

INDEPENDENT ELECTRICAL CONTRACTORS (IEC) 212 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.

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. The demand load for household ranges above 1.75 kW uses which NEC table?**
 - A. Table 210.19
 - B. Table 220.3
 - C. Table 310.16
 - D. Table 220.55
- 2. The NEC requires the ampacity of a feeder shall be equal to, or greater than ____.**
 - A. the calculated load after demand factors have been applied
 - B. the connected load
 - C. the sum of all branch circuit loads
 - D. the largest single load
- 3. In the example, which conduit type is used for the underground feeder to the detached garage?**
 - A. Rigid PVC conduit
 - B. EMT conduit
 - C. Flexible metal conduit
 - D. Schedule 40 PVC conduit
- 4. GFPE device installation: Which configuration requires GFPE device?**
 - A. 480/277-volt, 3Ø, 4-wire switchgear with a 1000-A main breaker
 - B. 120/208-volt, 3Ø, 4-wire 1200-Amp switchboard
 - C. Both A and B
 - D. Neither A nor B
- 5. Which of the following statements best describes GFPE requirements in the configurations listed?**
 - A. GFPE is required for the 480/277-volt system
 - B. GFPE is required for the 120/208-volt system
 - C. GFPE is required for both systems
 - D. GFPE is required for neither system

6. The described 120/208-volt feeder is a four-wire feeder. Which statement is true about the feeder type?
- A. It is a 4-wire feeder
 - B. It is a 3-wire feeder
 - C. It is a 2-wire feeder
 - D. It is a 5-wire feeder
7. Voltage drop consideration in feeder sizing helps ensure which outcome?
- A. Reduced energy cost
 - B. Acceptable voltage at distant outlets
 - C. Both A and B
 - D. None of the above
8. What does NEC Table 250.122 address?
- A. The sizing of equipment grounding conductors based on overcurrent device rating.
 - B. The color coding of grounding conductors.
 - C. The voltage rating of conductors.
 - D. The ampacity of conductors based on insulation type.
9. What is the size of the smallest aluminum service-drop conductor allowed for installation?
- A. 4 AWG
 - B. 6 AWG
 - C. 8 AWG
 - D. 2 AWG
10. In an inductive load, what happens to current phase relative to voltage?
- A. Inductive loads have no effect on phase.
 - B. Inductive loads draw current in phase with voltage.
 - C. Inductive loads cause current to lead voltage.
 - D. Inductive loads cause current to lag voltage.

Answers

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

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Explanations

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1. The demand load for household ranges above 1.75 kW uses which NEC table?

- A. Table 210.19
- B. Table 220.3
- C. Table 310.16
- D. Table 220.55**

Cooking appliance demand loads are evaluated with a dedicated table because ranges and ovens don't draw their full nameplate current all at once. When a household range is rated above 1.75 kW, you use Table 220.55 to determine the demand load. This table provides factors based on how many ranges are installed and their sizes, reflecting typical usage patterns and applying a demand factor rather than simply summing all ratings. That approach helps size the service and feeders more accurately and avoid oversizing. Other tables exist for different purposes (general lighting and receptacle loads, conductor sizing, etc.), but they aren't used to calculate the cooking appliance demand. So, for ranges above 1.75 kW, the appropriate table is Table 220.55.

2. The NEC requires the ampacity of a feeder shall be equal to, or greater than ____.

- A. the calculated load after demand factors have been applied**
- B. the connected load
- C. the sum of all branch circuit loads
- D. the largest single load

Feeder ampacity is determined from the calculated load after applying demand factors, because not all connected loads reach their full rating at the same time. Demand factors reflect how actual usage varies and reduce the total to a realistic, safe, and economical value. Relying on the connected load or the sum of all branch-circuit loads would generally overstate what's actually drawn, while sizing to the single largest load would underrepresent the rest of the system. The NEC uses this calculated load to size feeders so they can handle the expected simultaneous demand.

3. In the example, which conduit type is used for the underground feeder to the detached garage?

- A. Rigid PVC conduit**
- B. EMT conduit
- C. Flexible metal conduit
- D. Schedule 40 PVC conduit

For an underground feeder to a detached structure, you want a raceway that stands up to moisture, soil pressure, and possible backfill damage while protecting the conductors. Rigid PVC conduit fits that need well because it's nonconductive, corrosion-resistant, and designed for underground use. When joints are solvent-welded, it forms a watertight path, and its rigidity provides solid protection along long burial runs. Compared to EMT (metallic) and flexible metal conduit, rigid PVC is better suited for direct burial and long underground runs in a trench. Schedule 40 PVC refers to the same rigid PVC family, but the example's wording highlights the rigid form as the appropriate choice for underground feeders, which is why this option is selected.

4. GFPE device installation: Which configuration requires GFPE device?

- A. 480/277-volt, 3Ø, 4-wire switchgear with a 1000-A main breaker**
- B. 120/208-volt, 3Ø, 4-wire 1200-Amp switchboard
- C. Both A and B
- D. Neither A nor B

Ground-Fault Protection of Equipment (GFPE) is used to protect large feeders and switchgear from damage caused by ground faults by sensing a ground fault and tripping quickly. The requirement for a GFPE device depends on the system voltage and the feeder's ampacity. In a 480/277-volt distribution setup that uses three-phase four-wire switchgear with a main breaker rated at 1000 A, the system meets the condition where GFPE protection is required because the feeder is both high in current and part of a 480Y/277 V distribution where ground faults can cause substantial damage to equipment. The protection is intended to limit Equipment damage by interrupting faults before they escalate. For a 120/208-volt, three-phase four-wire arrangement with a 1200-A switchboard, the scenario described does not align with the same GFPE requirement in this context. Although the switchboard rating is high, this particular configuration is not indicated as triggering GFPE in the rule set being tested, so GFPE is not mandated here. The core idea is that GFPE is tied to protecting equipment on high-current, higher-voltage distribution configurations, and the 480/277 V setup with a 1000-A main breaker fits that scenario, whereas the 120/208 V arrangement shown does not in this question's framing.

5. Which of the following statements best describes GFPE requirements in the configurations listed?

- A. GFPE is required for the 480/277-volt system**
- B. GFPE is required for the 120/208-volt system
- C. GFPE is required for both systems
- D. GFPE is required for neither system

GFPE protects equipment by detecting a ground fault and interrupting current before insulation damage or a fire can occur, especially on higher voltage systems. In a 480/277V system, the line-to-ground voltage is high enough (277V to ground) that a ground fault can energize exposed equipment with dangerous energy, so protection with GFPE is required to quickly disconnect the fault. A 120/208V system operates at a lower voltage and is typically safeguarded by standard overcurrent protection and GFCIs for receptacles, so GFPE is not mandated for that configuration. Thus, GFPE requirements apply to the 480/277V system.

6. The described 120/208-volt feeder is a four-wire feeder. Which statement is true about the feeder type?

- A. It is a 4-wire feeder**
- B. It is a 3-wire feeder
- C. It is a 2-wire feeder
- D. It is a 5-wire feeder

In a 120/208 V system, the power comes from a 3-phase wye setup where each of the three phase conductors is hot and there is a neutral. You get 120 V between any hot and the neutral, and 208 V between any two hot lines. To supply both types of loads, you need four conductors: three hot conductors plus a neutral. So this described feeder is a four-wire feeder. The 120 V loads use the hot-to-neutral path, while 208 V exists between any two hot lines.

7. Voltage drop consideration in feeder sizing helps ensure which outcome?

- A. Reduced energy cost
- B. Acceptable voltage at distant outlets**
- C. Both A and B
- D. None of the above

Voltage drop along a feeder is the loss in voltage that occurs as current flows through the conductor's resistance over its length. When feeders are sized properly, their resistance is low enough that the voltage at distant outlets stays within the acceptable range specified for electrical equipment. That's the main goal: ensure devices receive usable voltage even far from the panel. If the feeder is too small for the load, the resistance causes a larger drop, and the far end could see voltages below what equipment needs to operate correctly. Larger conductors or shorter runs reduce this drop, keeping voltage within tolerance. While reducing energy costs can be affected by overall system losses, the primary purpose of considering voltage drop in feeder sizing is to maintain acceptable voltage at distant outlets, not to cut energy bills.

8. What does NEC Table 250.122 address?

- A. The sizing of equipment grounding conductors based on overcurrent device rating.**
- B. The color coding of grounding conductors.
- C. The voltage rating of conductors.
- D. The ampacity of conductors based on insulation type.

The main concept is sizing the equipment grounding conductor so it can carry enough fault current to trip the overcurrent protection quickly. NEC Table 250.122 sets the minimum size for the equipment grounding conductor based on the rating of the overcurrent device protecting the circuit. It shows separate sizes for copper and aluminum conductors and increases the required size as the protective device rating increases. This ensures a low-impedance path for fault current, helping to clear faults fast and protect people and equipment. It isn't about color coding, voltage rating, or the ampacity of current-carrying conductors, which are addressed elsewhere.

9. What is the size of the smallest aluminum service-drop conductor allowed for installation?

- A. 4 AWG
- B. 6 AWG**
- C. 8 AWG
- D. 2 AWG

The concept tested is the minimum size allowed for service-drop conductors based on material. For aluminum service-drop conductors feeding a dwelling, the smallest size permitted is six AWG. This size provides enough current-carrying capacity and thermal performance for typical residential loads and outdoor installation, while smaller sizes would not meet the minimum requirement and could overheat or fail under load. Larger sizes are used only when the calculated load or run length necessitates them.

10. In an inductive load, what happens to current phase relative to voltage?

- A. Inductive loads have no effect on phase.
- B. Inductive loads draw current in phase with voltage.
- C. Inductive loads cause current to lead voltage.
- D. Inductive loads cause current to lag voltage.**

In an inductive load, the current lags the voltage. This happens because an inductor resists changes in current, and the voltage across it is proportional to the rate of change of that current ($v = L di/dt$). When you apply a sinusoidal AC voltage, the resulting current is effectively the integral of that voltage, which shifts the current waveform behind the voltage by about 90 degrees in a purely inductive circuit. In real circuits, there's also some resistance, so the lag is less than 90 degrees, but the current still falls behind the voltage. This is why inductive loads like motor windings or coils draw current that trails the voltage waveform.

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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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