ATPL Subject Air Regulations (SARON) and Subject Air Meteorology and Regulations (SAMRA) Practice Exam (Sample)

Study Guide

BY EXAMZIFY

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. 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!

Questions

1. **What is the formula to calculate the angle of bank in relation to true airspeed (TAS)?**
   - **A. TAS in knots / 5 + 12**
   - **B. TAS in knots / 10 + 7**
   - **C. TAS in knots / 15 + 8**
   - **D. TAS in knots / 20 + 5**

2. **What must happen for dihedral wings to restore wings level after a wing drop caused by turbulence?**
   - **A. The aircraft must develop a side slip towards the dropped wing**
   - **B. The pilot must increase power to climb**
   - **C. The ailerons must be deflected excessively**
   - **D. The aircraft needs to level off and stabilize**

3. **In the event of a fuel shortage requiring priority approach and landing, is it necessary to file an incident report with the TSB?**
   - **A. No**
   - **B. Yes**
   - **C. Only if injuries occur**
   - **D. Only if the landing was difficult**

4. **Induced drag is inversely proportional to what factor?**
   - **A. Air density**
   - **B. The square root of the speed**
   - **C. Wing loading**
   - **D. Altitude**

5. **What is the maximum airspeed for turbojet aircraft holding above 14,000 feet?**
   - **A. 240 KIAS**
   - **B. 250 KIAS**
   - **C. 260 KIAS**
   - **D. 265 KIAS**

6. **What is the designated clearance area for mountainous regions at an altitude of 2000 ft?**

   A. 1 nm

   B. 5 nm

   C. 10 nm

   D. 15 nm

7. **In a turbo fan engine, what makes bypassed air more efficient at creating engine thrust?**

   A. It is hotter than exhaust air

   B. It is cooler and denser than hot exhaust air

   C. It travels faster than exhaust air

   D. It contains more fuel than exhaust air

8. **What is required for a 43-year-old pilot maintaining a category 1 medical certificate while flying single-pilot VFR in a commercial operation?**

   A. A medical exam every 6 months, an ECG every 12 months, and an audio gram as required

   B. A medical exam every year and a full physical every 5 years

   C. A medical exam every 3 months without additional tests

   D. A medical exam every 6 months with no further tests needed

9. **What is the primary difference between primary radar and secondary radar?**

   A. Primary radar requires an electric signal; secondary radar does not

   B. Primary radar does not rely on a transponder; secondary radar does

   C. Primary radar has a longer range than secondary radar

   D. Primary radar is used for air traffic control; secondary radar is not

10. **What type of drag increases with decreasing air density?**

   A. Induced drag

   B. Wave drag

   C. Skin friction drag

   D. Form drag

Answers

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

Explanations

1. What is the formula to calculate the angle of bank in relation to true airspeed (TAS)?

- A. TAS in knots / 5 + 12
- B. TAS in knots / 10 + 7
- C. TAS in knots / 15 + 8
- D. TAS in knots / 20 + 5

The formula to calculate the angle of bank in relation to true airspeed is derived from the need to maintain a specific load factor during a turn. The increase in load factor is managed by adjusting the bank angle, which in turn relates to the true airspeed of the aircraft. The correct choice, which is represented by the formula TAS in knots divided by 10 plus 7, reflects the relationship between the bank angle and the horizontal components of lift, indicating that at higher true airspeeds, a steeper bank angle is necessary to maintain a coordinated turn without increasing the load factor excessively. In this context, dividing the true airspeed by a factor, such as 10, calculates a ratio that scales the angle of bank appropriately for different speeds. The addition of 7 is an adjustment factor based on aerodynamics principles, ensuring that the resultant bank angle remains optimal for performance criteria while maintaining safety during flight operations. This reasoning helps pilots apply the formula effectively during flight planning and execution. Knowing this, it's important to remember that other formulas presented may not align with aerodynamic principles or may not provide an accurate representation for bank angle calculations at varying true airspeeds.

2. What must happen for dihedral wings to restore wings level after a wing drop caused by turbulence?

- A. The aircraft must develop a side slip towards the dropped wing
- B. The pilot must increase power to climb
- C. The ailerons must be deflected excessively
- D. The aircraft needs to level off and stabilize

Dihedral wings are designed with an upward angle relative to the horizontal plane, which enhances the aircraft's lateral stability. When turbulence causes a wing drop, this design helps to restore the wings to a level position through the natural forces acting on the aircraft. Specifically, if one wing drops, the aircraft will enter a state of side slip towards that dropped wing. This side slip generates a difference in lift between the two wings because the upturned dihedral wing (the one that is up) will produce more lift due to its greater angle of attack relative to the relative wind. Conversely, the down wing (the one that has dropped) will have a reduced angle of attack and produce less lift. As a result, this disparity in lift causes the aircraft to roll back towards level flight, effectively restoring wings level without the need for the pilot to intervene heavily with ailerons or power adjustments. The other options do not directly relate to the natural stability mechanisms of dihedral wings in addressing a wing drop. For instance, increasing power to climb does not directly impact the lateral stability provided by dihedral. Excessive deflection of the ailerons can lead to over-control and complicate recovery instead of allowing the natural aerodynamic characteristics to work effectively. Level

3. In the event of a fuel shortage requiring priority approach and landing, is it necessary to file an incident report with the TSB?

A. No

B. Yes

C. Only if injuries occur

D. Only if the landing was difficult

Filing an incident report with the Transportation Safety Board (TSB) is crucial in the event of a fuel shortage requiring a priority approach and landing. This is because such situations can potentially indicate a serious safety risk that could affect not only the aircraft in question but also others in the airspace and on the ground. By reporting to the TSB, the incident becomes part of a broader safety review process that aims to identify generalized problems within the aviation system. This helps ensure that all necessary investigations can be conducted to prevent similar occurrences in the future. The reporting is not limited to situations resulting in injuries, difficult landings, or only when certain thresholds of severity are met. Instead, any event that could compromise safety, such as a fuel shortage necessitating priority landing, is considered significant and should be documented. This fosters transparency and promotes a culture of safety within aviation operations, allowing for continuous improvement in safety practices and regulations.

4. Induced drag is inversely proportional to what factor?

A. Air density

B. The square root of the speed

C. Wing loading

D. Altitude

Induced drag is a type of drag that primarily occurs due to the generation of lift. It is influenced by several factors, and one key relationship is with the speed of the aircraft. Specifically, induced drag is inversely proportional to the square of the speed of the aircraft. As the speed increases, the induced drag decreases due to the reduction in the angle of attack required to maintain lift at a higher speed. This relationship can be summarized by the formula related to induced drag, which states that induced drag is equal to the lift divided by the square of the aircraft's speed. Consequently, as speed increases, the induced drag reduces, demonstrating the inverse proportionality. In contrast, the other factors listed do not have the same direct and clear inverse relationship with induced drag. While air density and altitude can affect efficiency and performance in a broader sense, they do not directly inversely affect induced drag in the way that speed does. Similarly, wing loading impacts overall drag but does not modify the relationship between speed and induced drag directly. Thus, understanding the dynamics of induced drag highlights the importance of speed in managing an aircraft's aerodynamic performance.

5. What is the maximum airspeed for turbojet aircraft holding above 14,000 feet?

A. 240 KIAS

B. 250 KIAS

C. 260 KIAS

D. 265 KIAS

For turbojet aircraft holding above 14,000 feet, the maximum airspeed is 265 KIAS (Knots Indicated Airspeed). This regulation is established to ensure safe and efficient operations for high-speed aircraft during holding patterns. Holding patterns are designed to maintain orderly traffic flow and minimize pilot workload, and limiting speed helps in managing the airspace effectively. The prescribed maximum airspeed of 265 KIAS allows for a balance between maintaining adequate separation between aircraft and allowing pilots to manage fuel consumption and performance during holds. At lower altitudes, such as below 10,000 feet, the maximum airspeed for holding is reduced to 250 KIAS, primarily to enhance safety by preventing conflicts with slower aircraft and to comply with traffic management regulations. However, once above 14,000 feet, the limit increases to 265 KIAS specifically for turbojet operations to accommodate the higher performance capabilities of these aircraft. Understanding these regulations is crucial for pilots to ensure compliance and promote safety within the air traffic system.

6. What is the designated clearance area for mountainous regions at an altitude of 2000 ft?

A. 1 nm

B. 5 nm

C. 10 nm

D. 15 nm

The designated clearance area for mountainous regions is crucial for ensuring safe navigation and obstacle clearance. In mountainous areas, the requirement for separation from terrain is more stringent due to the unpredictable topography and potential for rapidly changing weather conditions. At an altitude of 2000 ft, the standard requirement is a lateral distance of 5 nautical miles from the mountain or obstacle to maintain safety margins. This distance helps mitigate the risks associated with altitude changes and allows for the effects of downdrafts and other weather phenomena that can impact aircraft performance as they approach mountainous terrain. While some scenarios may call for greater clearances depending on the specific local regulations or operational requirements, the general guidance for mountainous terrain indicates 5 nm as the appropriate clearance distance at this altitude. This guideline ensures that pilots have adequate separation from potential hazards and can manage their flight paths safely.

7. In a turbo fan engine, what makes bypassed air more efficient at creating engine thrust?

A. It is hotter than exhaust air

B. It is cooler and denser than hot exhaust air

C. It travels faster than exhaust air

D. It contains more fuel than exhaust air

Bypassed air in a turbo fan engine is more efficient at producing thrust primarily because it is cooler and denser than the hot exhaust air. This characteristic is critical for a couple of reasons. When air is bypassed around the engine core, it is compressed and accelerated before being expelled. Its cooler and denser nature means that, when it is accelerated, it produces a greater mass flow rate compared to the hotter exhaust air. Thrust generation in a jet engine is fundamentally about the change in momentum of the air being expelled; therefore, denser air can contribute to a more effective thrust-to-weight ratio. Moreover, because cooler air holds more oxygen molecules per unit volume than hotter air, it can potentially enhance combustion efficiency in the broader context of the engine's operation, indirectly benefiting overall performance. In turbo fan engines, particularly in the case of high bypass ratio designs, the majority of thrust is generated by this bypassed air rather than the core airflow, accounting for the efficiency and capability of modern commercial aircraft to operate quietly and with less fuel consumption. The other options do not accurately capture why bypassed air is more efficient for thrust generation. Hot exhaust air, while produced at high speed, does not contribute to thrust as efficiently due to its lower density.

8. What is required for a 43-year-old pilot maintaining a category 1 medical certificate while flying single-pilot VFR in a commercial operation?

A. A medical exam every 6 months, an ECG every 12 months, and an audio gram as required

B. A medical exam every year and a full physical every 5 years

C. A medical exam every 3 months without additional tests

D. A medical exam every 6 months with no further tests needed

For a 43-year-old pilot maintaining a category 1 medical certificate while flying single-pilot VFR in a commercial operation, it is essential to meet the specific medical examination requirements mandated by aviation regulations. The requirements state that a pilot keeping a category 1 medical certificate must undergo a medical exam every 6 months when over 40 years of age. Alongside this, there is a requirement for an electrocardiogram (ECG) every 12 months, which serves as a cardiovascular health evaluation, ensuring that the pilot is fit to fly and does not have any underlying health issues that may impair flying safety. Additionally, an audiogram, which tests hearing ability, is needed as required, especially since the pilot's capability to communicate effectively is crucial for both safety and operational effectiveness in a commercial flying environment. These comprehensive checks ensure that the pilot maintains a high standard of medical fitness, considering the rigorous demands and responsibilities associated with single-pilot commercial flight operations. In contrast, other options either do not meet the necessary frequency of examinations and tests or do not incorporate the additional testing requirements stipulated for pilots of this age and category.

9. What is the primary difference between primary radar and secondary radar?

A. Primary radar requires an electric signal; secondary radar does not

B. Primary radar does not rely on a transponder; secondary radar does

C. Primary radar has a longer range than secondary radar

D. Primary radar is used for air traffic control; secondary radar is not

The primary difference between primary radar and secondary radar lies in their operational principles. Primary radar systems operate by transmitting a pulse of electromagnetic signals, which then bounce off objects—such as aircraft—and return to the radar site. This method does not depend on any onboard equipment of the aircraft, which means it can detect any object that reflects radar signals in its path, including weather phenomena. In contrast, secondary radar operates with the assistance of transponders onboard the aircraft. When a secondary radar system sends out a signal, the aircraft receives this signal and responds back with its own information, such as identification and altitude. This reliance on transponders not only enhances the functionality of secondary radar but also allows for more accurate data provision, making it crucial for tasks like air traffic control and collision avoidance. Therefore, the distinction that secondary radar relies on a transponder while primary radar does not encapsulates their fundamental difference in operation. This understanding is essential for comprehending how air traffic is monitored and managed in controlled airspace.

10. What type of drag increases with decreasing air density?

A. Induced drag

B. Wave drag

C. Skin friction drag

D. Form drag

Induced drag is a type of drag that primarily occurs due to the generation of lift. It is influenced by the lift being produced by the aircraft's wings and is directly related to the angle of attack and air density. As air density decreases, such as at higher altitudes, the aircraft needs to operate at a higher angle of attack to maintain the same lift. This increased angle of attack leads to an increase in induced drag. The relationship between lift and induced drag means that when air density is lower, the induced drag increases because more lift must be generated to counteract the decrease in density. Understandably, other forms of drag do not vary in the same manner with changes in air density. Skin friction drag, for instance, relates primarily to the surface area of the aircraft and the viscosity of the air; it does not inherently increase in direct correlation with air density changes. Form drag is influenced more by the shape of the aircraft and airflow separation rather than air density, while wave drag is associated with transonic and supersonic speeds, which again does not have a direct relationship with air density in the same context as induced drag.

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://atplsaronsamra.examzify.com

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