General Aircraft Technical Knowledge Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

Sample study guide. For the full version with hundreds of questions, visit: https://genaircrafttechknowledge.examzify.com

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Table of Contents

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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.

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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!

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Questions

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1. For a four-cylinder engine, what is the firing interval in degrees?

A. 180 degrees

B. 360 degrees

C. 90 degrees

D. 240 degrees

2. The piston is least affected by pressure changes when near which positions?

A. Mid-stroke

B. Only TDC

C. Only BDC

D. Both TDC and BDC

3. 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.

4. Which component best prevents fuel surging inside the tank?

A. Booster pump

B. Internal baffles

C. Tank selector

D. Cross feed

5. The speed of combustion depends on

A. The quality of the mixture and the swirling gas during compression and combustion.

B. Ignition timing and spark plug gap.

C. Engine RPM and air density.

D. Fuel octane rating and exhaust backpressure.

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6. During the power stage, the intake and exhaust valves are?

A. Both open

B. Both closed

C. Intake closed, exhaust open

D. Intake open, exhaust closed

7. Crank angle is:

A. The camshaft rotation

B. The crankshaft rotation

C. The piston stroke

D. The valve timing

8. Which statement describes the AVGAS color code?

A. Has the word AVGAS in blue letters on a white background.

B. Has the word Avgas in black letters on a white background.

C. Has the word Avgas or octane rating in white letters on a red background.

D. Has orange letters on a black background.

9. Which device protects main fuel pumps against excessive pressure?

A. Check valve

B. Pressure relief valve

C. Regulator

D. Bypass valve

10. What is the primary function of glow plugs during starting?

A. Spark igniter

B. Inject fuel

C. Regulate air intake

D. Heat the combustion space to assist ignition during starting

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Answers

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

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Explanations

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1. For a four-cylinder engine, what is the firing interval in degrees?

A. 180 degrees

B. 360 degrees

C. 90 degrees

D. 240 degrees

Firing interval is the crankshaft angle between successive power strokes in the engine. In a four-stroke engine, a full engine cycle spans 720 crankshaft degrees, and with four cylinders delivering power evenly, there are four firing events in that 720-degree span. Dividing 720 by four gives 180 degrees between fires, so the interval is 180 crankshaft degrees. If the interval were 360 degrees, there would only be two power strokes in a 720-degree cycle, which isn't consistent with four cylinders. A 90-degree interval would imply eight events per cycle, which isn't possible for four cylinders. A 240-degree interval wouldn't evenly divide the 720-degree cycle into four equal parts, breaking the even firing pattern.

2. The piston is least affected by pressure changes when near which positions?

A. Mid-stroke

B. Only TDC

C. Only BDC

D. Both TDC and BDC

When a cylinder's pressure changes, it acts on the piston to move it, and how far the piston actually moves depends on its speed at that moment and its inertia. At the ends of the stroke—the top dead center and the bottom dead center—the piston is momentarily at rest, so its velocity is zero. With zero velocity, even noticeable pressure changes don't translate into much displacement because the piston lacks momentum to carry the motion and the crank mechanism briefly resists further movement. That's why the piston is least affected by pressure changes when it's near the top or bottom of the stroke. In contrast, near mid-stroke the piston is moving fastest, so pressure fluctuations produce a more pronounced response.

3. 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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4. Which component best prevents fuel surging inside the tank?

A. Booster pump

B. Internal baffles

C. Tank selector

D. Cross feed

Fuel surge happens when the liquid in a tank sloshes during maneuvers or changes in acceleration, causing the fuel to move toward or away from the pump inlet and create pressure fluctuations. Internal baffles are partitions inside the tank that divide the fuel into smaller chambers. This setup limits how much liquid can move as a single mass, damping the slosh and smoothing the surface so the pump experiences a steadier feed. Other components like the booster pump, tank selector, or cross feed serve to move fuel or select tanks rather than dampen motion, so they don't address surging as effectively. By constraining the movement of fuel, internal baffles reduce surges and help maintain a consistent fuel supply to the engine.

5. The speed of combustion depends on

A. The quality of the mixture and the swirling gas during compression and combustion.

B. Ignition timing and spark plug gap.

C. Engine RPM and air density.

D. Fuel octane rating and exhaust backpressure.

The speed of combustion is governed by how fast the flame front can propagate through the combustible mixture, which is strongly influenced by the mixture quality and the level of turbulence inside the chamber. A well-balanced, properly mixed air-fuel ratio provides the right amount of reactive species and heat release to sustain rapid flame growth. Turbulence, created by swirling and swirling-like motion during compression and the initial burning period, wrinkles the flame surface, increasing its area and speeding up propagation. When the mixture is too lean or too rich, or when turbulence is weak, the flame front advances more slowly, reducing the overall combustion rate. Ignition timing and spark plug gap set when burning starts, but they don't change the intrinsic speed at which the flame travels through the mixture once ignition has occurred. Engine speed and air density affect how much air is available and how quickly cycles occur, not the fundamental burning rate. Fuel octane rating and exhaust backpressure influence knock resistance and exhaust flow, not the basic rate of flame propagation. So the factors that directly determine how quickly combustion occurs are the mixture quality and the turbulence level in the chamber.

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6. During the power stage, the intake and exhaust valves are?

A. Both open

B. Both closed

C. Intake closed, exhaust open

D. Intake open, exhaust closed

In the power stage the combustion pressure needs to act on the piston without leaking away. To do that, both the intake and exhaust valves are kept closed. This seals the combustion chamber so the rapid expansion of the burned air-fuel mixture can push the piston downward and convert chemical energy into mechanical work. If any valve were open, the high-pressure gases could escape or the fresh charge could leak in, reducing pressure, wasting power, and harming efficiency. The intake valve will be closed to stop fresh air from escaping during this stage, and the exhaust valve stays closed to prevent spent gases from leaving until the next exhaust stroke.

7. Crank angle is:

A. The camshaft rotation

B. The crankshaft rotation

C. The piston stroke

D. The valve timing

Crank angle is the angular position of the crankshaft as it rotates, usually measured from a reference like top dead center. This angle defines where the piston is in its cycle because the crank converts the piston's linear motion into rotation. It isn't the camshaft's position, nor the piston stroke itself, and while valve timing is coordinated with crank angle, the angle described here specifically refers to the crankshaft's rotation.

8. Which statement describes the AVGAS color code?

A. Has the word AVGAS in blue letters on a white background.

B. Has the word Avgas in black letters on a white background.

C. Has the word Avgas or octane rating in white letters on a red background.

D. Has orange letters on a black background.

AVGAS labeling uses a red background with white letters, and it may include the word AvGas or the octane rating. This color and wording convention makes the fuel type instantly recognizable to ground crew, helping to prevent misfueling and ensuring the correct octane grade is used. Other color schemes (such as blue on white, black on white, or orange on black) do not match the standard AVGAS marking, so they wouldn't be correct descriptions of the typical AVGAS color code.

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9. Which device protects main fuel pumps against excessive pressure?

A. Check valve

B. Pressure relief valve

C. Regulator

D. Bypass valve

The device that protects main fuel pumps from excessive pressure is a pressure relief valve. It is set to open at a predefined discharge pressure, and if the pump pushes fuel too hard, the valve pops open and allows fuel to return to the tank or to a lower-pressure point. This keeps the pump, lines, and fuel controls from being stressed or damaged by overpressure, ensuring safe and reliable operation. Other devices serve different roles: a check valve prevents reverse flow, a regulator maintains a desired downstream pressure under normal conditions, and a bypass valve redirects flow to prevent blockage or overload but isn't primarily a safety release for pump overpressure.

10. What is the primary function of glow plugs during starting?

A. Spark igniter

B. Inject fuel

C. Regulate air intake

D. Heat the combustion space to assist ignition during starting

Glow plugs are heating devices used to raise the temperature inside the combustion chamber to help ignition when starting, especially in cold conditions. By warming the air (and any residual fuel-air mixture) just before and during the start, they bring the temperature to where combustion can occur reliably as the engine turns over. Once the engine starts and warms up, the glow plugs reduce or stop heating. This isn't about creating a spark, injecting fuel, or regulating the air intake. Spark igniters would be used in spark-ignition engines, fuel injectors supply fuel, and air intake is controlled by the throttle and intake system. The glow plugs' job is specifically to heat the combustion space to aid ignition during starting.

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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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