

GENERAL AIRCRAFT TECHNICAL KNOWLEDGE PRACTICE TEST (SAMPLE) STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS



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THE FULL VERSION STUDY GUIDE

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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. Ram air in the engine intake is:

- A. Filtered
- B. Unfiltered
- C. Partially filtered
- D. Not applicable

2. When carb heat is selected, there is a _____ in manifold pressure because there is a _____ in ram air pressure. There is _____ restriction on the airflow and the heated air is _____ dense than previously.

- A. Drop, Loss, Greater, Less
- B. Rise, Gain, Greater, More
- C. Drop, Gain, Greater, More
- D. Rise, Loss, Less, Less

3. In an automatic variable wastegate system, the pilot sets the required manifold pressure with the ____ and, through the use of an ____ capsule or other sensor, the positioning of the ____ is automatically varied to obtain the required turbocharging.

- A. Throttle
- B. Aneroid capsule
- C. Waste gate
- D. Pressure sensor

4. Why are fuel tanks filled up at the end of the day?

- A. To minimize condensation of water vapour when temperatures decrease overnight.
- B. To allow more time for testing.
- C. To reduce evaporation.
- D. To improve fuel quality.

5. Which stroke is responsible for expelling the combustion products from the cylinder?

- A. Induction.
- B. Power.
- C. Exhaust.
- D. Compression.

- 6. At sea level, a supercharged engine compared to a normally aspirated engine of the same size typically has:**
- A. Lower sea level power
 - B. Same sea level power
 - C. Higher sea level power
 - D. No change in weight
- 7. Positioning air intakes to take advantage of ram air and propeller slipstream improves which aspect of engine performance?**
- A. Volumetric efficiency
 - B. Thermal efficiency
 - C. Mechanical efficiency
 - D. Exhaust efficiency
- 8. If plug fouling is a persistent problem a change of ____ may be required**
- A. plugs
 - B. oil
 - C. air filter
 - D. fuel
- 9. A mixture with a ratio of 1:9 is considered**
- A. Lean
 - B. Rich
 - C. Stoichiometric
 - D. Extremely lean
- 10. Which component provides the gas-tight seal when inlet and exhaust valves are closed?**
- A. Tight springs.
 - B. Hydraulic pressure.
 - C. Pneumatic cushions.
 - D. Magnetic seals.

Answers

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

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Explanations

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1. Ram air in the engine intake is:

- A. Filtered
- B. Unfiltered**
- C. Partially filtered
- D. Not applicable

Ram air is the air that flows into the engine simply because the airplane is moving forward. It is unfiltered to avoid added resistance that would reduce the mass of air the engine can ingest, which directly affects engine performance and thrust. Filtration would create a pressure drop, especially at high speeds, so the intake is designed to minimize restriction. In practice, large debris may be kept out by inlet screens or debris diverters, but fine filtration of ram air is not used in the engine intake path.

2. When carb heat is selected, there is a _____ in manifold pressure because there is a _____ in ram air pressure. There is _____ restriction on the airflow and the heated air is _____ dense than previously.

- A. Drop, Loss, Greater, Less**
- B. Rise, Gain, Greater, More
- C. Drop, Gain, Greater, More
- D. Rise, Loss, Less, Less

Carburetor heat introduces heated air into the carburetor to prevent icing. Warmer air is less dense, so for the same volume of air the engine receives less mass. With the throttle set, this reduced mass flow lowers the pressure in the intake manifold, i.e., manifold pressure drops. The path through the carb heat system adds resistance, creating a greater restriction to airflow, and the heated air is less dense than the air it replaces. The combination of lower ram air pressure behind that restricted path and the lower air density explains the drop in manifold pressure when carb heat is selected.

3. In an automatic variable wastegate system, the pilot sets the required manifold pressure with the ____ and, through the use of an ____ capsule or other sensor, the positioning of the ____ is automatically varied to obtain the required turbocharging.

- A. Throttle
- B. Aneroid capsule
- C. Waste gate**
- D. Pressure sensor

The system works by the pilot setting the desired manifold pressure with the throttle, and then a sensor such as an aneroid capsule provides the real-time pressure signal to the boost-control mechanism. This signal drives the wastegate actuator, which automatically moves the wastegate to regulate exhaust flow and maintain the set manifold pressure. In other words, the waste gate is the component whose position is adjusted to achieve the required turbocharging.

4. Why are fuel tanks filled up at the end of the day?

- A. To minimize condensation of water vapour when temperatures decrease overnight.
- B. To allow more time for testing.
- C. To reduce evaporation.
- D. To improve fuel quality.

Moisture control in aircraft fuel tanks is the key idea. When the tanks are not full, the air inside contains water vapor. As the aircraft temperature drops overnight, that air cools and the water vapor can condense into liquid water, which settles at the bottom of the tank and can be drawn into the fuel system or cause icing at altitude. By filling the tanks at the end of the day, you reduce the amount of air in the tank, leaving less opportunity for condensation to form, and any moisture can be found and drained from the sump. Evaporation is a less significant factor here, and the other options aren't related to how moisture behaves in cool-down conditions, so the primary purpose is to minimize condensation of water vapor as temperatures fall.

5. Which stroke is responsible for expelling the combustion products from the cylinder?

- A. Induction.
- B. Power.
- C. Exhaust.
- D. Compression.

The exhaust stroke is the one that clears the cylinder of spent combustion products. As the piston moves upward, the exhaust valve opens and pushes the burnt gases out through the exhaust system. This clearing is essential so that the next induction stroke can draw in a fresh air–fuel charge. The other strokes have different roles: induction brings the charge in, compression tightens it for efficient combustion, and the power stroke uses that combustion to push the piston down. None of those stages are fundamentally about expelling the exhaust gases.

6. At sea level, a supercharged engine compared to a normally aspirated engine of the same size typically has:

- A. Lower sea level power
- B. Same sea level power
- C. Higher sea level power
- D. No change in weight

Forced induction increases the amount of air the engine can burn per cycle, which lets more fuel be burned and more power be produced from the same displacement. At sea level, a supercharger compresses the intake air so the engine ingests more air than a naturally aspirated one for each intake stroke. Since horsepower scales with the mass of air (and fuel) burned, this boosted air charge yields higher peak power than a normally aspirated engine of the same size. There is always some power cost to driving the supercharger, but with typical boost levels the net result is higher sea level power. The other options don't reflect the extra air mass and combustion energy provided by forced induction.

7. Positioning air intakes to take advantage of ram air and propeller slipstream improves which aspect of engine performance?

- A. Volumetric efficiency**
- B. Thermal efficiency
- C. Mechanical efficiency
- D. Exhaust efficiency

Positioning the air intake to take advantage of ram air and the propeller slipstream directly affects how much air the engine can fill into its cylinders on each intake stroke. Volumetric efficiency is a measure of how effectively the engine fills its displacement with air. When ram air increases the pressure of incoming air at speed, and the propeller slipstream boosts the air pressure and velocity at the intake, more air mass can enter per cycle. That means the engine can achieve a higher actual intake volume (corrected for density) compared to its displaced volume, raising volumetric efficiency. The other efficiencies—thermal, mechanical, and exhaust—are not directly governed by how the intake is positioned relative to ram air and slipstream; they involve combustion heat conversion, friction losses, and exhaust flow characteristics, respectively. So the improvement shown by optimizing intake position is in volumetric efficiency.

8. If plug fouling is a persistent problem a change of ____ may be required

- A. plugs**
- B. oil
- C. air filter
- D. fuel

When spark plugs become fouled, their ability to ignite the mixture is compromised because the deposits insulating the electrode prevent a strong, reliable spark. If this problem keeps happening, installing new spark plugs of the correct type and heat range is the most effective fix. Cleaned or reused plugs often don't regain original performance and can fail again, leading to misfires and rough running. Changing oil, air filters, or fuel may influence operating conditions or deposit formation, but they don't directly restore a fouled spark plug's ignition capability the way a fresh set does.

9. A mixture with a ratio of 1:9 is considered

- A. Lean
- B. Rich**
- C. Stoichiometric
- D. Extremely lean

Mixture strength depends on the balance between fuel and air. A ratio of 1:9, read as air to fuel, means there is far more fuel than air (only one part air for nine parts fuel). That produces a fuel-rich condition because there isn't enough air to completely burn all the fuel, so the mixture is considered rich. It's not at stoichiometric, which would require a specific, much larger amount of air to burn fuel cleanly, and it's not lean or extremely lean, which would have far more air relative to fuel.

10. Which component provides the gas-tight seal when inlet and exhaust valves are closed?

A. Tight springs.

B. Hydraulic pressure.

C. Pneumatic cushions.

D. Magnetic seals.

Valves must be held tightly seated to prevent gas leakage, and that closing force comes from the springs. The valve springs push the inlet and exhaust valves against their seats, so the mating surfaces form a gas-tight seal when the valves are closed. Hydraulics would drive movement, not the sealing force in this context; pneumatic cushions are for damping, and magnetic seals aren't used for standard valve sealing.

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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://genaircrafttechknowledge.examzify.com>

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

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