EASA GAS TURBINE ENGINE 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. Which statement describes the temperature profile of the mass airflow as it passes through the engine?

A. Temperature rises from inlet through the diffuser and burner, then decreases through the turbine.

B. Temperature increases only in the diffuser.

C. Temperature decreases continuously.

D. Temperature remains constant from inlet to exhaust.

2. A high bypass engine results in which of the following?

A. overall slower airflow and greater propulsive efficiency.

B. overall faster airflow.

C. greater propulsive efficiency.

D. No change in airflow.

3. In a dual axial flow or twin-spool compressor system with a free power turbine, Nf would indicate the speed of which component?

A. Turbine thrust indication

B. First stage compressor speed

C. Free power turbine speed

D. Exhaust gas temperature

4. The Brayton cycle is known as the constant

A. temperature cycle.

B. volume cycle.

C. pressure cycle.

D. mass cycle.

5. Adiabatic compression is which of the following?

A. An isothermal process

B. One where there is an increase in kinetic energy

C. One where there is no loss or gain of heat

D. All of the above

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6. In a choked nozzle, velocity increases, and which of the following also changes according to the data?

A. Density decreases

B. Pressure decreases

C. Pressure increases

D. Temperature increases

7. Which condition yields the highest propulsive efficiency?

A. Low mass flow acceleration.

B. High mass flow acceleration.

C. High engine RPM independent of flow.

D. Low ambient temperature.

8. The term Pt7 means what?

A. pressure and temperature at station No. 7

B. the total pressure at station No. 7

C. the total inlet pressure

D. the total temperature at station No. 7

9. Newton's First Law is summarized as

A. To every action there is an equal and opposite reaction.

B. A force is necessary to change the velocity of an object.

C. An object at rest tends to stay at rest, and an object in motion tends to stay in motion unless acted upon by an outside force.

D. A body maintains its state of rest or uniform motion unless acted upon by an outside force.

10. Which statement correctly describes the engine rating plug?

A. Permanently connected to the EEC

B. Connected to the EPR transmitter

C. Permanently connected to the engine casing

D. Connected to the FADEC

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Answers

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

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Explanations

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1. Which statement describes the temperature profile of the mass airflow as it passes through the engine?

A. Temperature rises from inlet through the diffuser and burner, then decreases through the turbine.

B. Temperature increases only in the diffuser.

C. Temperature decreases continuously.

D. Temperature remains constant from inlet to exhaust.

In a gas turbine, the temperature profile follows the stages: as air enters and slows in the diffuser, kinetic energy is converted to pressure energy, so the static temperature rises; then fuel is added and burned in the burner, which greatly increases the gas temperature; finally, the hot gas expands through the turbine and does work on the blades, causing the gas temperature to fall. This pattern—rise through the diffuser and burner, then a decrease through the turbine—matches the described statement.

2. A high bypass engine results in which of the following?

A. overall slower airflow and greater propulsive efficiency.

B. overall faster airflow.

C. greater propulsive efficiency.

D. No change in airflow.

A high bypass turbofan improves propulsive efficiency by moving a large mass of air with a relatively small increase in jet velocity. The big fan pulls in a lot of air, and most of it bypasses the core and exits through the nozzle at a much lower speed than the core exhaust would in a turbojet. This lower jet velocity means less kinetic energy is wasted in the exhaust, so for the same thrust you get more useful propulsion energy—i.e., higher propulsive efficiency. Note that the overall airflow into the engine does increase because the fan is moving more air, but the important point is the balance: more mass flow with a slower exhaust improves efficiency. The statement that there is no change in airflow isn't correct in this context; the air moved by the fan is significantly larger, while the exhaust velocity is reduced, yielding the higher propulsive efficiency.

3. In a dual axial flow or twin-spool compressor system with a free power turbine, Nf would indicate the speed of which component?

A. Turbine thrust indication

B. First stage compressor speed

C. Free power turbine speed

D. Exhaust gas temperature

In a dual axial flow or twin-spool setup that includes a free power turbine, the Nf value represents the rotational speed of the free power turbine. This turbine is the output-side turbine that drives the load (through a gearbox in turboprops or turboshafts) and operates on a separate shaft from the gas generator spools. Because it isn't directly tied to the compressor spools, Nf specifically tracks the output turbine's speed, which is why it's the parameter you'd monitor or control for power delivery. The other items are not speeds of the output turbine: turbine thrust indication is a thrust measure, exhaust gas temperature is a temperature, and the first stage compressor speed refers to the compressor spool speed (not the power turbine).

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4. The Brayton cycle is known as the constant

A. temperature cycle.

B. volume cycle.

C. pressure cycle.

D. mass cycle.

The key idea here is that heat is added to the working fluid at nearly constant pressure. In the ideal Brayton (air standard) cycle, air is compressed, then fuel is burned in the combustor while the flow remains at essentially the same pressure. The combustor is part of the open, continuous flow path, so the pressure doesn't change much as temperature rises. After heating, the gas expands through the turbine, producing work and dropping in temperature and pressure along the way. Because the energy addition happens at roughly constant pressure, the Brayton cycle is described as a constant-pressure cycle. Real engines have small pressure losses, but the principle remains the same.

5. Adiabatic compression is which of the following?

A. An isothermal process

B. One where there is an increase in kinetic energy

C. One where there is no loss or gain of heat

D. All of the above

Adiabatic means no heat is exchanged with the surroundings. In an adiabatic compression, the gas is insulated so heat cannot enter or leave (Q = 0). Any work done on the gas increases its internal energy, which for an ideal gas shows up as a rise in temperature and, therefore, higher molecular kinetic energy. The defining point is the absence of heat transfer, not whether the temperature changes. An isothermal process, by contrast, requires heat flow to keep the temperature constant, so it isn't adiabatic. Saying there's an increase in kinetic energy describes the usual outcome (temperature rise) but isn't the defining feature of adiabatic compression.

6. In a choked nozzle, velocity increases, and which of the following also changes according to the data?

A. Density decreases

B. Pressure decreases

C. Pressure increases

D. Temperature increases

In a choked nozzle the flow at the throat reaches Mach 1, and further acceleration is achieved by converting pressure energy into kinetic energy. As the velocity rises, the static pressure falls because the expanding gas is doing work to speed up rather than to maintain high pressure. In an ideal, adiabatic (isentropic) nozzle, total pressure stays essentially constant (neglecting losses) while static pressure, density, and temperature all decrease as velocity increases. So the change that accompanies the velocity increase is a decrease in pressure (not an increase). If the data you're looking at shows pressure rising, that would indicate non-ideal effects or a different measurement location beyond the choking point.

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7. Which condition yields the highest propulsive efficiency?

A. Low mass flow acceleration.

B. High mass flow acceleration.

C. High engine RPM independent of flow.

D. Low ambient temperature.

Propulsive efficiency is highest when the amount by which the jet speeds up the air is small compared with the aircraft's speed. In other words, you want the exhaust velocity to be as close as possible to the flight speed, so most of the power you add goes into producing useful thrust rather than wasted as extra kinetic energy of the exhaust. Mathematically, propulsive efficiency increases as the jet's velocity increment (the change from incoming air to exhaust) decreases. If the mass flow is accelerated only a little, the exhaust velocity is closer to the inlet velocity, and the ratio of useful thrust power to the power added to the flow becomes larger. That's why low mass flow acceleration yields the highest propulsive efficiency. If you accelerate the mass flow a lot (high mass flow acceleration), the exhaust leaves much faster than the aircraft, wasting energy as excess jet kinetic energy and lowering propulsive efficiency. High engine RPM or low ambient temperature don't directly set this efficiency limit; they can affect overall performance but don't maximize the fundamental ratio tied to how much the flow's velocity is changed.

8. The term Pt7 means what?

A. pressure and temperature at station No. 7

B. the total pressure at station No. 7

C. the total inlet pressure

D. the total temperature at station No. 7

Pt7 indicates the stagnation (total) pressure measured at station seven along the engine's flow path. Pt is the standard symbol for total pressure, while static pressure would be indicated simply by P. The subscript seven shows the specific location where the pressure is being measured. So the meaning is the total pressure at station seven. The other options mix up what Pt stands for (pressure vs temperature) or refer to a different location or quantity (such as total temperature, which would be Tt7, or inlet conditions).

9. Newton's First Law is summarized as

A. To every action there is an equal and opposite reaction.

B. A force is necessary to change the velocity of an object.

C. An object at rest tends to stay at rest, and an object in motion tends to stay in motion unless acted upon by an outside force.

D. A body maintains its state of rest or uniform motion unless acted upon by an outside force.

Inertia is the tendency of a body to keep doing what it's doing—stay at rest or keep moving at the same speed in a straight line—unless something external changes that state. The best description here is the one that says a body maintains its state of rest or uniform motion unless acted upon by an outside force. That wording captures both aspects of inertia (rest and straight-line motion) and the condition that only an external net force can alter that state. The other ideas correspond to different laws: the action-reaction phrase is Newton's third law, and the statement about needing a force to change velocity reflects Newton's second law. The chosen option most precisely expresses the persistence of motion or rest and the role of an external force to cause change.

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10. Which statement correctly describes the engine rating plug?

A. Permanently connected to the EEC

B. Connected to the EPR transmitter

C. Permanently connected to the engine casing

D. Connected to the FADEC

The engine rating plug is a fixed hardware device that sets or locks in the engine's maximum operating rating. It is part of the engine's structure and is permanently mounted into the engine casing. Because it is a mechanical, non-electrical component that stays with the engine, it isn't connected to electronic control systems like the EEC or FADEC, nor is it part of the EPR transmitter circuit. Its purpose is to establish the rated state of the engine through a permanent installation, and changes to it require a maintenance action rather than normal operation. That's why the statement about it being permanently connected to the engine casing is the correct description.

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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://easagasturbineengine.examzify.com

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

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