

AIRFRAME ELECTRICAL 2 PRACTICE TEST (SAMPLE)

STUDY GUIDE



**SAMPLE STUDY GUIDE
WITH LIMITED QUESTIONS**

**VISIT US ONLINE FOR
THE FULL VERSION STUDY GUIDE**

<https://airframeelectrical2.examzify.com>



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Table of Contents

Copyright	1
Table of Contents	2
Introduction	3
How to Use This Guide	4
Questions	5
Answers	8
Explanations	10
Next Steps	15

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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 can happen if generator startup surges are not managed?**
 - A. Voltage sags that can cause regulator misoperation and nuisance trips
 - B. Increased fuel consumption
 - C. Improved voltage stability
 - D. Faster engine start

- 2. Explain the difference between direct current (DC) and alternating current (AC) in aircraft electrical systems and where each is typically used.**
 - A. DC is used for fixed-voltage power distribution (e.g., 28V) for most aircraft systems; AC may be used for specific loads or converted by power conversion equipment; many GA aircraft operate primarily on DC
 - B. DC is used for high-power lighting; AC is used for all other systems
 - C. AC is used for fixed-voltage distribution (e.g., 28V) for most aircraft systems; DC may be used for specific loads
 - D. There is no distinction; DC and AC are interchangeable in aircraft

- 3. Which type of motor is brushless by design?**
 - A. AC induction motor
 - B. DC motor
 - C. Universal motor
 - D. Stepper motor

- 4. What is the purpose of an isolation diode in an aircraft electrical power system?**
 - A. To prevent reverse current flow between power sources and allow multiple sources to share loads without backfeeding
 - B. To regulate system voltage
 - C. To measure current flow
 - D. To increase power output

- 5. Slip rings are used on what type of generator?**
 - A. AC generators and DC alternators
 - B. DC motors
 - C. AC motors
 - D. All types of generators

- 6. How is reversing a DC motor accomplished?**
- A. Reverse speed by increasing voltage
 - B. Short-circuit the armature
 - C. Reverse polarity or field in armature but not both
 - D. Reversing rotor direction
- 7. When you detect chafed or damaged wiring, what is the proper sequence to address it?**
- A. Depower power, document the fault, repair or replace damaged wiring with approved parts, and protect with abrasion-resistant sleeving.
 - B. Document the fault, depower power, repair or replace damaged wiring with approved parts, and protect with abrasion-resistant sleeving.
 - C. Depower power, repair or replace damaged wiring, document the fault, and protect with abrasion-resistant sleeving.
 - D. Depower power, document the fault, protect with abrasion-resistant sleeving, and then repair.
- 8. What does continuity testing assess, and what is an acceptable result for a wiring harness?**
- A. Continuity testing measures insulation resistance.
 - B. Continuity testing checks for an unbroken path; acceptable readings are a low resistance value.
 - C. It tests for cross-talk.
 - D. It verifies amperage capacity of the wire.
- 9. Which protective device is a one-time device that opens the circuit when overloaded and cannot be reset?**
- A. Fuse
 - B. Circuit breaker
 - C. Relay
 - D. Switch
- 10. Why is the avionics bus often protected by circuit breakers and may be on a separate battery or power source?**
- A. To ensure stable power for cockpit avionics
 - B. To allow avionics to power the main bus
 - C. To reduce weight of the aircraft
 - D. To power only cabin lights

Answers

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

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Explanations

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1. What can happen if generator startup surges are not managed?

- A. Voltage sags that can cause regulator misoperation and nuisance trips
- B. Increased fuel consumption
- C. Improved voltage stability
- D. Faster engine start

Startup surges in the generator system cause transient voltage dips on the output. If these surges aren't controlled, the bus voltage can sag enough to push the automatic voltage regulator out of its normal range, which can lead to misoperation of regulation and nuisance trips by protective devices. In short, unmanaged surge events destabilize the voltage and can trigger unwanted trips, rather than improving stability or speeding engine starts. The other outcomes don't reflect the actual effect of a sudden, large inrush on the electrical system.

2. Explain the difference between direct current (DC) and alternating current (AC) in aircraft electrical systems and where each is typically used.

- A. DC is used for fixed-voltage power distribution (e.g., 28V) for most aircraft systems; AC may be used for specific loads or converted by power conversion equipment; many GA aircraft operate primarily on DC
- B. DC is used for high-power lighting; AC is used for all other systems
- C. AC is used for fixed-voltage distribution (e.g., 28V) for most aircraft systems; DC may be used for specific loads
- D. There is no distinction; DC and AC are interchangeable in aircraft

Direct current provides a stable, fixed-voltage power supply that is ideal for the avionics and most loads on smaller aircraft. In general aviation, the standard is a 28-volt DC distribution system, with the battery and the generator feeding the DC bus directly or via rectification. This simple, robust arrangement keeps wiring and electronics reliable and uncomplicated. Alternating current shows up where higher power is needed or where aircraft are designed around AC power. In larger airplanes, for example, power is distributed as AC (common values include 115 VAC at 400 Hz) to drive motors, environmental systems, and other heavy loads. On aircraft that do use AC, any loads not natively designed for AC are powered through inverters or other power conversion equipment that create the needed DC or AC form. So, most GA aircraft operate primarily on DC (fixed voltage like 28V) with AC used only for specific loads or when power conversion equipment is employed to supply AC.

3. Which type of motor is brushless by design?

- A. AC induction motor
- B. DC motor
- C. Universal motor
- D. Stepper motor

Brushless by design means there's no mechanical commutation on the rotor. An AC induction motor fits this because its rotor is driven by the rotating magnetic field created by the stator's AC windings, usually a simple squirrel-cage rotor with no brushes or commutator. As a result, it operates without any sliding contacts, making it inherently brushless. The DC motor and universal motor rely on a commutator and brushes to switch current as the rotor turns, so they are not brushless by design. Stepper motors are typically driven by electronic control and are also brushless in their common form, but the classic, most straightforward example of a motor that is brushless by design among these options is the AC induction motor.

4. What is the purpose of an isolation diode in an aircraft electrical power system?

- A. To prevent reverse current flow between power sources and allow multiple sources to share loads without backfeeding
- B. To regulate system voltage
- C. To measure current flow
- D. To increase power output

A diode acts as a one-way valve for electrical current. In an aircraft electrical power system, isolation diodes between each power source and the common bus prevent reverse current from flowing back into other sources. This lets multiple sources (such as a generator and a battery) connect to the same bus without fighting each other or feeding power into a source that isn't providing it. With a diode from each source to the bus, the source with the highest voltage forward-biases its diode and powers the bus, while the other diodes stay reverse-biased and block current. If a source drops out or fails, the remaining sources can continue supplying the bus without current flowing into the failed source. This arrangement also enables load sharing without backfeeding, but it does not regulate voltage, measure current, or increase power output.

5. Slip rings are used on what type of generator?

- A. AC generators and DC alternators
- B. DC motors
- C. AC motors
- D. All types of generators

Slip rings provide a continuous connection to a rotating winding, which is needed to excite the rotor field in machines with a wound rotor. For generators that rely on a rotating field, the rotor must be fed with DC to create and sustain the magnetic field while it spins. That excitation is supplied through slip rings and brushes, making them a key feature of AC generators (alternators) and DC alternators. In these machines, the rotor's field current stays on the spinning part, while the output comes from the stationary stator. Other types of motors and generators typically use a different method for rotor excitation (or do not require a rotating field fed through slip rings), so slip rings are not used in those cases.

6. How is reversing a DC motor accomplished?

- A. Reverse speed by increasing voltage
- B. Short-circuit the armature
- C. Reverse polarity or field in armature but not both
- D. Reversing rotor direction

The direction a DC motor turns is set by the relationship between the armature current and the magnetic field. The torque the motor develops is proportional to the field flux and the armature current. If you reverse the current in the armature, you reverse the torque, so the motor spins the other way. If you reverse the polarity of the field, the direction of the field flux changes, which also reverses the torque. But reversing both the armature current and the field flips both factors and the torque ends up in the same direction as before, so the rotation doesn't change. So, to reverse the motor's rotation, you change the polarity in one path: either the armature or the field, but not both. Increasing voltage changes speed, not direction; short-circuiting the armature is dangerous and not a control method; and simply "reversing rotor direction" isn't a valid control approach because rotation direction is determined by the relative polarities of current and field, not by some separate rotor setting.

7. When you detect chafed or damaged wiring, what is the proper sequence to address it?

- A. Depower power, document the fault, repair or replace damaged wiring with approved parts, and protect with abrasion-resistant sleeving.**
- B. Document the fault, depower power, repair or replace damaged wiring with approved parts, and protect with abrasion-resistant sleeving.
- C. Depower power, repair or replace damaged wiring, document the fault, and protect with abrasion-resistant sleeving.
- D. Depower power, document the fault, protect with abrasion-resistant sleeving, and then repair.

The main idea is to follow a safety-first, maintenance-traceability sequence when you find damaged wiring: make the system safe, document the fault, perform a proper repair with approved parts, then add protection to prevent recurrence. First, depowering the power eliminates the risk of shock, arcing, or further damage while you work. Next, document the fault so there's a clear maintenance record and the issue is tracked for inspections and compliance. Then repair or replace the damaged wiring using parts and methods approved for the aircraft, ensuring the repair meets wiring standards and certification requirements. Finally, protect the repaired area with abrasion-resistant sleeving to guard against future chafing and to maintain proper harness protection. This order keeps people safe, ensures proper recordkeeping, and preserves airworthiness.

8. What does continuity testing assess, and what is an acceptable result for a wiring harness?

- A. Continuity testing measures insulation resistance.
- B. Continuity testing checks for an unbroken path; acceptable readings are a low resistance value.**
- C. It tests for cross-talk.
- D. It verifies amperage capacity of the wire.

Continuity testing checks for an unbroken electrical path between two points. In a wiring harness, you're verifying that each conductor runs from end to end without a break, so the current can flow freely. The best result is a low resistance value, ideally near zero ohms for a single, intact conductor. A reading that's high or infinite means there's an open somewhere in the path, indicating a break. The exact "acceptable" low value can vary with wire length and gauge, but it should be much lower than an open-circuit reading. Perform the test with power off and across the conductor's two ends (or through the harness connector) to avoid misleading results from energized circuits. This test specifically confirms a continuous path, unlike insulation resistance testing (which checks for leaks in insulation) or measurements of cross-talk or amperage capacity.

9. Which protective device is a one-time device that opens the circuit when overloaded and cannot be reset?

- A. Fuse**
- B. Circuit breaker
- C. Relay
- D. Switch

Overcurrent protection that is used up and cannot be reset is provided by a fuse. A fuse contains a metal conductor designed to melt or vaporize when the current exceeds its rating, causing the circuit to open and stop the current flow. This intentional failure protects wiring and equipment from damage due to overload or a short circuit. Because the fusible element is destroyed, it cannot be reset; you replace the fuse after it blows. In contrast, a circuit breaker also interrupts current when there's an overload, but it trips and can be reset after the fault is cleared. A relay is an electrically actuated switch used in control circuits, not primarily a protective device for overloads. A switch is a manual control and does not automatically interrupt power due to overload.

10. Why is the avionics bus often protected by circuit breakers and may be on a separate battery or power source?

- A. To ensure stable power for cockpit avionics**
- B. To allow avionics to power the main bus
- C. To reduce weight of the aircraft
- D. To power only cabin lights

The idea being tested is that avionics need a reliable, clean, and isolated power source. The avionics bus is protected with circuit breakers so any fault or overcurrent on other parts of the electrical system won't pull the avionics down or cause damage. Placing avionics on a separate battery or power source gives them a dedicated supply that can stay energized even if the main electrical system faults or loses power, helping maintain stable voltage, reduce noise and transients, and ensure cockpit instruments and displays remain available during abnormal conditions. This is why the option stating it ensures stable power for cockpit avionics is the best choice. It isn't about powering the main bus, it doesn't aim to reduce weight, and it isn't for powering cabin lights.

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://airframeelectrical2.examzify.com>

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

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