interference to your amateur station, what should you consider doing?

- A. Contact a local repair shop
- B. All of these choices are correct**
- C. Change your operating frequency
- D. Ignore the problem

When dealing with harmful interference to your amateur station from a neighbor's home, considering various appropriate actions can be crucial to resolving the issue effectively. The choice to consult a local repair shop can be beneficial since they might be equipped to diagnose and fix potential interference sources within the neighbor's equipment. Additionally, modifying your operating frequency could provide a temporary solution by allowing you to operate without encountering interference, even if it doesn't address the root cause of the issue. Ignoring the problem is generally not advisable, as it could result in ongoing disruptions to your communications and may also affect your relationship with your neighbor. Therefore, acknowledging that multiple strategies may be useful highlights the importance of a comprehensive approach to interference issues in amateur radio operations. Emphasizing collaboration and proactive measures like reaching out to your neighbor or engaging with local repair professionals can facilitate a more effective resolution to the interference.

9. For what purpose is a dipole antenna commonly used?

- A. Television reception
- B. Satellite communication
- C. Broadband internet access
- D. General amateur radio communication**

A dipole antenna is commonly utilized for general amateur radio communication due to its simplicity, efficiency, and effectiveness across a range of frequencies. This type of antenna consists of two conductors that are typically of equal length, which allows it to resonate at a specific frequency, making it highly effective for transmitting and receiving radio signals. Dipole antennas are particularly well-suited for amateur radio operators because they can be easily constructed, adjusted for specific frequency bands, and installed in various configurations, such as horizontal or vertical orientations. They offer good performance for both transmitting and receiving signals, and their design can be scaled to meet the needs of different operating conditions and frequency requirements. In contrast, the other options have more specialized applications. While dipole antennas may be used in television reception and can be adapted for certain types of communication with satellites, these are not their primary use cases. Similarly, while broadband internet access often employs other types of antennas designed for different bandwidths and coverage requirements, the versatility and straightforward design of dipole antennas make them a go-to choice for general amateur radio communication.

10. Which of the following methods is encouraged by the FCC when identifying your station when using phone?

- A. Sending DTMF tones
- B. Use of a phonetic alphabet**
- C. Repeating your call sign multiple times
- D. Using a Morse code identifier

Using a phonetic alphabet is encouraged by the FCC when identifying your station during phone transmissions because it enhances clarity and comprehensibility. The phonetic alphabet consists of words assigned to each letter of the alphabet, such as "Alpha" for "A" and "Bravo" for "B." This method significantly minimizes the potential for miscommunication, especially in environments with weak signals or background noise, where letters and numbers could be easily misinterpreted. Through the use of a phonetic alphabet, operators ensure that their call sign is clearly understood by other operators, contributing to more effective communication. This practice helps in situations where listeners might be unfamiliar with the letters or numbers being used, which can be particularly vital during emergency communications or when reaching out to individuals in diverse locations or linguistic backgrounds. The other methods, while they can have their merits, do not offer the same level of clarity and effectiveness as using a phonetic alphabet when it comes to identifying stations.

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.

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

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

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