

# Journeymen Electrician Practice Exam (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 is the ampacity of a size 1/0 AWG THW copper current-carrying conductor in a raceway with three other conductors at 86°F?**
  - A. 100 amperes**
  - B. 120 amperes**
  - C. 140 amperes**
  - D. 160 amperes**
- 2. What is the minimum size equipment grounding conductor required for a 5 hp, 3-phase, 208-volt motor?**
  - A. 12 AWG**
  - B. 10 AWG**
  - C. 8 AWG**
  - D. 6 AWG**
- 3. How high above finished grade must direct-buried conductors or cables be protected?**
  - A. 6 feet**
  - B. 7 feet**
  - C. 8 feet**
  - D. 9 feet**
- 4. What is the ampacity of size 8/3 AWG with ground copper NM cable installed in an attic where the ambient temperature reaches 130°F?**
  - A. 30.0 amperes**
  - B. 35.0 amperes**
  - C. 40.0 amperes**
  - D. 45.0 amperes**
- 5. What is the maximum height that conduits can rise above the bottom of an enclosure at the point of entry into a switchboard or panelboard?**
  - A. 2 inches**
  - B. 3 inches**
  - C. 4 inches**
  - D. 5 inches**

**6. What is the minimum calculation for general purpose receptacle loads in commercial buildings before demand factors are applied?**

- A. 120 VA per receptacle**
- B. 150 VA per receptacle**
- C. 180 VA per receptacle**
- D. 200 VA per receptacle**

**7. What is the minimum ampacity percentage required for branch-circuit conductors supplying multiple motors?**

- A. 100%**
- B. 110%**
- C. 125%**
- D. 150%**

**8. What is the ampacity of a size 8 AWG single copper conductor with Type FEPB insulation, installed in free air?**

- A. 60 amperes**
- B. 70 amperes**
- C. 80 amperes**
- D. 90 amperes**

**9. What is the minimum clearance required between luminaires and the lowest surface of metal-corrugated sheet roofing decking?**

- A. 1 inch**
- B. 1 1/4 inches**
- C. 1 1/2 inches**
- D. 2 inches**

**10. What is the maximum voltage to ground required when installing wiring for sensitive electronic equipment?**

- A. 40 volts**
- B. 50 volts**
- C. 60 volts**
- D. 70 volts**

## **Answers**

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

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## **Explanations**

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**1. What is the ampacity of a size 1/0 AWG THW copper current-carrying conductor in a raceway with three other conductors at 86°F?**

- A. 100 amperes**
- B. 120 amperes**
- C. 140 amperes**
- D. 160 amperes**

To determine the ampacity of a size 1/0 AWG THW (Thermoplastic Heat and Water-resistant) copper conductor, it's important to refer to the National Electrical Code (NEC) ampacity tables, specifically considering the conditions under which the conductor operates—such as the number of conductors in a raceway and their temperature rating. In this scenario, with four conductors in a raceway at a temperature of 86°F, the ampacity of a single 1/0 AWG THW copper conductor is typically listed in Table 310.16 of the NEC. For conductors rated at an ambient temperature of 86°F, the standard ampacity is often at least 140 amperes. However, since there are three other conductors in the raceway, it's crucial to apply the adjustment factors provided in the NEC for the number of conductors, which typically reduces the ampacity to prevent overheating. Specifically, when more than three conductors are present in a raceway, the ampacity is usually reduced by a percentage. Based on the NEC adjustment for having four conductors, you would take the initial rating and adjust it accordingly. The adjusted ampacity should ultimately lead to a rating of 120 amperes.

**2. What is the minimum size equipment grounding conductor required for a 5 hp, 3-phase, 208-volt motor?**

- A. 12 AWG**
- B. 10 AWG**
- C. 8 AWG**
- D. 6 AWG**

The minimum size equipment grounding conductor for a motor is determined based on its full-load current and the requirements set forth in the National Electrical Code (NEC). For a 5 hp, 3-phase motor operating at 208 volts, the full-load current can be calculated using specific guidelines available in NEC tables. According to NEC Table 430.250, the full-load current for a 5 hp, 3-phase motor at 208 volts is approximately 14.5 amperes. When sizing the equipment grounding conductor, the NEC requires it to be sized according to NEC Table 250.122, which lists the minimum equipment grounding conductor sizes based on the overcurrent protection device rating. For a full-load current of 14.5 amps, the 10 AWG copper grounding conductor is sufficient, as it is the minimum size required for circuits rated up to 20 amps. Thus, selecting a 10 AWG copper equipment grounding conductor meets the code requirements while providing adequate ground fault protection for the motor and its associated equipment. Therefore, based on NEC requirements, the correct answer is indeed 10 AWG. The other sizes would either be too large or incorrect for the specific application of a 5 hp motor at the given voltage and

**3. How high above finished grade must direct-buried conductors or cables be protected?**

- A. 6 feet**
- B. 7 feet**
- C. 8 feet**
- D. 9 feet**

Direct-buried conductors or cables must be protected when they are above finished grade at a height of 8 feet. This requirement is in place to ensure safety by preventing accidental contact with the conductors or cables during activities such as maintenance, landscaping, or construction. The height of 8 feet is standard for areas where equipment might cross paths with these installations, ensuring that proper clearance is maintained to avoid electrical hazards. When installed correctly at this height, the risk of physical damage or unintended interactions with the conductors is minimized, promoting overall safety for both individuals and property in proximity to the installation.

**4. What is the ampacity of size 8/3 AWG with ground copper NM cable installed in an attic where the ambient temperature reaches 130°F?**

- A. 30.0 amperes**
- B. 35.0 amperes**
- C. 40.0 amperes**
- D. 45.0 amperes**

To determine the ampacity of 8/3 AWG copper NM (non-metallic) cable installed in an attic with a high ambient temperature of 130°F, it is essential to consider both the basic ampacity values set forth in the National Electrical Code (NEC) and adjustments required for temperature. Under normal conditions, the ampacity of 8 AWG copper wire is typically around 40 amperes. However, when the cable is exposed to higher temperatures, such as 130°F, derating is necessary. The NEC mandates that for every degree above 86°F, there should be a reduction in the ampacity rating to account for potential overheating. Specifically, at 130°F, the temperature adjustment would reduce the ampacity from its base rating. Since common practice suggests using a 30% derating factor for NM cables in high temperature environments, we apply this derating to the 40 amperes base rating of the 8 AWG copper. The calculation would involve adjusting the ampacity down to a maximum allowable capacity, which amounts to 40 amperes multiplied by the remaining capacity after temperature adjustments. As a result, grounding the calculations, the adjusted ampacity leads to a final value

**5. What is the maximum height that conduits can rise above the bottom of an enclosure at the point of entry into a switchboard or panelboard?**

**A. 2 inches**

**B. 3 inches**

**C. 4 inches**

**D. 5 inches**

The maximum height that conduits can rise above the bottom of an enclosure at the point of entry into a switchboard or panelboard is specified to be 3 inches. This requirement is in place to ensure ease of installation and maintenance as well as to reduce the risk of damage to the conduits and their contents during servicing. Additionally, it helps in aligning the conduit appropriately with the equipment and minimizing any stress or strain on both the conduits and electrical connections. This measurement is important because it adheres to the standards set forth in the National Electrical Code (NEC), which regulates safe electrical design, installation, and inspection. Following this guideline leads to improved safety and function within electrical systems, as it provides clear parameters on proper installation practices. In contrast, other height options such as 2 inches, 4 inches, or 5 inches would either be insufficient or excessive based on these industry standards, possibly leading to complications during either installation or servicing. Thus, the specification of 3 inches aligns with established practices for electrical installations.

**6. What is the minimum calculation for general purpose receptacle loads in commercial buildings before demand factors are applied?**

**A. 120 VA per receptacle**

**B. 150 VA per receptacle**

**C. 180 VA per receptacle**

**D. 200 VA per receptacle**

The minimum calculation for general purpose receptacle loads in commercial buildings before applying demand factors is established by the National Electrical Code (NEC). The standard stipulates that the minimum load per general purpose receptacle should be calculated at 180 volt-amperes (VA) for the purposes of designing electrical systems. Using 180 VA per receptacle allows for a realistic assessment of potential electrical loads, accommodating the use of various devices that may be plugged into these receptacles. This calculation provides a safety margin, ensuring that the electrical system can handle the load without overloading circuits. It is important to note that calculations of receptacle loads are essential for appropriate sizing of conductors, circuit breakers, and panel boards, aiding in the overall safety and functionality of the electrical distribution system in commercial environments.

**7. What is the minimum ampacity percentage required for branch-circuit conductors supplying multiple motors?**

- A. 100%**
- B. 110%**
- C. 125%**
- D. 150%**

The minimum ampacity percentage required for branch-circuit conductors supplying multiple motors is based on the NEC (National Electrical Code) guidelines. When calculating the ampacity for conductors serving multiple motors, the code specifies that the conductors must be sized to at least 125% of the largest motor's full load current plus the full load currents of the other motors in the circuit. This ensures that the conductors can handle the maximum anticipated load without overheating and to prevent voltage drop that could adversely affect motor performance. Using 125% helps to account for the inrush current that occurs when motors start, which is significantly higher than their running load. This ensures that the conductors are adequately rated to handle not just the continuous load but also the temporary spikes in current associated with motor operation. Choosing 100% or lower percentages would not provide sufficient capacity for heating or the additional starting currents that motors typically experience. A higher percentage like 150% goes beyond the necessary allowance, which could lead to oversizing, unnecessarily increasing costs and complications in installation. Thus, 125% is the precise and calculated minimum requirement for such applications, ensuring both safety and functionality.

**8. What is the ampacity of a size 8 AWG single copper conductor with Type FEPB insulation, installed in free air?**

- A. 60 amperes**
- B. 70 amperes**
- C. 80 amperes**
- D. 90 amperes**

The ampacity of a size 8 AWG single copper conductor is determined by various factors, including the conductor's size, material, insulation type, and its installation conditions. For a size 8 AWG copper conductor with Type FEPB insulation, installed in free air, the ampacity can be referenced from the National Electrical Code (NEC) tables. When copper conductors are installed in free air, they can usually carry more current compared to those installed in conduit or other configurations. Specifically, Type FEPB insulation is rated to handle higher temperatures, which allows the conductor to safely carry an increased load. According to NEC guidelines, a size 8 AWG copper conductor with the specified insulation type, under free air conditions, can typically carry 80 amperes. However, depending on the referencing guide or regional amendments, it may be calculated or rounded to 90 amperes in specific scenarios, but the most common referenced value for practical purposes remains around 80 amperes. Thus, understanding the insulation type and installation method, along with the proper source references, contributes to determining the correct ampacity value for this conductor setup.

**9. What is the minimum clearance required between luminaires and the lowest surface of metal-corrugated sheet roofing decking?**

- A. 1 inch**
- B. 1 1/4 inches**
- C. 1 1/2 inches**
- D. 2 inches**

The minimum clearance required between luminaires and the lowest surface of metal-corrugated sheet roofing decking is 1 1/2 inches. This requirement is crucial for ensuring safety and proper heat dissipation. Luminaires generate heat during operation, and maintaining the specified clearance helps prevent overheating, which could lead to potential fire hazards or damage to both the lighting fixtures and the roofing materials. The clearance requirement is established to ensure that there is enough space for air circulation around the luminaire, minimizing the risk of heat buildup. It's essential for electricians and installers to adhere to these guidelines to comply with safety codes and to promote the longevity of the lighting fixture in various environmental conditions.

**10. What is the maximum voltage to ground required when installing wiring for sensitive electronic equipment?**

- A. 40 volts**
- B. 50 volts**
- C. 60 volts**
- D. 70 volts**

The maximum voltage to ground for installing wiring for sensitive electronic equipment is 60 volts. This standard is in place to ensure safety and minimize the risk of electrical shock while protecting sensitive devices from damage due to excessive voltage levels. Sensitive electronic equipment, such as computers and medical devices, can be particularly vulnerable to fluctuations in voltage and electrical noise. By adhering to the 60 volts maximum threshold, installers can maintain a safer electrical environment that reduces the likelihood of interference or damage caused by higher voltages. This limit also aligns with various industry standards and codes designed to protect both personnel and equipment from electrical hazards. It is essential for electricians to understand these values, ensuring they comply with safety regulations while effectively serving their clients' needs.

# 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://journeymanelectrician.examzify.com>**

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

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