

NCCER Load Calculations - Feeders and Services (26401-23) 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. Which statement is true about show window lighting load?**
 - A. It is calculated per linear foot**
 - B. It is calculated per square foot**
 - C. It is calculated per square meter**
 - D. It is a fixed value regardless of length**

- 2. Which NEC element contains ampacity tables?**
 - A. Neutral conductor color codes**
 - B. Conductor testing procedures**
 - C. Ampacity tables**
 - D. Ambient temperature correction factors**

- 3. Under the 10' tap rule, the total length of the tap conductors must not exceed how many feet?**
 - A. 5 ft**
 - B. 15 ft**
 - C. 10 ft**
 - D. 20 ft**

- 4. Which NEC section discusses motor data including rating of branch circuits and protections?**
 - A. NEC Section 430.24**
 - B. NEC Section 430.6(A)(1)**
 - C. NEC Section 220.14(A)**
 - D. NEC Section 230.42**

- 5. What does NEC Section 240.21(C) cover?**
 - A. Feeder taps**
 - B. Full load current for motors**
 - C. Transformer secondary conductors**
 - D. Outside taps unlimited length**

- 6. Which NEC section covers Feeder Taps?**
 - A. NEC Section 240.4: Protection of conductors**
 - B. NEC Section 240.21(B): Feeder Taps**
 - C. NEC Section 240.21(C): Transformer secondary conductors**
 - D. NEC Section 230.6: Conductors outside the building**

- 7. For electric space heating, feeders and services can be calculated at what percentage?**
- A. 100%**
 - B. 50%**
 - C. 25%**
 - D. 75%**
- 8. A 15,000 ft² office building has what minimum lighting load?**
- A. 10,200 VA**
 - B. 19,500 VA**
 - C. 25,000 VA**
 - D. 32,500 VA**
- 9. What is the current in amps for a 3-phase 480V feeder supplying 112.5 kVA?**
- A. 135.32 A**
 - B. 120.0 A**
 - C. 150.0 A**
 - D. 170.0 A**
- 10. Table 310.15(C)(1) addresses which of the following?**
- A. Ampacity for conductors at standard temperature**
 - B. OCPD interrupting rating**
 - C. Neutral conductor sizing**
 - D. Adjustment factors for more than 3 current carrying conductors**

Answers

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

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Explanations

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1. Which statement is true about show window lighting load?

- A. It is calculated per linear foot**
- B. It is calculated per square foot**
- C. It is calculated per square meter**
- D. It is a fixed value regardless of length**

The key idea is that show window lighting load is sized using a per-linear-foot basis because the lighting along a storefront window runs continuously across its length. The total load grows in direct proportion to how long the window is, since fixtures are typically distributed along that length in a continuous strip. So you take the wattage (or VA) per foot of window and multiply by the window's length to get the total load for that display. This approach makes sense here because the physical arrangement is along a line, not a defined area inside a room. If you tried to use per-square-foot (area) calculations, you'd ignore how many fixtures are actually installed along the window's length and would either under- or over-size the feeder and service based on the window's height or other dimensions that don't drive the lighting load in this case. A fixed value would also be inappropriate because a longer window clearly adds more lighting load. So, the correct concept is that show window lighting load is calculated per linear foot of window.

2. Which NEC element contains ampacity tables?

- A. Neutral conductor color codes**
- B. Conductor testing procedures**
- C. Ampacity tables**
- D. Ambient temperature correction factors**

Ampacity data, the current-carrying capacity of a conductor, is presented in dedicated tables that specify maximum amps for different conductor sizes, insulation types, and temperature ratings. These ampacity tables are the go-to reference you use to size conductors and are located in Article 310 of the NEC. After pulling the base ampacity from the appropriate table, you may apply ambient temperature correction factors (also part of NEC calculations) to adjust the value for your specific installation conditions, but the actual tables that list the current ratings are the ampacity tables themselves. The other items listed—neutral color codes or conductor testing procedures—do not contain the ampacity data.

3. Under the 10' tap rule, the total length of the tap conductors must not exceed how many feet?

- A. 5 ft**
- B. 15 ft**
- C. 10 ft**
- D. 20 ft**

The key idea is that when you "tap" a branch circuit from a feeder, there's a limit on how long those tap conductors can be. The 10-foot tap rule gives a maximum length for those tap conductors to stay within the simplified protection and calculation framework of a feeder tap. Keeping the length to ten feet helps ensure the upstream overcurrent protection properly protects the tap conductors and that voltage drop and fault conditions stay within design expectations. If the tap were longer than ten feet, you'd have to treat it with a different approach and apply the longer-tap rules or a full feeder calculation rather than the simple tap rule. So the correct limit is ten feet.

4. Which NEC section discusses motor data including rating of branch circuits and protections?

- A. NEC Section 430.24
- B. NEC Section 430.6(A)(1)**
- C. NEC Section 220.14(A)
- D. NEC Section 230.42

The essential idea is that motor circuits have their own specific rules in the NEC, tying the motor's nameplate data to how you size the branch-circuit conductors and the overcurrent protection. The section in question directly covers how to use motor data—especially the full-load current (FLC) and related nameplate information—to determine the appropriate branch-circuit rating and protection for a motor. It lays out the requirements for sizing the conductors and selecting the protective device based on that motor data, ensuring the circuit can safely carry the motor's load and be protected properly. In practice, you'd look at the motor's data on the nameplate, identify the FLC, and apply the section's rules to determine the minimum circuit ampacity and the appropriate overcurrent protection. This is the part of the code that connects the motor's data to the actual wiring and protection you install. Other NEC sections mentioned in the choices address different topics—general branch-circuit sizing for non-motor loads, service conductors for the electrical service, or other motor-related requirements—but they do not focus on the motor data and its direct link to branch-circuit rating and protections the way this section does.

5. What does NEC Section 240.21(C) cover?

- A. Feeder taps
- B. Full load current for motors
- C. Transformer secondary conductors**
- D. Outside taps unlimited length

This section focuses on the protection and sizing of transformer secondary conductors. The secondary conductors are the wires on the low-voltage side of a transformer—the lines that deliver the transformed power to the downstream circuits. NEC 240.21(C) sets requirements to ensure these conductors are protected by an overcurrent device and sized appropriately for the load on the transformer's secondary, so the conductors aren't under- or overprotected. In practice, this means the overcurrent protection on the secondary side must be chosen to protect the secondary conductors themselves, based on their ampacity, while also considering the transformer's secondary rating. This is distinct from feeder taps or motor full-load current calculations, which are addressed by other sections and articles of the NEC. It's also not about "outside taps of unlimited length," which isn't a valid provision in this context. So, transformer secondary conductors are what NEC Section 240.21(C) covers.

6. Which NEC section covers Feeder Taps?

- A. NEC Section 240.4: Protection of conductors
- B. NEC Section 240.21(B): Feeder Taps**
- C. NEC Section 240.21(C): Transformer secondary conductors
- D. NEC Section 230.6: Conductors outside the building

Feeder taps are addressed specifically in NEC 240.21(B). This section lays out the rules for conductors tapped from a feeder to supply a branch circuit or transformer, including how those tapping conductors are sized and protected and the permissible tap lengths when the tap is taken from a feeder ahead of the overcurrent device. It's the exact place in the code that governs the practice of creating a feeder tap and ensures proper coordination between protection and conductor sizing so the tapping conductors don't create unsafe conditions. The other sections mentioned cover different topics: 240.4 deals with protection of conductors in general, not the special case of taps; 240.21(C) covers transformer secondary conductors (not feeder taps); and 230.6 addresses conductors outside the building.

7. For electric space heating, feeders and services can be calculated at what percentage?

- A. 100%**
- B. 50%
- C. 25%
- D. 75%

The key idea is that when sizing feeders and services, you apply a factor to reflect how likely it is that different loads will be on at the same time. Electric space heating is treated as a full-load condition, so you use 100% of the connected space-heating load in the calculation. This is because heating in multiple zones can be required simultaneously in cold weather, leaving little room for diversity or simultaneous-use reductions. So you sum all the space-heating equipment and include its full rating (100%) in the feeder/service sizing. Other loads may be reduced with demand factors, but space heating is taken at full load in this context.

8. A 15,000 ft² office building has what minimum lighting load?

- A. 10,200 VA
- B. 19,500 VA**
- C. 25,000 VA
- D. 32,500 VA

In sizing feeders and services, the minimum lighting load for a space is found by applying the standard general lighting load per square foot to the area of the space. For an office space, the typical minimum general lighting value used in these problems is 1.3 VA per square foot. Multiply that by the building's area to get the total minimum lighting load. So for 15,000 ft²: $15,000 \text{ ft}^2 \times 1.3 \text{ VA/ft}^2 = 19,500 \text{ VA}$ This represents the baseline lighting load that must be included in the feeder/service calculation before any demand factors. The other numbers would come from using different per-square-foot values, which aren't used in this scenario.

9. What is the current in amps for a 3-phase 480V feeder supplying 112.5 kVA?

- A. **135.32 A**
- B. 120.0 A
- C. 150.0 A
- D. 170.0 A

For a three-phase system, the apparent power S in volt-amps relates to line voltage and line current by $S = \sqrt{3} \times V_{L-L} \times I_L$. To find the current, rearrange $I_L = S / (\sqrt{3} \times V_{L-L})$. Plugging in $S = 112.5 \text{ kVA}$ (112,500 VA) and $V_{L-L} = 480 \text{ V}$ gives $I = 112,500 / (\sqrt{3} \times 480) = 112,500 / (1.732 \times 480) \approx 112,500 / 831.38 \approx 135.3 \text{ A}$, about 135.32 A. This shows that carrying 112.5 kVA at 480 V three-phase requires roughly 135 A. PF isn't needed here since we're dealing with apparent power.

10. Table 310.15(C)(1) addresses which of the following?

- A. Ampacity for conductors at standard temperature
- B. OCPD interrupting rating
- C. Neutral conductor sizing
- D. **Adjustment factors for more than 3 current carrying conductors**

Adjustment factors for more than three current-carrying conductors in a raceway, cable, or conduit. When several conductors share the same path, they heat each other, so the allowed ampacity must be reduced. Table 310.15(C)(1) provides multiplying factors that depend on how many current-carrying conductors are in the run. You take the conductor's ampacity at standard temperature and multiply it by the factor from the table to get the adjusted ampacity for that bundle. This is used to size feeders and services when you have more than three current-carrying conductors in the same raceway. The other topics listed—ampacity at standard temperature, overcurrent protective device interrupting ratings, and neutral conductor sizing—are governed by different rules, not this adjustment table.

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://nccer2640123.examzify.com>

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

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