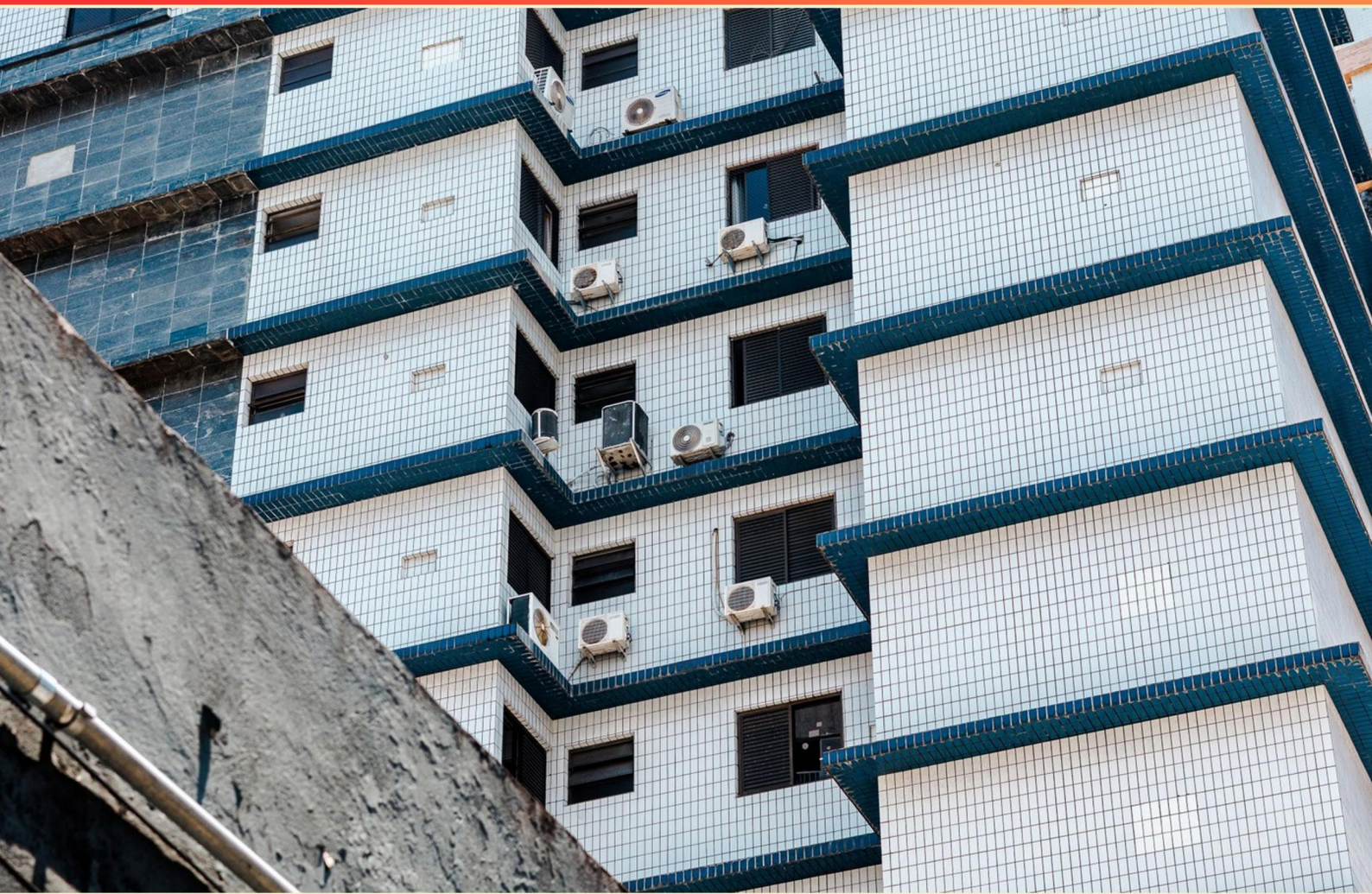


ARIZONA R-39/CR-39 RESIDENTIAL AND COMMERCIAL AIR CONDITIONING AND REFRIGERATION HVAC CONTRACTOR PRACTICE EXAM (SAMPLE) STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

**VISIT US ONLINE FOR
THE FULL VERSION STUDY GUIDE**

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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. Oil fired water heaters are tested under which standard?**
 - A. UL 2158
 - B. UL 732
 - C. UL 896
 - D. UL 858
- 2. What is the required distance for flammable exhaust from mechanical intakes?**
 - A. 5 feet
 - B. 10 feet
 - C. 15 feet
 - D. 20 feet
- 3. When the heat exchanger is part of a central system, where should shut-off valves be installed?**
 - A. On the inlet of the heat exchanger
 - B. On the building supply and return
 - C. Only on the return line
 - D. Near the boiler
- 4. What factor is crucial for assessing the efficiency of an air conditioning system?**
 - A. Copper wiring quality
 - B. Velocity of the airflow
 - C. Type of refrigerant used
 - D. System installation angle
- 5. In what condition must mechanical ventilation systems for parking garages operate?**
 - A. Always clear of obstructions
 - B. Only when occupied
 - C. Intermittently as needed
 - D. Continuously

- 6. Which of the following components is identified as part of the secondary system in HVAC?**
- A. Compressor
 - B. Air Ducts
 - C. Expansion Valve
 - D. Thermostat
- 7. How many ounces of copper per foot of sheeting does a Type 2 hood require?**
- A. 18 ounces
 - B. 24 ounces
 - C. 30 ounces
 - D. 36 ounces
- 8. What is typically eliminated by maintaining proper airflow in HVAC systems?**
- A. Moisture buildup
 - B. Condensation
 - C. Dust accumulation
 - D. All of the above
- 9. How many BTU's are required to produce 1 ton of ice in a day?**
- A. 288,000 BTU's
 - B. 12,000 BTU's
 - C. 144,000 BTU's
 - D. 24,000 BTU's
- 10. How can measuring air flow at a register help with a ventilation system?**
- A. It determines the age of the ducts
 - B. It indicates the condition of the filters
 - C. It helps find disconnected ducts
 - D. It assesses the energy consumption

Answers

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

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Explanations

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1. Oil fired water heaters are tested under which standard?

- A. UL 2158
- B. UL 732
- C. UL 896
- D. UL 858**

Oil-fired water heaters are tested under the standard UL 858. This standard specifically addresses the safety and performance requirements for appliances that utilize oil as a fuel source for heating water. It ensures that these water heaters operate safely and efficiently, preventing hazards associated with oil combustion. In contrast, the other standards listed focus on different types of appliances or applications. For example, UL 2158 pertains to the safety of vented and unvented electric clothes dryers, while UL 732 deals with the performance and safety criteria of electric water heaters. UL 896 targets gas-fired water heaters, so it is also not applicable to oil-fired models. Understanding which standard applies to oil-fired water heaters is crucial for contractors and technicians to ensure compliance with safety regulations and to effectively service and install these systems.

2. What is the required distance for flammable exhaust from mechanical intakes?

- A. 5 feet
- B. 10 feet**
- C. 15 feet
- D. 20 feet

The required distance for flammable exhaust from mechanical intakes being set at 10 feet is based on safety standards designed to prevent the re-ingestion of potentially hazardous fumes and gases into a building's air supply. This distance helps to ensure that exhaust from combustion processes, which may contain harmful pollutants, does not re-enter the HVAC system through intakes, which could compromise air quality and create dangerous conditions. Setting this distance at 10 feet aligns with guidelines from regulatory bodies such as the International Mechanical Code and the National Fire Protection Association, emphasizing the importance of separating exhaust sources from air intakes. This precaution reduces the risk of fire hazards, particularly in commercial and residential settings where mechanical systems are in close proximity to areas that may generate flammable vapors or gases. In contrast, shorter distances such as 5 feet may not provide adequate protection against these hazards, while larger distances like 15 feet or 20 feet may be overly cautious for typical residential and commercial configurations, leading to inefficient use of space. Therefore, the 10-foot requirement serves as a balanced approach that promotes safety without imposing unnecessary restrictions on system design.

3. When the heat exchanger is part of a central system, where should shut-off valves be installed?

- A. On the inlet of the heat exchanger
- B. On the building supply and return**
- C. Only on the return line
- D. Near the boiler

The installation of shut-off valves on the building supply and return is crucial for effective maintenance and operation of the heat exchanger in a central HVAC system. Shut-off valves allow for easy isolation of the heat exchanger from the system, facilitating maintenance, repairs, or replacement without affecting the entire heating or cooling circuit. By placing these valves on both the supply and return lines, a technician can completely isolate the heat exchanger. This ensures that any work performed does not disrupt the service to the rest of the building. It also minimizes the risk of fluid leaks or pressure issues while the heat exchanger is being serviced. This approach enhances the overall reliability and efficiency of the HVAC system, as it allows for timely interventions while ensuring the system can continue operating smoothly when maintenance is not being performed.

4. What factor is crucial for assessing the efficiency of an air conditioning system?

- A. Copper wiring quality
- B. Velocity of the airflow**
- C. Type of refrigerant used
- D. System installation angle

The velocity of the airflow is a critical factor for assessing the efficiency of an air conditioning system because it directly impacts how effectively the system can distribute conditioned air throughout the space. Proper airflow velocity ensures that air is moved efficiently through the ducts and into the living areas, maintaining a consistent temperature and comfort level. If the airflow is too low, the system may struggle to cool or heat the space adequately, leading to increased energy consumption and reduced overall efficiency. Conversely, if the airflow is too high, it can create noise and potentially cause discomfort. In addition to the velocity of airflow, other components like the size and design of the ductwork, air filter condition, and equipment settings also play roles. However, among the options presented, airflow velocity stands out as a primary indicator of the system's performance and effectiveness. Understanding this relationship helps contractors optimize systems for better efficiency and comfort.

5. In what condition must mechanical ventilation systems for parking garages operate?

A. Always clear of obstructions

B. Only when occupied

C. Intermittently as needed

D. Continuously

Mechanical ventilation systems in parking garages must operate "always clear of obstructions" to ensure safe and effective airflow. It is critical that these systems remain unobstructed to facilitate the removal of vehicle emissions, prevent the buildup of harmful gases, and maintain a healthy environment for occupants and emergency responders. Obstructions can hinder airflow, leading to inadequate ventilation, which drastically increases the risk of hazardous conditions. While other conditions, such as operating only when occupied, intermittently as needed, or continuously, may seem practical in varying contexts, they do not address the foundational safety requirement of ensuring unobstructed airflow. Keeping ventilation systems free from obstruction is essential for maintaining air quality and ventilation efficiency in a space that can experience high concentrations of pollutants from vehicle exhaust. Maintaining this clarity is fundamental to the design and operation of such systems in parking garages.

6. Which of the following components is identified as part of the secondary system in HVAC?

A. Compressor

B. Air Ducts

C. Expansion Valve

D. Thermostat

In HVAC systems, the secondary system refers to the components that distribute or utilize the conditioned air or refrigerant after it has been processed by the primary components, such as the compressor and evaporation coil. Air ducts are critical in this context as they are responsible for distributing air throughout the building after it has been cooled or heated by the primary system. Air ducts function as the delivery mechanisms for warmed or cooled air generated in the HVAC system, ensuring that air reaches various rooms or areas. They are not involved in the initial conditioning process but play a significant role in the overall efficiency and effectiveness of the HVAC system by maintaining airflow and ensuring heat transfer occurs in different spaces. Conversely, other components like the compressor and expansion valve are part of the primary system, involved directly in refrigerant circulation and thermal management. The thermostat serves as a control mechanism for the HVAC system, regulating the temperature but does not directly participate in the conditioning or distribution process itself.

7. How many ounces of copper per foot of sheeting does a Type 2 hood require?

- A. 18 ounces
- B. 24 ounces**
- C. 30 ounces
- D. 36 ounces

The requirement for a Type 2 hood to have 24 ounces of copper per foot of sheeting is based on industry standards for materials used in the construction of these hoods. Type 2 hoods are typically installed over equipment that produces heat and moisture, such as ovens or dishwashers, and therefore must be constructed from durable materials that can withstand these conditions. The thickness and weight of the copper provide sufficient resistance to corrosion and damage over time, which is essential in a commercial kitchen environment. Using 24 ounces of copper per foot ensures that the hood not only meets safety codes but also performs effectively in facilitating ventilation and dealing with the byproducts of cooking. In contrast, the other weights such as 18, 30, or 36 ounces are either under-specified or over-specified for the typical needs of a Type 2 hood, emphasizing the importance of adhering to the correct specifications that align with recognized standards in the HVAC industry.

8. What is typically eliminated by maintaining proper airflow in HVAC systems?

- A. Moisture buildup
- B. Condensation
- C. Dust accumulation
- D. All of the above**

Maintaining proper airflow in HVAC systems plays a crucial role in preventing the issues associated with inadequate circulation. Effective airflow helps regulate temperature and humidity levels within a space, which eliminates moisture buildup. When air moves freely, it reduces the likelihood of condensation forming on surfaces, particularly in areas where warm, moist air comes into contact with cooler surfaces. Additionally, proper airflow contributes to minimizing dust accumulation. Stagnant air tends to allow dust and particulates to settle, leading to poor indoor air quality. However, when the air circulates adequately, these particles are kept in suspension and are more effectively captured by air filters. By ensuring that an HVAC system operates with optimal airflow, all these problems—moisture buildup, condensation, and dust—are addressed comprehensively. Thus, maintaining proper airflow is integral to achieving a comfortable, clean, and healthy indoor environment, resulting in the option that encompasses all these benefits being the most accurate choice.

9. How many BTU's are required to produce 1 ton of ice in a day?

- A. 288,000 BTU's**
- B. 12,000 BTU's
- C. 144,000 BTU's
- D. 24,000 BTU's

To understand why the required amount of BTUs to produce 1 ton of ice in a day is 288,000 BTUs, it's important to know the definition and conversion factors related to ice production. One ton of ice is equivalent to 2,000 pounds. The process of converting water at 32 degrees Fahrenheit into ice at the same temperature requires a specific amount of energy, which is known as the latent heat of fusion. The latent heat of fusion for water is approximately 144 BTUs per pound. To find the total amount of energy required to produce 1 ton of ice, you would calculate as follows: 1. Multiply the weight of the ice (2,000 pounds) by the latent heat of fusion (144 BTUs per pound): $(2,000 \text{ lbs}) \times 144 \text{ BTU/lb} = 288,000 \text{ BTUs}$ This calculation shows that producing 1 ton of ice necessitates 288,000 BTUs. This understanding is fundamental in HVAC applications, particularly in designing systems for cooling and refrigeration, as it highlights the substantial amount of energy required for ice production in various cooling processes.

10. How can measuring air flow at a register help with a ventilation system?

- A. It determines the age of the ducts
- B. It indicates the condition of the filters
- C. It helps find disconnected ducts**
- D. It assesses the energy consumption

Measuring air flow at a register is a critical diagnostic tool in assessing the performance of a ventilation system. When air flow is measured, it provides valuable information about whether the system is delivering the intended volume of air to various spaces. If the airflow is significantly lower than expected, it may indicate issues such as disconnected ducts, which can allow air to escape before it reaches the intended areas, significantly affecting system efficiency and indoor air quality. Identifying disconnected ducts is essential for ensuring that the ventilation system operates effectively. Disruption in airflow can lead to uneven heating or cooling in different parts of a building, increased energy consumption, and decreased comfort levels. By measuring the air flow at the register, technicians can pinpoint locations where ductwork may have become detached, allowing for targeted repairs that restore optimal system performance. This understanding underscores the importance of proper duct integrity in the overall functioning of HVAC systems. Addressing duct disconnections not only enhances airflow but can also lead to better energy efficiency and improved comfort within the living or working space.

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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