COLORADO JOURNEYMAN PRACTICE EXAM (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. **What is the voltage drop for a three-phase, 3-wire, 240-volt circuit with a load of 5 HP located 110 ft away from the panel using No. 8 AWG copper THHN?**

   A. 1.75 volts

   B. 2.25 volts

   C. 3.15 volts

   D. 4.00 volts

2. **What are feeder conductors used for?**

   A. To connect devices to the outlet

   B. To supply power from the main service to sub-panels and branch circuits

   C. To provide ground connection

   D. To distribute circuit loads evenly

3. **How much change in length would 100 ft of PVC conduit experience with temperature fluctuations from -10°F to 110°F?**

   A. 3.25 inches

   B. 4.87 inches

   C. 5.50 inches

   D. 6.00 inches

4. **What type of wiring is commonly used in residential electrical systems in Colorado?**

   A. Metallic conduit

   B. Non-metallic sheathed cable (NM cable)

   C. Fiber optic wiring

   D. Twisted pair wiring

5. **"Connected to the ground or to a conductive body that extends the ground connection." refers to which term?**

   A. Grounded

   B. Bonded

   C. Connected

   D. Wired

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6. Which type of circuit breaker is designed to protect against ground faults?

A. Circuit Breaker (CB)

B. Ground Fault Circuit Interrupter (GFCI)

C. Arc Fault Circuit Interrupter (AFCI)

D. Standard Breaker

7. What is the minimum height for installing a residential service entrance?

A. 6 feet above ground

B. 8 feet above ground

C. 10 feet above ground

D. 12 feet above ground

8. How many grounding electrodes are required for a residential service system?

A. No grounding electrodes

B. One grounding electrode

C. Two grounding electrodes

D. Three grounding electrodes

9. Which circuit component is crucial for protecting against voltage spikes?

A. Resistor

B. Diode

C. Surge protector

D. Capacitor

10. The total square inch area of a three-inch intermediate metal conduit is _____.

A. 5.500 sq. inches

B. 7.922 sq. inches

C. 9.100 sq. inches

D. 10.250 sq. inches

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Answers

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

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Explanations

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1. What is the voltage drop for a three-phase, 3-wire, 240-volt circuit with a load of 5 HP located 110 ft away from the panel using No. 8 AWG copper THHN?

A. 1.75 volts

B. 2.25 volts

C. 3.15 volts

D. 4.00 volts

To determine the voltage drop for a three-phase, 3-wire, 240-volt circuit with a specified load and distance, it's essential to use the appropriate formulas that take into account the load in horsepower, distance, and wire gauge. First, convert the horsepower to watts, as electrical calculations typically utilize watts. Since 1 HP is approximately 746 watts, a 5 HP load translates to around 3,730 watts (5 HP × 746). Next, to determine the current (I) flowing through the circuit, we can utilize the formula for calculating current in a three-phase system: \[I = \frac{P}{\sqrt{3} \times V} \] Where P is power in watts and V is voltage. Plugging in our numbers gives: \[I = \frac{3730}{\sqrt{3} \times 240} \approx 10.73 \text{ Amperes} \] Now, the voltage drop can be calculated using the formula for a three-phase circuit: \[\text{Voltage Drop (VD)} = \frac{1.732 \times I \times L \times R}{1000} \] Where: - 1.732 is

2. What are feeder conductors used for?

A. To connect devices to the outlet

B. To supply power from the main service to sub-panels and branch circuits

C. To provide ground connection

D. To distribute circuit loads evenly

Feeder conductors play a crucial role in the electrical distribution system by supplying power from the main service equipment, such as the main panel, to sub-panels and branch circuits. This function is essential for ensuring that electrical distribution is managed efficiently and safely across various points in a building or facility. The feeders carry the current needed for the operation of sub-panels, which then can supply individual circuits for lighting, appliances, and other devices throughout the structure. Having a designated set of conductors for this purpose helps in maintaining a clear and organized electrical system, allowing for easier troubleshooting and load management. In the context of the other options, while connecting devices to outlets is a function of branch circuits, and providing a ground connection is vital for safety, they do not pertain to the primary role of feeder conductors. Similarly, while distributing circuit loads evenly is important for electrical safety and performance, it is not the direct function of feeder conductors specifically. Thus, the selection of the answer regarding the supply of power to sub-panels accurately reflects the fundamental purpose of feeder conductors in the electrical system design.

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3. How much change in length would 100 ft of PVC conduit experience with temperature fluctuations from -10°F to 110°F?

A. 3.25 inches

B. 4.87 inches

C. 5.50 inches

D. 6.00 inches

To determine the change in length of a 100 ft PVC conduit due to temperature fluctuations, the coefficient of linear expansion for PVC is essential. PVC typically expands or contracts at a rate of about 4.5 x 10^-5 per degree Fahrenheit. First, calculate the temperature change: - From -10°F to 110°F is a change of 120°F. Next, apply the formula for linear expansion: ΔL = L0 × α × ΔT Where: ΔL = change in length L0 = original length (100 ft in this case) α = coefficient of linear expansion (4.5 x 10^-5 per °F) ΔT = change in temperature (120°F) Converting 100 ft to inches, we know that 100 feet = 1200 inches. Now, plug in the values: ΔL = 1200 inches × (4.5 x 10^-5) × (120) Calculating this step by step: 1. Calculate the expansion factor: 4.5 x 10^-5 × 120 = 0.0054 2. Then multiply that by the original length in inches: 1200 × 0.0054 =

4. What type of wiring is commonly used in residential electrical systems in Colorado?

A. Metallic conduit

B. Non-metallic sheathed cable (NM cable)

C. Fiber optic wiring

D. Twisted pair wiring

Non-metallic sheathed cable, commonly referred to as NM cable, is widely used in residential electrical systems in Colorado and across the United States. This type of wiring is favored for its flexibility, ease of installation, and relative affordability. NM cable typically consists of two or more insulated conductors along with a bare ground wire, all encased in a plastic sheath, which provides protection and insulation. The use of NM cable is particularly advantageous for residential applications as it allows for easier routing through walls, ceilings, and various spaces in a home, which is essential during the construction or renovation of residential electrical systems. Furthermore, the National Electrical Code (NEC) permits NM cable for most residential wiring, which adds to its popularity and acceptance in the industry. In contrast, while metallic conduit has its applications, especially for added protection or in commercial settings, it is not the standard choice for residential wiring. Fiber optic wiring is typically used for data transmission rather than electrical power, making it unsuitable for general residential electrical needs. Twisted pair wiring is also primarily utilized for telecommunications and networking rather than for electrical power distribution in homes. Thus, NM cable stands out as the most appropriate answer for typical residential electrical systems in Colorado.

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5. "Connected to the ground or to a conductive body that extends the ground connection." refers to which term?

A. Grounded

B. Bonded

C. Connected

D. Wired

The term that refers to "connected to the ground or to a conductive body that extends the ground connection" is grounded. Grounding is a critical aspect of electrical safety, as it provides a path for electric current to flow into the earth in the case of a fault, thus preventing electrical shock and equipment damage. When a system is grounded, all parts that could become energized are linked to a common ground, ensuring that in the event of a malfunction, the electrical energy is safely dissipated into the ground. This is crucial for the safe operation of electrical systems in residential, commercial, and industrial settings. In contrast, the other terms do not precisely capture this concept. Bonded refers to the process of joining electrical devices together to ensure a consistent grounding potential among them to reduce the chance of shock hazards. Connected implies a generic link without the specific focus on grounding, and wired pertains more to the physical placement and integration of electrical conductors rather than their safety connection to ground. The clarity of the definition makes "grounded" the accurate choice for this context.

6. Which type of circuit breaker is designed to protect against ground faults?

A. Circuit Breaker (CB)

B. Ground Fault Circuit Interrupter (GFCI)

C. Arc Fault Circuit Interrupter (AFCI)

D. Standard Breaker

The Ground Fault Circuit Interrupter (GFCI) is specifically designed to protect against ground faults, which occur when there is an unintended path between a source of current and the grounded surface. This can happen, for example, when electrical equipment is used in wet areas, making individuals susceptible to electric shocks. GFCIs work by constantly monitoring the electrical current flowing through the circuit. If they detect any imbalance between the outgoing and returning current, indicative of a ground fault, they quickly cut off the power to prevent electrical shock. This rapid response is crucial for safety in areas such as kitchens, bathrooms, and outdoor settings where moisture is likely to be present. In contrast, standard circuit breakers primarily protect against overloads and short circuits, while arc fault circuit interrupters (AFCIs) are focused on preventing fires by detecting unintended arcs that can occur in damaged wiring. These other types of breakers do not provide the same level of ground fault protection that GFCIs offer.

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7. What is the minimum height for installing a residential service entrance?

A. 6 feet above ground

B. 8 feet above ground

C. 10 feet above ground

D. 12 feet above ground

The minimum height for installing a residential service entrance is typically set at 8 feet above ground. This requirement is in place to ensure safety and accessibility. By placing the service entrance at this height, it minimizes the risk of accidental contact with pedestrians or vehicles and provides adequate clearance for maintenance activities, such as pruning trees or servicing overhead lines. Furthermore, adhering to this height requirement is essential for compliance with the National Electrical Code (NEC) and local building codes, which dictate the standards for electrical installations. These codes are designed to protect both the individuals who may come into contact with the service entrance and the integrity of the electrical system itself. By following the specified 8-foot guideline, installations can help prevent hazards related to low-hanging wires and ensure a safer residential environment.

8. How many grounding electrodes are required for a residential service system?

A. No grounding electrodes

B. One grounding electrode

C. Two grounding electrodes

D. Three grounding electrodes

In a residential service system, the National Electrical Code (NEC) specifies that a grounding electrode system is essential for safety. While one grounding electrode is required for a residential service, having a single grounding electrode is generally deemed sufficient to provide a reliable electrical path to ground. This electrode system typically includes ground rods, metal water pipes, or other approved grounding methods. However, if the installed grounding electrode meets certain criteria—such as being a metal underground water pipe or a concrete-encased electrode—it may satisfy the requirements alone. It is advisable, especially for added safety and reliability, to use multiple grounding electrodes in certain scenarios. However, for the purposes of the basic requirement in standard residential installations, one grounding electrode is the minimum necessary to ensure the system is grounded, aligning with NEC guidelines.

9. Which circuit component is crucial for protecting against voltage spikes?

A. Resistor

B. Diode

C. Surge protector

D. Capacitor

The surge protector is specifically designed to safeguard electrical equipment from voltage spikes, which can occur for a variety of reasons, such as lightning strikes or sudden changes in electricity usage within the circuit. Surge protectors work by diverting or absorbing excess voltage, ensuring that the connected devices are not subjected to damaging levels of electricity. In contrast, while resistors limit the flow of current, they do not provide protection against voltage spikes. Diodes can allow current to flow in one direction and can help manage specific conditions, but they are not primarily intended for spike protection. Capacitors store electrical energy and can filter out voltage fluctuations, but they do not inherently protect against high voltage surges. Therefore, the surge protector is the most appropriate component for addressing the specific challenge of voltage spikes.

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10. The total square inch area of a three-inch intermediate metal conduit is _____.

A. 5.500 sq. inches

B. 7.922 sq. inches

C. 9.100 sq. inches

D. 10.250 sq. inches

To determine the total square inch area of a three-inch intermediate metal conduit, it's important to understand how to calculate the cross-sectional area of a circular conduit. The formula for the area of a circle is $A = \pi r^2$, where A is the area, π (pi) is approximately 3.14159, and r is the radius. For a three-inch conduit, the diameter is three inches, which means the radius is 1.5 inches (half of the diameter). Plugging this value into the formula gives us: $A = \pi(1.5 \text{ inches})^2$ $A = \pi(2.25 \text{ square inches})$ $A \approx 3.14159 \times 2.25 \text{ square inches}$ $A \approx 7.06858 \text{ square inches}$ Rounding that value gives approximately 7.07 square inches. However, in conduit applications, manufacturers often list the standard cross-sectional area slightly differently for practical use, which can lead to slight variations. In this context, the answer provided, 7.922 sq. inches, aligns with the standard area that might be referenced as the effective working area used in construction and compliance with electrical codes. This area accounts for additional factors relevant in practical applications such as space needed for

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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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