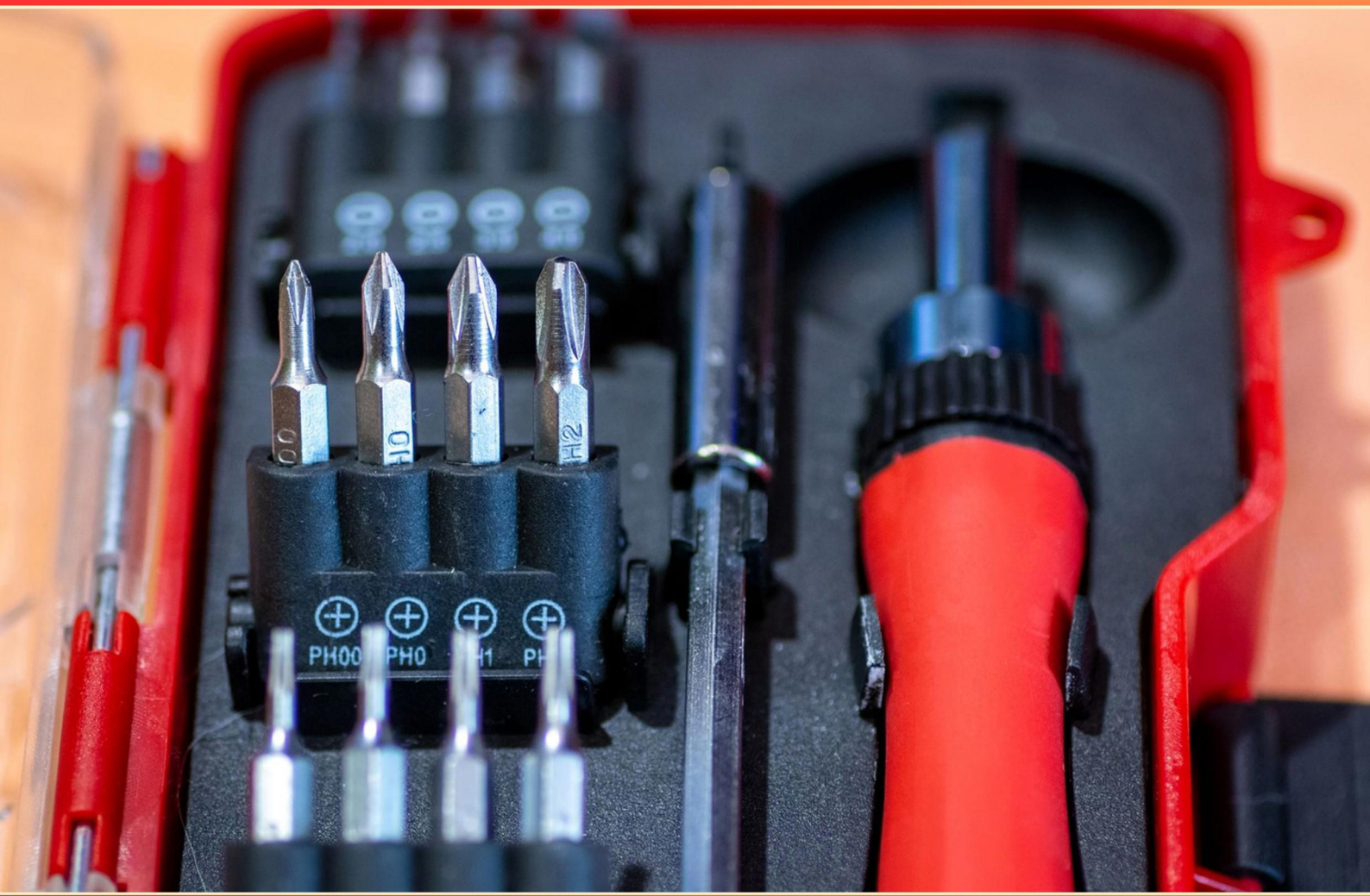
HVAC STAR PRACTICE EXAM (SAMPLE)

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.

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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!

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Questions

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1. Explain the difference between PSIG and psia.

A. PSIG is gauge pressure above ambient; psia is absolute pressure above a vacuum.

B. PSIG is absolute pressure; psia is gauge pressure.

C. PSIG is vacuum pressure; psia is ambient pressure.

D. PSIG and psia are the same.

2. 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

3. The approach temperature for the evaporator is

A. The difference between the entering-water temperature and the refrigerant boiling temperature

B. The difference between the leaving-water temperature and the condenser temperature

C. The difference between the evaporator air temperature and the water temperature

D. The difference in the refrigerant boiling temperature and the leaving-water temperature

4. In a pump system, a coupling serves which primary function?

A. To regulate flow between stages

B. To support radial loads

C. To seal the shafts against leakage

D. To connect the shafts of the motor and pump

5. The refrigerant line that carries liquid refrigerant from the condenser to the metering device is called the _____ line.

A. Liquid line

B. Suction line

C. Discharge line

D. Vapor line

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6. 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.

7. Defrost termination can be controlled by which of the following methods?

A. Time

B. Humidity

C. Flow rate

D. Sound level

8. Define CO detectors, their role, and typical placement in a home with gas appliances.

A. Carbon monoxide detectors alert occupants to dangerous CO levels; place near sleeping areas and on each floor, away from fuel-burning appliances and in accordance with code.

B. CO detectors detect oxygen levels.

C. CO detectors are unnecessary if windows are open.

D. CO detectors measure home temperature.

9. The refrigerant line that connects the condenser to the metering device is the _____ line.

A. Liquid

B. Suction

C. Discharge

D. Vapor

10. In hot-gas bypass control, which component is bypassed?

A. Evaporator

B. Condenser

C. Compressor

D. Expansion valve

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Answers

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

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Explanations

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1. Explain the difference between PSIG and psia.

A. PSIG is gauge pressure above ambient; psia is absolute pressure above a vacuum.

B. PSIG is absolute pressure; psia is gauge pressure.

C. PSIG is vacuum pressure; psia is ambient pressure.

D. PSIG and psia are the same.

Gauge pressure (PSIG) tells you how much pressure is present above the surrounding atmosphere, while absolute pressure (psia) tells you how much pressure exists above a perfect vacuum. The key is the reference point: ambient air for gauge, zero pressure for absolute. Because atmosphere itself adds pressure, you can relate them with psia = psig + atmospheric pressure. At sea level, atmospheric pressure is about 14.7 psi, so 0 psig equals roughly 14.7 psia, and 50 psig is about 64.7 psia. Absolute pressure cannot be negative, whereas gauge pressure can read negative when the pressure is below ambient. This is why the statement that PSIG is gauge pressure above ambient and psia is absolute pressure above a vacuum is the correct way to distinguish the two. The other descriptions mix up the references or claim they're the same, which isn't correct.

2. 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.

3. The approach temperature for the evaporator is

A. The difference between the entering-water temperature and the refrigerant boiling temperature

B. The difference between the leaving-water temperature and the condenser temperature

C. The difference between the evaporator air temperature and the water temperature

D. The difference in the refrigerant boiling temperature and the leaving-water temperature

The approach temperature is the smallest temperature difference between the two fluids inside a heat exchanger, showing how close the leaving water temperature gets to the refrigerant's boiling (saturation) temperature. In the evaporator, the refrigerant boils at its saturation temperature, while water is heated from its inlet toward a higher leaving temperature. The closest thermal proximity between the two streams is the difference between the refrigerant's boiling temperature and the leaving-water temperature. That is why the approach temperature is defined as the difference between the refrigerant boiling temperature and the leaving-water temperature. The other options don't describe this closest approach at the evaporator surface.

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4. In a pump system, a coupling serves which primary function?

A. To regulate flow between stages

B. To support radial loads

C. To seal the shafts against leakage

D. To connect the shafts of the motor and pump

The key idea is that a coupling is there to transmit power from the motor to the pump while keeping the two shafts connected as a single rotating system. It links the motor shaft to the pump shaft so torque can pass through, and it also allows a bit of misalignment and distance between the two pieces for maintenance and installation purposes. It doesn't regulate the flow, which is handled by the pump design and control valves. It also doesn't bear the radial loads or take on shaft sealing—that's handled by bearings and seals respectively. So connecting the shafts of the motor and pump is the primary function.

5. The refrigerant line that carries liquid refrigerant from the condenser to the metering device is called the _____ line.

A. Liquid line

B. Suction line

C. Discharge line

D. Vapor line

Liquid line. After the refrigerant is condensed, it remains as high pressure liquid and is sent to the metering device through this line, where its pressure is reduced before entering the evaporator. The suction line carries the low pressure vapor back to the compressor, and the discharge line carries high pressure vapor from the compressor to the condenser; "vapor line" isn't the standard term for the liquid feed path.

6. 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.

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7. Defrost termination can be controlled by which of the following methods?

A. Time

B. Humidity

C. Flow rate

D. Sound level

Defrost termination is about ending the cycle at the point where frost has melted enough to restore heat transfer, while keeping energy use reasonable. The most common and straightforward way to achieve this is by a timer that ends defrost after a preset duration. This approach is simple, reliable, and doesnures a consistent cycle length regardless of varying conditions, so the evaporator can return to normal operation in a predictable way. Using elapsed time works well because it doesn't depend on sensors that may be harder to calibrate or prone to drift. Humidity sensing would require an evaporator-surface humidity sensor and a robust threshold, which isn't always practical. Flow-rate-based termination would need precise flow measurements that don't directly reflect frost melt and can be affected by fan speed and ducting. Sound level isn't a reliable indicator of frost status. So terminating defrost by time is the best-fit method in typical practice.

8. Define CO detectors, their role, and typical placement in a home with gas appliances.

A. Carbon monoxide detectors alert occupants to dangerous CO levels; place near sleeping areas and on each floor, away from fuel-burning appliances and in accordance with code.

B. CO detectors detect oxygen levels.

C. CO detectors are unnecessary if windows are open.

D. CO detectors measure home temperature.

Carbon monoxide detectors are safety devices that alert you when carbon monoxide, a colorless, odorless gas produced by incomplete combustion in gas appliances, is present at dangerous levels. The best placement is one detector on each floor and another near sleeping areas so occupants are warned during the night. Make sure they're installed according to code and manufacturer instructions, and keep them away from fuel-burning appliances, vents, or sources that could cause false alarms. These detectors do not measure oxygen or temperature; they specifically sense carbon monoxide and should be tested regularly and replaced according to the manufacturer's schedule.

9. The refrigerant line that connects the condenser to the metering device is the _____ line.

A. Liquid

B. Suction

C. Discharge

D. Vapor

The line carrying liquid refrigerant from the condenser to the metering device is the liquid line. After condensation, the refrigerant is a high pressure liquid (often subcooled) that needs to be delivered to the expansion device without vapor or gas in the path. The metering device throttles this liquid, dropping its pressure before it enters the evaporator, which is essential for proper cooling and avoiding flash gas. The suction line, by contrast, carries low-pressure vapor from the evaporator back to the compressor, while the discharge line carries high-pressure vapor from the compressor to the condenser. There isn't a separate "vapor line" between the condenser and metering device in typical systems, so the correct distinction is the liquid line.

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10. In hot-gas bypass control, which component is bypassed?

A. Evaporator

B. Condenser

C. Compressor

D. Expansion valve

Hot-gas bypass control works by diverting some of the compressor's discharge gas away from the condenser. A bypass valve sends that hot gas around the condenser and into the evaporator area (or back toward the suction side). Because the bypass path goes around the condenser, the condenser is the component being bypassed. This arrangement allows hot gas to heat the evaporator, increasing evaporator superheat and helping with control of system pressure and temperature, especially at low load or during start-up.

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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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