LMS SUBSTATION 1ST YEAR, LEVEL II PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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Table of Contents

Copyright 1

Table of Contents 2

Introduction 3

How to Use This Guide 4

Questions 5

Answers 8

Explanations 10

Next Steps 15

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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. Which of the following describes the correct way to read resistance using an analog meter?

A. Read the value directly from the meter without any adjustments

B. Always set the meter to the highest setting first

C. Short the leads and set the meter to zero before measuring

D. Only use digital meters for resistance measurements

2. Which particle has a negative charge and orbits around the nucleus of an atom?

A. Proton

B. Neutron

C. Quark

D. Electron

3. If an electric heater has a resistance of 17.32 ohms and requires a current of 6.93 amperes, what is the circuit voltage?

A. 115.36 V

B. 120.03 V

C. 90.00 V

D. 100.50 V

4. What might happen if you attempt to measure resistance while the circuit is powered?

A. The meter may display inaccurate readings

B. The meter could be damaged

C. Both A and B

D. None of the above

5. What does the word "elektron," which is related to electricity, mean?

A. To be like metal

B. To be like water

C. To be like amber

D. To be like wood

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6. How do you calculate the voltage of a circuit given the power and current values?

A. E = P/I

B. E = I / P

C. E = P * I

D. E = I ^ P

7. What do we call the resistance measured when no current flows?

A. Closed resistance

B. Open resistance

C. Dynamic resistance

D. Static resistance

8. Which of the following best describes conductors?

A. Materials with high resistance to electric flow.

B. Materials that have a balance of 4 valence electrons.

C. Materials that easily allow the flow of electric current.

D. Materials that are generally insulative in nature.

9. What happens when a circuit is open?

A. Current flows through the circuit

B. Voltage exists in the circuit

C. No voltage exists in the circuit

D. Resistance is absent in the circuit

10. An electrical potential of one volt will cause how much work to be done by one coulomb of current?

A. One joule

B. Two joules

C. Three joules

D. Four joules

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Answers

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

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Explanations

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1. Which of the following describes the correct way to read resistance using an analog meter?

A. Read the value directly from the meter without any adjustments

B. Always set the meter to the highest setting first

C. Short the leads and set the meter to zero before measuring

D. Only use digital meters for resistance measurements

The process of reading resistance with an analog meter involves an important step to ensure accuracy and reliability of the measurements. Before measuring any resistance, it is necessary to short the leads of the meter and adjust the needle on the scale to the zero position. This calibration accounts for any potential variations in the meter itself, ensuring that when you later measure the resistance of a specific component, the reading reflects only the resistance of that component without interference from the meter's inherent characteristics. This practice is essential because analog meters can exhibit a slight offset when initially set up, and adjusting to zero eliminates that discrepancy. By doing this first, you're confirming that the reading will be as accurate as possible when you connect the leads to the item you wish to measure. Other methods, such as reading the value directly or using a digital meter exclusively, do not incorporate this vital calibration step which could lead to misleading or incorrect resistance readings.

2. Which particle has a negative charge and orbits around the nucleus of an atom?

A. Proton

B. Neutron

C. Quark

D. Electron

The correct choice identifies the electron, which is a fundamental subatomic particle known for its negative charge. Electrons are located in the electron cloud, which orbits around the nucleus of an atom, playing a crucial role in chemical bonding and the electrical properties of materials. Their negative charge balances the positive charge of protons within the nucleus, maintaining the overall neutrality of atoms. While protons are positively charged particles found in the nucleus, and neutrons are neutral particles that also reside within the nucleus, they do not possess a negative charge or orbit around the nucleus. Quarks, the elementary particles that combine to form protons and neutrons, also do not exist freely in nature and are not responsible for electron-related behaviors in atoms. This distinction emphasizes the unique role and charge of electrons in atomic structure.

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3. If an electric heater has a resistance of 17.32 ohms and requires a current of 6.93 amperes, what is the circuit voltage?

A. 115.36 V

B. 120.03 V

C. 90.00 V

D. 100.50 V

To determine the circuit voltage for the electric heater, we can apply Ohm's Law, which states that the voltage (V) across a conductor is equal to the product of the current (I) flowing through it and the resistance (R) of the conductor. The formula is expressed as: $V = I \times R$. In this scenario, the resistance is given as 17.32 ohms and the current is 6.93 amperes. Using the formula, we can calculate the voltage: $V = 6.93\ A \times 17.32\ \Omega = 120.00\ V$. Rounding this value to the nearest hundredth, we determine that the circuit voltage is approximately 120.03 volts. Therefore, this confirms that the choice of 120.03 V is indeed the correct answer. The calculation illustrates the fundamental principles of electric circuits and reinforces the relationship between voltage, current, and resistance. Understanding these concepts is essential in various applications, particularly in analyzing circuit performance and ensuring safe and effective design and operation of electrical devices.

4. What might happen if you attempt to measure resistance while the circuit is powered?

A. The meter may display inaccurate readings

B. The meter could be damaged

C. Both A and B

D. None of the above

When attempting to measure resistance in a powered circuit, there are several important reasons why this is problematic. First, a multimeter set to the resistance measurement mode applies a small voltage to the circuit to determine resistance. If the circuit is powered, this additional voltage can interfere with the reading, resulting in inaccurate measurements. Consequently, the meter may show values that do not reflect the true resistance because the powered components can alter the flow and measurement of current. Additionally, there is a risk of damaging the multimeter. Many multimeters are designed to measure resistance only in de-energized circuits. If voltage from the powered circuit exceeds the multimeter's voltage rating, it could lead to internal damage or even cause the meter to fail completely. This combination of potential inaccuracies in the readings and the risk to the multimeter itself is why both concerns are valid, affirming that attempting to measure resistance in a powered circuit is unsafe and should be avoided.

5. What does the word "elektron," which is related to electricity, mean?

A. To be like metal

B. To be like water

C. To be like amber

D. To be like wood

The term "elektron" is derived from the Greek word for amber, which is a natural resin known for its ability to generate static electricity when rubbed. This connection comes from the early observations of early philosophers and scientists, who noted that when amber was rubbed against fur or wool, it attracted lightweight objects. This phenomenon laid the groundwork for understanding electricity. The other choices do not align with the historical or linguistic roots of the word "elektron." While metals, water, and wood have their own unique properties in relation to electricity, they do not relate back to the origin of the term in the same way amber does. Therefore, the correct answer highlights the influence of amber in the historical development of the concept of electricity.

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6. How do you calculate the voltage of a circuit given the power and current values?

A. E = P/I

B. E = I / P

C. E = P * I

D. E = I ^ P

To determine the voltage of a circuit using the power and current values, the formula E = P/I is employed, where E represents voltage, P represents power, and I represents current. This formula derives from the relationship defined by Ohm's Law and the power formula in electrical circuits, where power (P) is equal to voltage (E) times current (I). By rearranging this formula, you isolate voltage, leading to the conclusion that E = P/I. Using this relationship, you can effectively calculate the voltage when you have the power and current values as inputs. For example, if you know that a circuit has a power consumption of 100 watts and a current of 5 amperes, you can substitute these values into the formula to find that the voltage would be 20 volts, illustrating how this calculation works practically. The other formulas presented do not align with the foundational electrical principles. Some may incorrectly suggest inversely relating power and current or misrepresent the relationship between these variables. The correct understanding of the power relationship is crucial for effectively analyzing and designing electrical circuits.

7. What do we call the resistance measured when no current flows?

A. Closed resistance

B. Open resistance

C. Dynamic resistance

D. Static resistance

The resistance measured when no current flows is referred to as open resistance. This term describes the situation where the circuit is open and, consequently, no electrons are moving, which means that the flow of current is absent. Under these conditions, the resistance can be measured using an ohmmeter or a similar device without any voltage applied or current flowing. It provides a snapshot of the resistive properties of the component or circuit under static conditions. The term open resistance specifically indicates that the circuit is not complete, allowing for measurement in a state where there is no current. This is different from dynamic resistance, which relates to the resistance in the presence of a changing current, and static resistance, which is generally synonymous with open resistance in contexts where current flow is not present. Closed resistance is not a recognized term in this context, as it implies a complete circuit where current should be flowing.

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8. Which of the following best describes conductors?

A. Materials with high resistance to electric flow.

B. Materials that have a balance of 4 valence electrons.

C. Materials that easily allow the flow of electric current.

D. Materials that are generally insulative in nature.

Conductors are defined primarily by their ability to facilitate the flow of electric current with minimal resistance. This characteristic is due to their atomic structure, which allows electrons to move freely. In conductors, such as metals like copper and aluminum, the outer electrons are not tightly bound to an atom, enabling them to move along the material when an electric field is applied. This free movement of electrons is what makes these materials highly efficient in transmitting electrical energy. In contrast, materials with high resistance to electric flow do not allow current to flow easily, which is the opposite of what constitutes a conductor. Similarly, materials with a balance of four valence electrons, such as silicon, are generally considered semiconductors rather than conductors. Insulative materials, on the other hand, are characterized by their inability to conduct electricity effectively, often used to prevent the flow of current. Therefore, the essential feature of conductors is their capacity to allow easy flow of electric current, making the identification of option C as the best description accurate.

9. What happens when a circuit is open?

A. Current flows through the circuit

B. Voltage exists in the circuit

C. No voltage exists in the circuit

D. Resistance is absent in the circuit

When a circuit is open, there is no complete path for current to flow. This means that while voltage may be present at various points within the circuit, current cannot flow, resulting in an open circuit condition. The essential point here is that in an open circuit, the flow of electric charge is interrupted, which effectively results in no current in the circuit itself. Typically, voltage can still be measured across an open circuit because there exists a potential difference between the terminals. However, without a closed path, the current remains at zero. Therefore, while voltage is present in many cases, the assertion about current flowing is incorrect, as is the idea of absent resistance in the circuit. Resistance is a property of the components in the circuit, but it does not dictate the existence of voltage or current in an open circuit scenario.

10. An electrical potential of one volt will cause how much work to be done by one coulomb of current?

A. One joule

B. Two joules

C. Three joules

D. Four joules

An electrical potential of one volt indicates that one joule of work is done when one coulomb of charge moves through a potential difference of one volt. This relationship is rooted in the fundamental definition of voltage (or electric potential). Specifically, voltage is defined as the amount of electric potential energy per unit charge. Therefore, if one coulomb of charge is moved through a potential difference of one volt, it gains an energy of one joule. The equation that embodies this concept is: $$\text{Work (in joules)} = \text{Voltage (in volts)} \times \text{Charge (in coulombs)}$$ In this case, substituting in the values gives: $$1 \text{ joule} = 1 \text{ volt} \times 1 \text{ coulomb}$$ This relationship reinforces that whenever 1 volt drives 1 coulomb of charge, the work done is precisely 1 joule. Thus, the answer is firmly established as one joule.

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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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