

# Electricity for HVACR Practice Test (Sample)

## Study Guide



**Everything you need from our exam experts!**

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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. Define inductance in electrical terms.**
  - A. The ability of a conductor to store electrical charge**
  - B. The property of a conductor to resist changes in current flow through electromagnetic fields**
  - C. The measure of electrical resistance in a circuit**
  - D. The capacity to conduct alternating current efficiently**
  
- 2. A motor with a starting torque of 150% is typically designed for which application?**
  - A. Fan applications**
  - B. Compressor applications**
  - C. Pump applications**
  - D. Conveyor applications**
  
- 3. What device is used for phasing two transformers in parallel?**
  - A. Voltmeter**
  - B. Multimeter**
  - C. Oscilloscope**
  - D. Amperemeter**
  
- 4. In terms of electricity, what does "load" refer to?**
  - A. The total voltage in a circuit**
  - B. The electrical power consumption by devices in a circuit**
  - C. The type of current used**
  - D. The total resistance in a circuit**
  
- 5. For optimal performance, how should single-phase motor windings be connected for HVAC systems?**
  - A. Parallel configuration**
  - B. Series configuration**
  - C. Delta configuration**
  - D. Capacitor configuration**

- 6. Why is a good fuse reading zero ohms when tested with an ohmmeter?**
- A. It indicates a complete circuit without resistance**
  - B. It shows the fuse has been completely replaced**
  - C. It suggests the fuse is ready to fail**
  - D. It reflects high resistance in electrical components**
- 7. Which component is used to store electrical energy in a circuit?**
- A. Resistor**
  - B. Inductor**
  - C. Capacitor**
  - D. Semi-conductor**
- 8. Which device is commonly used to measure electric current?**
- A. Voltmeter**
  - B. Ampere meter**
  - C. Ohmmeter**
  - D. Capacitance meter**
- 9. How does the secondary voltage of a transformer relate to the number of windings?**
- A. More windings in the primary equals lower voltage in the secondary**
  - B. More windings in the secondary equals lower voltage**
  - C. More primary windings lead to the same secondary voltage**
  - D. More windings lead to higher voltage in the secondary**
- 10. Central air conditioning systems in homes generally require a power source of \_\_\_\_.**
- A. 120 volts**
  - B. 240 volts**
  - C. 480 volts**
  - D. 600 volts**

## Answers

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

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## **Explanations**

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**1. Define inductance in electrical terms.**

- A. The ability of a conductor to store electrical charge**
- B. The property of a conductor to resist changes in current flow through electromagnetic fields**
- C. The measure of electrical resistance in a circuit**
- D. The capacity to conduct alternating current efficiently**

Inductance is fundamentally defined as the property of a conductor or coil that allows it to resist changes in current flow through the influence of electromagnetic fields. This phenomenon occurs when a changing current in a wire generates a magnetic field around it, which can induce a voltage in the wire itself or in nearby conductors. The ability to resist changes in current is critical in various applications, particularly in inductors and transformers within electronic and HVACR systems, because it helps maintain a stable flow of electricity despite fluctuations in demand or supply. When the current through an inductor changes, the magnetic field also changes, creating an induced electromotive force (emf) that opposes the change according to Lenz's law. This aspect is key in the operation of many electrical devices and systems, such as in filtering applications and energy storage, making the understanding of inductance essential for HVACR professionals.

**2. A motor with a starting torque of 150% is typically designed for which application?**

- A. Fan applications**
- B. Compressor applications**
- C. Pump applications**
- D. Conveyor applications**

A motor with a starting torque of 150% is particularly suited for compressor applications due to the high initial resistance that compressors typically present when starting. Compressors often require a significant amount of torque to overcome the inertia and pressure within the system at startup, which leads to a higher demand for starting torque compared to other applications. This additional torque ensures that the compressor can start efficiently and maintain its operation without stalling or causing electrical issues. In contrast, fan and pump applications generally require lower starting torques because they do not encounter the same level of resistance upon starting. Fans usually deal with air, which has minimal resistance compared to a pressurized gas or liquid, while pumps may also involve lower starting challenges depending on their construction and the fluid being moved. Conveyor systems, while potentially requiring a good amount of torque, typically do not reach the same level of initial resistance as compressors do. Therefore, the design of a motor with 150% starting torque aligns with the demanding nature of compressor operation.

**3. What device is used for phasing two transformers in parallel?**

- A. Voltmeter
- B. Multimeter**
- C. Oscilloscope
- D. Amperemeter

The device used for phasing two transformers in parallel is a multimeter. This tool is essential for verifying that the voltage, phase, and frequency of both transformers are synchronized before connecting them in parallel. When transformers are paralleled, it is crucial that they are in phase to prevent circulating currents, which can lead to equipment damage. A multimeter can measure the voltage output of each transformer and confirm that both are operating at the same voltage and phase relationship. It can also check for the polarity of the transformer windings; if the polarities are not aligned, connecting them could result in a destructive short circuit. Other devices, while useful in measuring electrical parameters, are not as suitable for this specific task. A voltmeter only measures voltage but doesn't provide information on phase, while an oscilloscope can display waveforms but may not be practical for simple phase checks in transformers. An amperemeter focuses solely on current measurement, which is not adequate for confirming proper phasing before paralleling transformers.

**4. In terms of electricity, what does "load" refer to?**

- A. The total voltage in a circuit
- B. The electrical power consumption by devices in a circuit**
- C. The type of current used
- D. The total resistance in a circuit

"Load" in an electrical context refers specifically to the electrical power consumption by devices in a circuit. This encompasses all the appliances and equipment that draw power from the electrical supply during operation. Essentially, the load represents the demand that devices place on an electrical system, which is crucial for understanding how much energy is required to run those devices efficiently. Recognizing the load is essential for proper circuit design and ensuring that the electrical system can handle the total power consumption without risk of overload. It also plays a significant role in determining the appropriate size of breakers, wires, and transformers in an HVACR system, ensuring safety and reliability. In contrast to the electrical load, other concepts in the options deal with different aspects of electricity: total voltage pertains to the potential difference in the circuit, the type of current addresses whether it is alternating or direct current, and total resistance relates to how current is impeded in the circuit. These terms are important but do not define what a "load" is in relation to electrical power consumption.

**5. For optimal performance, how should single-phase motor windings be connected for HVAC systems?**

- A. Parallel configuration**
- B. Series configuration**
- C. Delta configuration**
- D. Capacitor configuration**

Single-phase motors in HVAC systems often use a capacitor configuration to enhance their performance. This configuration involves connecting a capacitor in series with the starting winding of the motor, which creates a phase shift in the current. This phase shift is crucial because single-phase motors need a starting torque to overcome inertia and initiate rotation. By using a capacitor, the motor can generate a rotating magnetic field, which is essential for starting the motor efficiently and allowing it to reach operational speed smoothly. Capacitors also help improve the overall efficiency of the motor by reducing the likelihood of overheating and enhancing the power factor, which is important in HVAC applications for energy savings and effective operation. The use of a capacitor is a common practice in many single-phase motors used in HVAC systems, especially for applications needing higher starting torque, such as compressors and fans. In contrast, other configurations like parallel or series, while they can be used in different contexts, do not provide the same benefits for starting torque and efficiency in single-phase motors as the capacitor configuration. Delta configuration is primarily associated with three-phase motors and is not applicable to single-phase systems. Therefore, the capacitor configuration plays a crucial role in optimizing the performance of single-phase motors in HVAC applications.

**6. Why is a good fuse reading zero ohms when tested with an ohmmeter?**

- A. It indicates a complete circuit without resistance**
- B. It shows the fuse has been completely replaced**
- C. It suggests the fuse is ready to fail**
- D. It reflects high resistance in electrical components**

A good fuse reading zero ohms when tested with an ohmmeter indicates a complete circuit without resistance. This means that the conductive path through the fuse is intact and allows electricity to flow freely without any interruptions. A reading of zero ohms shows that the fuse has not blown, and thus it can effectively protect the circuit by ensuring that current flows as intended. When testing a fuse, the goal is to ensure that there are no breaks or high resistance points that could affect circuit performance. If a fuse were to show any significant resistance or an infinite reading, it would indicate that the fuse is either blown or has developed a fault that could prevent it from performing its protective function. Therefore, a zero-ohm reading confirms that the fuse is functional and suited for its role in the electrical system.

**7. Which component is used to store electrical energy in a circuit?**

- A. Resistor**
- B. Inductor**
- C. Capacitor**
- D. Semi-conductor**

The component used to store electrical energy in a circuit is the capacitor. Capacitors function by storing energy in the form of an electric field created between two conductive plates separated by an insulating material (dielectric). When voltage is applied across the plates, the capacitor accumulates charge, and this stored energy can later be released back into the circuit when needed. Capacitors are integral in various applications, such as smoothing out voltage fluctuations in power supplies, starting motors, and coupling signals between stages of an electronic circuit. Their ability to quickly charge and discharge makes them vital in timing applications and filtering out interference. Other options like resistors are used to limit current flow, inductors store energy in a magnetic field, and semiconductors are materials used to control the flow of current rather than store energy. Each of these components plays distinct roles in electrical circuits, but only capacitors serve the primary function of storing electrical energy.

**8. Which device is commonly used to measure electric current?**

- A. Voltmeter**
- B. Ampere meter**
- C. Ohmmeter**
- D. Capacitance meter**

The device commonly used to measure electric current is indeed the ampere meter, often referred to as an ammeter. This instrument is specifically designed to measure the flow of electric charge in a circuit, expressed in amperes (A). An ammeter can be connected in series with the circuit, allowing it to measure the current flowing through any part of the circuit accurately. In contrast, a voltmeter measures electric potential difference between two points and is used to determine voltage, not current. An ohmmeter is used to measure resistance in a circuit, helping to identify issues like faulty components or connections, but it does not measure current. A capacitance meter measures the capacitance of a capacitor and is unrelated to current measurement. Therefore, the ampere meter is the appropriate device for measuring electric current in HVACR applications.

**9. How does the secondary voltage of a transformer relate to the number of windings?**

- A. More windings in the primary equals lower voltage in the secondary**
- B. More windings in the secondary equals lower voltage**
- C. More primary windings lead to the same secondary voltage**
- D. More windings lead to higher voltage in the secondary**

In a transformer, the relationship between the primary and secondary voltage is determined by the turns ratio, which is the ratio of the number of windings in the primary coil to the number of windings in the secondary coil. When the number of windings in the secondary coil is increased relative to the primary coil, the transformer can step up the voltage. This principle is based on Faraday's law of electromagnetic induction, which states that the induced voltage in a coil is proportional to the rate of change of magnetic flux and the number of turns. Therefore, a greater number of turns in the secondary winding results in a higher voltage being induced across that coil, provided the primary winding has a certain voltage applied to it. In contrast, if there are more windings in the primary, it would usually lead to a step-down transformer scenario where the secondary voltage would be lower relative to the primary voltage, which can also lead to the alternate understanding that more primary turns can mean less voltage at the secondary if nothing else changes. The correct understanding involves recognizing that the turns ratio is key and that having more windings in the secondary relative to the primary inherently leads to a higher output voltage. Thus, having more windings in the secondary indeed correlates directly to higher

**10. Central air conditioning systems in homes generally require a power source of \_\_\_\_.**

- A. 120 volts**
- B. 240 volts**
- C. 480 volts**
- D. 600 volts**

Central air conditioning systems in homes typically operate on a power source of 240 volts. This is the standard voltage for many residential HVAC systems, which includes both the compressor and the condenser components. The higher voltage is necessary to provide sufficient power to operate the motors effectively, ensuring that the system can efficiently manage the cooling load of a home. Using 240 volts allows for the design of smaller wiring systems when compared to a higher voltage, such as 480 or 600 volts, while still delivering the necessary power. In contrast, 120 volts is generally used for smaller appliances and standard household electrical outlets, which would not be sufficient for the demands of a central air conditioning system. Thus, the choice of 240 volts is both practical and aligned with industry standards for residential applications.

## 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](mailto:hello@examzify.com).**

**Or visit your dedicated course page for more study tools and resources:**

**<https://electricityforhvacr.examzify.com>**

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

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