

RESIDENTIAL HVAC INSTALLATION PRACTICE EXAM (SAMPLE)

STUDY GUIDE



Prepare with structure. Pass with confidence



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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 would be the impact on cfm if the ACH (Air Changes per Hour) value is increased in an HVAC system?**
 - A. Decrease in air volume
 - B. Increase in air volume
 - C. No impact on air volume
 - D. Improved air quality
- 2. What is the purpose of the U-value when describing the thermal conductivity of a material?**
 - A. To determine the material's color
 - B. To measure the material's hardness
 - C. To quantify the material's ability to conduct heat
 - D. To assess the material's flexibility
- 3. Is it true that very little heat is lost through the roof?**
 - A. True
 - B. False
- 4. Which component is responsible for heating the air in a furnace?**
 - A. The blower motor
 - B. The thermostat
 - C. The heat exchanger
 - D. The expansion valve
- 5. In HVAC terminology, what does ACH stand for in the formula for cfm calculation?**
 - A. Airflow Cooling Hierarchy
 - B. Airflow Correction Hours
 - C. Air Changes per Hour
 - D. Airflow Control Handle
- 6. Which symptom may indicate a blocked air filter in an HVAC system?**
 - A. Increased humidity
 - B. Decreased airflow and system performance
 - C. Unusual noises from the unit
 - D. Higher energy costs

- 7. What is the guideline for calculating heat gain from appliances in a house with a refrigerator and a vented cooking surface?**
- A. 200 Btu/h
 - B. 400 Btu/h
 - C. 600 Btu/h
 - D. 800 Btu/h
- 8. What is the main drawback of the extended plenum system?**
- A. Higher energy consumption
 - B. Lower air velocity at the last takeoffs on the extended plenum
 - C. Increased noise levels
 - D. Reduced airflow pressure
- 9. When is the best time to perform leak checking on a refrigeration system?**
- A. During peak operation
 - B. After adding refrigerant
 - C. Standing with dry nitrogen pressure of 150 psig in the system
 - D. During defrost cycle
- 10. When it comes to sizing air conditioning and heating equipment, what statement is true?**
- A. Bigger equipment is always better for efficient cooling and heating
 - B. Smaller equipment is more energy-efficient
 - C. Oversized equipment cools the space faster
 - D. Proper sizing is crucial for optimal performance

Answers

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

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Explanations

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1. What would be the impact on cfm if the ACH (Air Changes per Hour) value is increased in an HVAC system?

- A. Decrease in air volume
- B. Increase in air volume**
- C. No impact on air volume
- D. Improved air quality

Increasing the ACH (Air Changes per Hour) value in an HVAC system would lead to an increase in air volume. This is because a higher ACH value means that the air in the space is being replaced more frequently, resulting in a greater volume of air being moved through the system. This increase in air volume helps improve ventilation and air quality by reducing the concentration of contaminants in the indoor air. Therefore, the correct answer is B. The other options are not correct because increasing the ACH value would not result in a decrease in air volume (option A), have no impact on air volume (option C), or directly lead to improved air quality (option D).

2. What is the purpose of the U-value when describing the thermal conductivity of a material?

- A. To determine the material's color
- B. To measure the material's hardness
- C. To quantify the material's ability to conduct heat**
- D. To assess the material's flexibility

The U-value is used to quantify the thermal conductivity of a material, which measures its ability to conduct heat. It is not used to determine the material's color, hardness, or flexibility. The U-value is an important factor in determining the energy efficiency of buildings and choosing appropriate materials for insulation. Therefore, it is important to understand its purpose and use.

3. Is it true that very little heat is lost through the roof?

- A. True
- B. False**

Highly reflective roofs can reduce the amount of heat absorbed by the building, thus potentially reducing energy usage. Additionally, well-insulated roofs can prevent heat from escaping, making the building more energy efficient. Therefore, it is not true that very little heat is lost through the roof. Option A is incorrect because it suggests that heat is not lost through the roof at all, which is not accurate. Heat can still be lost through roofs, just at a lower rate if the roof is properly insulated and reflective.

4. Which component is responsible for heating the air in a furnace?

- A. The blower motor
- B. The thermostat
- C. The heat exchanger**
- D. The expansion valve

The heat exchanger is the component in a furnace that is specifically designed to heat the air. When the furnace is activated, the burner ignites, creating heat. This heat is transferred to the heat exchanger, which is usually a series of metal pipes or tubes that absorbs the warmth. As air from the home is drawn through the heat exchanger, it picks up this heat and is then distributed throughout the living spaces by the blower motor. The blower motor, while crucial for moving the heated air throughout the house, does not itself generate heat; it only facilitates the circulation of air. The thermostat regulates the overall functioning of the heating system by sensing the home's temperature and signaling the furnace to turn on or off as needed, but it does not directly heat the air. The expansion valve is a component typically found in refrigeration systems, such as air conditioners, and does not pertain to the heating function of a furnace. In summary, the heat exchanger is the critical component that actually warms the air before it is circulated, making it the correct answer in this context.

5. In HVAC terminology, what does ACH stand for in the formula for cfm calculation?

- A. Airflow Cooling Hierarchy
- B. Airflow Correction Hours
- C. Air Changes per Hour**
- D. Airflow Control Handle

In HVAC terminology, ACH stands for "Air Changes per Hour" in the formula for cfm calculation. The term refers to the number of times within one hour that the entire volume of air within a space is replaced with fresh air. This is a critical factor in maintaining indoor air quality and ensuring proper ventilation in residential HVAC systems. It is important for HVAC professionals to understand and calculate ACH accurately to ensure proper airflow and ventilation in residential spaces.

6. Which symptom may indicate a blocked air filter in an HVAC system?

- A. Increased humidity
- B. Decreased airflow and system performance**
- C. Unusual noises from the unit
- D. Higher energy costs

A blocked air filter in an HVAC system primarily affects the airflow and overall performance of the unit. When the filter is obstructed with dirt and debris, it restricts the amount of air that can pass through the system. This leads to a noticeable decrease in airflow, which can cause the HVAC system to work harder to maintain the desired temperature. Consequently, the system's performance diminishes as it struggles against the increased resistance. Decreased airflow can also lead to issues such as uneven heating or cooling throughout the space, as well as potential strain on the components of the system, which may shorten its lifespan. Regularly checking and replacing the air filter is crucial to ensure optimal system performance and efficiency. Although increased humidity, unusual noises, and higher energy costs can be symptoms of HVAC problems, they are not directly indicative of a blocked air filter as clearly as decreased airflow is. Increased humidity could be caused by other factors, such as issues with the system's dehumidification capabilities. Unusual noises may suggest mechanical problems or loose components rather than an air filter blockage. Higher energy costs can result from various inefficiencies in the system, not just an obstructed filter. Thus, decreased airflow and system performance is the most definitive symptom of a blocked air filter.

7. What is the guideline for calculating heat gain from appliances in a house with a refrigerator and a vented cooking surface?

- A. 200 Btu/h
- B. 400 Btu/h
- C. 600 Btu/h**
- D. 800 Btu/h

The guideline for calculating heat gain from appliances in a house with a refrigerator and a vented cooking surface is 600 Btu/h. This is because a refrigerator typically adds around 200 Btu/h of heat to a space, while a vented cooking surface adds around 400 Btu/h. Therefore, the total heat gain from these appliances would be 600 Btu/h. Options A, B, and D are incorrect because they do not take into account both the refrigerator and the vented cooking surface, or they overestimate the amount of heat gain from just one of the appliances.

8. What is the main drawback of the extended plenum system?

- A. Higher energy consumption
- B. Lower air velocity at the last takeoffs on the extended plenum**
- C. Increased noise levels
- D. Reduced airflow pressure

The main drawback of the extended plenum system is that it often results in lower air velocity at the last takeoffs on the extended plenum. This occurs because as the air travels down the extended plenum, it loses some of its velocity before reaching the last takeoff points. This can lead to reduced efficiency and potentially uneven heating or cooling distribution in the building. Options A, C, and D are not the main drawbacks of the extended plenum system and do not directly relate to the specific issue of lower air velocity at the last takeoffs.

9. When is the best time to perform leak checking on a refrigeration system?

- A. During peak operation
- B. After adding refrigerant
- C. Standing with dry nitrogen pressure of 150 psig in the system**
- D. During defrost cycle

The best time to perform leak checking on a refrigeration system is when it is standing with dry nitrogen pressure of 150 psig in the system. This pressure test allows for the detection of any leaks in the system by pressurizing it with dry nitrogen, making it easier to pinpoint and repair any leaks before proceeding with further steps in the installation process. Option A, performing leak checking during peak operation, would not be ideal as the system is actively running, which could make it harder to detect leaks due to the system's working conditions. Option B, conducting leak checking after adding refrigerant, may not be effective as there may already be refrigerant in the system, which could interfere with the leak detection process. Option D, performing leak checking during the defrost cycle, would not be suitable as the system is in a specific operating mode intended for defrosting, which may not be optimal for detecting leaks in the system. Therefore, option C, performing leak checking when the system is standing with dry nitrogen pressure of 150 psig, is the best choice as it provides a controlled environment for effective leak detection in the refrigeration system.

10. When it comes to sizing air conditioning and heating equipment, what statement is true?

- A. Bigger equipment is always better for efficient cooling and heating
- B. Smaller equipment is more energy-efficient
- C. Oversized equipment cools the space faster**
- D. Proper sizing is crucial for optimal performance

Oversized equipment cools the space faster because it can deliver more cold air into the space. However, this may lead to short cycling, where the system turns on and off frequently, resulting in inefficient operation and uneven temperatures. Proper sizing is crucial for optimal performance to ensure that the system runs efficiently, maintains consistent comfort levels, and operates within its intended design parameters.

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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:

<https://residentialhvac.examzify.com>

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

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