

# PMMI Industrial Electricity 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 is the resistance of a circuit that is being supplied by a 100VDC power source that is putting out 5 amps?**
  - A. 500 ohms**
  - B. 20 ohms**
  - C. .05 ohms**
  - D. 25 ohms**
  
- 2. In a 240V, 20A two-wire branch circuit, the maximum allowable voltage drop is 2.4V. Using Ohm's law, what is the maximum conductor resistance?**
  - A. 0.12 ohms**
  - B. 0.24 ohms**
  - C. 0.01 ohms**
  - D. 1.2 ohms**
  
- 3. Motors draw full-load amperes (FLA) when they are:**
  - A. Are running under over-loaded conditions**
  - B. Are running at rated voltage and lightly loaded**
  - C. None of the above**
  - D. Producing their rated horsepower**
  
- 4. What is the total power of 4 quarter watt resistors wired in series?**
  - A.  $\frac{1}{4}$  Watt**
  - B.  $\frac{1}{16}$  Watt**
  - C. 4 Watt**
  - D. 1 Watt**
  
- 5. Which statement about ladder diagrams is true?**
  - A. They show the physical wiring**
  - B. They show electrical interconnections between components**
  - C. They are not used in control systems**
  - D. They show nothing about wiring**

- 6. In a typical three-wire AC power cord, which color is the Neutral wire?**
- A. Red**
  - B. Black**
  - C. White**
  - D. Green**
- 7. How many 1200-watt hair dryers can be operated by a 120V circuit protected by a 20 amp circuit breaker?**
- A. 0**
  - B. 1**
  - C. 2**
  - D. 3**
- 8. When a short occurs in one branch of a parallel circuit, the other branches will continue to operate.**
- A. The other branches will continue to operate**
  - B. It causes an open in the power supply**
  - C. The entire circuit will be shorted**
  - D. None of these**
- 9. Which law is used to relate voltage drop, current, and resistance in conductor calculations?**
- A. Watt's Law**
  - B. Kirchhoff's Law**
  - C. Ohm's Law**
  - D. Newton's Law**
- 10. The voltage across all components in a series circuit adds up to the source voltage.**
- A. True**
  - B. False**
  - C. Not specified**
  - D. Depends on components**

## Answers

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

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## **Explanations**

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**1. What is the resistance of a circuit that is being supplied by a 100VDC power source that is putting out 5 amps?**

- A. 500 ohms
- B. 20 ohms**
- C. .05 ohms
- D. 25 ohms

Ohm's law in action:  $V = I \times R$ . To find resistance when voltage and current are known, use  $R = V / I$ . With a 100 V DC supply and 5 A flowing, the resistance is 100 divided by 5, which equals 20 ohms. This means the circuit presents 20  $\Omega$  to the power source. If you test other values, you'd see inconsistent results: 500  $\Omega$  would only allow about 0.2 A at 100 V; 0.05  $\Omega$  would draw about 2000 A; 25  $\Omega$  would yield about 4 A.

**2. In a 240V, 20A two-wire branch circuit, the maximum allowable voltage drop is 2.4V. Using Ohm's law, what is the maximum conductor resistance?**

- A. 0.12 ohms**
- B. 0.24 ohms
- C. 0.01 ohms
- D. 1.2 ohms

The main idea is that the voltage drop along the conductor path in a circuit equals the current times the total resistance of that path ( $V = I \times R$ ). To stay within the allowed drop, you solve for the maximum resistance:  $R_{\text{max}} = V_{\text{drop}} / I$ . Here, the allowable drop is 2.4 V and the current is 20 A. So  $R_{\text{max}} = 2.4 / 20 = 0.12$  ohms. In a two-wire branch circuit, this 0.12 ohms represents the total loop resistance of the conductors (the path the current travels there and back).

**3. Motors draw full-load amperes (FLA) when they are:**

- A. Are running under over-loaded conditions
- B. Are running at rated voltage and lightly loaded
- C. None of the above
- D. Producing their rated horsepower**

Full-load amperes are the current a motor draws when it is delivering its rated mechanical output at the rated voltage. When a motor is producing its rated horsepower, it is at its full load, so the current it draws matches its FLA on the nameplate. If the motor is overloaded beyond its rated horsepower, the current rises above FLA; if it's lightly loaded, the current is below FLA. So, the motor draws FLA when it is producing its rated horsepower.

**4. What is the total power of 4 quarter watt resistors wired in series?**

- A.  $\frac{1}{4}$  Watt
- B.  $\frac{1}{16}$  Watt
- C. 4 Watt
- D. 1 Watt**

Power ratings are about safe dissipation. When four identical quarter-watt resistors are connected in series, the same current flows through each, and the total safe dissipation is the sum of the individual ratings. Since each resistor can handle 0.25 W, four of them in series can safely dissipate  $4 \times 0.25 \text{ W} = 1 \text{ W}$ , assuming they share the heat roughly equally (which they do when the resistors have equal resistance). So the total power rating of the string is 1 W. The other numbers would not reflect this additive property: a single resistor is 0.25 W, not the whole chain;  $\frac{1}{16} \text{ W}$  is far too small for four elements; and 4 W would require each element to dissipate 1 W, which exceeds its rating.

**5. Which statement about ladder diagrams is true?**

- A. They show the physical wiring
- B. They show electrical interconnections between components**
- C. They are not used in control systems
- D. They show nothing about wiring

Ladder diagrams depict how devices in a control circuit are electrically connected and how control signals flow between them. They focus on interconnections and the logic of the circuit rather than the exact physical layout of wires, mapping the relationships between components like relays, contactors, and sensors. This makes them a core tool in control systems and PLC programming, where understanding which components are connected and how power and signals travel is essential. So the true statement is that ladder diagrams show electrical interconnections between components. They do not show physical wiring routes, and they are indeed used in control systems.

**6. In a typical three-wire AC power cord, which color is the Neutral wire?**

- A. Red
- B. Black
- C. White**
- D. Green

In typical three-wire AC cords, the color coding clearly identifies each conductor: the black wire is the hot (live) conductor, the white wire is the neutral, and the green wire is the protective earth ground. The neutral returns current back to the source and is tied to earth at the service panel, so it sits at or near earth potential. That white color is how it's recognized as the neutral, which is why White is the correct choice. Red can appear as a second hot in some circuits, and green is reserved for grounding, not neutral.

7. How many 1200-watt hair dryers can be operated by a 120V circuit protected by a 20 amp circuit breaker?

- A. 0
- B. 1
- C. 2**
- D. 3

The main idea is how current, voltage, and power relate on a circuit. A device that uses 1200 watts at 120 volts draws current  $I = P / V = 1200 / 120 = 10$  amperes. A 20-amp circuit breaker can supply up to 20 amperes, so you can run up to two of these dryers at the same time ( $2 \times 10 \text{ A} = 20 \text{ A}$ ). Three would require 30 amperes, which would trip the breaker. In practice, startup surges can affect current, but the straightforward calculation shows two is the limit for this setup.

8. When a short occurs in one branch of a parallel circuit, the other branches will continue to operate.

- A. The other branches will continue to operate**
- B. It causes an open in the power supply
- C. The entire circuit will be shorted
- D. None of these

In a parallel circuit, each branch is connected directly across the same two points of the power source, so every branch experiences the full supply voltage independently of the others. If a short occurs in one branch, that branch becomes a very low-resistance path and draws a large amount of current, but the other branches still have the same voltage across them and can continue to operate normally. The only time their operation would stop is if the protective devices (like a fuse or breaker) trip because of the excessive current in the shorted branch. So, the remaining branches keep working, making this option the best choice.

9. Which law is used to relate voltage drop, current, and resistance in conductor calculations?

- A. Watt's Law
- B. Kirchhoff's Law
- C. Ohm's Law**
- D. Newton's Law

Ohm's Law describes how voltage drop, current, and resistance relate in a conductor. It states that the voltage drop across a conductor equals the current through it times its resistance,  $V = I \times R$ . This means that for a given resistance, the voltage drop scales with current, and for a given voltage, the current is determined by the resistance ( $I = V/R$ ). It's the fundamental tool for predicting how much voltage will be lost along a wire or component when a certain current flows, or for sizing conductors to keep drops within acceptable limits. For example, if a wire has 2 ohms of resistance and 3 amperes pass through it, the voltage drop is 6 volts. If the current doubles while resistance stays the same, the drop doubles as well. Other listed ideas touch on related topics—Watt's Law connects power to voltage and current (and can be rewritten using Ohm's Law), Kirchhoff's Law deals with the sum of currents or voltages in a circuit, and Newton's Law governs mechanics, not electrical relationships.

**10. The voltage across all components in a series circuit adds up to the source voltage.**

**A. True**

**B. False**

**C. Not specified**

**D. Depends on components**

In a series circuit, the same current flows through every component, and Kirchhoff's Voltage Law says the sum of all voltage changes around a closed loop is zero. If we treat the source as providing a single voltage rise, then the voltage drops across each component must add up to that rise. Since each component drops  $V = I R$  and the current is the same through all of them, the total drop across all components equals  $I$  times the total resistance, which is the source voltage in an ideal circuit. Therefore, the voltages across all components do add up to the source voltage. If there's internal resistance in the source, the sum of the component voltages equals the terminal voltage, which can be less than the source's emf, but in the ideal case the statement holds true.

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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](mailto:hello@examzify.com).**

**Or visit your dedicated course page for more study tools and resources:**

**<https://pmmiindustrialelectricity.examzify.com>**

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

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