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.

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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. **In the refrigeration cycle, which device raises the pressure of the refrigerant on the high-pressure side?**

   A. Condenser

   B. Evaporator

   C. Expansion device

   D. Compressor

2. **Which device uses dissimilar metals to control electron flow?**

   A. RTD

   B. Diode

   C. Thermocouple

   D. Thermistor

3. **Which device is commonly activated by a thermostat call for heat in many HVAC systems?**

   A. Inducer fan

   B. Condenser fan

   C. Compressor

   D. Humidifier

4. **Which component primarily modulates zone cooling in a VAV system?**

   A. Variable air volume box at each zone.

   B. Fixed duct with manual dampers.

   C. Dedicated outdoor air handler.

   D. Single central supply fan.

5. **How does economizer damper control logic decide when to open or close?**

   A. It compares outdoor air conditions (temp/humidity) to cooling needs and opens when OA helps meet cooling; closes when not needed.

   B. It compares indoor conditions and opens when occupants are present.

   C. It opens only when inside temperature is high and closes when outside air is cold.

   D. It opens randomly.

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6. Which refrigerant path carries high-pressure vapor from the compressor to the condenser?

A. Discharge line

B. Suction line

C. Liquid line

D. Capillary tube

7. What is the purpose of a lockout relay in a comfort cooling control circuit?

A. An Automatic Restart Of The HVAC Equipment

B. Overheating Condition Protection

C. Reverse Cycle Prevention

D. Short Circuit Protection

8. 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

9. Which action helps control condenser head pressure in a cooling system?

A. Decreasing room thermostat setpoint.

B. Adjusting condenser fan speed to influence airflow.

C. Increasing the number of supply dampers open.

D. Using a higher indoor humidity setpoint.

10. 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

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Answers

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

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Explanations

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1. In the refrigeration cycle, which device raises the pressure of the refrigerant on the high-pressure side?

A. Condenser

B. Evaporator

C. Expansion device

D. Compressor

Raising the refrigerant's pressure on the high-pressure side is done by the compressor. It does work on the refrigerant, compressing low-pressure vapor into high-pressure, high-temperature vapor so it can move through the rest of the cycle toward the condenser. The condenser's job is to reject heat at that high pressure and condense the vapor into a liquid; it does not increase pressure. The expansion device lowers pressure from high to low to prepare the refrigerant for the evaporator, and the evaporator operates at low pressure to absorb heat from the space being cooled. So the compressor is the component that elevates the pressure of the refrigerant on the high-pressure side.

2. Which device uses dissimilar metals to control electron flow?

A. RTD

B. Diode

C. Thermocouple

D. Thermistor

Two different metals joined together produce a voltage when there's a temperature difference between the ends. This thermoelectric effect, called the Seebeck effect, is what a thermocouple uses: the junctions of dissimilar metals generate an electrical potential that varies with temperature, so connecting the hot and cold junctions to a circuit lets current flow if the circuit is closed. That reliance on dissimilar metals to create a signal is the distinguishing feature here. The other devices operate by different principles. An RTD changes its resistance with temperature in a single metal, so you measure temperature by resistance rather than by generating a voltage from metal differences. A diode uses a semiconductor p-n junction to control current flow, not a pair of metals producing a thermoelectric voltage. A thermistor also changes resistance with temperature, typically using a ceramic semiconductor material rather than dissimilar metals.

3. Which device is commonly activated by a thermostat call for heat in many HVAC systems?

A. Inducer fan

B. Condenser fan

C. Compressor

D. Humidifier

When a thermostat calls for heat, the system often starts with the draft inducer motor. Its job is to purge any leftover combustion gases and supply fresh air for safe and efficient burning before ignition. This ensures the burner can light properly and the heat exchanger can operate without venting problems. After the inducer runs, the control typically opens the gas valve and ignites the burner, and once heat is being produced, the blower circulates warm air through the living space. The other components listed aren't part of the typical heat-activation sequence: the condenser fan and compressor belong to cooling, and a humidifier is an optional accessory that isn't automatically engaged by a heat call in most setups.

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4. Which component primarily modulates zone cooling in a VAV system?

A. Variable air volume box at each zone.

B. Fixed duct with manual dampers.

C. Dedicated outdoor air handler.

D. Single central supply fan.

In a VAV system, zone cooling is controlled primarily by the VAV box at each zone. This box is the point where conditioned air is delivered to a specific space and it contains a damper that automatically opens or closes to regulate how much air enters the zone. When the zone thermostat calls for cooling, the VAV box responds by increasing airflow to the space; when less cooling is needed, the damper closes to reduce the delivered air. This per-zone modulation lets each area reach and maintain its setpoint efficiently, without changing the overall supply rate for the entire building. The other components don't provide the same zone-specific modulation. A dedicated outdoor air handler mainly handles outside air intake, not the precise adjustment of cooling for each zone. A single central supply fan moves air through the system, but it doesn't tailor airflow to individual zones. A fixed duct with manual dampers requires manual adjustment and can't automatically respond to changing zone conditions.

5. How does economizer damper control logic decide when to open or close?

A. It compares outdoor air conditions (temp/humidity) to cooling needs and opens when OA helps meet cooling; closes when not needed.

B. It compares indoor conditions and opens when occupants are present.

C. It opens only when inside temperature is high and closes when outside air is cold.

D. It opens randomly.

Economizer damper control is about using outdoor air to meet part of the cooling load whenever outdoor conditions can actually help. The controller compares outdoor air conditions (temperature and humidity, sometimes enthalpy) to what the building cooling needs are. If outdoor air is cool and dry enough to reduce the coil cooling required, the damper opens to bring that air in. If outdoor air wouldn't provide a cooling benefit (or would make humidity control worse), the damper stays closed or only partially opens. It isn't driven by occupancy or random chance; it's a deliberate check of whether outdoor air can meaningfully reduce the cooling load, and it closes when it can't.

6. Which refrigerant path carries high-pressure vapor from the compressor to the condenser?

A. Discharge line

B. Suction line

C. Liquid line

D. Capillary tube

High-pressure vapor flows from the compressor into the condenser through the discharge line. After the compressor compresses the refrigerant, its pressure and temperature rise, and this hot, high-pressure vapor exits the compressor and travels through the discharge line to the condenser where it rejects heat and becomes a liquid. The suction line carries low-pressure vapor back to the compressor from the evaporator, the liquid line carries high-pressure liquid from the condenser toward the metering device, and the capillary tube is a throttling device in the liquid line that reduces pressure, not a path for vapor from the compressor to the condenser.

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7. What is the purpose of a lockout relay in a comfort cooling control circuit?

A. An Automatic Restart Of The HVAC Equipment

B. Overheating Condition Protection

C. Reverse Cycle Prevention

D. Short Circuit Protection

The lockout relay acts as a safety gate in the control circuit, preventing the compressor from starting when a fault or unsafe condition exists. When a fault occurs, the relay locks out the start circuit so the equipment cannot energize. Once the fault is cleared or the control resets, the relay releases and the system can start automatically in response to a cooling call. This automatic restart capability is what the relay is designed to provide, ensuring the equipment comes back on without manual intervention once it's safe. This isn't primarily about protecting against overheating (that's handled by thermal sensors and cutoffs), nor about preventing a heat pump from cycling into a reverse cycle, nor about protecting against a short circuit (that's handled by fuses or breakers). The lockout relay's main role is to gate starts and allow automatic restart when conditions return to safe.

8. 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.

9. Which action helps control condenser head pressure in a cooling system?

A. Decreasing room thermostat setpoint.

B. Adjusting condenser fan speed to influence airflow.

C. Increasing the number of supply dampers open.

D. Using a higher indoor humidity setpoint.

Condenser head pressure is driven by how efficiently the condenser can reject heat to the outdoor air. Increasing the condenser's airflow by adjusting the fan speed improves heat transfer, cools the refrigerant on the high side, and lowers the pressure in the condenser. This direct control over heat rejection makes it the most effective way to manage head pressure. The other actions don't directly affect the condenser's heat rejection. Changing the indoor thermostat setpoint alters when cooling is requested and the indoor load, but not how the condenser rejects heat. Opening more supply dampers mainly changes indoor air distribution, not the high-side condenser conditions. Increasing indoor humidity setpoint changes latent load inside, not the condenser's pressure on the high side.

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10. 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.

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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:

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

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