HVAC CONTROLS 26408-23 PRACTICE TEST (SAMPLE)

STUDY GUIDE

SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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 refrigeration compressors are driven by conventional (nonhermetic) motors, the motors and controls are subject to the requirements in**

A. NEC Article 440

B. NEC Article 320

C. NEC Article 500

D. NEC Article 430

2. **In a heating system, with the fan switch set to AUTO, which motors run when the thermostat calls for heat?**

A. Blower and exhaust motors

B. No motors

C. Only the blower motor

D. All three motors

3. **What is a sequence of operation (SOO) and why is it critical in commissioning?**

A. A random collection of equipment settings without sequence.

B. A documented step-by-step description of how equipment should start, run, and shut down; it guides verification and proper performance.

C. A list of maintenance tasks to perform monthly.

D. A warranty specification for the equipment.

4. **Which of the following would be considered a digital device?**

A. Thermostat

B. Relay

C. Sensor

D. Valve

5. **In economizer operation, what is the effect when outdoor air conditions are favorable?**

A. Open OA damper and reduce cooling energy.

B. Close OA damper.

C. No effect.

D. Open the OA damper when outdoor air conditions satisfy cooling needs, reducing cooling energy.

6. Trend log data records which of the following?

A. A real-time alarm stream

B. A schedule for energy use

C. A list of maintenance tasks

D. A historical record of sensor and setpoint values

7. Low-voltage (24VAC) control circuits are used in HVAC systems because _____.

A. 24V power is cheaper

B. 24V power is less reliable

C. 24V power is louder

D. 24V power is safer

8. What is the defrost cycle used to prevent in a heat pump's outdoor coil?

A. Ice buildup on outdoor coil

B. Compressor overload

C. Refrigerant leakage

D. Humidity increase

9. Differentiate between VAV and CAV systems.

A. VAV modulates airflow to zones; CAV supplies constant airflow with varying temperature to meet loads.

B. VAV is fixed flow; CAV modulates.

C. VAV modulates temperature; CAV modulates humidity.

D. VAV uses constant supply; CAV uses variable supply.

10. 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

Answers

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

Explanations

1. When refrigeration compressors are driven by conventional (nonhermetic) motors, the motors and controls are subject to the requirements in

A. NEC Article 440

B. NEC Article 320

C. NEC Article 500

D. NEC Article 430

The key idea is that conventional, nonhermetic motors used to drive refrigeration compressors are treated as motor circuits with dedicated protection and control requirements. NEC Article 430 covers the electrical design of motor circuits: it specifies how conductors supplying the motor must be sized, the overcurrent protection and disconnecting means needed, and the types of motor controllers and starting methods that are permitted, along with motor overload protection. Because the motor in this setup is separate from the compressor (not hermetically sealed inside the unit), its electrical installation falls under these motor-circuit rules rather than under equipment-based rules. The other NEC articles don't apply to this situation in the same way. Article 440 addresses air-conditioning and refrigeration equipment as installed units, typically when the motor is part of the equipment itself or when specific equipment requirements apply, such as hermetic or semi-hermetic configurations. The remaining articles cover topics like wiring methods for armored cable or locations with hazardous classifications, which aren't the governing rules for motor circuits in this scenario.

2. In a heating system, with the fan switch set to AUTO, which motors run when the thermostat calls for heat?

A. Blower and exhaust motors

B. No motors

C. Only the blower motor

D. All three motors

When heat is called for, the system powers through a sequence that involves all the motors in the furnace's air- and exhaust-path. The exhaust/inducer motor starts first to purge combustion gases and create a draft, then ignition occurs, and after a brief delay the blower motor comes on to push the heated air through the ducts. In many furnaces there's a third motor in the ventilation or damper path that also runs to support proper venting and airflow during the heating cycle. With the fan switch set to AUTO, the blower is engaged only during active heat (and cooling) cycles, but during the heat call the blower, the exhaust/inducer motor, and the third motor all operate as part of the heating sequence. That coordination ensures safe ignition, proper venting, and efficient distribution of warm air.

3. What is a sequence of operation (SOO) and why is it critical in commissioning?

A. A random collection of equipment settings without sequence.

B. A documented step-by-step description of how equipment should start, run, and shut down; it guides verification and proper performance.

C. A list of maintenance tasks to perform monthly.

D. A warranty specification for the equipment.

The sequence of operation is a documented step-by-step description of how equipment should start, run, and shut down, and it guides verification and proper performance. It lays out how the control system should respond to inputs (like sensor readings, setpoints, and occupancy), how components coordinate (fans, pumps, dampers, boilers, chillers, economizers), and the order in which actions occur. This clarity is essential during commissioning because it becomes the blueprint used to test that the system behaves as intended in every mode, ensures safety interlocks and inter-system coordination function correctly, and proves the equipment meets design goals for comfort and energy efficiency. With a well-defined SOO, technicians can methodically verify each step, track whether states transition correctly, and document any deviations for fixes. It also provides operators and maintenance staff a consistent reference for operating and troubleshooting the system after turnover. A random collection of settings doesn't show how systems should behave together, maintenance-only tasks aren't about initial startup and verification, and warranty documents don't describe how to operate the equipment during normal conditions.

4. Which of the following would be considered a digital device?

A. Thermostat

B. Relay

C. Sensor

D. Valve

In HVAC control, digital devices are those that operate with discrete, binary states. A relay fits this perfectly because it acts as an on/off switch: when the control signal energizes it, the contacts close and the load is powered; when not energized, the contacts open and the load is off. There's no gradual or proportional output—just a simple, two-state operation—which is the essence of a digital device. The other components aren't inherently digital in the same way. A sensor provides a measurement that can vary continuously (temperature readings), and a valve or a thermostat typically modulates or processes signals rather than delivering a strict on/off binary output. So the relay best exemplifies a digital device in this context.

5. In economizer operation, what is the effect when outdoor air conditions are favorable?

A. Open OA damper and reduce cooling energy.

B. Close OA damper.

C. No effect.

D. Open the OA damper when outdoor air conditions satisfy cooling needs, reducing cooling energy.

Economizer operation uses outdoor air to meet part of the cooling load when conditions outside are cool and acceptable for occupancy. Opening the outside-air damper under those favorable conditions lets outdoor air do the cooling instead of running the mechanical cooling, which lowers the energy required for cooling. If outdoor conditions aren't suitable, the damper stays closed to avoid bringing in hot or humid air. So opening the OA damper when outdoor air satisfies cooling needs, thereby reducing cooling energy, is the correct behavior.

6. Trend log data records which of the following?

A. A real-time alarm stream

B. A schedule for energy use

C. A list of maintenance tasks

D. A historical record of sensor and setpoint values

Trend log data is all about capturing how measurements change over time. It records historical values of sensors and their setpoints, so you can see trends, verify performance, and diagnose issues by reviewing past conditions. This is different from a real-time alarm stream, which logs events as alarms occur rather than building a time-ordered history. It's also not a schedule for energy use, which defines when equipment should run, nor a list of maintenance tasks, which tracks upkeep activities. So the historical record of sensor and setpoint values best matches what trend log data records.

7. Low-voltage (24VAC) control circuits are used in HVAC systems because _____.

A. 24V power is cheaper

B. 24V power is less reliable

C. 24V power is louder

D. 24V power is safer

The primary reason for using low-voltage control circuits in HVAC is safety. Running controls at 24 volts keeps the risk of electric shock for occupants and service people much lower than with line voltage. The control circuitry is usually isolated from the higher mains power by a transformer, so the signals that operate relays, contactors, and thermostats stay at a safe, manageable level. This allows control devices to be placed in accessible areas like walls and thermostats without creating high-risk wiring in living spaces. That safety-centered choice also enables practical benefits: control wires can be smaller and simpler to route, and components like thermostats and relays can be designed specifically for 24V operation, still reliably switching the higher-power loads when needed. The other options don't capture why 24V control is used—cost, reliability, or noise aren't the defining concerns—so safety and ease of implementation are the key reasons.

8. What is the defrost cycle used to prevent in a heat pump's outdoor coil?

A. Ice buildup on outdoor coil

B. Compressor overload

C. Refrigerant leakage

D. Humidity increase

Ice buildup on the outdoor coil is the problem the defrost cycle addresses. When a heat pump runs in cold weather, moisture in the air can freeze on the outdoor coil, creating frost that insulates the coil and blocks airflow. That reduces heat transfer, lowers efficiency, and can increase compressor stress. The defrost cycle reverses the refrigeration flow for a short time so the outdoor coil is heated (by hot refrigerant gas or indoor heat) and the ice melts. After the ice clears and the coil warms, the system returns to heating. Defrost is typically triggered by coil temperature, pressure, or a timer.

9. Differentiate between VAV and CAV systems.

A. VAV modulates airflow to zones; CAV supplies constant airflow with varying temperature to meet loads.

B. VAV is fixed flow; CAV modulates.

C. VAV modulates temperature; CAV modulates humidity.

D. VAV uses constant supply; CAV uses variable supply.

VAV systems control how much air each zone receives, while keeping the supply air temperature relatively steady. A zone damper continually adjusts its position to match the cooling or heating demand of that space, so the airflow to each zone varies as needed. In contrast, CAV keeps the total supply air flow constant and meets changing loads by changing the temperature of that air—cooler air for more cooling, warmer air for less—rather than sending more or less air to different zones. That's why the statement describing VAV as modulating airflow to zones and CAV as providing constant airflow with varying temperature to meet loads is the best fit.

10. 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.

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!