Gas Turbine Systems (GS) A School Test 2 Practice (Sample)

Study Guide

Everything you need from our exam experts!

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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

1. What percent of compressed air is used in combustion?

A. 20%

B. 25%

C. 30%

D. 35%

2. What is the use of bleed air taken from the 13th stage of the gas turbine?

A. To lubricate turbine bearings

B. To shroud and cool the stage 2 nozzles

C. To enhance compressor efficiency

D. To preheat the fuel

3. How does the ignition exciter operate in a gas turbine system?

A. On a 220 V, 50 HZ input

B. On a 115 V, 60 HZ input

C. On a 110 V, 60 HZ input

D. On a 120 V, 50 HZ input

4. What temperature does the BEA heater heat air to maintain fuel viscosity?

A. 50 degrees

B. 60 degrees

C. 70 degrees

D. 80 degrees

5. What action is performed by the lube and scavenging pump?

A. Circulating coolant

B. Controlling fuel flow

C. Supplying oil to lubricate components

D. Maintaining air pressure

6. What is the main purpose of the exhaust system in a gas turbine?

A. To enhance fuel efficiency

B. To direct hot gases away and recover heat

C. To increase the engine's weight

D. To minimize noise levels during operation

7. What is a primary advantage of increasing reliability through maintenance?

A. Lower initial purchase costs

B. Reduced need for training

C. Higher availability for operations

D. Increased equipment lifespan

8. What safety precaution should personnel follow before gas turbine maintenance?

A. Check fuel levels

B. Ensure turbines are operational

C. Obtain permission from EOOW or EDO

D. Conduct environmental assessments

9. How many elements are in the lube and scavenging pump?

A. 4 elements

B. 5 elements

C. 6 elements

D. 7 elements

10. What effect does increasing temperature have on gas pressure, under constant volume?

A. It increases gas pressure

B. It decreases gas pressure

C. It has no effect on gas pressure

D. It varies gas pressure depending on gas type

Answers

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

Explanations

1. What percent of compressed air is used in combustion?

A. 20%

B. 25%

C. 30%

D. 35%

The correct answer of 25% indicates the typical percentage of compressed air that is utilized in the combustion process within gas turbines. In gas turbine operations, compressed air serves multiple functions, with one of the most critical being its role in sustaining combustion. The 25% figure is representative of a balance between ensuring sufficient oxygen availability for the combustion of fuel and maintaining overall efficiency within the turbine cycle. For gas turbines, the ideal air-fuel mixture is crucial for achieving optimal combustion efficiency and minimizing emissions. By using approximately 25% of the compressed air specifically for combustion, turbines can maintain effective fuel combustion while also ensuring that excess air is available for cooling and diluting the combustion gases, which further optimizes performance and environmental output. Understanding this percentage helps inform maintenance and operational strategies in gas turbine systems, as managing air flow and its allocation directly impacts the turbine's performance characteristics and longevity. This knowledge is essential for anyone involved in gas turbine operation and maintenance.

2. What is the use of bleed air taken from the 13th stage of the gas turbine?

A. To lubricate turbine bearings

B. To shroud and cool the stage 2 nozzles

C. To enhance compressor efficiency

D. To preheat the fuel

The correct use of bleed air taken from the 13th stage of the gas turbine is to shroud and cool the stage 2 nozzles. This particular application is crucial in maintaining the operational efficiency and structural integrity of the turbine components. The air bled from this stage is typically at a high temperature and pressure, which is harnessed to create a cooling effect, ensuring that the nozzles do not overheat and become damaged due to the high thermal stresses encountered during operation. Cooling the nozzles helps manage the heat generated by the combustion process and prevents thermal fatigue, thus enhancing reliability and longevity of the turbine system. While the other options may be related to various functions of engine operation, they do not accurately describe the primary role of bleed air from the 13th stage. For instance, using bleed air to lubricate turbine bearings or enhance compressor efficiency involves different mechanisms and components. Similarly, preheating the fuel involves systems that operate separately from the bleed air functionalities specific to the turbine nozzles. Therefore, the utilization of bleed air for shrouding and cooling stage 2 nozzles stands out as the correct application.

3. How does the ignition exciter operate in a gas turbine system?

A. On a 220 V, 50 HZ input

B. On a 115 V, 60 HZ input

C. On a 110 V, 60 HZ input

D. On a 120 V, 50 HZ input

The ignition exciter in a gas turbine system operates on a 115 V, 60 Hz input, which is essential for providing the necessary voltage and frequency for igniting the fuel-air mixture in the combustion chamber. This specific input ensures that the exciter can generate the high-voltage spark needed to initiate combustion effectively. Utilizing a 60 Hz frequency is common in many power systems, particularly in North America, aligning with standard electrical infrastructure. The voltage level of 115 V is optimized for reliable performance while ensuring safety and compatibility with the overall gas turbine system. The other options do not match the standard operational requirements for the ignition exciter in this context. Variations in voltage or frequency may lead to inadequate performance or potential damage to the exciter or the components surrounding it, highlighting the importance of using the correct specifications for optimal system functionality.

4. What temperature does the BEA heater heat air to maintain fuel viscosity?

A. 50 degrees

B. 60 degrees

C. 70 degrees

D. 80 degrees

The correct temperature for the BEA (Burner Efficiency Air) heater to maintain fuel viscosity is 60 degrees. This temperature is crucial for ensuring that the fuel maintains the appropriate viscosity for optimal atomization and combustion within the gas turbine system. If the fuel is too viscous, it can lead to poor atomization, resulting in inefficient combustion and a potential decrease in engine performance. Conversely, if it is too thin, it may lead to issues such as excessive evaporation and an increased risk of fuel leakage. Therefore, maintaining the heating air at 60 degrees strikes a balance that promotes effective combustion while also ensuring the fuel system operates smoothly. The other temperature options do not align with the specifications required for maintaining adequate fuel viscosity within operational parameters for gas turbines.

5. What action is performed by the lube and scavenging pump?

A. Circulating coolant

B. Controlling fuel flow

C. Supplying oil to lubricate components

D. Maintaining air pressure

The lube and scavenging pump is crucial for ensuring the proper functioning of gas turbine systems. Its primary role is to supply oil to lubricate various components within the system. This lubrication is essential for reducing friction and wear between moving parts, thus prolonging their lifespan and enhancing overall efficiency. Without adequate lubrication, components such as bearings, gears, and other critical elements would experience increased wear and potential failure, leading to reduced performance and possibly catastrophic damage. The scavenging aspect of the pump aids in collecting the oil after it has circulated through the system, returning it to the sump for recirculation, which further reinforces the essential nature of this pump in maintaining the health of the gas turbine. This function directly supports the overall operational integrity of the turbine, making it a key component in the lubrication system.

6. What is the main purpose of the exhaust system in a gas turbine?

A. To enhance fuel efficiency

B. To direct hot gases away and recover heat

C. To increase the engine's weight

D. To minimize noise levels during operation

The main purpose of the exhaust system in a gas turbine is to effectively direct hot gases away from the engine and recover heat. As gas turbines operate, they combust fuel to produce high-temperature, high-pressure gases that expand and drive the turbine. The exhaust system is designed to manage these exhaust gases safely. In addition to directing these gases away from the turbine, the exhaust system can play a crucial role in heat recovery. Technologies such as exhaust heat recovery systems can capture some of the thermal energy from the exhaust for use in other processes, improving overall system efficiency. This capability is particularly important in combined cycle systems, where the waste heat from the gas turbine is utilized to generate additional power through a steam turbine. This function of directing and managing exhaust gases is vital for the safe and efficient operation of the gas turbine, making it a critical aspect of gas turbine design and operation.

7. What is a primary advantage of increasing reliability through maintenance?

A. Lower initial purchase costs

B. Reduced need for training

C. Higher availability for operations

D. Increased equipment lifespan

Increasing reliability through maintenance primarily results in higher availability for operations. This means that equipment is less likely to break down unexpectedly and can perform its required functions consistently when needed. Regular maintenance activities help in identifying and addressing potential issues before they lead to failures, which ensures that the gas turbine system remains operational. Consequently, the equipment can be used more frequently and for longer periods, maximizing its productivity and efficiency during operations. While options regarding initial purchase costs, need for training, or equipment lifespan are important aspects to consider in a broader context, the core advantage of enhanced reliability is its direct impact on availability. Reliability measures directly correlate to the time and resources that can be allocated to operational activities, thereby making higher availability a critical benefit derived from effective maintenance practices.

8. What safety precaution should personnel follow before gas turbine maintenance?

A. Check fuel levels

B. Ensure turbines are operational

C. Obtain permission from EOOW or EDO

D. Conduct environmental assessments

Before conducting maintenance on a gas turbine, it is crucial for personnel to obtain permission from the Engineering Officer of the Watch (EOOW) or the Engineering Duty Officer (EDO). This step is fundamental because it ensures that qualified personnel are aware of and can oversee the maintenance activities, thereby preventing any unsafe conditions or unauthorized actions. The EOOW or EDO is responsible for monitoring the operational status of the equipment and ensuring that all safety protocols and procedures are followed. Obtaining permission also allows for proper coordination and communication among the maintenance team and operations staff, which is vital for ensuring that all necessary precautions are taken before commencing any work on the gas turbine. This practice is aligned with safety protocols that prioritize the well-being of personnel and the integrity of the equipment, establishing a clear line of authority and responsibility during maintenance operations.

9. How many elements are in the lube and scavenging pump?

A. 4 elements

B. 5 elements

C. 6 elements

D. 7 elements

The correct answer is that there are six elements in the lube and scavenging pump. This refers to the components necessary for the operation of these pumps within a gas turbine system. The lube pump typically consists of elements including the pump housing, the gears or rotors, seals, bearings, an inlet and an outlet. These components work together to ensure the proper circulation of lubricating oil throughout the turbine, essential for reducing friction, dissipating heat, and preventing wear on engine parts. Understanding the breakdown of these elements helps in grasping how the pump functions as part of the larger gas turbine system. Each of the six elements plays a critical role in maintaining pump efficiency and reliability, which are vital for the overall performance of the gas turbine.

10. What effect does increasing temperature have on gas pressure, under constant volume?

A. It increases gas pressure

B. It decreases gas pressure

C. It has no effect on gas pressure

D. It varies gas pressure depending on gas type

Increasing the temperature of a gas while keeping the volume constant leads to an increase in gas pressure. This relationship is described by Gay-Lussac's Law, which states that the pressure of a gas is directly proportional to its absolute temperature (measured in Kelvin) when the volume is held constant. As the temperature rises, the kinetic energy of the gas molecules increases, causing them to move more rapidly. This increased molecular motion results in more frequent and forceful collisions with the walls of the container, which translates into higher pressure. Therefore, the correct choice reflects the fundamental principles of gas behavior under constant volume conditions.

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://gsaschool2.examzify.com

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