

# Aircraft Electrical Systems Practice Test (Sample)

## Study Guide



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

**Copyright © 2026 by Examzify - A Kaluba Technologies Inc. product.**

**ALL RIGHTS RESERVED.**

**No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.**

**Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.**

**SAMPLE**

# 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>15</b>

SAMPLE

# 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

SAMPLE

- 1. Which protection measure is used to minimize induced surges by routing conductors?**
  - A. Bonding**
  - B. Shielding**
  - C. Proper conductor routing**
  - D. Surge protection devices**
  
- 2. When clamping RF cables, what are the determining factors when selecting the clamp?**
  - A. The clamp must fit without crushing the cable.**
  - B. The clamp should be painted orange for visibility.**
  - C. The clamp should be as light as possible to minimize weight.**
  - D. The clamp must fit without crushing the cable and must be snug enough to prevent movement while allowing slight axial sliding.**
  
- 3. The transformer-rectifier unit in aircraft power systems receives input from which source to supply DC to the DC buses?**
  - A. AC power from generators.**
  - B. Direct current from the main battery.**
  - C. Solar panels.**
  - D. Hydraulic power.**
  
- 4. When an aircraft has a structure made from composite materials, how is protection provided against lightning strikes?**
  - A. The composite is coated with paint**
  - B. The composite material contains a layer of conductive material**
  - C. The aircraft uses a separate metal skin**
  - D. Lightning protection is not needed**
  
- 5. Which statement about the nonessential bus is true?**
  - A. It powers cabin lighting and entertainment, which can be shed when power is limited**
  - B. It powers flight control computers**
  - C. It powers essential flight instruments**
  - D. It powers the standby battery**

- 6. What color are the navigation lights on the wingtips?**
- A. The left wingtip is red and the right is green.**
  - B. The left wingtip is green and the right is red.**
  - C. Both wingtips are red.**
  - D. Both wingtips are green.**
- 7. The voltage regulator controls which parameter to regulate the alternator's voltage?**
- A. The generator field current**
  - B. The rotor speed**
  - C. The air flow**
  - D. The terminal resistance**
- 8. What colors are the left and right wing tip position lights respectively?**
- A. Left green, right red.**
  - B. Left white, right blue.**
  - C. Left red, right green.**
  - D. Left red, right white.**
- 9. What is the function of a bus tie in avionics power distribution?**
- A. It connects two buses to allow allocation of power between them and maintain essential power if one bus drops**
  - B. It measures voltage on the bus**
  - C. It isolates all buses in fault**
  - D. It disconnects the avionics from power**
- 10. When is an inverter typically used in an aircraft power system?**
- A. To regulate the 28V DC bus**
  - B. To charge the battery**
  - C. To provide DC power to avionics**
  - D. To convert DC to AC to power equipment that requires AC power when AC power is unavailable**

## Answers

SAMPLE

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

SAMPLE

## **Explanations**

SAMPLE

**1. Which protection measure is used to minimize induced surges by routing conductors?**

- A. Bonding**
- B. Shielding**
- C. Proper conductor routing**
- D. Surge protection devices**

Induced surges come from changing magnetic fields linked to a conductor and its return path. The size of the loop area between a supply and its return determines how much voltage is induced when those magnetic fields change. By routing conductors so that the current path and its return are as close together as possible, and by keeping sensitive lines separate from long parallel runs of high-current conductors, you drastically reduce the loop area and the mutual coupling. In practice, this means laying out power and return conductors together, routing them along the same path, and avoiding long, parallel runs with other circuits. If routes must cross, crossing at right angles helps, and keeping high-current conductors away from sensitive control or signal wires further minimizes coupling. Other measures like bonding, shielding, or surge protection devices address different protection aspects, but the specific way to minimize induced surges through routing is to reduce the loop area and mutual inductance by careful conductor routing.

**2. When clamping RF cables, what are the determining factors when selecting the clamp?**

- A. The clamp must fit without crushing the cable.**
- B. The clamp should be painted orange for visibility.**
- C. The clamp should be as light as possible to minimize weight.**
- D. The clamp must fit without crushing the cable and must be snug enough to prevent movement while allowing slight axial sliding.**

When selecting a clamp for RF cables, the key idea is to balance secure restraint with gentle handling of the cable. The clamp should grip the cable firmly enough to prevent movement along the aircraft structure, but it must not crush or deform the outer jacket or the dielectric. Allowing a small amount of axial sliding is essential because it lets the cable accommodate thermal expansion, vibration, and bending without transferring stress to the connector or damaging shielding. If a clamp crushes the cable, insulation or shielding can be damaged, changing impedance and increasing the risk of failure. If it's too loose or rigid and doesn't permit any sliding, stress builds up at the connector and along the run, especially under flight-induced movement and temperature changes. Those forces, if not managed, can lead to wear, shorts, or impedance disturbances. Colors or weight are not the determining factors here; the priority is preventing damage while controlling movement and allowing a bit of axial movement for real-world conditions.

**3. The transformer-rectifier unit in aircraft power systems receives input from which source to supply DC to the DC buses?**

- A. AC power from generators.**
- B. Direct current from the main battery.**
- C. Solar panels.**
- D. Hydraulic power.**

The transformer-rectifier unit is the bridge between the aircraft's AC generation and the DC distribution. It takes the AC output from the engine-driven generators, uses a transformer to get the voltage at the proper level, and then rectifies that AC into DC to feed the DC buses. The resulting DC is smoothed and regulated to provide stable power for avionics and systems, and it can also help charge the main battery when needed. Solar panels do not feed the TRU in a typical aircraft electrical system; they produce DC separately and would generally connect to the battery or a dedicated regulator, not to the generator-derived input of the TRU. Hydraulic power is mechanical energy and cannot supply the DC buses directly.

**4. When an aircraft has a structure made from composite materials, how is protection provided against lightning strikes?**

- A. The composite is coated with paint**
- B. The composite material contains a layer of conductive material**
- C. The aircraft uses a separate metal skin**
- D. Lightning protection is not needed**

Lightning can cause severe damage to a non-conductive composite, so a low-impedance path for the current must be provided. The protection comes from embedding or attaching a layer of conductive material within the laminate—such as a metal foil or a conductive mesh—so the lightning current can spread across a broad area and flow into the aircraft's bonding network rather than concentrating in one spot. This conductive layer acts as a path that carries the current away from the resin and fibers, protecting the structure from overheating and delamination. Painting the surface, which is typically nonconductive, does not establish this path and thus isn't sufficient by itself. In some designs a separate metal skin is used, but the standard, effective method for composites is to include a conductive layer in the material itself.

5. Which statement about the nonessential bus is true?

- A. It powers cabin lighting and entertainment, which can be shed when power is limited**
- B. It powers flight control computers**
- C. It powers essential flight instruments**
- D. It powers the standby battery**

Nonessential electrical loads are those not needed to keep the aircraft safely flying, and they can be shed to conserve power when power is limited. Cabin lighting and passenger entertainment are classic examples of loads placed on the nonessential bus because turning them off doesn't affect flight safety or control. In contrast, flight control computers and essential flight instruments rely on the essential power bus to stay powered, even during electrical limits, so they aren't supported by the nonessential bus. The standby battery is an independent source dedicated to keeping standby instruments alive if primary power fails, not something that is powered by the nonessential bus. So, the statement that the nonessential bus powers cabin lighting and entertainment and can be shed when power is limited is the correct interpretation.

6. What color are the navigation lights on the wingtips?

- A. The left wingtip is red and the right is green.**
- B. The left wingtip is green and the right is red.**
- C. Both wingtips are red.**
- D. Both wingtips are green.**

Navigation lights on aircraft are arranged to show orientation at night or in low visibility. The left wingtip carries a red light and the right wingtip a green light, so other pilots can quickly tell which side of the aircraft they're looking at. This standard color pairing—red on the port (left) side and green on the starboard (right) side—helps determine direction and reduces collision risk. Having both wingtips the same color or reversed would remove that quick visual cue, which is why the red-left/green-right configuration is the correct one.

7. The voltage regulator controls which parameter to regulate the alternator's voltage?

- A. The generator field current**
- B. The rotor speed**
- C. The air flow**
- D. The terminal resistance**

Voltage regulation is achieved by controlling the generator's field current. The voltage regulator watches the output voltage and adjusts the current in the generator's field winding to keep the terminal voltage within limits. A stronger field (more current) increases the generated EMF and raises the output voltage; reducing the field current lowers the EMF and the voltage. This direct control of the magnetic field is how the system maintains a steady voltage even as load or temperature changes. The other factors aren't used to regulate voltage. Rotor speed affects the generator's frequency and, to a small degree, the generated EMF, but the regulator's job isn't to set rotor speed. Air flow is unrelated to voltage control in this context, and terminal resistance varies with wiring and connections but isn't what the regulator adjusts to regulate voltage.

**8. What colors are the left and right wing tip position lights respectively?**

- A. Left green, right red.
- B. Left white, right blue.
- C. Left red, right green.**
- D. Left red, right white.

Wingtip position lights use a standardized color scheme to show aircraft orientation. The left wingtip carries a red light and the right wingtip a green light. This red-for-port and green-for-starboard setup helps other pilots quickly gauge which side of your airplane they're seeing, especially at night or in poor visibility. White lights are used for tail lighting or anti-collision strobes, not for the wingtip position lights, so the correct arrangement is red on the left and green on the right.

**9. What is the function of a bus tie in avionics power distribution?**

- A. It connects two buses to allow allocation of power between them and maintain essential power if one bus drops**
- B. It measures voltage on the bus
- C. It isolates all buses in fault
- D. It disconnects the avionics from power

The bus tie creates a cross-connection between two power buses, allowing power to be shared or transferred from one bus to the other. This lets you allocate power between buses and keep essential avionics powered if one bus drops. In normal operation, each bus feeds its own loads, but when a fault or generator issue occurs on one side, closing the bus tie lets the healthy bus back-feed the affected side, preserving critical systems with safe transfer sequencing. The bus tie is typically a controlled switch or relay that is opened or closed by the power-management system or crew, with interlocks to prevent unsafe backfeeding. It isn't used for measuring voltage, isolating every bus in a fault, or disconnecting avionics from power by itself.

**10. When is an inverter typically used in an aircraft power system?**

- A. To regulate the 28V DC bus
- B. To charge the battery
- C. To provide DC power to avionics
- D. To convert DC to AC to power equipment that requires AC power when AC power is unavailable**

Inverters convert DC power to AC power, allowing equipment that requires AC to run when no AC source is available. In an aircraft, engines or external power typically provide AC, but the inverter backs up by supplying AC from the DC system (battery or DC bus) during start, abnormal conditions, or when AC power is offline. That's why this option describes converting DC to AC to power equipment that needs AC when AC power isn't available. The other options describe DC-side functions: regulating the DC bus, charging the battery, or supplying DC to avionics, which aren't the inverter's primary purpose.

## 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://aircraftelectricalsys.examzify.com>**

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

SAMPLE