

InterNACHI Heating, Ventilation, and Air Conditioning (HVAC) 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. When extending a black steel pipe with copper pipe, what potential issue may arise at the junction?**
 - A. The circulator may not be able to overcome the pressure change at the junction**
 - B. The copper pipe will rust because of the galvanic reaction**
 - C. The copper pipe will wear through with the friction force of the water**
 - D. The steel pipe may rust at the connection due to galvanic reaction**

- 2. Is improper location for the vent termination a common problem with sidewall-vented mid-efficiency oil furnaces?**
 - A. True**
 - B. False**
 - C. Only during the winter months**
 - D. Only in commercial installations**

- 3. What happens when a heat exchanger fails in a boiler?**
 - A. It leaks**
 - B. It becomes too hot**
 - C. It generates extra pressure**
 - D. It stops working altogether**

- 4. Before ignition, oil must be what?**
 - A. Aerated**
 - B. Atomized**
 - C. Heated**
 - D. Vaporized**

- 5. What is likely causing a wavering flame at one burner in a gas furnace when the blower activates?**
 - A. Insufficient airflow across the heat exchanger**
 - B. Blower motor running too slow**
 - C. Faulty gas valve**
 - D. Heat exchanger has failed**

- 6. Which component in a heat pump system helps regulate the flow of refrigerant?**
- A. Compressor**
 - B. Expansion valve**
 - C. Condenser**
 - D. Evaporator**
- 7. Which component is responsible for exhausting products of combustion in a gas furnace?**
- A. Induced-draft fan**
 - B. Blower motor**
 - C. Thermostat**
 - D. Heat exchanger**
- 8. What role do inlet and exhaust fans play in an HRV?**
- A. They primarily heat the air**
 - B. They circulate air only**
 - C. They facilitate air exchange**
 - D. They filter contaminants**
- 9. An unprotected oil-storage tank is a concern in the context of a general home inspection.**
- A. True**
 - B. False**
- 10. What action should be taken if corroded vents are found during an inspection?**
- A. Replace them immediately**
 - B. Monitor them periodically**
 - C. Ignore them if they are minor**
 - D. Clean them with chemicals**

Answers

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

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Explanations

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1. When extending a black steel pipe with copper pipe, what potential issue may arise at the junction?
- A. The circulator may not be able to overcome the pressure change at the junction
 - B. The copper pipe will rust because of the galvanic reaction
 - C. The copper pipe will wear through with the friction force of the water
 - D. The steel pipe may rust at the connection due to galvanic reaction**

When extending a black steel pipe with copper pipe, a significant concern is the potential for galvanic corrosion, which occurs when two dissimilar metals are electrically connected in the presence of an electrolyte. In this scenario, the junction of the black steel (which is iron-based) and copper creates a galvanic couple. The black steel pipe is more susceptible to corrosion because, in such a couple, the more noble metal (copper) tends to remain relatively unharmed, while the less noble metal (black steel) can corrode at an accelerated rate. This means that the black steel pipe may start to rust at the junction with the copper pipe, compromising the integrity of the piping system over time. Therefore, it's crucial to address this issue by using appropriate fittings that can isolate the two metals or by applying protective coatings to prevent direct contact, thus mitigating the risk of galvanic corrosion. This understanding is vital for ensuring the longevity and reliability of the plumbing system.

2. Is improper location for the vent termination a common problem with sidewall-vented mid-efficiency oil furnaces?
- A. True**
 - B. False
 - C. Only during the winter months
 - D. Only in commercial installations

Improper location for the vent termination is indeed a common problem with sidewall-vented mid-efficiency oil furnaces. The design and installation of vent systems for these types of furnaces must meet specific codes and requirements to ensure that exhaust gases are safely expelled outside and do not re-enter the home. If the vent is terminated too close to windows, doors, or other openings, it can lead to dangerous situations where carbon monoxide and other harmful gases may be drawn back into the living space. Furthermore, the vent termination must also be placed away from areas where snow can accumulate or where the exhaust gases can be obstructed by landscaping or other structures. Failing to adhere to these guidelines can cause inefficiencies, improper combustion, and potentially hazardous conditions for the occupants. In contrast, the other options suggest either a lack of a consistent issue or restricting the problem to certain conditions or locations, which do not accurately reflect the ongoing concerns related to vent placements across various types of installations and conditions.

3. What happens when a heat exchanger fails in a boiler?

- A. It leaks**
- B. It becomes too hot**
- C. It generates extra pressure**
- D. It stops working altogether**

When a heat exchanger in a boiler fails, one of the primary issues that can arise is leaking. This occurs because the heat exchanger is designed to transfer heat from the combustion gases to the water in the boiler while keeping the two fluids separated. A failure in the heat exchanger can compromise this barrier, leading to a breach that allows water or steam to leak into the combustion chamber or vice versa. This leaking not only reduces the efficiency of the heating system but can also create safety hazards, such as the potential for steam burns or even water damage in other parts of the building. Additionally, leaking can lead to a loss of pressure in the heating system, requiring repair or replacement of the heat exchanger to restore proper function. Understanding this specific failure mode helps in diagnosing issues related to heating efficiency and safety within boiler systems.

4. Before ignition, oil must be what?

- A. Aerated**
- B. Atomized**
- C. Heated**
- D. Vaporized**

The correct choice is that oil must be atomized before ignition. Atomization refers to the process of breaking the oil into tiny particles or droplets. This transformation is necessary because, in combustion systems, the oil needs to mix thoroughly with air to facilitate efficient burning. When oil is atomized, it increases the surface area available for combustion, leading to a more complete and efficient ignition process. Heating oil may help improve its flow and reduce viscosity, but it does not ensure that the oil is in the ideal state for combustion. Similarly, while vaporization can occur in certain heating methods, atomization is the specific requirement for efficient ignition in typical oil-burning appliances. Aeration, which involves mixing air with the oil, does not achieve the same goal of creating a fine mist suitable for combustion. Therefore, atomization stands out as the crucial step needed to achieve optimal combustion efficiency.

5. What is likely causing a wavering flame at one burner in a gas furnace when the blower activates?

- A. Insufficient airflow across the heat exchanger**
- B. Blower motor running too slow**
- C. Faulty gas valve**
- D. Heat exchanger has failed**

A wavering flame at one burner in a gas furnace, especially when the blower activates, often indicates an issue with the heat exchange process or airflow dynamics. When the blower turns on, it increases the airflow through the system, which can affect how gas is delivered to the burners and how efficiently the combustion process occurs. A failed heat exchanger can create issues such as improper combustion conditions, leading to a wavering flame. The flame may become unstable due to fluctuations in temperature and pressure caused by the failure. In instances where the heat exchanger is compromised, it may not distribute heat effectively, thus impacting the stability of the flame. The other choices describe various conditions that could lead to heating inefficiencies or operational problems, but they would typically present with different symptoms. For example, insufficient airflow across the heat exchanger generally leads to overheating or shutdown, while a blower motor running too slow may cause inadequate air distribution, not directly causing a wavering flame. A faulty gas valve could disrupt the gas flow but wouldn't necessarily correlate directly with the blower activation affecting one burner. Thus, a failed heat exchanger is the most plausible explanation for the wavering flame phenomenon observed in this scenario.

6. Which component in a heat pump system helps regulate the flow of refrigerant?

- A. Compressor**
- B. Expansion valve**
- C. Condenser**
- D. Evaporator**

The expansion valve plays a crucial role in the heat pump system by regulating the flow of refrigerant as it transitions from the high-pressure side to the low-pressure side of the system. When refrigerant leaves the condenser, it is in a high-pressure, high-temperature state. The expansion valve reduces the pressure of the refrigerant as it flows into the evaporator, which allows it to expand and cool. This cooling enables the refrigerant to absorb heat from the surrounding environment, thus facilitating the heating or cooling process depending on the operation mode of the heat pump. This regulation is essential in ensuring the efficiency of the heat pump system, as it controls the quantity of refrigerant that can circulate through the evaporator and condenser, directly impacting the system's ability to effectively transfer heat. Proper functioning of the expansion valve is vital for optimal performance and energy efficiency in heat pump operations.

7. Which component is responsible for exhausting products of combustion in a gas furnace?

A. Induced-draft fan

B. Blower motor

C. Thermostat

D. Heat exchanger

The induced-draft fan is essential in a gas furnace for expelling products of combustion, such as carbon dioxide and water vapor, from the furnace to the outdoors. This fan operates by creating negative pressure, which helps to pull combustion gases through the heat exchanger and out of the venting system. It ensures that the combustion process operates efficiently and safely by preventing the backdraft of exhaust gases into the living space and maintaining proper airflow. In contrast, the blower motor's primary function is to circulate air throughout the home once it has been heated. The thermostat is responsible for regulating the temperature by signaling the furnace to operate or shut down based on the desired indoor temperature. The heat exchanger, while critical for transferring heat from the combustion gases to the air that circulates through the home, does not directly exhaust the combustion products. Therefore, the induced-draft fan is the correct answer as it is specifically designed for the task of venting these harmful gases.

8. What role do inlet and exhaust fans play in an HRV?

A. They primarily heat the air

B. They circulate air only

C. They facilitate air exchange

D. They filter contaminants

In the context of a Heat Recovery Ventilator (HRV), inlet and exhaust fans are essential components that facilitate air exchange between the inside and outside of a building. Their primary function is to enable the transfer of stale indoor air to the exterior while simultaneously bringing in fresh outdoor air. This process is crucial for maintaining indoor air quality and ensuring proper ventilation. The inlet fan draws in fresh air from outside, which is then passed through the HRV's heat exchange core. Simultaneously, the exhaust fan expels the stale indoor air. The unique design of the HRV allows for the heat from the outgoing air to transfer to the incoming air, thereby improving energy efficiency by reducing the heating or cooling load on HVAC systems. While there are other roles that HVAC components can serve, such as air filtration and circulation, the primary purpose of the fans in an HRV is to facilitate effective air exchange, ensuring a balance of fresh air intake and indoor air expulsion. This is why the correct answer highlights their crucial role in promoting air exchange within the system.

9. An unprotected oil-storage tank is a concern in the context of a general home inspection.

A. True

B. False

In the context of a general home inspection, an unprotected oil-storage tank is indeed a concern, which means the correct answer should be true. An unprotected oil-storage tank poses several risks, including potential leaks or spills that can lead to environmental contamination. This not only affects the surrounding soil and groundwater but can also pose safety hazards such as fire risks if the tank is located near ignition sources. Moreover, regulatory agencies often have strict guidelines regarding the installation and maintenance of such installations, meaning that a home with an unprotected oil-storage tank may be in violation of local codes or regulations. Home inspectors are trained to identify such risks and prioritize them in their assessments, making it essential for homeowners to have proper safeguards in place for oil storage to ensure safety and compliance with regulations.

10. What action should be taken if corroded vents are found during an inspection?

A. Replace them immediately

B. Monitor them periodically

C. Ignore them if they are minor

D. Clean them with chemicals

When corroded vents are discovered during an inspection, it is crucial to replace them immediately. Corrosion can significantly compromise the structural integrity of the ventilation system, leading to potential leaks, reduced efficiency, and safety hazards, such as exposure to harmful gases or reduced indoor air quality. By replacing corroded vents promptly, you ensure that the HVAC system operates effectively, maintaining proper airflow and preventing issues that may arise from degraded materials. This action is essential in preventing further damage and ensuring the safety and comfort of the occupants in a building. Regular inspections and timely replacements are key to maintaining a safe and efficient HVAC system. Other approaches, such as monitoring, ignoring minor corrosion, or attempting to clean with chemicals, don't adequately address the potential risks posed by corroded vents. Monitoring might neglect the immediate threat, short-term measures like cleaning are not guaranteed to restore integrity, and ignoring any signs of corrosion could lead to more severe, costly problems in the future.

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://internachihvac.examzify.com>

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