

GCAP BOOK 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.

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

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- 1. What kind of energy change occurs when changing 1 pound of liquid ammonia to gas?**
 - A. Exothermic reaction
 - B. Endothermic reaction
 - C. No energy change
 - D. Condensation
- 2. Which of the following is a style of condenser?**
 - A. Solar cooled
 - B. Geothermal cooled
 - C. Air cooled
 - D. Thermal cooled
- 3. What effect does air noncondensable gas have on suction pressure in an ammonia system?**
 - A. Increase suction pressure
 - B. Lower suction pressure
 - C. Maintain suction pressure
 - D. Instigate pressure fluctuations
- 4. What is the practical maximum compression ratio for a rotary screw compressor?**
 - A. 10:1 CR
 - B. 15:1 CR
 - C. 20:1 CR
 - D. 25:1 CR
- 5. What could potentially occur if ammonia in a vessel is subjected to heating without room for expansion?**
 - A. A complete system failure
 - B. Liquid vaporization
 - C. A rupture due to hydrostatic pressure
 - D. A drop in pressure

- 6. What is the phase change that occurs in a condenser when it removes heat from refrigerant?**
- A. Liquid to gas
 - B. Gas to liquid
 - C. Solid to gas
 - D. Liquid to solid
- 7. According to OSHA regulations, should an operator wear contact lenses when dealing with ammonia refrigerant?**
- A. Yes
 - B. No
 - C. Only protective glasses are required
 - D. Only if necessary
- 8. What is the pH level of ammonia?**
- A. 7.0
 - B. 11.6
 - C. 14.0
 - D. 8.5
- 9. What is the practical maximum compression ratio for a reciprocating compressor?**
- A. 4:1 CR
 - B. 6:1 CR
 - C. 8:1 CR
 - D. 10:1 CR
- 10. What is one disadvantage of ammonia as a refrigerant?**
- A. It is not readily available
 - B. It is expensive to use
 - C. It is toxic
 - D. It requires special equipment

Answers

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

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Explanations

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1. What kind of energy change occurs when changing 1 pound of liquid ammonia to gas?

- A. Exothermic reaction
- B. Endothermic reaction**
- C. No energy change
- D. Condensation

Changing 1 pound of liquid ammonia to gas involves an endothermic process. In this context, an endothermic reaction is characterized by the absorption of heat from the surroundings. When ammonia transitions from a liquid state to a gaseous state, energy in the form of heat is required to overcome the intermolecular forces that hold the liquid molecules together. As the liquid ammonia absorbs heat, the energy facilitates the transition into the gas phase, allowing the molecules to move freely and rapidly, which is indicative of the gaseous state. This energy absorption means that the surroundings lose some heat, which is a hallmark of an endothermic process. The other answer choices do not accurately describe the process. An exothermic reaction would involve the release of heat, which does not occur when converting liquid ammonia to gas. There is indeed a significant energy change (absorption of heat) rather than no energy change at all, and condensation refers to a process where gas turns into liquid, which is not applicable to the phase change described in the question.

2. Which of the following is a style of condenser?

- A. Solar cooled
- B. Geothermal cooled
- C. Air cooled**
- D. Thermal cooled

The choice of air-cooled as a style of condenser is correct because air-cooled condensers utilize ambient air to remove heat from refrigerants or other fluids. In these systems, a fan is used to force air over the condenser coils, allowing the heat to dissipate into the atmosphere. This method is widely used, particularly in smaller refrigerating systems and residential air conditioning units, due to its simplicity and lower initial cost compared to other cooling methods. Concerning the other options, solar cooled does not specifically refer to a recognized style of condenser but rather indicates a broader concept of using solar energy for cooling, which may involve different technologies. Geothermal cooled relates to systems that use the earth's temperature to facilitate cooling, typically more associated with heat pumps rather than stand-alone condensers. Thermal cooled is not a standard term in the context of condenser types and could create confusion as it doesn't distinctly describe a specific cooling process used in condensers. Thus, air-cooled is the most accurate and widely accepted classification among the given choices.

3. What effect does air noncondensable gas have on suction pressure in an ammonia system?

- A. Increase suction pressure
- B. Lower suction pressure**
- C. Maintain suction pressure
- D. Instigate pressure fluctuations

In an ammonia refrigeration system, the presence of noncondensable gases (such as air) has a significant impact on suction pressure. Noncondensable gases do not condense like ammonia; therefore, they occupy space in the system that should be filled by the refrigerant. As a result, these gases effectively reduce the amount of ammonia vapor in the evaporator, which leads to lower suction pressure. When noncondensable gases infiltrate the system, they create a barrier that hinders the proper function of the refrigeration cycle. This reduction in the density of the ammonia vapor in the evaporator means that the suction pressure must decrease to maintain the same temperature and enthalpy of the refrigerant. Thus, the overall effect is a lowering of suction pressure, which can lead to reduced system efficiency, increased energy consumption, and potential operational issues due to insufficient refrigeration capacity. In this context, the correct identification of the effects of noncondensable gases on suction pressure is essential for understanding the operational integrity of ammonia systems and ensuring their efficient performance.

4. What is the practical maximum compression ratio for a rotary screw compressor?

- A. 10:1 CR
- B. 15:1 CR
- C. 20:1 CR**
- D. 25:1 CR

The practical maximum compression ratio for a rotary screw compressor is generally around 20:1. This is due to the design and operational characteristics of rotary screw compressors, which allow for efficient compression within this range. Achieving a compression ratio beyond 20:1 can lead to inefficiencies and increased wear on the system components, as the thermal and mechanical stresses can rise significantly. At compression ratios greater than 20:1, the performance of the compressor may diminish, leading to potential overheating and other operational challenges. It's essential for users to remain within this optimal range to ensure reliable and efficient operation. Understanding these limits helps in selecting the right equipment and maintaining its longevity while achieving desired performance.

5. What could potentially occur if ammonia in a vessel is subjected to heating without room for expansion?

- A. A complete system failure
- B. Liquid vaporization
- C. A rupture due to hydrostatic pressure**
- D. A drop in pressure

When ammonia in a vessel is heated without room for expansion, the most concerning outcome is a rupture due to hydrostatic pressure. As the temperature of the ammonia increases, it tends to expand. In a confined space where there is no possibility for that expansion to occur, the pressure inside the vessel rises significantly as the liquid and vapor phases cannot increase their volume. If the pressure exceeds the design limits of the vessel, it may lead to a catastrophic failure, resulting in a rupture. This phenomenon is rooted in the principles of gas laws, where gas pressure increases with temperature under constant volume conditions. The heated ammonia will strive to maintain equilibrium, but in the absence of expansion space, it leads to dangerous conditions that can cause a physical failure of the container. This scenario emphasizes the importance of safety measures, such as pressure relief valves, in systems that handle pressurized gases and liquids. Understanding this concept can significantly enhance the approach to safely handling and storing volatile substances like ammonia.

6. What is the phase change that occurs in a condenser when it removes heat from refrigerant?

- A. Liquid to gas
- B. Gas to liquid**
- C. Solid to gas
- D. Liquid to solid

In a condenser, the refrigerant undergoes a phase change from gas to liquid. This process occurs when the refrigerant, which is in a gaseous state after absorbing heat in the evaporator, enters the condenser. As it circulates through the condenser coils, it releases heat to the surrounding environment, typically through air or water. This heat removal causes the refrigerant to cool down and transition to a liquid state. This phase change is essential for the refrigeration cycle to continue operating efficiently. If the refrigerant did not change from gas to liquid in the condenser, it would not be able to return to the evaporator to absorb heat again, thus disrupting the cooling process. Other options describe phase changes that do not accurately represent the function of a condenser. The transition from liquid to gas typically occurs in the evaporator, while solid states involve entirely different thermodynamic processes that are not related to the operation of a condenser in a refrigeration cycle.

7. According to OSHA regulations, should an operator wear contact lenses when dealing with ammonia refrigerant?

- A. Yes
- B. No**
- C. Only protective glasses are required
- D. Only if necessary

Wearing contact lenses while handling ammonia refrigerant is not advisable according to OSHA regulations due to the potential hazards associated with ammonia exposure. Ammonia is a corrosive substance that can harm the eyes and respiratory system. If exposure occurs, contact lenses can trap the ammonia against the eye surface, leading to more severe injuries or complications. In environments where ammonia is present, safety protocols typically emphasize the use of protective eyewear that provides a barrier against splashes or airborne materials. This ensures that the eyes are adequately protected from corrosive agents, which is essential for safe operations. Thus, the recommendation against wearing contact lenses helps to minimize health risks and protect the operator effectively.

8. What is the pH level of ammonia?

- A. 7.0
- B. 11.6**
- C. 14.0
- D. 8.5

The correct answer is 11.6, which indicates that ammonia is a basic compound. Ammonia (NH₃) is a weak base commonly found in household cleaning products and fertilizers. Its pH level, when dissolved in water, can reach approximately 11.6, suggesting that it can significantly increase the pH of a solution, making it alkaline. In the context of ammonia, a basic pH stems from the compound's ability to accept protons (H⁺ ions) from water, forming ammonium ions (NH₄⁺) and hydroxide ions (OH⁻). The presence of hydroxide ions is what contributes to the higher pH, reflecting greater alkalinity. Understanding the pH level of ammonia is crucial for applications in various fields, including chemistry and environmental science, as it affects reactions and impacts biological systems where pH balance is essential.

9. What is the practical maximum compression ratio for a reciprocating compressor?

- A. 4:1 CR
- B. 6:1 CR
- C. 8:1 CR**
- D. 10:1 CR

The practical maximum compression ratio for a reciprocating compressor is typically around 8:1. This limit is due to several factors, including the thermodynamic efficiency of the compression process, the properties of the gas being compressed, and the mechanical limitations of the compressor itself. As the compression ratio increases, the work required to compress the gas also increases, which can lead to higher temperatures and potential overheating within the compressor. An 8:1 compression ratio strikes a balance between efficiency and mechanical reliability in most applications, allowing the compressor to operate effectively without risking damage to the components. Compression ratios higher than this, such as 10:1, may not be practical in many scenarios due to challenges related to heat dissipation and mechanical stress, which is why 8:1 is generally accepted as the upper operational limit for most reciprocating compressors.

10. What is one disadvantage of ammonia as a refrigerant?

- A. It is not readily available
- B. It is expensive to use
- C. It is toxic**
- D. It requires special equipment

Ammonia is widely recognized as a refrigerant with excellent thermodynamic properties; however, one significant disadvantage is its toxicity. Ammonia can pose serious health risks if inhaled, and exposure can lead to respiratory issues, skin irritation, and other health concerns. This toxicity necessitates careful handling, robust safety protocols, and protective equipment during installation and maintenance. The need for specialized safety measures is a crucial factor when considering ammonia as a refrigerant in various applications, especially in commercial or industrial settings where large quantities may be used. While the other considerations like availability, cost, and equipment might present challenges in certain situations, ammonia's toxicity remains a primary concern that impacts its overall usability in the refrigeration market.

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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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