

AIR CONDITIONING REPAIR CERTIFICATION (ETI) 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. What heat types are removed from refrigerant via the condenser?**
 - A. Sensible heat only
 - B. Latent heat only
 - C. Both sensible and latent heat
 - D. No heat is removed
- 2. What is a common symptom indicating a failing capacitor in an AC unit?**
 - A. The system produces strange noises
 - B. The compressor won't start
 - C. The air filter is clogged
 - D. The system blows warm air
- 3. What formula is used to calculate the air flow in an air conditioning system?**
 - A. $CFM = BTU / (1.08 \times T)$
 - B. $CFM = BTU \times (1.08 / T)$
 - C. $CFM = BTU / T$
 - D. $CFM = T / BTU$
- 4. Which heat transfer process occurs with no change in temperature?**
 - A. Sensible Heat
 - B. Latent Heat
 - C. Super Heat
 - D. Convection
- 5. A broken reed valve in a compressor is likely to cause which of the following?**
 - A. High suction and discharge pressures
 - B. Low suction and low discharge pressures
 - C. Intermittent compressor operation
 - D. High refrigerant return

- 6. What is the main function of the accumulator in an AC system?**
- A. To regulate temperature
 - B. To store excess refrigerant and protect the compressor
 - C. To remove moisture from the refrigerant
 - D. To enhance cooling efficiency
- 7. What is the recommended indoor relative humidity for residential systems during summer?**
- A. 30%
 - B. 50%
 - C. 40%
 - D. Above 60%
- 8. What effect do air or non-condensable gases have in a capillary tube system?**
- A. Low suction and discharge pressures
 - B. High suction and low discharge pressures
 - C. High suction and high discharge pressures
 - D. System freezing
- 9. Which component is responsible for regulating the flow of refrigerant in a cooling system?**
- A. Compressor
 - B. Expansion valve
 - C. Condenser
 - D. Blower fan
- 10. What is typically the first step in troubleshooting an air conditioning system?**
- A. Checking the refrigerant levels
 - B. Inspecting the thermostat settings
 - C. Observing energy bills
 - D. Cleaning the air ducts

Answers

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

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Explanations

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1. What heat types are removed from refrigerant via the condenser?

- A. Sensible heat only
- B. Latent heat only
- C. Both sensible and latent heat**
- D. No heat is removed

The correct response is that both sensible and latent heat are removed from the refrigerant in the condenser. When refrigerant passes through the condenser, it undergoes a phase change from a gas to a liquid. During this process, both types of heat are involved. Sensible heat refers to the heat energy that causes a change in temperature of the refrigerant without a change in its phase. As the refrigerant releases heat to the surrounding environment, it cools down and transitions from a gas to a liquid. Latent heat, on the other hand, is the heat energy that is absorbed or released when a substance changes its state without changing its temperature. In the case of the condenser, the refrigerant releases latent heat when it condenses from a vapor to a liquid, essentially letting go of the heat energy stored in the vapor phase. By efficiently removing both sensible and latent heat, the condenser facilitates the refrigerant's transition into the liquid phase, ensuring effective heat exchange and system performance.

2. What is a common symptom indicating a failing capacitor in an AC unit?

- A. The system produces strange noises
- B. The compressor won't start**
- C. The air filter is clogged
- D. The system blows warm air

A common symptom indicating a failing capacitor in an AC unit is that the compressor won't start. The capacitor is critical for providing the necessary electrical boost to start the compressor, which is the main component responsible for circulating refrigerant throughout the system. If the capacitor is failing or has failed, it may not be able to generate the required starting torque needed for the compressor to run, resulting in the compressor being unresponsive when the system is activated. While strange noises could indicate various issues within the unit, they do not specifically signal capacitor failure. Similarly, a clogged air filter can impact system efficiency but does not directly relate to the functionality of the capacitor. Lastly, if the system blows warm air, it could suggest numerous issues including inadequate refrigerant levels or problems with the compressor itself, rather than pointing to a capacitor issue specifically. Thus, the inability of the compressor to start is a direct and clear indication of a capacitor problem.

3. What formula is used to calculate the air flow in an air conditioning system?

- A. $CFM = BTU / (1.08 \times T)$**
- B. $CFM = BTU \times (1.08 / T)$
- C. $CFM = BTU / T$
- D. $CFM = T / BTU$

The formula $CFM = BTU / (1.08 \times T)$ is essential for calculating the airflow in an air conditioning system. In this formula, CFM (Cubic Feet per Minute) represents the volume of air that an air conditioning system needs to deliver to effectively cool a space. The variable BTU stands for British Thermal Units, which is a measure of thermal energy. When analyzing an air conditioning system, it's important to understand how much BTU is needed to cool a given area. The 'T' in the formula refers to the temperature difference between the supply air and the return air. The factor of 1.08 in the equation accounts for the density of air and the specific heat of air, adjusting the calculations to provide a more accurate measurement of airflow needed to circulate enough cooled air to meet the BTU requirement for a specified temperature drop. Utilizing this formula allows technicians to ensure that an air conditioning system is adequately sized and operating efficiently, which is crucial for both performance and energy consumption. Understanding this calculation is integral to effective system design and troubleshooting in HVAC applications.

4. Which heat transfer process occurs with no change in temperature?

- A. Sensible Heat
- B. Latent Heat**
- C. Super Heat
- D. Convection

The process of latent heat transfer involves the absorption or release of heat without a change in temperature. This typically occurs during phase changes in a substance, such as when water evaporates to form steam or when steam condenses back to water. During these transitions, the energy is used to alter the state of the substance rather than to increase its temperature. In the case of water, for instance, while the temperature remains constant at 100 degrees Celsius during boiling (the phase change from liquid to gas), latent heat is required to convert the liquid into vapor. Similarly, when vapor condenses back into liquid at the same temperature, latent heat is released. This concept is essential in understanding various processes in air conditioning and heating systems, where phase changes play a critical role in how energy is managed. This distinction is what makes latent heat the correct answer to the question about heat transfer with no change in temperature, as opposed to the other options provided, which involve changes in temperature or specific types of heat transfer that are not related to phase changes.

5. A broken reed valve in a compressor is likely to cause which of the following?

- A. High suction and discharge pressures
- B. Low suction and low discharge pressures**
- C. Intermittent compressor operation
- D. High refrigerant return

A broken reed valve in a compressor typically results in low suction and low discharge pressures. The reed valve functions as a one-way valve, allowing refrigerant gas to flow in one direction (into the compressor) and preventing it from flowing back out when the compressor is not operating or during the return stroke. When the valve is damaged or broken, it can fail to seal properly, leading to a situation where refrigerant gas may leak back into the suction side of the compressor and not be adequately compressed. This condition reduces the effectiveness of the compressor, resulting in lower pressure readings on both the suction and discharge sides. Consequently, as the compressor struggles to operate efficiently due to the valve malfunction, the overall pressure in the system decreases, affecting the performance of the air conditioning system. Understanding the role of the reed valve helps in diagnosing issues related to compressor performance, as its integrity is crucial for maintaining the necessary pressure levels within the refrigeration cycle.

6. What is the main function of the accumulator in an AC system?

- A. To regulate temperature
- B. To store excess refrigerant and protect the compressor**
- C. To remove moisture from the refrigerant
- D. To enhance cooling efficiency

The principal role of the accumulator in an air conditioning system is to store excess refrigerant and safeguard the compressor. The accumulator is strategically located on the low-pressure side of the system, serving as a reservoir for liquid refrigerant before it enters the compressor. This function is crucial because if excess liquid refrigerant were to reach the compressor, it could cause damage due to hydraulic lock. By holding excess refrigerant, the accumulator ensures that only vapor enters the compressor, allowing for safe and efficient operation. Additionally, it plays a role in making sure that any liquid refrigerant that has not yet evaporated is captured and kept from damaging the compressor components. While the other options present functions that are relevant to the overall operation of an air conditioning system, they do not accurately reflect the specific duties of the accumulator. For example, regulating temperature is primarily managed by the thermostat and the overall system design, removing moisture is the job of the liquid line filter-drier, and enhancing cooling efficiency involves various components, including the evaporator and condenser.

7. What is the recommended indoor relative humidity for residential systems during summer?

- A. 30%
- B. 50%**
- C. 40%
- D. Above 60%

The recommended indoor relative humidity for residential systems during summer is typically around 50%. Maintaining humidity levels at this percentage helps to ensure comfort and also enhances the efficiency of air conditioning systems. High humidity can make the air feel warmer than it actually is, leading to discomfort, while low humidity can cause dry skin and irritation. At 50% relative humidity, the indoor environment can help mitigate issues such as mold growth and dust mites, which thrive in excessively humid conditions. Additionally, reaching this humidity level can assist in maximizing the cooling effectiveness of air conditioning units, allowing them to remove not only heat but also moisture from the air. This balance ultimately contributes to a more comfortable living space during warmer months.

8. What effect do air or non-condensable gases have in a capillary tube system?

- A. Low suction and discharge pressures
- B. High suction and low discharge pressures
- C. High suction and high discharge pressures**
- D. System freezing

In a capillary tube system, the presence of air or non-condensable gases can lead to high suction and high discharge pressures. This is because these gases do not condense within the refrigerant circuit, which disrupts the normal phase changes of the refrigerant and impairs the heat exchange process. When air or non-condensable gases enter the system, they essentially take up space in the evaporator and condenser. This results in an increase in pressure throughout the system since these gases are incompressible to the same extent as the refrigerant. Consequently, the suction line experiences elevated pressures due to the air or non-condensables not allowing the refrigerant to expand and absorb heat effectively. Simultaneously, higher discharge pressures occur in the condenser as the refrigerant struggles to release heat because the non-condensables prevent proper condensation, leading to an inefficient system operation. Overall, the introduction of air or non-condensable gases in a capillary tube system causes a significant rise in both suction and discharge pressures, affecting the overall efficiency and performance of the air conditioning system.

9. Which component is responsible for regulating the flow of refrigerant in a cooling system?

- A. Compressor
- B. Expansion valve**
- C. Condenser
- D. Blower fan

The expansion valve plays a crucial role in regulating the flow of refrigerant within a cooling system. It is positioned between the condenser and the evaporator, where its primary function is to control the amount of refrigerant that enters the evaporator. By adjusting the flow of refrigerant based on the cooling demand, the expansion valve ensures that the system operates efficiently. When the refrigerant passes through the expansion valve, it experiences a drop in pressure, which facilitates its transition from a high-pressure liquid to a low-pressure vapor. This process is essential for the refrigerant to absorb heat effectively from the indoor space as it travels through the evaporator, thereby allowing the cooling cycle to continue. The other components mentioned, such as the compressor, condenser, and blower fan, play complementary roles in the cooling cycle but do not specifically regulate the refrigerant flow. The compressor compresses the refrigerant, the condenser releases heat to the outside, and the blower fan circulates air within the indoor environment, but it is the expansion valve that directly controls how much refrigerant reaches the evaporator.

10. What is typically the first step in troubleshooting an air conditioning system?

- A. Checking the refrigerant levels
- B. Inspecting the thermostat settings**
- C. Observing energy bills
- D. Cleaning the air ducts

The first step in troubleshooting an air conditioning system often involves inspecting the thermostat settings because the thermostat controls the operation of the HVAC system. If the thermostat is not set correctly, the system may not respond as expected, leading to a variety of perceived issues, such as the AC not turning on or failing to reach the desired temperature. Ensuring that the thermostat is set to the appropriate mode (cool, heat, off) and that the temperature setting is correct can quickly determine if the issue lies with the thermostat or if further investigation is required. While checking refrigerant levels, observing energy bills, and cleaning air ducts are important aspects of maintenance and troubleshooting, they usually come after confirming that the thermostat is functioning properly. If the thermostat is improperly configured, the system will not operate, making it a logical starting point in any troubleshooting process.

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://airconditioningrepair-eti.examzify.com>

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

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