

PHILSCA Aircraft Construction, Repair, and Maintenance (ACRM) Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

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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

- 1. What type of loads does a well-designed rivet joint primarily subject the rivet to?**
 - A. Compressive loads**
 - B. Tensile loads**
 - C. Shear loads**
 - D. Twisting loads**
- 2. Which statement is true regarding a cantilever wing?**
 - A. It has nonadjustable lift struts**
 - B. It requires only one lift strut on each side**
 - C. External bracing is needed**
 - D. No external bracing is needed**
- 3. Why are clad aluminum alloys used in aircraft?**
 - A. They can be heat treated much easier than other aluminum forms**
 - B. They are less subject to corrosion than uncoated aluminum alloys**
 - C. They are stronger than unclad aluminum alloys**
 - D. They are heat resistant**
- 4. What must the majority of aircraft control cables be checked with to show compliance after the swaging operation?**
 - A. Corrosion treatment**
 - B. Pull testing**
 - C. Go-no-go gauge**
 - D. Visual inspection**
- 5. Which of the following is NOT typically included in a comprehensive safety audit?**
 - A. Review of maintenance records**
 - B. Inspection of emergency equipment**
 - C. Assessment of pilot skills**
 - D. Evaluation of aircraft structural integrity**

- 6. What is a non-electrolytic chemical treatment for aluminum alloys that increases corrosion resistance and paint-bonding qualities?**
- A. Anodizing**
 - B. Dichromating**
 - C. Alodizing**
 - D. Tempering**
- 7. When should a fiber-type, self-locking nut not be used on an aircraft?**
- A. If the bolt is subject to rotation**
 - B. If the bolt is under tension loading**
 - C. If the bolt is under shear loading**
 - D. If the bolt is under torque**
- 8. What is a consequence of fuel system contamination in aircraft?**
- A. Increased fuel economy**
 - B. Blockage of fuel lines or injectors**
 - C. Improvement in engine efficiency**
 - D. Enhanced aircraft performance**
- 9. What is the primary purpose of a Type Certificate for an aircraft?**
- A. To list the maintenance history of the aircraft**
 - B. To certify the aircraft design meets safety and airworthiness standards**
 - C. To identify the aircraft's manufacturer**
 - D. To outline the operational limits of the aircraft**
- 10. What does a comprehensive safety audit typically assess regarding an aircraft?**
- A. Manufacturing processes**
 - B. Operational flight procedures**
 - C. Airworthiness and safety standards**
 - D. Cost management practices**

Answers

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

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Explanations

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1. What type of loads does a well-designed rivet joint primarily subject the rivet to?

- A. Compressive loads**
- B. Tensile loads**
- C. Shear loads**
- D. Twisting loads**

A well-designed rivet joint primarily subjects the rivet to shear loads due to the nature of how rivets function in joining two or more materials. When two components are riveted together, the rivets hold them in place and resist relative movement between the components. The primary action that occurs at the joint when loads are applied is sliding or shearing along the plane of the rivet, making shear loads the dominant force acting on the rivet. In the context of aircraft construction, where rivets are commonly used to bond structures like the fuselage and wings, it's essential that the rivet joint can effectively take on shear loads. This ensures the structural integrity and safety of the aircraft under various operational stresses, such as bending and torsion during flight. While rivets can experience tensile and compressive loads depending on specific design scenarios, the main loading condition for well-designed rivet joints is shear, which is why this answer is the best choice. Understanding this characteristic of rivet joints is crucial for those involved in the construction and maintenance of aircraft, as it directly relates to the performance and durability of the overall structure.

2. Which statement is true regarding a cantilever wing?

- A. It has nonadjustable lift struts**
- B. It requires only one lift strut on each side**
- C. External bracing is needed**
- D. No external bracing is needed**

A cantilever wing is a design characterized by its ability to support itself without the need for external bracing. This design uses internal structural components, such as spars and ribs, to carry the loads produced during flight, allowing the wing to be lighter and providing a cleaner aerodynamic profile. When a wing is termed "cantilever," it means that all necessary support structures are integrated within the wing's structure itself, eliminating the requirement for external struts or braces seen in other wing designs, such as biplanes. This internal construction enhances the wing's efficiency by reducing drag and improving performance, making cantilever wings suitable for higher-speed aircraft. The other options suggest that external bracing or additional structural supports are necessary, which contradicts the fundamental characteristic of a cantilever wing. Thus, stating that no external bracing is needed accurately reflects the nature of this wing type and successfully highlights its design advantages.

3. Why are clad aluminum alloys used in aircraft?

- A. They can be heat treated much easier than other aluminum forms
- B. They are less subject to corrosion than uncoated aluminum alloys**
- C. They are stronger than unclad aluminum alloys
- D. They are heat resistant

Clad aluminum alloys are primarily used in aircraft due to their enhanced corrosion resistance compared to uncoated aluminum alloys. In the aerospace industry, where aircraft are exposed to diverse environmental conditions, including moisture and various chemicals, the susceptibility to corrosion is a significant concern. Cladding involves the application of a thin layer of a more corrosion-resistant alloy (often aluminum-lithium) over the core alloy, which provides excellent protection against oxidation and corrosion. This protective layer helps maintain the mechanical properties of the core alloy while significantly reducing the tendency to corrode, thereby extending the lifespan of the aircraft components. This corrosion resistance is particularly vital as it contributes to safety, maintenance costs, and overall structural integrity. While other options mention strength, heat treatment, or heat resistance, they do not accurately capture the primary advantage of clad aluminum alloys in aircraft applications, which is their enhanced corrosion resistance.

4. What must the majority of aircraft control cables be checked with to show compliance after the swaging operation?

- A. Corrosion treatment
- B. Pull testing
- C. Go-no-go gauge**
- D. Visual inspection

The correct answer is that the majority of aircraft control cables must be checked with a go-no-go gauge after the swaging operation to ensure compliance. The swaging process involves compressing a fitting onto the ends of the control cables, which must be done correctly to maintain the integrity and safety of the cable system. Using a go-no-go gauge allows technicians to determine whether the swaged fitting meets the required dimensional specifications. The gauge provides a clear, binary assessment: if the fitting passes through one part of the gauge, it's compliant (go); if it does not, it's non-compliant (no-go). This method is critical because it provides an objective means of verifying the quality of the swage connection, ensuring that it can withstand the required loads during operation. While other checks such as visual inspection, pull testing, and corrosion treatment might be necessary parts of cable maintenance and inspection protocols, they do not specifically verify the swaging operation's compliance in the same precise manner as a go-no-go gauge. Therefore, the go-no-go gauge is essential for establishing the correctness of the swaged fitting, making it the required choice for compliance checking after the swaging process.

5. Which of the following is NOT typically included in a comprehensive safety audit?

- A. Review of maintenance records**
- B. Inspection of emergency equipment**
- C. Assessment of pilot skills**
- D. Evaluation of aircraft structural integrity**

A comprehensive safety audit in the context of aviation typically encompasses various aspects aimed at ensuring the safety and proper functioning of an aircraft and its operations. The primary focus is to identify potential hazards and mitigate risks associated with aircraft maintenance, emergency procedures, and aircraft integrity. The review of maintenance records is crucial because it allows auditors to verify that all maintenance procedures have been correctly followed, ensuring that the aircraft remains airworthy. This helps confirm adherence to regulatory standards and best practices in aircraft upkeep. Inspections of emergency equipment are critical as well, as they ensure that all safety equipment—such as fire extinguishers, emergency exits, and first aid kits—is operational and accessible. This is vital for ensuring the safety of passengers and crew during emergencies. Evaluation of aircraft structural integrity is also fundamental. It involves examining the airframe and components to ensure they can withstand the operational stresses and maintain safety. This assessment is key to preventing structural failures that could jeopardize aircraft safety. In contrast, while assessing pilot skills is undeniably important in the broader context of aviation safety, it is not typically part of a safety audit focused specifically on aircraft maintenance and operational safety. Pilot assessments usually fall under training and competency evaluations, rather than the safety audit of the aircraft's physical and operational assets.

6. What is a non-electrolytic chemical treatment for aluminum alloys that increases corrosion resistance and paint-bonding qualities?

- A. Anodizing**
- B. Dichromating**
- C. Alodizing**
- D. Tempering**

The process of alodizing is a non-electrolytic chemical treatment specifically designed for aluminum alloys. This treatment enhances the corrosion resistance of the aluminum surface while also improving its ability to bond with paints and other coatings. Alodizing involves a conversion of the aluminum surface into a durable oxide layer that is non-porous, providing excellent protection against environmental factors that can lead to corrosion. Alodizing is particularly beneficial in aerospace applications, where weight savings are critical, and the protection of aircraft components from corrosion is essential for safety and longevity. The fact that this process is non-electrolytic means that it does not require an electric current, making it simpler and more cost-effective compared to other methods, such as anodizing, which does require electricity to form its protective oxide layer. The other options, while they have distinct applications in the treatment of aluminum and other materials, do not specifically match the criteria of a non-electrolytic process that simultaneously improves corrosion resistance and paint bondability as effectively as alodizing.

7. When should a fiber-type, self-locking nut not be used on an aircraft?

- A. If the bolt is subject to rotation**
- B. If the bolt is under tension loading**
- C. If the bolt is under shear loading**
- D. If the bolt is under torque**

Fiber-type, self-locking nuts are specifically designed to provide a reliable locking mechanism that prevents loosening under vibration and dynamic loads. However, they are not suitable when the bolt is subject to rotation. This is because the internal fibers of the nut may wear out or deform due to the continuous movement and friction, compromising their locking ability over time. Using a self-locking nut in this scenario could lead to a loss of clamping force and potentially allow the bolt to loosen, resulting in mechanical failure. Aircraft components often experience various forces during operation, and ensuring that fasteners remain secure is critical for safety and performance. When rotation is involved, it's essential to choose fasteners designed for such conditions, which can provide the necessary holding power without the risk of failure associated with fiber-type self-locking nuts. In contrast, other loading conditions like tension or shear can sometimes allow the use of these nuts, provided that the overall design and operating conditions assure sufficient locking capability despite those stresses.

8. What is a consequence of fuel system contamination in aircraft?

- A. Increased fuel economy**
- B. Blockage of fuel lines or injectors**
- C. Improvement in engine efficiency**
- D. Enhanced aircraft performance**

Fuel system contamination in aircraft can lead to several serious consequences, one of the most significant being the blockage of fuel lines or injectors. When contaminants such as dirt, water, or microbial growth enter the fuel system, they can accumulate in various components. This buildup can restrict the flow of fuel, resulting in inadequate fuel delivery to the engine. Blockages in the fuel lines or injectors disrupt the required fuel-air mixture, hampering the combustion process. As a result, the engine may experience reduced power output, rough running, or even failure to start. In severe cases, complete engine shutdown can occur during flight, presenting serious safety risks. While improved efficiency, fuel economy, and enhanced performance are desired outcomes, these are contradicted by the effects of contamination. Instead, contaminants typically lead to reduced operational efficiency and increased maintenance requirements due to the need for repairs or replacements for affected fuel system components. Thus, recognizing the risks of contamination is crucial for ensuring the safe and efficient operation of aircraft engines.

- 9. What is the primary purpose of a Type Certificate for an aircraft?**
- A. To list the maintenance history of the aircraft**
 - B. To certify the aircraft design meets safety and airworthiness standards**
 - C. To identify the aircraft's manufacturer**
 - D. To outline the operational limits of the aircraft**

The primary purpose of a Type Certificate for an aircraft is to certify that the aircraft design meets specific safety and airworthiness standards established by aviation authorities. This certification process ensures that the aircraft's design, manufacturing processes, and components comply with the regulatory requirements necessary to operate safely in the aviation environment. The Type Certificate essentially represents official approval that the aircraft can be manufactured and operated, so long as it adheres to the defined specifications and limitations outlined in the certificate. This certification covers not just the design but also the materials, performance, and systems of the aircraft, providing a framework within which the aircraft can be safely operated. It is a critical step for an aircraft before it can be sold or used commercially. Other options, while relevant to aircraft operations, do not encapsulate the fundamental purpose of the Type Certificate as effectively as this one.

- 10. What does a comprehensive safety audit typically assess regarding an aircraft?**
- A. Manufacturing processes**
 - B. Operational flight procedures**
 - C. Airworthiness and safety standards**
 - D. Cost management practices**

A comprehensive safety audit of an aircraft focuses on evaluating airworthiness and safety standards. This means that it systematically examines various aspects of the aircraft's design, maintenance practices, and operational protocols to ensure that they meet established safety regulations and performance criteria. Ensuring that an aircraft is airworthy involves checking structural integrity, systems functionality, and compliance with aviation safety regulations set forth by governing bodies such as the FAA or EASA. The emphasis on safety standards is crucial because these standards are established to protect passengers, crew, and the aircraft itself from potential hazards. Audits typically involve a thorough review of maintenance records, inspection reports, and compliance with safety protocols to maintain operational eligibility. By prioritizing airworthiness and safety standards, the audit supports overall flight safety and efficiency. Other options have their own significance in aviation but do not directly relate to the focus of a safety audit. For instance, while manufacturing processes may have an impact on safety, they pertain more to the production phase rather than an ongoing audit. Operational flight procedures are important for day-to-day activities but are not the central focus of a comprehensive safety audit. Cost management practices, while relevant to the financial health of an operation, do not directly assess safety or airworthiness concerns.

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://philscaacrm.examzify.com>

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