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. 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. How much separation is needed for light aircraft taking off behind a heavy aircraft in a radar controlled zone?

   A. 5 miles

   B. 4 miles

   C. 2 miles

   D. 6 miles

2. For IFR propeller-driven flights with an alternate, what is the fuel reserve requirement?

   A. To destination plus 45 minutes cruise

   B. To destination, approach, missed approach, and 45 minutes cruise

   C. To alternate only

   D. Destination plus 30 minutes cruise

3. 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

4. What survival equipment is required for flights 50 nautical miles offshore?

   A. Only life rafts for each person

   B. Life preserver or flotation device for every person on board

   C. Life jackets only

   D. No special equipment is needed

5. Which factor would contribute to V1 decreasing?

   A. Increased runway length

   B. Increased weight

   C. Upslope runway

   D. Decreased density altitude

6. When must passenger and crew wear seatbelts in an aircraft?

A. During taxi and parking

B. Only when the seatbelt sign is on

C. During takeoff and landing, as well as any time the PIC directs it

D. Whenever flying above 10,000 feet

7. How does air temperature affect critical Mach number (Mcrit)?

A. Increases with higher temperatures

B. Decreases with higher temperatures

C. No effect on critical Mach number

D. Varies depending on altitude

8. What is a key difference between primary radar and secondary radar?

A. Primary radar needs a transponder to function

B. Secondary radar sends signals but receives no feedback

C. Primary radar transmits signals and waits for a response

D. Secondary radar operates independently of other signals

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

A. Induced drag

B. Wave drag

C. Skin friction drag

D. Form drag

10. What is the width of a VHF airway or LF airway for VOR-NDB?

A. 4.34nm

B. 5nm

C. 6nm

D. 3.5nm

Answers

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

Explanations

1. How much separation is needed for light aircraft taking off behind a heavy aircraft in a radar controlled zone?

A. 5 miles

B. 4 miles

C. 2 miles

D. 6 miles

In the context of separation distances in air traffic control, the correct answer signifies the standard procedure to ensure safety during takeoff operations in radar-controlled zones. When a light aircraft is taking off behind a heavy aircraft, it is critical to maintain a sufficient distance to mitigate the effects of wake turbulence. Heavy aircraft generate significantly stronger wake turbulence than lighter aircraft, which can cause detrimental effects on following aircraft if they are too close. The recommended separation of 6 miles is derived from operational safety criteria that account for the differences in aircraft size, weight, and the resulting wake turbulence they produce. The 6-mile separation ensures that the light aircraft has adequate distance to avoid the turbulent air created by the heavy aircraft, allowing for a safe takeoff experience without the risk of being caught in the turbulence, which could lead to loss of control or other dangerous situations. By following this established standard, air traffic controllers can maintain effective operational safety, ensuring that all aircraft safely navigate their departure paths without interference. This practice reflects a careful balance of safety protocols within aviation regulations.

2. For IFR propeller-driven flights with an alternate, what is the fuel reserve requirement?

A. To destination plus 45 minutes cruise

B. To destination, approach, missed approach, and 45 minutes cruise

C. To alternate only

D. Destination plus 30 minutes cruise

The fuel reserve requirement for IFR propeller-driven flights that include an alternate airport is determined by the need to ensure safety during various phases of flight. The correct answer indicates that the fuel requirement includes enough fuel to reach the destination airport, conduct an approach, execute a missed approach if necessary, and then account for a cruise duration of 45 minutes. This comprehensive requirement ensures that in the event of unexpected circumstances—such as needing to perform a missed approach due to poor visibility or other factors—the aircraft will have sufficient fuel to reach its planned landing destination safely. Additionally, the extra 45 minutes of fuel allows for contingencies, including potential delays or the need to divert to an alternate airport if landing at the intended destination is not possible. This thorough fuel planning is critical for IFR operations, particularly in propeller-driven aircraft, where performance and fuel management play vital roles in safe flight operations.

3. 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.

4. What survival equipment is required for flights 50 nautical miles offshore?

A. Only life rafts for each person

B. Life preserver or flotation device for every person on board

C. Life jackets only

D. No special equipment is needed

The requirement for survival equipment during flights 50 nautical miles offshore emphasizes safety considerations, particularly the potential for ditching in open water. According to aviation survival regulations, a life preserver or flotation device for every person on board is mandated in such circumstances. This equipment ensures that, in the event of an emergency requiring a water landing, all occupants have immediate means for buoyancy and can stay afloat until rescue arrives. Each individual on board needs to have access to personal flotation devices to maximize the chances of survival. While other options may mention life rafts or life jackets, the explicit regulation states the need for personal flotation devices as a baseline requirement for flights that are a certain distance from shore, reflecting the gravity of safety and risk management in aviation operations.

5. Which factor would contribute to V1 decreasing?

A. Increased runway length

B. Increased weight

C. Upslope runway

D. Decreased density altitude

The correct choice regarding the factor that would contribute to a decrease in V1 is related to decreased density altitude. When density altitude decreases, the air becomes denser, which provides better aerodynamic performance for the aircraft. This denser air results in improved lift generation and thrust performance, allowing the aircraft to reach takeoff speed, including V1, more quickly. Consequently, under these conditions, V1 can be reduced since the aircraft's acceleration on the runway is enhanced due to the higher air density. This understanding is crucial, as pilots must consider density altitude when calculating takeoff performance. The relationship between air density and aircraft performance is a fundamental concept in aviation, especially in terms of efficiency during the takeoff roll.

6. When must passenger and crew wear seatbelts in an aircraft?

A. During taxi and parking

B. Only when the seatbelt sign is on

C. During takeoff and landing, as well as any time the PIC directs it

D. Whenever flying above 10,000 feet

The requirement for passengers and crew to wear seatbelts is primarily focused on ensuring safety during critical phases of flight as well as during specific directives from the Pilot in Command (PIC). Seatbelt use is mandated during takeoff and landing because these phases represent the highest risk for accidents or turbulence. Additionally, the PIC may determine other times when it is prudent for passengers and crew to secure their seatbelts, especially if unexpected turbulence occurs or other circumstances arise that could pose a risk to safety. This flexibility to respond to real-time conditions underscores the importance of always being prepared in the event of sudden movements or changes in the flight environment. While there may be other situations in which the seatbelt sign could be on or when flights are above a certain altitude, the most comprehensive and safety-oriented rule is indeed the directive that includes takeoff, landing, and PIC instructions. This ensures individuals are protected during the most critical moments as well as adapting to unforeseen circumstances when necessary.

7. How does air temperature affect critical Mach number (Mcrit)?

A. Increases with higher temperatures

B. Decreases with higher temperatures

C. No effect on critical Mach number

D. Varies depending on altitude

The critical Mach number (Mcrit) is defined as the lowest Mach number at which airflow over some part of the aircraft reaches the speed of sound. Understanding its relationship with air temperature is crucial in aerodynamics and aviation dynamics. Air temperature indeed affects the speed of sound in the atmosphere. As temperature increases, the speed of sound also increases because sound waves travel faster in warmer air. The critical Mach number is calculated based on the speed of sound, and since it defines the Mach number at which local flow reaches that speed, higher temperatures actually lead to a higher speed of sound. When the temperature rises, for a given true airspeed, the Mach number will be lower than the critical Mach number derived at lower temperatures because the baseline changes due to the higher sound speed. Consequently, the critical Mach number itself does not increase or decrease independently; it varies with the conditions that affect the speed of sound. Thus, the characterization of critical Mach number having no effect from temperature changes can be misleading. Significant changes in air temperature will impact the Mach number relative to the local speed of sound, and therefore influence the critical Mach number experienced by the aircraft in flight conditions.

8. What is a key difference between primary radar and secondary radar?

A. Primary radar needs a transponder to function

B. Secondary radar sends signals but receives no feedback

C. Primary radar transmits signals and waits for a response

D. Secondary radar operates independently of other signals

The key difference between primary radar and secondary radar is that primary radar transmits signals and waits for a response from a target. This involves the emission of radio waves that reflect off objects, such as aircraft, and return to the radar system, allowing it to determine the location, speed, and other attributes of the object based on the time it takes for the signals to return. In contrast, secondary radar systems rely on transponders installed on aircraft. When the secondary radar sends out an interrogation signal, the transponder on the aircraft responds with information, including the aircraft's identity and altitude. This two-way communication enhances the information available to the radar operator. Understanding this fundamental operation helps clarify the broader context of each system's use and functionality in air traffic control and surveillance operations.

9. 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.

10. What is the width of a VHF airway or LF airway for VOR-NDB?

A. 4.34nm

B. 5nm

C. 6nm

D. 3.5nm

The width of a VHF airway, which is primarily defined for use with VOR navigation aids, is standardized at 4.34 nautical miles. This measurement extends 2.17 nautical miles to either side of the centerline of the airway. This width ensures safe lateral separation of aircraft operating within the airway while accommodating variations in navigation accuracy and pilot navigation practices. In contrast, other options such as 5 nautical miles, 6 nautical miles, and 3.5 nautical miles represent widths that do not conform to the established regulations for VHF airways. The specific width of 4.34 nautical miles is grounded in the International Civil Aviation Organization (ICAO) guidelines, which outline the parameters for airspace classification and design to promote safety and efficiency in aviation operations.

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!