

Amateur Technician License Practice Test (Sample)

Study Guide



Everything you need from our exam experts!

This is a sample study guide. To access the full version with hundreds of 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. Don't worry about getting everything right, 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, and take breaks to retain information better.

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.

7. Use Other Tools

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!

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Questions

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- 1. What should be considered when selecting an accessory SWR meter?**
 - A. The frequency and power level at which measurements will be made**
 - B. The distance the meter will be located from the antenna**
 - C. The types of modulation being used at the station**
 - D. All these choices are correct**

- 2. Which of the following is a form of amplitude modulation?**
 - A. Spread spectrum**
 - B. Packet radio**
 - C. Single sideband**
 - D. Phase shift keying (PSK)**

- 3. Who is responsible if a repeater inadvertently retransmits communications that violate FCC rules?**
 - A. The control operator of the originating station**
 - B. The control operator of the repeater**
 - C. The owner of the repeater**
 - D. Both the originating station and the repeater owner**

- 4. Which is equal to 3.525 MHz?**
 - A. 0.003525 kHz**
 - B. 35.25 kHz**
 - C. 3525 kHz**
 - D. 3,525,000 kHz**

- 5. How is the cathode lead of a semiconductor diode often marked on the package?**
 - A. With the word "cathode"**
 - B. With a stripe**
 - C. With the letter C**
 - D. With the letter K**

- 6. What is a way to enable quick access to a favorite frequency or channel on your transceiver?**
- A. Enable the frequency offset**
 - B. Store it in a memory channel**
 - C. Enable the VOX**
 - D. Use the scan mode to select the desired frequency**
- 7. Electrical power is measured in which of the following units?**
- A. Volts**
 - B. Watts**
 - C. Watt-hours**
 - D. Amperes**
- 8. In which direction does a half-wave dipole antenna radiate the strongest signal?**
- A. Equally in all directions**
 - B. Off the ends of the antenna**
 - C. In the direction of the feed line**
 - D. Broadside to the antenna**
- 9. What component is combined with an inductor to create a resonant circuit?**
- A. Resistor**
 - B. Zener diode**
 - C. Potentiometer**
 - D. Capacitor**
- 10. What is the electrical difference between RG-58 and RG-213 coaxial cable?**
- A. There is no significant difference between the two types**
 - B. RG-58 cable has two shields**
 - C. RG-213 cable has less loss at a given frequency**
 - D. RG-58 cable can handle higher power levels**

Answers

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

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Explanations

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1. What should be considered when selecting an accessory SWR meter?

- A. The frequency and power level at which measurements will be made**
- B. The distance the meter will be located from the antenna**
- C. The types of modulation being used at the station**
- D. All these choices are correct**

When selecting an accessory SWR meter, it's critical to consider the frequency and power level at which measurements will be made because these factors directly influence the meter's accuracy and effectiveness for your specific application. Different SWR meters are designed to operate optimally over specific frequency ranges and must be capable of handling the power levels you intend to use. If the meter is rated for lower power levels than what your setup produces, it could become damaged or provide misleading readings. Similarly, using a meter outside its frequency range will result in inaccurate SWR measurements, which are essential for ensuring a well-matched antenna system. While the distance of the meter from the antenna and the types of modulation are relevant considerations in antenna systems, they do not directly affect the fundamental operation of the SWR meter as much as the frequency and power level do. These factors can impact signal loss and performance but do not dictate the need for a specific SWR meter. The primary concern in choosing a meter remains its ability to accurately measure within the intended operational parameters of frequency and power.

2. Which of the following is a form of amplitude modulation?

- A. Spread spectrum**
- B. Packet radio**
- C. Single sideband**
- D. Phase shift keying (PSK)**

Single sideband (SSB) is indeed a form of amplitude modulation, specifically a refinement of traditional amplitude modulation. In SSB, instead of transmitting both the upper and lower sidebands along with the carrier wave as in conventional amplitude modulation, only one of the sidebands is transmitted. This effectively reduces the bandwidth required and enhances efficiency, allowing for better utilization of the spectrum. By eliminating the carrier and one of the sidebands, SSB signals consume less power and provide improved signal clarity over longer distances. Other forms like spread spectrum, packet radio, and phase shift keying (PSK) serve different purposes and use distinct techniques. Spread spectrum techniques involve spreading a signal over a wider frequency range to minimize interference and improve security. Packet radio is a method of digital communication that sends data in packets rather than continuously, and PSK is a form of digital modulation that encodes information in the phase of a carrier wave, rather than its amplitude. While these methods are significant in their own right, they do not represent amplitude modulation.

3. Who is responsible if a repeater inadvertently retransmits communications that violate FCC rules?

- A. The control operator of the originating station**
- B. The control operator of the repeater**
- C. The owner of the repeater**
- D. Both the originating station and the repeater owner**

The control operator of the originating station is responsible if a repeater inadvertently retransmits communications that violate FCC rules. This is because the originating station is deemed responsible for the content being transmitted, as they initiate the communication that is subsequently retransmitted by the repeater. In the context of amateur radio, the FCC places the onus on the control operator of the station that is generating the transmission to ensure that their communications comply with all regulations. If the content violates rules, regardless of whether it goes through a repeater, the originating station's control operator is ultimately accountable. This highlights the importance of being knowledgeable about the content you are transmitting, as well as understanding the potential for that content to be amplified or retransmitted by other stations.

4. Which is equal to 3.525 MHz?

- A. 0.003525 kHz**
- B. 35.25 kHz**
- C. 3525 kHz**
- D. 3,525,000 kHz**

To determine the correct equivalent of 3.525 MHz (megahertz), it's important to understand the relationships between different units of frequency. One megahertz is defined as one million hertz, or 1,000 kilohertz. When converting 3.525 MHz to kilohertz, you multiply by 1,000 because there are 1,000 kilohertz in a megahertz. This results in: $3.525 \text{ MHz} = 3.525 * 1,000 \text{ kHz} = 3,525 \text{ kHz}$. Now, let's analyze the choices provided. The conversion to kilohertz (kHz) is the standard method of measurement in this context. The choice representing 3525 kHz is in line with this conversion. In relation to other frequency units, 3.525 MHz would convert to 3,525,000 Hz as there are 1,000,000 Hz in a megahertz. However, the choice given as 3,525,000 kHz overshoots this conversion since it implies a much larger number than what is represented by 3.525 MHz. Thus, understanding these conversions and the scale of units is crucial; the correct answer

5. How is the cathode lead of a semiconductor diode often marked on the package?

- A. With the word "cathode"**
- B. With a stripe**
- C. With the letter C**
- D. With the letter K**

The cathode lead of a semiconductor diode is commonly marked on the package with a stripe. This marking helps to identify which lead is the cathode, as diodes are polarized components that must be connected in the correct orientation to function properly. When looking at the diode, the stripe typically indicates the side that connects to the cathode, while the unmarked side is the anode. This visual cue is important for both professionals and hobbyists to ensure they wire the diode correctly in circuits, avoiding potential damage or malfunction. Though there are other potential markings or identifiers for cathodes in different contexts, the stripe is a standardized and widely recognized method specifically for diodes, allowing for quick identification in both design and practical applications.

6. What is a way to enable quick access to a favorite frequency or channel on your transceiver?

- A. Enable the frequency offset**
- B. Store it in a memory channel**
- C. Enable the VOX**
- D. Use the scan mode to select the desired frequency**

Storing a favorite frequency or channel in a memory channel is an effective way to enable quick access on your transceiver. Memory channels allow you to save specific frequencies or settings, making it easy to recall them with a simple button press or dial turn. This feature is particularly useful in situations where you frequently switch between certain frequencies, as it saves time and enhances operational efficiency. In contrast, enabling the frequency offset is generally used in specific situations such as duplex communications with repeaters, and doesn't provide a direct means to quickly access a favorite frequency. The VOX (voice-operated exchange) feature is designed for hands-free operation but does not relate to channel storage or quick access. Similarly, using scan mode is helpful for finding active frequencies but does not guarantee quick access to a specific one unless you are currently aware of it. Thus, saving frequencies in memory channels is the most direct and efficient method for quick retrieval.

7. Electrical power is measured in which of the following units?

- A. Volts**
- B. Watts**
- C. Watt-hours**
- D. Amperes**

Electrical power is measured in watts. This unit represents the rate at which electrical energy is transferred by an electric circuit. One watt is defined as one joule per second, and it quantifies how much energy is used or generated per unit of time. Understanding this concept is crucial for troubleshooting and designing electrical systems, as it helps technicians determine how much power a device consumes or produces within power ratings. The other units mentioned relate to different aspects of electricity. Volts measure the electrical potential difference or pressure in the circuit, amperes measure the flow rate of electric charge (current), and watt-hours represent a measure of energy over time rather than power itself. Thus, while all these terms are essential in electronics, only watts accurately describes electrical power.

8. In which direction does a half-wave dipole antenna radiate the strongest signal?

- A. Equally in all directions**
- B. Off the ends of the antenna**
- C. In the direction of the feed line**
- D. Broadside to the antenna**

A half-wave dipole antenna is designed to have its strongest radiation pattern directed broadside to the length of the antenna. This means that the maximum radiated energy is emitted perpendicular to the axis of the antenna. The dipole itself consists of two equal-length conductive elements, and the current flowing through these elements creates a radiation pattern that is strongest in the plane that is perpendicular to the antenna. As a result, if you visualize the antenna horizontally, the strongest signals are radiated outwards to the sides, not along its length or towards the feed line. Understanding this radiation pattern is crucial for amateur radio operators to effectively position their antennas for optimal signal strength and coverage in desired directions.

9. What component is combined with an inductor to create a resonant circuit?

- A. Resistor**
- B. Zener diode**
- C. Potentiometer**
- D. Capacitor**

A resonant circuit is formed by combining an inductor with a capacitor. This combination creates a circuit that can oscillate at a specific frequency, known as the resonant frequency. The inductor stores energy in a magnetic field when current flows through it, while the capacitor stores energy in an electric field when it is charged. When these two components are paired, they have the ability to exchange energy back and forth, leading to oscillations at the resonant frequency determined by the values of the inductance and capacitance. This characteristic is utilized in various applications such as tuning radios and filtering signals. The other components mentioned do not create a resonant circuit with an inductor. A resistor primarily dissipates energy as heat and helps in controlling current, a Zener diode is used for voltage regulation, and a potentiometer functions as a variable resistor but does not contribute to resonance in the same manner as a capacitor does.

10. What is the electrical difference between RG-58 and RG-213 coaxial cable?

- A. There is no significant difference between the two types**
- B. RG-58 cable has two shields**
- C. RG-213 cable has less loss at a given frequency**
- D. RG-58 cable can handle higher power levels**

The correct choice highlights that RG-213 cable has less loss at a given frequency compared to RG-58. This distinction is primarily due to the physical characteristics and construction of the cables. RG-213, being a thicker cable with a larger diameter, typically utilizes a higher quality dielectric and a more effective shielding design, which reduces attenuation. This lower loss is critically important for applications where signal integrity must be maintained over longer distances, making RG-213 a preferred choice for communications in settings such as repeater stations or other infrastructure where signal strength is crucial. In contrast, RG-58, while suitable for many applications, tends to have higher attenuation due to its smaller conductor size and lighter construction. This can limit its effectiveness for longer runs or higher frequency applications where signal degradation needs to be minimized. Thus, while both cables can be used in various situations, the lower loss characteristic of RG-213 is a significant advantage when considering performance in transmitting signals across distances.

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:

<https://amateurtechnician.examzify.com>

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

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