

# RMO Real Engineer Practice Exam (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. In a dual pressure relief valve system, what valve should be installed to work on one pressure relief valve while allowing the other to operate?**
  - A. Two-way valve**
  - B. Three-way valve**
  - C. Four-way valve**
  - D. Check valve**
- 2. What is the most probable cause of knocking in a reciprocating compressor?**
  - A. Worn bearings**
  - B. Liquid slugging**
  - C. Insufficient lubrication**
  - D. Excessive pressure**
- 3. What is the most likely cause of increased superheat temperature for refrigerating fluid entering a reciprocating compressor?**
  - A. Refrigerant overcharge**
  - B. Low ambient temperature**
  - C. Scale particles lodged in the TEV valve**
  - D. Dirty compressor filters**
- 4. If 10 BTUs are transferred to 10 lb of water, what is the closest increase in temperature?**
  - A. 0.5° Fahrenheit**
  - B. 1° Fahrenheit**
  - C. 2° Fahrenheit**
  - D. 3° Fahrenheit**
- 5. Why might a refrigeration system need to have an equalizer line?**
  - A. To prevent subcooling**
  - B. To balance pressures across components**
  - C. To reduce energy consumption**
  - D. To improve refrigerant flow**

- 6. What component is necessary when a system does not have unloaders?**
- A. Expansion valve**
  - B. Solenoid on the liquid line**
  - C. Bypass valve**
  - D. Compressor crankshaft**
- 7. What is the pressure of R22 at 41° Fahrenheit?**
- A. 50 PSIG**
  - B. 60 PSIG**
  - C. 70 PSIG**
  - D. 80 PSIG**
- 8. What function does the automatic expansion valve serve in a refrigeration system?**
- A. It increases the compressor output**
  - B. It maintains constant pressure on the evaporator**
  - C. It controls the refrigerant flow rate**
  - D. It decreases energy consumption**
- 9. How would capacity control be achieved in a reciprocating compressor?**
- A. Closing the suction valves**
  - B. Opening the suction valves with some form of control**
  - C. Using a variable frequency drive**
  - D. Increasing the discharge pressure**
- 10. What is the primary purpose of the gland steam in mechanical systems?**
- A. To create a vacuum and enhance efficiency**
  - B. To create positive pressure and eliminate leakage**
  - C. To cool the shaft**
  - D. To lubricate the bearings**



## **Answers**

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

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## **Explanations**

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**1. In a dual pressure relief valve system, what valve should be installed to work on one pressure relief valve while allowing the other to operate?**

- A. Two-way valve
- B. Three-way valve**
- C. Four-way valve
- D. Check valve

In a dual pressure relief valve system, a three-way valve is ideal for selecting which pressure relief valve to operate while allowing the other to remain functional. The purpose of a three-way valve is to connect and allow flow between two paths, where it can direct fluid from one source to either of two outputs. In this case, the three-way valve can be configured to channel fluid from the system to either of the relief valves, enabling one to operate while isolating the other. This feature is particularly useful for maintenance or troubleshooting, as it allows for the isolation of one valve without interrupting the operation of the second valve. A two-way valve would only allow for a simple open/close function, lacking the ability to facilitate flow to one valve while isolating the other. A four-way valve introduces unnecessary complexity and is typically used for applications requiring multiple flow paths, which is not the case here. A check valve, on the other hand, is designed to prevent backflow and would not function to direct flow between two relief valves. Therefore, the three-way valve serves the specific requirement of managing operations between two pressure relief valves effectively.

**2. What is the most probable cause of knocking in a reciprocating compressor?**

- A. Worn bearings
- B. Liquid slugging**
- C. Insufficient lubrication
- D. Excessive pressure

Knocking in a reciprocating compressor is primarily caused by liquid slugging. This phenomenon occurs when liquid refrigerant enters the cylinders instead of gas. Since compressors are designed to compress gases, the presence of liquid can lead to a catastrophic situation where the liquid does not compress and can result in severe mechanical stresses within the compressor. This can cause knocking sounds as the liquid slug crashes against the compressor components, disrupting the normal operation. Liquid slugging can be particularly damaging; it may cause bent connecting rods, damaged crankshafts, and other mechanical failures. To prevent this, systems are designed to ensure that only vapor enters the compressor, and proper maintenance is essential to monitor refrigerant levels and operational conditions to avoid slugs of liquid refrigerant from entering the cylinders. While worn bearings, insufficient lubrication, and excessive pressure can also cause various types of mechanical noises or failures, they do not specifically lead to the unique situation of knocking that is associated with liquid slugging.

**3. What is the most likely cause of increased superheat temperature for refrigerating fluid entering a reciprocating compressor?**

- A. Refrigerant overcharge**
- B. Low ambient temperature**
- C. Scale particles lodged in the TEV valve**
- D. Dirty compressor filters**

Increased superheat temperature for refrigerating fluid entering a reciprocating compressor is most likely caused by scale particles lodged in the thermal expansion valve (TEV). When scale particles obstruct the TEV, they hinder the flow of refrigerant through the valve. This restriction can cause an insufficient amount of refrigerant to enter the evaporator, leading to a higher superheat condition. Superheat represents the amount of heat added to the refrigerant vapor after it has fully evaporated. If the flow is diminished due to the obstruction, the refrigerant will not absorb enough heat in the evaporator, causing the vapor that enters the compressor to be hotter than normal because it has spent more time absorbing heat than it typically would. The other factors such as refrigerant overcharge or low ambient temperature do not directly cause an increase in superheat. Overcharging may actually lead to lower superheat temperatures due to excessive refrigerant being present, while low ambient temperatures can influence system performance in different ways, but would not normally lead to an increase in superheat at the compressor inlet. Similarly, dirty compressor filters may affect the overall system efficiency and pressure drops, but are less directly related to the superheat at the compressor inlet compared to the blockage in the TEV.

**4. If 10 BTUs are transferred to 10 lb of water, what is the closest increase in temperature?**

- A. 0.5° Fahrenheit**
- B. 1° Fahrenheit**
- C. 2° Fahrenheit**
- D. 3° Fahrenheit**

To determine the increase in temperature when 10 BTUs are transferred to 10 pounds of water, it is essential to use the specific heat capacity of water, which is a fundamental property. The specific heat capacity of water is approximately 1 BTU/lb°F. This means that it takes 1 BTU of energy to raise the temperature of 1 pound of water by 1°F. Given that you have 10 pounds of water and are adding a total of 10 BTUs, you can calculate the temperature increase as follows: 1. If 1 BTU raises 1 pound of water by 1°F, then 10 BTUs will raise 10 pounds of water by: - Temperature Increase = (BTUs Transferred) / (Weight of Water) - Temperature Increase = 10 BTUs / 10 lbs = 1°F This calculation shows that the closest increase in temperature, based on the specific heat capacity of water and the amount of energy transferred, is indeed 1°F. Therefore, the answer aligns perfectly with the fundamentals of thermodynamics involving heat transfer and water's specific heat.

**5. Why might a refrigeration system need to have an equalizer line?**

- A. To prevent subcooling**
- B. To balance pressures across components**
- C. To reduce energy consumption**
- D. To improve refrigerant flow**

A refrigeration system utilizes an equalizer line to balance pressures across components, particularly in systems that involve multiple evaporators or those that utilize a capillary tube or expansion valve. The equalizer line connects the outlet of the evaporator to the input of the expansion device. This connection allows for equalization of the pressure, ensuring that the pressure drop across the expansion device is consistent. By balancing pressures, the system can operate more efficiently, enabling optimal refrigerant flow and proper heat exchange in each evaporator. When the pressures are equalized, it helps prevent issues such as under or overfeeding of the refrigerant to the evaporator, enhancing the overall performance and stability of the refrigeration system. Other options do not accurately reflect the primary function of the equalizer line. For instance, preventing subcooling is related to managing refrigerant temperatures rather than pressure balance. While energy consumption might be influenced indirectly through improved efficiency, it is not the direct role of the equalizer line. Similarly, reducing or improving refrigerant flow is a secondary benefit of maintaining balanced pressures rather than the primary purpose.

**6. What component is necessary when a system does not have unloaders?**

- A. Expansion valve**
- B. Solenoid on the liquid line**
- C. Bypass valve**
- D. Compressor crankshaft**

In systems that do not utilize unloaders, a solenoid on the liquid line is essential for controlling the flow of refrigerant. The solenoid plays a critical role in regulating refrigerant to the evaporator under certain conditions, especially when the system needs to be shut down or when specific adjustments in the system's operation are required. By controlling the flow of refrigerant, the solenoid helps maintain efficient operation during periods of varying load demands. When the solenoid is energized, it allows the refrigerant to flow, enabling the system to operate normally. Conversely, when the house cooling demands decrease, the solenoid can close to prevent refrigerant from entering the evaporator, thereby reducing cooling capacity and preventing the compressor from working against a low load. In contrast, components like an expansion valve or bypass valve serve different functions within the refrigeration cycle, focusing primarily on managing refrigerant flow or pressure variations rather than acting as the primary control mechanism in the absence of unloaders. The compressor crankshaft, while crucial for the mechanical operation of the compressor, does not control refrigerant flow directly. Thus, the solenoid on the liquid line becomes a vital component to ensure proper system function when unloaders are not part of the design.

**7. What is the pressure of R22 at 41° Fahrenheit?**

- A. 50 PSIG**
- B. 60 PSIG**
- C. 70 PSIG**
- D. 80 PSIG**

To determine the pressure of R22 refrigerant at a specific temperature, you can refer to pressure-temperature charts that detail the relationship between the temperature of the refrigerant and its corresponding pressure. At 41° Fahrenheit, the saturated pressure of R22 is indeed approximately 70 PSIG. This is derived from the thermodynamic properties of R22, which is important to understand in refrigeration and air conditioning applications. Such charts are essential for HVAC technicians to ensure that systems operate within the designed parameters. The other options would represent pressures at different temperatures, which do not correspond to the saturated pressure of R22 at 41° Fahrenheit. Understanding these properties helps technicians effectively diagnose and repair HVAC systems, ensuring efficient operation and compliance with safety standards.

**8. What function does the automatic expansion valve serve in a refrigeration system?**

- A. It increases the compressor output**
- B. It maintains constant pressure on the evaporator**
- C. It controls the refrigerant flow rate**
- D. It decreases energy consumption**

The automatic expansion valve plays a vital role in a refrigeration system by regulating the flow of refrigerant into the evaporator coil. Its primary function is to ensure that the evaporator operates at a consistent pressure, regardless of varying cooling loads. By doing this, the valve reacts to fluctuations in pressure within the evaporator, automatically adjusting the flow of refrigerant to maintain the desired pressure level. This consistent pressure is essential for optimal heat exchange within the evaporator, allowing the refrigerant to absorb heat effectively from the surroundings before it moves onto the compressor. Without this function, the evaporator could become either underfilled or overfilled with refrigerant, leading to inefficient operation and potential system failure. Therefore, it is crucial for the automatic expansion valve to maintain a steady pressure, enabling the entire refrigeration cycle to function efficiently. In summary, the correct answer highlights the valve's critical role in maintaining the evaporator's pressure, thereby ensuring effective refrigeration performance.

**9. How would capacity control be achieved in a reciprocating compressor?**

**A. Closing the suction valves**

**B. Opening the suction valves with some form of control**

**C. Using a variable frequency drive**

**D. Increasing the discharge pressure**

Capacity control in a reciprocating compressor is effectively achieved by managing the intake of gas into the compressor. Opening the suction valves with some form of control allows for adjusting the amount of gas that enters the compressor. This control can take various forms, such as variable unloading of cylinders or using butterfly valves to modulate the flow. By regulating the amount of gas entering, the compressor can operate at different capacity levels to match the demand, enhancing efficiency and performance. This method is essential as it provides a flexible approach to adjusting capacity based on operational requirements, which is particularly crucial in applications where demand fluctuates. Unlike simply closing the suction valves, which would lead to reduced gas flow and potential stalling, precise control through the opening of suction valves ensures an optimal load on the compressor while maintaining stability and efficiency in operation.

**10. What is the primary purpose of the gland steam in mechanical systems?**

**A. To create a vacuum and enhance efficiency**

**B. To create positive pressure and eliminate leakage**

**C. To cool the shaft**

**D. To lubricate the bearings**

The primary purpose of gland steam in mechanical systems is to create positive pressure and eliminate leakage. Gland steam is introduced into the sealing area of rotating equipment, such as pumps and turbines, to ensure that the pressure within the gland seal exceeds the pressure of the fluid being contained. This positive pressure helps to prevent leakage of the process fluid, which is critical for maintaining system efficiency, safety, and environmental compliance. By creating a barrier, gland steam minimizes the loss of working fluid and helps preserve the integrity of the system. In addition to preserving fluid integrity, the positive pressure created by gland steam can also help in maintaining the operational reliability of machinery by reducing the risks associated with product contamination and potential damage resulting from leaks. While cooling and lubrication functions are important for machinery operation, those are typically addressed by other systems and methods rather than through the use of gland steam.



## 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](mailto:hello@examzify.com).**

**Or visit your dedicated course page for more study tools and resources:**

**<https://rmorealengineer.examzify.com>**

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