

AVIONICS ELECTRONICS TECHNICIAN (AET) PRACTICE TEST (SAMPLE) STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE

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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. What happens to the capacitive reactance of a capacitor as the frequency decreases?**
 - A. It decreases
 - B. It increases
 - C. It remains constant
 - D. It becomes zero
- 2. What is the unit of measurement for capacitance?**
 - A. Henry
 - B. Ohm
 - C. Farad
 - D. Volt
- 3. Which of the following is NOT a function of the avionics systems?**
 - A. Navigation
 - B. Automatic flight controls
 - C. Propulsion management
 - D. Communication
- 4. What does hysteresis in a magnetic context refer to?**
 - A. The loss of energy in a circuit
 - B. A lagging behind phenomenon
 - C. The immediate response of a magnetic material
 - D. The saturation point of a magnetic material
- 5. What does the left hand rule help determine regarding a coil?**
 - A. Current direction through the coil.
 - B. Resistance of the coil.
 - C. Magnetic polarity of the coil.
 - D. Voltage across the coil.

- 6. How does a change in input voltage typically affect the operation of a transformer?**
- A. It causes an immediate failure
 - B. It affects the turns ratio
 - C. It changes the primary resistance
 - D. It does not affect the transformer
- 7. When is the resistance of the current return path through the aircraft considered negligible?**
- A. When circuits are powered
 - B. When the structure is adequately bonded
 - C. When the aircraft is on the ground
 - D. When all components are functional
- 8. What aspect must be considered regarding the impact of current load on resistors in a series circuit?**
- A. The resistance increases with higher loads
 - B. The voltage drop can change
 - C. The total resistance remains fixed
 - D. The circuit short-circuits
- 9. With proper bias applied to a transistor, what type of resistance does the emitter-base junction have?**
- A. High resistance
 - B. Medium resistance
 - C. Low resistance
 - D. No resistance
- 10. How does an electronic altimeter display altitude information?**
- A. Using GPS data
 - B. Converting pressure sensor data
 - C. Calculating distance from the ground
 - D. Integrating visual and radar information

Answers

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

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Explanations

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1. What happens to the capacitive reactance of a capacitor as the frequency decreases?

- A. It decreases
- B. It increases
- C. It remains constant
- D. It becomes zero

The capacitive reactance of a capacitor is inversely proportional to the frequency of the signal passing through it. This relationship is defined by the formula: $X_C = \frac{1}{2\pi f C}$ where X_C is the capacitive reactance, f is the frequency, and C is the capacitance. As the frequency f decreases, the denominator of the fraction decreases, which results in an increase in the value of X_C . Therefore, when the frequency decreases, it causes the capacitive reactance to increase, leading to a greater opposition to the alternating current (AC) flowing through the capacitor. This property is crucial in the design and operation of electronic circuits, especially in filtering applications, where the behavior of capacitors at different frequencies directly affects circuit performance.

2. What is the unit of measurement for capacitance?

- A. Henry
- B. Ohm
- C. Farad
- D. Volt

Capacitance is measured in farads, which is the standard unit of measurement for this electrical property. The farad quantifies a capacitor's ability to store an electrical charge per unit voltage. Specifically, one farad is defined as the capacitance of a capacitor that, when charged with one coulomb of electrical charge, will develop a potential difference of one volt across its terminals. Understanding capacitance is crucial in circuits involving capacitors, where they play significant roles in timing applications, filtering signals, and smoothing out electrical outputs. The farad encompasses the relationship between charge, voltage, and capacitance, making it a foundational concept in electronics and avionics systems. The other units mentioned—henry, ohm, and volt—are associated with different electrical measurements: henry is used for inductance, ohm measures resistance, and volt indicates electrical potential difference, each serving distinct functions in the study of electricity and electronics.

3. Which of the following is NOT a function of the avionics systems?

- A. Navigation
- B. Automatic flight controls
- C. Propulsion management**
- D. Communication

The correct answer is identified as propulsion management because it is not a function typically associated with avionics systems. Avionics systems primarily encompass the electronic systems used for communication, navigation, and flight control within an aircraft. Navigation systems help pilots determine their position and direction, ensuring safe travel from one point to another. Automatic flight control systems assist in managing the aircraft's trajectory, enabling automated operations like altitude and speed control to enhance efficiency and safety during flight. Communication systems are vital for maintaining contact with air traffic control and other aircraft, allowing clear exchanges of information regarding operations and safety concerns. In contrast, propulsion management involves the systems and processes necessary to control and monitor the engine or propulsion system of the aircraft, which falls outside the realm of avionics. Propulsion management deals with aspects such as thrust management, fuel flow, and engine performance, functions that are typically managed by the aircraft's powerplant systems rather than the avionics systems. Thus, propulsion management is the correct answer as it is not considered a core function of avionics.

4. What does hysteresis in a magnetic context refer to?

- A. The loss of energy in a circuit
- B. A lagging behind phenomenon**
- C. The immediate response of a magnetic material
- D. The saturation point of a magnetic material

Hysteresis in a magnetic context refers to the phenomenon where the output of a material depends not only on its current input but also on its past input. This is particularly evident in magnetic materials, where the magnetization of the material lags behind the applied magnetic field. When a magnetic field is applied to a material, it becomes magnetized, but when the field is removed, the material does not immediately return to its original state. Instead, it retains some magnetization due to the internal structure and arrangement of magnetic domains. This lag or delay in the response is what defines hysteresis. The characteristic loop created when graphed demonstrates how the magnetic properties change during the application and removal of the magnetic field, illustrating that the material exhibits a certain history of magnetization. This behavior has significant implications in various applications, such as transformers and magnetic storage devices, where the efficiency and energy loss are critical considerations, highlighting why understanding hysteresis is essential for technicians in the field.

5. What does the left hand rule help determine regarding a coil?

- A. Current direction through the coil.
- B. Resistance of the coil.
- C. Magnetic polarity of the coil.**
- D. Voltage across the coil.

The left hand rule is a fundamental principle in electromagnetism that helps in determining the direction of magnetic forces, specifically in the context of a coil. When a current flows through a coil of wire, it generates a magnetic field. The left hand rule, sometimes referred to in the context of motors, involves positioning your thumb, index finger, and middle finger of your left hand to represent three components: the thumb indicates the direction of the force (or motion), the index finger points in the direction of the magnetic field, and the middle finger indicates the direction of the current. In the case of a coil, the left hand rule specifically assists in determining the magnetic polarity that the coil exhibits. By applying the rule, you can predict the north and south poles of the magnetic field generated by a current-carrying coil. This is crucial for understanding how the coil will interact with external magnetic fields, other coils, or components within an electrical circuit. While current direction, resistance, and voltage are important concepts, they are not directly assessed by the left hand rule; the rule focuses on the relationship between current and magnetism, thereby confirming that the correct answer relates to identifying the magnetic polarity of the coil.

6. How does a change in input voltage typically affect the operation of a transformer?

- A. It causes an immediate failure
- B. It affects the turns ratio**
- C. It changes the primary resistance
- D. It does not affect the transformer

When considering how a change in input voltage affects the operation of a transformer, the relationship between the primary and secondary windings is crucial. The turns ratio of a transformer is defined by the number of windings in the primary coil compared to the number of windings in the secondary coil. This ratio determines how the voltage is transformed: if the voltage input to the primary winding changes, the output voltage from the secondary winding will also adjust according to the established turns ratio. For example, if the input voltage to the primary winding increases, the output voltage at the secondary winding will also increase proportionately, based on the turns ratio. Conversely, if the input voltage decreases, the output voltage will decrease proportionately. The transformer does not inherently fail due to voltage changes unless those voltages exceed the design limits, in which case other protective measures are typically in place. Changes in input voltage do not directly affect the physical construction of the transformer, such as the turns ratio itself, which is a fixed characteristic determined during manufacturing. Additionally, while input voltage can influence the effective voltage seen by the windings, it does not alter the primary resistance in a significant way nor does it render the transformer inoperative barring extreme conditions. Therefore, the impact of input voltage variations

7. When is the resistance of the current return path through the aircraft considered negligible?

- A. When circuits are powered
- B. When the structure is adequately bonded**
- C. When the aircraft is on the ground
- D. When all components are functional

The resistance of the current return path through the aircraft is considered negligible when the structure is adequately bonded. Adequate bonding ensures that various parts of the aircraft's electrical systems are effectively connected to a common ground, which minimizes resistance in the return path for electrical currents. Proper bonding helps maintain a low-resistance path for the return current, which is essential for reliable operation of the avionics and electrical systems. When the aircraft structure is bonded correctly, it also reduces the potential for electromagnetic interference and helps in dissipating static electricity. This is critical for maintaining the performance of sensitive electronic systems. The use of bonding is a standard practice in aviation to ensure that electrical circuits function correctly and safely. While circuits being powered, the aircraft being on the ground, or all components being functional might influence operational conditions, they do not directly relate to the idea of resistance being negligible in the return path. Adequate bonding is the key factor that directly affects the resistance of the current return path.

8. What aspect must be considered regarding the impact of current load on resistors in a series circuit?

- A. The resistance increases with higher loads
- B. The voltage drop can change**
- C. The total resistance remains fixed
- D. The circuit short-circuits

In a series circuit, when the current load varies, it affects the voltage drop across each resistor due to Ohm's Law, which states that voltage (V) is equal to current (I) times resistance (R), or $V = IR$. As the current load increases, the voltage drop across each resistor will correspondingly increase. This is critical to understand because it can lead to variations in how much voltage is available for other components in the circuit. As the current flowing through the series circuit changes, individual resistors may experience different voltage drops based on their resistance values and the overall current flowing through them. This reflects the dependence of voltage on current, which can significantly influence the operation of devices powered by that circuit, potentially leading to performance changes or even failures if the voltage drops exceed designed thresholds. This aspect emphasizes the importance of considering how current load manifests within a resistor's voltage drop in series configurations.

9. With proper bias applied to a transistor, what type of resistance does the emitter-base junction have?

- A. High resistance
- B. Medium resistance
- C. Low resistance**
- D. No resistance

When proper bias is applied to a transistor, specifically in the context of a bipolar junction transistor (BJT), the emitter-base junction becomes forward-biased. In this state, the junction exhibits low resistance. This characteristic is essential for allowing current to flow easily through the transistor, enabling its operation as an amplifier or a switch. In a forward-biased condition, charge carriers (electrons and holes) are injected across the junction, which decreases the barrier potential and allows for increased current flow. This low resistance is critical to the transistor's function, as it helps in controlling the overall flow of current from the collector to the emitter when the transistor is in the active region. Understanding this concept is fundamental in grasping how transistors work within electronic circuits, as it highlights the importance of biasing in determining the operational state of the device.

10. How does an electronic altimeter display altitude information?

- A. Using GPS data
- B. Converting pressure sensor data**
- C. Calculating distance from the ground
- D. Integrating visual and radar information

An electronic altimeter displays altitude information by converting pressure sensor data. This is based on the principle that atmospheric pressure decreases as altitude increases. The altimeter is equipped with a pressure sensor that measures the ambient air pressure. This pressure reading is then compared to a reference pressure, typically the standard sea level pressure, allowing the altimeter to calculate the altitude of the aircraft relative to sea level. The use of pressure sensor data is essential because it provides a direct correlation to altitude based on the International Standard Atmosphere (ISA) model. As the aircraft ascends or descends, the changes in atmospheric pressure are detected by the altimeter, which then processes this information to provide a real-time altitude reading. The electronic circuitry interprets these pressure changes and displays the corresponding altitude on the cockpit instrument. While GPS data can also provide altitude information, it does so by triangulating the position of the aircraft via satellites and is not primarily how traditional electronic altimeters operate. Therefore, the response relies fundamentally on pressure sensors and their ability to relate air pressure to altitude.

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://avionicelectronicstech.examzify.com>

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

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