

Grounding and Bonding Level 1 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. What does the term 'grounded' mean?**
 - A. Connected to a source of power**
 - B. Disconnected from any conductive body**
 - C. Connected to ground or to a conductive body that extends the ground connection**
 - D. Completely isolated from any other circuits**

- 2. Wire-type equipment grounding conductors must be able to safely carry what during a fault event?**
 - A. Low levels of current**
 - B. High levels of available fault current**
 - C. Normal operating current**
 - D. Overrated current levels**

- 3. What is a capacitor's simplest form?**
 - A. One conductor with a resistor**
 - B. Two conductors separated by insulation**
 - C. A coil of wire**
 - D. A single insulated wire**

- 4. In a service disconnect with multiple disconnects, how is the bonding achieved?**
 - A. Only at the last disconnect**
 - B. With one jumper for all disconnects**
 - C. Each disconnect requires a separate jumper**
 - D. Bonding is unnecessary**

- 5. Where must the grounding electrode conductor connection be made if the DC system is located on the premises?**
 - A. At the main service panel**
 - B. At any of the specified locations**
 - C. At the grounding rod only**
 - D. At the electrical meter only**

- 6. Which material is not permitted as a wire-type grounding electrode conductor?**
- A. Copper**
 - B. Aluminum**
 - C. Steel**
 - D. Copper Clad-Aluminum**
- 7. Is a supply-side bonding jumper required to be sized based on the overcurrent protective device protecting the circuit?**
- A. True**
 - B. False**
 - C. Depends on the voltage level**
 - D. Only for residential applications**
- 8. Is liquidtight flexible metal conduit suitable for use as an equipment grounding conductor for sizes 1 1/2 inches and larger if all conditions are met?**
- A. True**
 - B. False**
 - C. Only under specific temperature conditions**
 - D. Only for temporary installations**
- 9. How many times per second does voltage and current change amplitude and direction in a 60-cycle AC circuit?**
- A. 60**
 - B. 90**
 - C. 120**
 - D. 240**
- 10. The purpose of a grounding electrode is to serve as a connection between what two elements?**
- A. Electrical systems and safety equipment**
 - B. Ground (earth) and grounded electrical systems**
 - C. Power supply and load**
 - D. Ground (earth) and circuit breakers**

Answers

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

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Explanations

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1. What does the term 'grounded' mean?

- A. Connected to a source of power
- B. Disconnected from any conductive body
- C. Connected to ground or to a conductive body that extends the ground connection**
- D. Completely isolated from any other circuits

The term 'grounded' specifically refers to being connected to ground or to a conductive body that extends the ground connection. Grounding serves several essential purposes in electrical systems, including safety by providing a path for fault currents to reduce the risk of electric shock and equipment damage. It ensures that any excess electrical charge is safely conducted away into the earth, which helps in stabilizing voltage levels and provides a reference point for the electrical system. In contrast, a connection to a source of power does not represent grounding, as it implies an active electrical connection rather than a safety measure. Being disconnected from any conductive body indicates that the system is not grounded, leaving it unprotected. Finally, being completely isolated from any other circuits suggests a lack of any connections, which also does not align with the grounding concept, as effective grounding requires some level of connection to a conductive body or the earth itself.

2. Wire-type equipment grounding conductors must be able to safely carry what during a fault event?

- A. Low levels of current
- B. High levels of available fault current**
- C. Normal operating current
- D. Overrated current levels

Wire-type equipment grounding conductors are specifically designed to safely carry high levels of available fault current during a fault event. This is crucial because in the case of an electrical fault, such as a short circuit, the equipment grounding conductor must be able to handle the surge of excess current to ensure that the overcurrent protective devices, like circuit breakers or fuses, operate correctly. When the grounding conductor successfully carries this high fault current, it helps to clear the fault by tripping the circuit breaker, which ultimately protects the equipment and prevents potential fire hazards. The grounding conductor must be sized adequately to withstand these fault conditions without failing, which is why understanding the magnitude of available fault current is important for proper electrical system safety and design. The other responses don't adequately reflect the role of grounding conductors during fault conditions. For example, normal operating current doesn't pertain to fault conditions, and overrated current levels do not ensure safety during faults. Low levels of current do not align with the scenario of fault events, which typically involve significantly higher currents. Therefore, recognizing the necessity for grounding conductors to manage high fault currents is fundamental to their function in electrical systems.

3. What is a capacitor's simplest form?

- A. One conductor with a resistor
- B. Two conductors separated by insulation**
- C. A coil of wire
- D. A single insulated wire

A capacitor's simplest form is characterized by two conductors separated by insulation. This arrangement allows the capacitor to store electrical energy in an electric field created between the two conductive materials, which can be metal plates, for example. The insulation, often referred to as a dielectric, prevents direct current from flowing between the conductors while allowing an electric field to form, which is essential for the capacitor's function. By using two conductors, a capacitor is capable of accumulating and holding charge when voltage is applied. The effectiveness of a capacitor is influenced by the surface area of the conductors, the distance between them, and the type of dielectric material used. This fundamental design of having conductors separated by an insulating material is what differentiates a capacitor from other components like resistors or inductors, and it is what enables capacitors to serve critical roles in various electrical circuits.

4. In a service disconnect with multiple disconnects, how is the bonding achieved?

- A. Only at the last disconnect
- B. With one jumper for all disconnects**
- C. Each disconnect requires a separate jumper
- D. Bonding is unnecessary

In a service disconnect that contains multiple disconnects, bonding is typically achieved using one jumper for all disconnects. This approach ensures that all the disconnects are electrically connected to the same grounding system, maintaining a consistent ground potential and preventing differences in voltage that could pose safety hazards. Using a single jumper simplifies the bonding process by eliminating the need for multiple connections and ensuring that all disconnects are effectively bonded to the grounding system with minimal resistance. This method also adheres to electrical codes and standards, which often specify bonding requirements to enhance safety and reliability in electrical installations. The other choices present less effective or incorrect approaches to bonding. Bonding only at the last disconnect does not provide adequate grounding for the preceding disconnects, and requiring each disconnect to have a separate jumper could create unnecessary complexity and potential for error in the installation. Claiming that bonding is unnecessary goes against established safety practices and regulations, as bonding is a critical component of electrical safety.

5. Where must the grounding electrode conductor connection be made if the DC system is located on the premises?

- A. At the main service panel**
- B. At any of the specified locations**
- C. At the grounding rod only**
- D. At the electrical meter only**

The correct answer indicates that the grounding electrode conductor connection for a DC system located on the premises can be made at any of the specified locations permitted by the electrical code. This flexibility is crucial because it allows for adaptability to different installation scenarios and ensures that the grounding system can effectively protect both the electrical system and the connected equipment. These specified locations could include not only the main service panel but also various other points that conform to local code requirements and safety practices. By permitting connections at multiple locations, the code acknowledges the diversity of system configurations and installation environments, facilitating compliance while ensuring effective grounding and bonding. Other options are limited to specific locations or devices, which may not always align with best practices for grounding in all installation situations. Allowing for connections at any of the specified locations ensures comprehensive coverage and enhances the overall effectiveness of the grounding system.

6. Which material is not permitted as a wire-type grounding electrode conductor?

- A. Copper**
- B. Aluminum**
- C. Steel**
- D. Copper Clad-Aluminum**

In grounding systems, the materials used for grounding electrode conductors are subject to specific standards and regulations. Steel is not permitted as a wire-type grounding electrode conductor primarily because it is prone to corrosion, especially when exposed to moisture and varying environmental conditions. The effectiveness of a grounding system relies not only on the conductivity of the material but also on its longevity and ability to resist environmental degradation over time. Copper and aluminum are commonly used materials in grounding applications because they have excellent electrical conductivity and resistance to corrosion. Copper clad-aluminum is also accepted since it combines the benefits of both materials, featuring a conductive layer of copper over aluminum, which enhances its corrosion resistance while maintaining good conductivity. Choosing steel for grounding would potentially jeopardize the reliability and safety of the grounding system, which is why it is not permitted.

7. Is a supply-side bonding jumper required to be sized based on the overcurrent protective device protecting the circuit?

A. True

B. False

C. Depends on the voltage level

D. Only for residential applications

A supply-side bonding jumper does not need to be sized based on the overcurrent protective device protecting the circuit. Instead, it must be appropriately sized according to specific guidelines provided in the National Electrical Code (NEC) and other regulatory standards. The primary purpose of the bonding jumper is to ensure electrical continuity and conductivity among equipment, providing a low-resistance path for fault currents. This conductor is typically sized based on the size of the service-entrance conductors and the system it's serving, not directly on the rating of the overcurrent protection, which can vary based on many factors such as the load characteristics, equipment ratings, and installation conditions. Therefore, the statement that a supply-side bonding jumper must be sized based on the overcurrent protective device is not accurate, making the answer that it is false correct in this context. In contrast, other considerations, like voltage levels or application types (e.g., residential versus commercial), do not alter the fundamental requirement that the sizing is dictated by the system and NEC guidelines rather than the overcurrent protection ratings.

8. Is liquidtight flexible metal conduit suitable for use as an equipment grounding conductor for sizes 1 1/2 inches and larger if all conditions are met?

A. True

B. False

C. Only under specific temperature conditions

D. Only for temporary installations

Liquidtight flexible metal conduit (LFMC) is generally not considered suitable for use as an equipment grounding conductor, particularly for sizes 1 1/2 inches and larger, even if certain conditions are met. This is primarily due to its construction and the nature of its application, which do not consistently provide an effective ground path. Grounding conductors must meet specific conductivity and installation requirements to ensure safety and reliability. LFMC, while providing some level of physical protection for conductors, does not guarantee the necessary continuity and capacity needed for effective grounding. The conduit itself is designed for flexibility and environmental protection rather than for grounding purposes. In certain applications, while flexible metallic conduits can provide grounding capabilities, they must meet strict requirements that would often render them inappropriate for grounding when considering their flexibility and the potential for movement or vibration that could interrupt the ground continuity. Therefore, the assertion that LFMC is suitable for use as an equipment grounding conductor is inaccurate, leading to the conclusion that the answer is indeed false.

9. How many times per second does voltage and current change amplitude and direction in a 60-cycle AC circuit?

- A. 60**
- B. 90**
- C. 120**
- D. 240**

In a 60-cycle alternating current (AC) circuit, the frequency of the voltage and current is 60 hertz (Hz), which means that the waveform completes one full cycle 60 times every second. Since an AC waveform changes direction twice during each complete cycle—once when it goes from positive to negative and again when it returns to positive—the voltage and current change their amplitude and direction a total of 120 times per second. Therefore, the correct answer is the option that reflects this doubling of occurrences per cycle. In a 60-cycle AC circuit, the voltage and current alternate polarity and reach their peak amplitudes a total of 120 times in one second. This fundamental characteristic of AC power is crucial for understanding how AC systems operate compared to direct current (DC) systems, where direction does not change.

10. The purpose of a grounding electrode is to serve as a connection between what two elements?

- A. Electrical systems and safety equipment**
- B. Ground (earth) and grounded electrical systems**
- C. Power supply and load**
- D. Ground (earth) and circuit breakers**

The purpose of a grounding electrode is to provide a direct connection between the ground (or earth) and the grounded electrical systems. This connection is essential for safety, as it allows any fault currents to be safely dissipated into the earth, minimizing the risk of electric shock or fire hazards. Grounding helps to stabilize voltage levels and provides a path for lightning or other surge events to reach the ground safely, reducing the risk of damage to electrical equipment and enhancing overall system reliability. The other options may address various aspects of electrical systems, such as connections critical for circuit operation or safety equipment, but they do not accurately capture the fundamental role of the grounding electrode, which specifically links the electrical system to the earth.

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://groundingbondinglvl1.examzify.com>

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

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