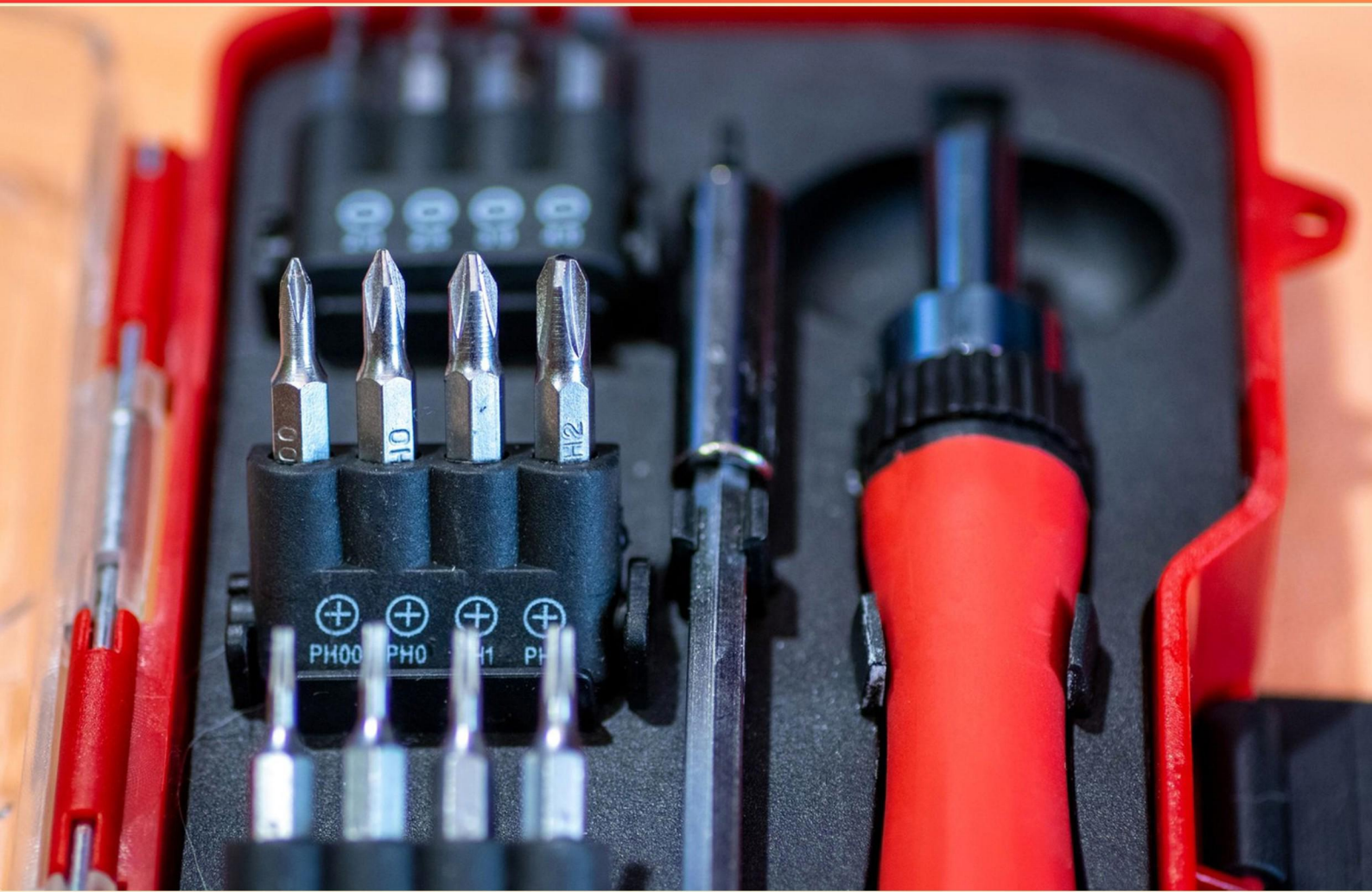


HVAC STAR PRACTICE EXAM (SAMPLE)

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 is an economizer in HVAC, and when is outdoor air during cooling beneficial?**
 - A. An economizer uses outdoor air to assist with cooling when conditions are favorable, reducing mechanical cooling energy use.
 - B. An economizer adds moisture to indoor air to improve comfort.
 - C. An economizer cools indoor air by refrigerant-only cycles.
 - D. An economizer controls the thermostat setpoint automatically.
- 2. When charging a refrigerant system, which port on the gauge manifold is typically used to connect the refrigerant cylinder?**
 - A. Center port of gauge manifold
 - B. Low-pressure port
 - C. High-pressure port
 - D. Vapor port
- 3. A lamp source has a voltage of 110 volts and a current of 0.9 amperes. What is the resistance of the lamp?**
 - A. 110 ohms
 - B. 98 ohms
 - C. 135 ohms
 - D. 122.2 ohms
- 4. Which statement about roller bearings is true?**
 - A. They are used with small motors under light loads
 - B. They are used only in belt-driven pumps
 - C. They require no lubrication
 - D. They are typically used with large motors operating under heavy loads
- 5. What is the common cause of back pressure in a condensate return line?**
 - A. Faulty steam trap
 - B. Blocked air vent
 - C. Over-sized condensate pump
 - D. Low steam pressure

6. Defrost termination is achieved by time, pressure, and temperature. Which of the following is NOT used as a termination method?
- A. Humidity
 - B. Time
 - C. Pressure
 - D. Temperature
7. In absorption systems, Lithium-Bromide is used as:
- A. A salt solution
 - B. An absorbent (attractant)
 - C. A solution that creates a pressure difference
 - D. A solvent
8. Which statement about economizers is true?
- A. An economizer increases mechanical cooling energy use.
 - B. An economizer uses outdoor air exclusively when outdoor conditions are poor.
 - C. Outdoor air is never used for cooling.
 - D. An economizer uses outdoor air to assist with cooling when conditions are favorable, reducing mechanical cooling energy use.
9. Which of the following combinations lists bearing types used in centrifugal pumps?
- A. magnetic bearings and air bearings
 - B. needle bearings and thrust bearings
 - C. sleeve bearings and ball bearings
 - D. roller bearings and spherical bearings
10. Which gas must never be used to pressurize or leak test a refrigeration system?
- A. Nitrogen
 - B. Oxygen
 - C. Helium
 - D. Argon

Answers

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

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Explanations

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1. What is an economizer in HVAC, and when is outdoor air during cooling beneficial?

- A. An economizer uses outdoor air to assist with cooling when conditions are favorable, reducing mechanical cooling energy use.**
- B. An economizer adds moisture to indoor air to improve comfort.
- C. An economizer cools indoor air by refrigerant-only cycles.
- D. An economizer controls the thermostat setpoint automatically.

An economizer is a control strategy that uses outdoor air to help cool the building when outdoor conditions are favorable, reducing the energy needed from mechanical cooling. It achieves this by opening dampers to bring in outside air to mix with return air, so the chill of the outdoor air can offset some of the cooling load instead of relying entirely on the refrigerant-and-fan cycle. Outdoor air during cooling is beneficial when the outside air is cooler (and not excessively humid) than the indoor air, and when ventilation requirements allow bringing in that air without compromising comfort or IAQ. In that case, using outside air lowers the indoor cooling load and saves energy. If outside conditions are hot or humid, the economizer should close or limit outside air to avoid making cooling worse. Humidification, refrigerant-only cooling, or automatic thermostat setpoint control are not what an economizer does, which is why those options don't fit.

2. When charging a refrigerant system, which port on the gauge manifold is typically used to connect the refrigerant cylinder?

- A. Center port of gauge manifold**
- B. Low-pressure port
- C. High-pressure port
- D. Vapor port

Charging is done through the center service port. This port is designed to accept the refrigerant cylinder via the charging hose and provides controlled access through its Schrader-type valve, allowing refrigerant to flow into the system when you open the cylinder valve. The low- and high-pressure ports are used to monitor pressures on the respective sides of the system, not for introducing refrigerant. The vapor port isn't the standard connection for charging. Using the center port keeps the flow controlled and safe, and aligns with how manifold gauges are designed to be used.

3. A lamp source has a voltage of 110 volts and a current of 0.9 amperes. What is the resistance of the lamp?

- A. 110 ohms
- B. 98 ohms
- C. 135 ohms
- D. 122.2 ohms**

Resistance is found by dividing the voltage across an element by the current through it. For this lamp, $R = V / I = 110 \text{ V} / 0.9 \text{ A} = 122.222... \text{ ohms}$, which rounds to 122.2 ohms. This is the correct value because it directly applies Ohm's law (resistance = voltage divided by current). Multiplying voltage by current would give power, not resistance, so that path wouldn't yield the right result.

4. Which statement about roller bearings is true?

- A. They are used with small motors under light loads
- B. They are used only in belt-driven pumps
- C. They require no lubrication
- D. They are typically used with large motors operating under heavy loads**

Roller bearings are built to carry heavy radial loads and provide stiffness because the rolling elements create line contact with the raceways, distributing load over a larger area than point contact (as seen with many other bearing types). This makes them well suited to large motors and equipment that must handle substantial forces and sustain reliability under demanding conditions. They still need proper lubrication to minimize wear and heat, so saying they require no lubrication isn't accurate. They aren't limited to belt-driven pumps; roller bearings are used in a wide range of applications, especially where heavy loads are involved. So the statement that they are typically used with large motors operating under heavy loads is the best fit.

5. What is the common cause of back pressure in a condensate return line?

- A. Faulty steam trap**
- B. Blocked air vent
- C. Over-sized condensate pump
- D. Low steam pressure

Back pressure in a condensate return line is most often caused by a malfunctioning steam trap. The trap is designed to remove condensate from the steam line while keeping steam from passing into the return line. If the trap sticks or fails to open properly, condensate cannot be discharged and starts to accumulate upstream. That buildup creates a higher hydrostatic head and resistance in the return line, pushing back on the system and raising pressure there. Blocking or venting issues in other components can cause related problems, but they don't create the sustained back pressure in the condensate return the way a faulty steam trap does. An over-sized condensate pump or low steam pressure changes flow or driving force, but they aren't the common cause of back pressure in the return line.

6. Defrost termination is achieved by time, pressure, and temperature. Which of the following is NOT used as a termination method?

- A. Humidity**
- B. Time
- C. Pressure
- D. Temperature

Defrost termination is driven by signals that reflect the actual state of the frost melt and the refrigerant circuit. Time provides a safe upper limit so the defrost cycle can't run indefinitely if conditions don't change. Temperature feedback is essential because when the outdoor coil reaches a set temperature, enough ice has melted for normal operation to resume. Pressure feedback helps confirm that the refrigerant flow and phase conditions are returning to normal, signaling that the cycle can end. Humidity doesn't directly indicate the ice condition on the coil or the refrigerant state, so it isn't used to terminate defrost. Relying on humidity would lead to inconsistent termination since outdoor moisture can vary without corresponding to the melt status.

7. In absorption systems, Lithium-Bromide is used as:

- A. A salt solution
- B. An absorbent (attractant)**
- C. A solution that creates a pressure difference
- D. A solvent

Absorption systems rely on an absorbent to take up the refrigerant vapor. In this setup, water is the refrigerant and Lithium Bromide serves as the absorbent. The LiBr solution has a strong affinity for water, so when water vapor from the evaporator reaches the absorber, it is absorbed into the LiBr solution. This absorption lowers the vapor pressure in the evaporator, allowing more water to evaporate and continue the cycle. The concentrated LiBr solution is then heated in the generator to release the water vapor, which goes to the condenser and back to the evaporator, while the LiBr is recycled to the absorber to keep absorbing. This is why Lithium Bromide is described as the absorbent (attractant). It's not the solvent in this cycle; water acts as the refrigerant and the LiBr-water solution provides the absorbing action.

8. Which statement about economizers is true?

- A. An economizer increases mechanical cooling energy use.
- B. An economizer uses outdoor air exclusively when outdoor conditions are poor.
- C. Outdoor air is never used for cooling.
- D. An economizer uses outdoor air to assist with cooling when conditions are favorable, reducing mechanical cooling energy use.**

An economizer is designed to use outdoor air to help cooling whenever outdoor conditions are favorable. When the outside air is cooler (and acceptable in humidity), the economizer opens dampers to bring in outdoor air to mix with return air, reducing the load on mechanical cooling and cutting energy use. The idea is to take advantage of mild weather to "free cool" the space, rather than relying solely on the chiller or compressor. The other statements don't fit because they imply increasing mechanical energy use, using outdoor air only when conditions are poor, or never using outdoor air, all of which contradict how economizers operate.

9. Which of the following combinations lists bearing types used in centrifugal pumps?

- A. magnetic bearings and air bearings
- B. needle bearings and thrust bearings
- C. sleeve bearings and ball bearings**
- D. roller bearings and spherical bearings

Radial support of the rotating shaft in a centrifugal pump comes from bearings chosen for how they handle load, speed, and lubrication. The most common pair of radial bearing types used are sleeve bearings (journal bearings) and ball bearings. Sleeve bearings rely on a lubricating film between the shaft and bearing surface, providing robust damping and durability for larger or slower pumps. Ball bearings use rolling elements to minimize friction and handle higher speeds with a compact, lightweight design. These two options cover the typical radial-bearing needs in standard centrifugal pump designs. Other bearing types like magnetic or air bearings appear only in specialized, high-end applications, and while needle, roller, or spherical bearings can be used in some configurations, they do not represent the standard radial-bearing pairing for most centrifugal pumps.

10. Which gas must never be used to pressurize or leak test a refrigeration system?

A. Nitrogen

B. Oxygen

C. Helium

D. Argon

Oxygen must never be used to pressurize or leak test a refrigeration system because it is an oxidizer that can greatly increase fire risk. If any flammable refrigerant components or oils are present, leaks can ignite or explode in the presence of oxygen. Instead, inert gases are used for safety. Nitrogen is the go-to option because it's inexpensive, inert, and readily available, making it ideal for pressurizing systems without triggering any chemical reactions. Helium is also used for leak testing due to its small molecular size, which makes it easy to detect leaks with standard detectors. Argon serves as another inert alternative in some cases. The common thread is avoiding oxygen to prevent combustion hazards during testing.

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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://hvacstar.examzify.com>

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

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