

HVAC CONTROLS 26408-23 PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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. A reset schedule reduces energy consumption by doing what?**
 - A. Permanently increasing all setpoints
 - B. Gradually changing a temperature setpoint over time to save energy
 - C. Decreasing system reliability
 - D. Increasing outdoor air at all times
- 2. What is the primary purpose of a Basis of Design (BOD) document in HVAC projects?**
 - A. It documents design decisions, control philosophy, sequences, and instrumentation choices.
 - B. It lists the project schedule and milestones.
 - C. It provides the equipment procurement cost estimates.
 - D. It sets the building's energy codes.
- 3. If the compressor motor, OFM, an indoor fan motor (IFM) all fail to operate on a cooling call, the most likely cause _____.**
 - A. thermostat failure
 - B. outdoor sensor failure
 - C. blown fuse in furnace
 - D. control transformer failure
- 4. What component staggers electric heater startup to prevent circuit overload?**
 - A. thermostat
 - B. heat sequencer
 - C. short-cycle timer
 - D. blower relay
- 5. The tubing that carries heat-laden refrigerant gas from the evaporator to the compressor is the**
 - A. Suction line
 - B. Discharge line
 - C. Liquid line
 - D. Capillary tube

- 6. The abbreviation FLC in electrical design stands for**
- A. Fault Load Current
 - B. Full-Load Current
 - C. Fixed Load Current
 - D. Flow Load Current
- 7. A defective lockout relay should be replaced with an exact duplicate, sometimes called what?**
- A. Time-delay relay
 - B. Impedance relay
 - C. Magnetic relay
 - D. Thermal relay
- 8. The device that prevents automatic restart after a fault in cooling systems is called a**
- A. Low-Pressure Switch
 - B. Lockout Relay
 - C. Pressure Sensor
 - D. High-Limit Switch
- 9. Trend log data is best described as which of the following?**
- A. A historical record of sensor and setpoint values used for diagnostics, performance verification, and troubleshooting
 - B. A real-time dashboard of current values
 - C. A log of equipment warranty dates
 - D. A list of occupant preferences
- 10. What is the main difference between open-loop and closed-loop control in HVAC systems?**
- A. Open-loop has no feedback to correct performance; closed-loop uses sensor feedback to adjust actuators toward the setpoint.
 - B. Open-loop uses sensor feedback to correct performance; closed-loop has no feedback.
 - C. Open-loop and closed-loop are the same in terms of feedback.
 - D. Closed-loop eliminates the need for sensors.

Answers

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

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Explanations

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1. A reset schedule reduces energy consumption by doing what?

- A. Permanently increasing all setpoints
- B. Gradually changing a temperature setpoint over time to save energy**
- C. Decreasing system reliability
- D. Increasing outdoor air at all times

A reset schedule saves energy by automatically shifting the thermostat setpoints over time instead of keeping them fixed. By gradually changing the target temperature based on factors like time of day or occupancy, the HVAC system runs less aggressively when full conditioning isn't needed, while still returning to comfortable levels when people are present. For example, during unoccupied periods you might raise the cooling setpoint or lower the heating setpoint, then revert before occupancy resumes. This approach reduces the number of full heating or cooling cycles and lowers compressor and fan energy use, all without compromising comfort when it matters.

2. What is the primary purpose of a Basis of Design (BOD) document in HVAC projects?

- A. It documents design decisions, control philosophy, sequences, and instrumentation choices.**
- B. It lists the project schedule and milestones.
- C. It provides the equipment procurement cost estimates.
- D. It sets the building's energy codes.

The Basis of Design captures the decisions that define how the HVAC system should operate, including the control philosophy, sequences of operation, and the instrumentation choices. This document serves as the single reference for designers, contractors, and commissioning agents to understand the intended behavior of the system, ensuring the owner's requirements are met and that all design work stays aligned with that intent. It guides equipment selection, performance criteria, and the overall design approach, and it helps verify that changes remain consistent with the established direction. Schedules, milestones, and cost estimates belong to project management and budgeting, while energy-code compliance is addressed in separate code-based documents; the BOD may reference relevant codes but its primary purpose is to articulate design intent and how the system should function.

3. If the compressor motor, OFM, an indoor fan motor (IFM) all fail to operate on a cooling call, the most likely cause _____.

- A. thermostat failure
- B. outdoor sensor failure
- C. blown fuse in furnace
- D. control transformer failure**

When a cooling call triggers all three components—the compressor in the outdoor unit, the outdoor fan motor, and the indoor fan motor—none respond, the common thread is the low-voltage control power. The thermostat and the various relays in the furnace/air handler rely on a 24-volt supply from the control transformer to energize the outdoor contactor and the indoor blower relay. If that transformer fails, there is no 24 VAC available to close any of the relays, so the outdoor contactor won't energize (no compressor or outdoor fan) and the indoor blower relay won't energize (no indoor fan). In other words, without control power, the cooling call cannot activate any of the equipment. Other possibilities, like a thermostat failure, would typically affect only the signaling path or the thermostat itself, not necessarily cutting off power to all downstream relays at once. An outdoor sensor issue might prevent proper operation under some conditions but wouldn't inherently stop all three motors on a cooling call. A blown fuse in the furnace could cut control power as well, but a transformer failure more cleanly explains loss of all low-voltage control circuits driving every component during cooling.

4. What component staggers electric heater startup to prevent circuit overload?

- A. thermostat
- B. heat sequencer**
- C. short-cycle timer
- D. blower relay

Staggering the startup of electric heating elements to limit the surge current is done by a heat sequencer. In a multi-element heater, several elements could try to energize at once, which would draw a large inrush and risk tripping the breaker or overloading the circuit. The heat sequencer energizes the elements one after another, or in small groups, with short delays between them. This keeps the initial current well within what the wiring and disconnects can safely handle and helps maintain steady voltage during startup. The thermostat simply switches the system on or off based on temperature, without coordinating multiple elements. A short-cycle timer is used to prevent rapid on/off cycling, not to stagger element startup. A blower relay controls the blower motor, not the sequence of heater element energization.

5. The tubing that carries heat-laden refrigerant gas from the evaporator to the compressor is the

- A. Suction line**
- B. Discharge line
- C. Liquid line
- D. Capillary tube

In a vapor-compression refrigeration cycle, the gas that comes off the evaporator has absorbed heat and is at relatively low pressure. That heat-laden refrigerant gas is drawn back to the compressor through the suction line. This line is the path for low-pressure, gaseous refrigerant returning to be compressed. The other lines serve different roles: the discharge line carries high-pressure gas from the compressor to the condenser; the liquid line transports high-pressure liquid from the condenser to the expansion device; and the capillary tube acts as a throttling device for some systems. Thus, the tubing described is the suction line.

6. The abbreviation FLC in electrical design stands for

- A. Fault Load Current
- B. Full-Load Current**
- C. Fixed Load Current
- D. Flow Load Current

In electrical design, FLC stands for Full-Load Current. This is the current an electrical device, such as a motor, draws when it is operating at its rated output under normal conditions. It's the steady operating current used to size conductors, overcurrent protection (fuses or breakers), and other equipment in the circuit. For motors, you'll often see Full-Load Amps (FLA), which is essentially the same concept expressed for motors. This value is distinct from starting or inrush current, which is higher than the full-load current. The other terms listed aren't standard design terms, so they don't fit the established meaning of FLC.

7. A defective lockout relay should be replaced with an exact duplicate, sometimes called what?

- A. Time-delay relay
- B. Impedance relay**
- C. Magnetic relay
- D. Thermal relay

Replacing a defective lockout relay with an exact duplicate keeps the protection system's timing and coordination intact. An impedance relay is a type of protective relay that relies on the measured impedance to decide when to trip and latch, so using an identical impedance relay ensures the same pickup and dropout settings, response time, and latch behavior as before. This preserves how the system responds to faults and avoids introducing changes that could cause miscoordination or unwanted trips. Other options reflect different operating principles—time-delay, magnetic, or thermal relays—and would not reproduce the same electrical response or coordination, which is why they aren't the best fit for an exact duplicate.

8. The device that prevents automatic restart after a fault in cooling systems is called a

- A. Low-Pressure Switch
- B. Lockout Relay**
- C. Pressure Sensor
- D. High-Limit Switch

Lockout relays are used to prevent automatic restart after a fault. When the control detects a fault, the lockout relay latches the circuit open, so the compressor and other equipment won't restart even if the fault condition clears. A manual reset (or power cycling) is typically required to restore normal operation. This ensures you don't get immediate restart and potential damage or unsafe conditions from a lingering fault. Other devices have protective roles but don't function as a restart blocker after faults. A low-pressure switch shuts down the system if refrigerant pressure drops too low, but it doesn't lock out future startups after a fault. A pressure sensor provides data to the control but doesn't itself enforce a restart lockout. A high-limit switch protects against overheating by opening the circuit, but it is not designed to permanently prevent automatic restarts after faults.

9. Trend log data is best described as which of the following?

- A. A historical record of sensor and setpoint values used for diagnostics, performance verification, and troubleshooting**
- B. A real-time dashboard of current values
- C. A log of equipment warranty dates
- D. A list of occupant preferences

Trend log data provide a historical sequence of sensor readings and setpoint values collected over time, which makes it possible to analyze how the system behaved under different conditions. This kind of data is used for diagnostics, performance verification, and troubleshooting because you can see patterns, verify that control logic worked as intended, and spot anomalies or drift after the fact. It's not simply a real-time snapshot of current values, nor is it about warranty dates or occupant preferences. For example, you can review trend logs to see if a cooling cycle aligns with the setpoint, detect sensor drift by comparing actual versus commanded temperatures over days, or verify that energy use matches expected performance after a retrofit.

10. What is the main difference between open-loop and closed-loop control in HVAC systems?

- A. Open-loop has no feedback to correct performance; closed-loop uses sensor feedback to adjust actuators toward the setpoint.**
- B. Open-loop uses sensor feedback to correct performance; closed-loop has no feedback.
- C. Open-loop and closed-loop are the same in terms of feedback.
- D. Closed-loop eliminates the need for sensors.

The idea being tested is how feedback distinguishes open-loop from closed-loop control in HVAC. In an open-loop system, commands are sent to equipment without checking the actual outcome—there's no measurement to compare against a target. So you might set a heater or damper to a fixed action, and disturbances like a door opening or more people in the room won't be automatically corrected. In a closed-loop system, sensors continuously measure the actual condition (such as room temperature), compare it to the desired setpoint, and adjust the actuators to reduce the difference. This feedback lets the system track the target and compensate for disturbances, leading to more accurate and stable control. That's why this choice is correct: it describes open-loop as lacking feedback and closed-loop as using sensor feedback to steer toward the setpoint.

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://hvaccont2640823.examzify.com>

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

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