GAS TURBINE SYSTEMS TECHNICIAN – MECHANICAL (GSM) A SCHOOL TEST 1 PRACTICE (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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Table of Contents

Copyright 1

Table of Contents 2

Introduction 3

How to Use This Guide 4

Questions 5

Answers 8

Explanations 10

Next Steps 15

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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 component is NOT typically driven by the accessory gearbox (AGB)?

A. Main fuel pump

B. Lubrication pump

C. Starting motor

D. Main turbine blade

2. Distinguish between ITT and EGT in terms of measurement location and use.

A. ITT is measured in exhaust; EGT inside turbine; ITT for exhaust limits

B. ITT is measured in hot section inside turbine; EGT measured in exhaust; ITT used for start/run limits, EGT for exhaust health

C. ITT and EGT are the same measurement

D. ITT is measured after cool-down; EGT before start

3. How do mineral oil and synthetic oil differ in performance in turbine lubrication?

A. Mineral oils are cheaper but provide less performance under extreme conditions.

B. Synthetic oils generally offer better high-temperature stability and oxidation resistance.

C. Synthetic oils are cheaper.

D. Mineral oils perform identically at all temperatures.

4. The LO unloader senses and maintains pressure at the most remote bearing at what setpoint?

A. 15 PSIG

B. 14.5 PSIG

C. 12 PSIG

D. 20 PSIG

5. Tank level indicator alarms are set at which high and low levels?

A. High 90% and Low 20%

B. High 92% and Low 28%

C. High 95% and Low 25%

D. High 97% and Low 30%

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6. List three common indicators of fuel system trouble.

A. Unstable fuel pressure, but not fuel flow changes.

B. Abnormal fuel flow only.

C. Unstable fuel pressure, abnormal fuel flow, and fuel leaks or inconsistent spray patterns.

D. Engine vibration only during idle.

7. How does inlet distortion affect compressor performance?

A. Causes uneven airflow, reduces surge margin, increases vibration and potential stall.

B. Improves efficiency.

C. No effect.

D. Only affects turbines.

8. What safety precautions should be observed when working near operating gas turbines?

A. Only PPE and gloves

B. Ground fault protection only

C. PPE, hearing protection, eye protection, flame-resistant clothing

D. Just no open flames

9. Why might a fuel preheater be used in a gas turbine installation?

A. To heat the compressor inlet.

B. To prevent fuel waxing/icing at low temperatures and to improve fuel atomization and combustor performance.

C. To increase fuel density.

D. To reduce engine noise.

10. The LO strainer basket has which micron rating?

A. 20 micron

B. 60 micron

C. 40 micron

D. 80 micron

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Answers

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

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Explanations

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1. Which component is NOT typically driven by the accessory gearbox (AGB)?

A. Main fuel pump

B. Lubrication pump

C. Starting motor

D. Main turbine blade

The accessory gearbox provides drive to engine accessories by taking power from the engine's high-pressure spool. It drives items like the main fuel pump, the lubrication pump, and the starting motor, allowing them to operate as the engine runs or is started. The main turbine blade, however, is part of the turbine rotor and is driven directly by the expanding hot gases from the combustor, not by the AGB. So the component not typically driven by the accessory gearbox is the main turbine blade.

2. Distinguish between ITT and EGT in terms of measurement location and use.

A. ITT is measured in exhaust; EGT inside turbine; ITT for exhaust limits

B. ITT is measured in hot section inside turbine; EGT measured in exhaust; ITT used for start/run limits, EGT for exhaust health

C. ITT and EGT are the same measurement

D. ITT is measured after cool-down; EGT before start

The main idea is where the temperature is measured and what that measurement is used for in protecting and monitoring the engine. Inter Turbine Temperature is the temperature of the hot gas inside the turbine section, typically at or just before the turbine inlet. This location directly reflects the heat the turbine blades will experience, so it's the critical value used to set start and run limits. Keeping ITT within limits protects the turbine blades from thermal damage as fuel flow and air flow change during start, acceleration, and steady operation. Exhaust Gas Temperature is measured in the exhaust stream after the turbine. It serves as a broader indicator of combustion efficiency and overall exhaust health. High or out-of-spec EGT can point to issues with fuel-air mixture, combustion stability, or downstream components, but it's not the primary blade temperature limit like ITT. So, ITT is measured in the hot section inside the turbine and used for start/run limits, while EGT is measured in the exhaust and used to monitor exhaust health and combustion performance.

3. How do mineral oil and synthetic oil differ in performance in turbine lubrication?

A. Mineral oils are cheaper but provide less performance under extreme conditions.

B. Synthetic oils generally offer better high-temperature stability and oxidation resistance.

C. Synthetic oils are cheaper.

D. Mineral oils perform identically at all temperatures.

In turbine lubrication, oil chemistry determines how a lubricant behaves under heat and exposure to air. High operating temperatures and oxygen drive oxidation and thermal breakdown, which can thicken into varnish or sludge and erode film strength. Synthetic oils are engineered with more stable molecular structures that resist oxidation and maintain lubricating film over a wider temperature range. This gives them better high-temperature stability and oxidation resistance, so they protect bearings and gears more reliably under extreme conditions and often last longer between changes. That's why the statement highlighting their superior high-temperature stability and oxidation resistance is the most accurate description of how mineral and synthetic oils differ in turbine service. Mineral oils tend to be cheaper but don't hold up as well to heat and oxidation, leading to faster degradation and more deposits. They are not identical in performance across temperatures, and synthetic oils are not generally cheaper.

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4. The LO unloader senses and maintains pressure at the most remote bearing at what setpoint?

A. 15 PSIG

B. 14.5 PSIG

C. 12 PSIG

D. 20 PSIG

This item tests how a lube-oil (LO) unloader keeps the minimum lubrication pressure at the farthest bearing. The pressure at the most remote bearing is the critical point because it experiences the largest drop from the pump to the bearing due to line losses and flow restrictions. By sensing and holding the pressure at that location, the system guarantees all bearings stay adequately lubricated under varying conditions. Holding the remote bearing at 14.5 PSIG provides enough oil film to protect bearing surfaces during normal operation and transients, while avoiding unnecessarily high pressure that would waste energy and stress components. If the remote point fell much lower (around 12 PSIG), lubrication could become insufficient during changes in load or temperature. If it were much higher (like 20 PSIG), it would push more oil than needed through the system and could lead to excess heat and seal wear. So, the setpoint of 14.5 PSIG is chosen to ensure reliable lubrication at the most distant bearing under all operating conditions.

5. Tank level indicator alarms are set at which high and low levels?

A. High 90% and Low 20%

B. High 92% and Low 28%

C. High 95% and Low 25%

D. High 97% and Low 30%

Tank level alarms are set to give timely warnings so you can act before you reach a dangerous condition—either overflowing or running out of fuel. The high-level alarm should be near the top, but with some headroom to prevent overflow and to allow the fill system to shut down safely; around 95% provides that margin. The low-level alarm should trigger well before empty, giving enough time to switch sources, start pumps, or stage a refill, so about 25% leaves a healthy reserve while still warning you early. This combination balances timely notification with safe operating margins, making it the most practical choice.

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6. List three common indicators of fuel system trouble.

A. Unstable fuel pressure, but not fuel flow changes.

B. Abnormal fuel flow only.

C. Unstable fuel pressure, abnormal fuel flow, and fuel leaks or inconsistent spray patterns.

D. Engine vibration only during idle.

A common signal of trouble in a fuel system is when multiple symptoms show up together, because fuel delivery relies on stable pressure, consistent flow, and proper atomization. Unstable fuel pressure means the system can't hold a steady pressure, which disrupts how much fuel is available at the injectors or metering device and leads to timing and fuel-air mixture variations. Abnormal fuel flow points to changes in the amount or rate of fuel reaching the engine, often caused by restrictions, leaks, or pump/regulator issues. Fuel leaks or inconsistent spray patterns indicate a physical fault in lines, seals, or injectors, causing leaks or irregular atomization, which directly corrupts combustion quality. When these indicators appear together, they provide a clearer picture of fuel system problems you need to inspect, such as the pump, regulators, filters, lines, and injectors. Other options miss one or more key signs. Focusing on unstable pressure alone without considering flow changes or leaks ignores a critical part of how the system operates. Abnormal flow by itself doesn't capture pressure stability or physical leakage/atomization issues. Engine vibration during idle is a broad symptom that can arise from many non-fuel-system causes, and it doesn't specifically point to fuel-delivery problems.

7. How does inlet distortion affect compressor performance?

A. Causes uneven airflow, reduces surge margin, increases vibration and potential stall.

B. Improves efficiency.

C. No effect.

D. Only affects turbines.

Inlet distortion introduces nonuniform flow into the compressor. When the air entering the compressor isn't evenly distributed, different rows and passages see different velocities and possibly swirl. This causes uneven blade loading across the compressor rotor, which increases aerodynamic losses and reduces the overall pressure rise the stage can sustain. The nonuniform flow pushes the operating point toward the unstable region of the compressor map, decreasing surge margin. It also can trigger local flow separation and stall on some blades, and the unsteady forces generated by these effects raise vibration levels. This combination—uneven airflow, lower surge margin, and increased likelihood of stall and vibration—is why inlet distortion degrades compressor performance.

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8. What safety precautions should be observed when working near operating gas turbines?

A. Only PPE and gloves

B. Ground fault protection only

C. PPE, hearing protection, eye protection, flame-resistant clothing

D. Just no open flames

Working near operating gas turbines exposes you to several hazards at once: extremely loud noise, high heat, potential flames or fuel exposure, and flying debris or hot surfaces. To manage these risks, you need protection that covers all those areas. Hearing protection guards against long-term hearing loss from the high noise levels. Eye protection shields your eyes from flying particles, sparks, and any radiant flashes. Flame-resistant clothing reduces burn risk if there's heat, flame, or an unexpected arc. General PPE ensures you're protected overall, including gloves, hard hat, and appropriate footwear. This combination is best because it addresses the full range of hazards you'll encounter, not just one aspect of safety. Relying only on PPE and gloves misses the important protections for hearing and eye safety and flame resistance. Ground fault protection reduces electrical risk but doesn't address the mechanical, thermal, or fire-related hazards of a running turbine. And simply avoiding open flames doesn't provide protection against heat, radiant exposure, debris, or other common turbine hazards.

9. Why might a fuel preheater be used in a gas turbine installation?

A. To heat the compressor inlet.

B. To prevent fuel waxing/icing at low temperatures and to improve fuel atomization and combustor performance.

C. To increase fuel density.

D. To reduce engine noise.

Fuel preheating is used to keep the fuel at a temperature where its properties support reliable delivery and efficient combustion. In cold conditions, kerosene-type aviation fuels can form wax crystals and become more viscous. Waxing can clog filters and fuel lines and increase the effort required by the fuel pump, leading to flow restrictions or pump cavitation. By heating the fuel, you keep it above those low-temperature limits, preventing waxing and reducing viscosity. The result is better fuel atomization at the injectors, which translates to more uniform air-fuel mixing, smoother combustion, and improved combustor performance and stability. Heating also helps prevent fuel icing in the system by keeping water in solution and avoiding ice formation. Other options don't fit because heating the fuel isn't aimed at increasing fuel density or reducing engine noise, and heating the fuel doesn't serve to heat the compressor inlet.

10. The LO strainer basket has which micron rating?

A. 20 micron

B. 60 micron

C. 40 micron

D. 80 micron

Filtration size is chosen to balance protecting critical components with maintaining normal oil flow. The LO strainer basket acts as a pre-filter in the lubrication oil system, catching larger debris before oil reaches the pump and downstream filters. A 40 micron screen stops most wear particles that could harm bearings and tight tolerances, while still letting oil flow smoothly and avoiding excessive clogging. A finer screen, like 20 micron, would trap more particles but would cause a higher pressure drop and could restrict flow, risking oil starvation. A coarser screen, such as 60 or 80 micron, would let larger contaminants through, increasing wear risk to components. So, 40 micron is the typical and appropriate balance for the LO strainer basket.

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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:

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

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