AIM BLOCK 13 PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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. Generally, when starting a turbine engine, the starter should be disengaged

A. After self-accelerating speed

B. Before it starts

C. After idle

D. When commanded by cockpit

2. If two variables show a perfect positive linear relationship on a scatterplot, how would the data points typically align?

A. Points lie on or near a straight line with positive slope.

B. Points are scattered randomly without pattern.

C. Points lie on a horizontal line.

D. Points lie on a vertical line.

3. Where is the diffuser section located in a typical jet engine?

A. Between the turbine section and the burner section.

B. Between the compressor section and the burner section.

C. Between the diffuser and the combustor.

D. In the inlet plenum.

4. The new Prop fan will be fitted with how many high-load, swept-back, curved blades?

A. Two to four blades

B. Eight to twelve blades

C. Six to ten blades

D. Twelve to sixteen blades

5. What happens to the velocity of subsonic air as it flows through a convergent nozzle?

A. Increases

B. Decreases

C. Remains constant

D. Becomes sonic

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6. Which parameter influences the operation of an automatic fuel control unit on a turbojet engine?

A. Burner Pressure

B. Oil Pressure

C. Inlet Temperature

D. RPM

7. When starting a turbine engine, a hot start is indicated if the exhaust gas temperature exceeds specified limits.

A. The engine reaches idle RPM too quickly.

B. The exhaust gas temperature exceeds specified limits.

C. The oil pressure is too high.

D. The engine starts without ignition.

8. What is the function of the exhaust cone assembly in a turbine engine?

A. Straighten and collect the exhaust gases into a solid exhaust jet.

B. Reduce back pressure in the compressor.

C. Mix fuel and air prior to combustion.

D. Stabilize the turbine rotor speed.

9. How does a dual axial-flow compressor improve the efficiency of a turbojet engine?

A. Higher compression ratios can be obtained

B. Lower compression ratios

C. No change in efficiency

D. Increased turbine inlet temperature

10. Jet engine turbine blades removed for detailed inspection must be reinstalled in which location?

A. Adjacent slot.

B. The same slot.

C. Any available slot.

D. Opposite slot.

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Answers

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

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Explanations

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1. Generally, when starting a turbine engine, the starter should be disengaged

A. After self-accelerating speed

B. Before it starts

C. After idle

D. When commanded by cockpit

The starter's job is to spin the engine until combustion can take over and the engine can sustain rotation on its own. Once ignition occurs and the engine reaches a speed at which it can run without the starter's help (the self-sustaining speed), the starter must be disengaged so it isn't driven by the compressor or caused to overrun. Disengaging earlier wouldn't let the engine continue to accelerate, while waiting until idle or relying on a cockpit command isn't the correct automatic trigger for safe, reliable starts.

2. If two variables show a perfect positive linear relationship on a scatterplot, how would the data points typically align?

A. Points lie on or near a straight line with positive slope.

B. Points are scattered randomly without pattern.

C. Points lie on a horizontal line.

D. Points lie on a vertical line.

When two variables have a perfect positive linear relationship, the values move together in a constant proportion: as one variable increases, the other increases in lockstep. On a scatterplot, this shows up as data points lining up on a straight line that slopes upward from left to right. If the relationship is truly perfect, all points lie exactly on that line; if it's near perfect, they cluster very close to it. That's why the correct description is that the points lie on or near a straight line with positive slope. The other patterns don't reflect a positive linear relation: random scatter means no clear pattern, a horizontal alignment means Y doesn't change with X, and a vertical alignment would imply X doesn't vary, which isn't a typical linear relationship between two variables.

3. Where is the diffuser section located in a typical jet engine?

A. Between the turbine section and the burner section.

B. Between the compressor section and the burner section.

C. Between the diffuser and the combustor.

D. In the inlet plenum.

The diffuser's job is to slow the incoming air and raise its static pressure so the compressor can take in a steady, high quality flow. In many jet engine layouts used in this material, the diffuser sits in the path between the compressor discharge and the combustor, conditioning the compressed air just before it enters the burner. This placement helps minimize pressure loss and prevents flow instabilities, which supports efficient combustion and smooth engine operation. The other options don't match the flow path as closely: the diffuser isn't primarily a section between turbine and burner, nor is it simply a part of the inlet plenum separate from feeding the burner; its main function is flow conditioning just after compression, feeding the combustor.

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4. The new Prop fan will be fitted with how many high-load, swept-back, curved blades?

A. Two to four blades

B. Eight to twelve blades

C. Six to ten blades

D. Twelve to sixteen blades

Blade count for a propfan is all about sharing the thrust load across the blades while staying within structural and aerodynamic limits. For a high-load, swept-back curved design, you need enough blades to carry the required thrust without overloading any single blade, but not so many that you introduce excessive weight and blade–blade interference that hurts efficiency. The six-to-ten blade range offers a solid balance: it provides enough surface area to meet the thrust demand while keeping the individual blade loading reasonable and the overall weight and drag in check. Swept-back curved blades help reduce drag and improve high-speed performance, so this mid-range count effectively leverages those geometric benefits without the downsides of too few blades (higher load per blade, more stress and noise) or too many blades (increased weight, cost, and diminishing returns from interference).

5. What happens to the velocity of subsonic air as it flows through a convergent nozzle?

A. Increases

B. Decreases

C. Remains constant

D. Becomes sonic

Subsonic air accelerates in a converging nozzle because the flow must pass through a smaller cross-section while keeping the same mass flow rate. The continuity principle (A times v stays roughly constant for steady flow) means that as area decreases, velocity must increase. In this subsonic regime, that acceleration comes with a drop in static pressure, converting some enthalpy into kinetic energy. The velocity continues to rise along the converging section and can reach sonic speed at the throat if the pressure conditions are right; otherwise it remains subsonic but faster than at the inlet.

6. Which parameter influences the operation of an automatic fuel control unit on a turbojet engine?

A. Burner Pressure

B. Oil Pressure

C. Inlet Temperature

D. RPM

The automatic fuel control unit uses signals that reflect how much fuel the engine needs to maintain stable combustion and the requested thrust. Burner pressure is the key parameter because it directly represents the pressure in the burner/combustion region that must be matched by the fuel flow to sustain flame and stay within limits. When burner pressure increases, the AFC meters more fuel; when it decreases, fuel flow is reduced. Oil pressure is about lubrication and doesn't regulate the fuel metering, while inlet temperature and RPM influence performance but do not directly drive the fuel metering signal in the same way burner pressure does.

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7. When starting a turbine engine, a hot start is indicated if the exhaust gas temperature exceeds specified limits.

A. The engine reaches idle RPM too quickly.

B. The exhaust gas temperature exceeds specified limits.

C. The oil pressure is too high.

D. The engine starts without ignition.

Exhaust gas temperature is the key indicator of how the turbine is reacting during a start. If the exhaust gas temperature climbs beyond the specified limit, it shows the engine is running hotter than it should for the current RPM and air flow, usually due to too much fuel or not enough air being supplied. That excessive heat can quickly damage turbine blades and other hot-section parts, so this condition is interpreted as a hot start and the start sequence is aborted or corrective steps are taken. Other options reflect different fault scenarios—reaching idle speed too quickly, oil pressure being too high, or starting without ignition—but they don't indicate overheating during start in the same way, and thus aren't the defining sign of a hot start.

8. What is the function of the exhaust cone assembly in a turbine engine?

A. Straighten and collect the exhaust gases into a solid exhaust jet.

B. Reduce back pressure in the compressor.

C. Mix fuel and air prior to combustion.

D. Stabilize the turbine rotor speed.

The exhaust cone assembly is about shaping the flow of hot gases as they leave the turbine. It acts like a streamlined funnel that straightens and focuses the exhaust into a single, coherent jet, minimizing swirl and turbulence. This makes the jet exit more efficiently, improving thrust and reducing energy losses in the exhaust path. This isn't where fuel and air are mixed (that happens in the combustor), nor does it affect upstream back pressure in the compressor, and it doesn't determine rotor speed through control. The exhaust cone's job is purely to guide the exhaust flow into a clean, directed jet.

9. How does a dual axial-flow compressor improve the efficiency of a turbojet engine?

A. Higher compression ratios can be obtained

B. Lower compression ratios

C. No change in efficiency

D. Increased turbine inlet temperature

The main idea is that using two axial-flow compressors in series lets the engine achieve a higher total pressure rise while keeping each stage operating at a comfortable loading. When the compression is distributed across two stages, each stage can do a moderate amount of work with better aerodynamic efficiency, reducing losses from high blade loading and flow disturbances. That means the overall compressor works more efficiently (higher isentropic efficiency) and the engine can reach a higher overall pressure ratio without pushing a single stage to its limits. A higher overall pressure ratio improves the Brayton cycle performance, boosting thermal efficiency and thrust for a given turbine inlet temperature limit. This is the practical reason why a dual axial-flow compressor can enhance engine efficiency: it enables higher compression ratios more efficiently. The other options don't capture this effect: lowering the compression ratio or claiming no change misses the actual gain from distributing the work, and simply increasing turbine inlet temperature isn't the outcome of adding a dual compressor.

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10. Jet engine turbine blades removed for detailed inspection must be reinstalled in which location?

A. Adjacent slot.

B. The same slot.

C. Any available slot.

D. Opposite slot.

When turbine blades are removed for inspection, they must go back into the exact same position they came from. Each blade and its slot are matched so the rotor keeps its proper balance and the blades sit in the correct orientation relative to the other components. The weight distribution, aerodynamics, and clearance to neighboring blades and the shroud are all built around that specific blade-slot pairing. If a blade is placed in a different slot, even a neighboring one, it can create an imbalance and misalignment, leading to vibration, increased wear, or structural damage. Because of these tight tolerances and the need to preserve the original blade-path geometry, the blade should be reinstalled in the same slot.

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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://aimblock13.examzify.com

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

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