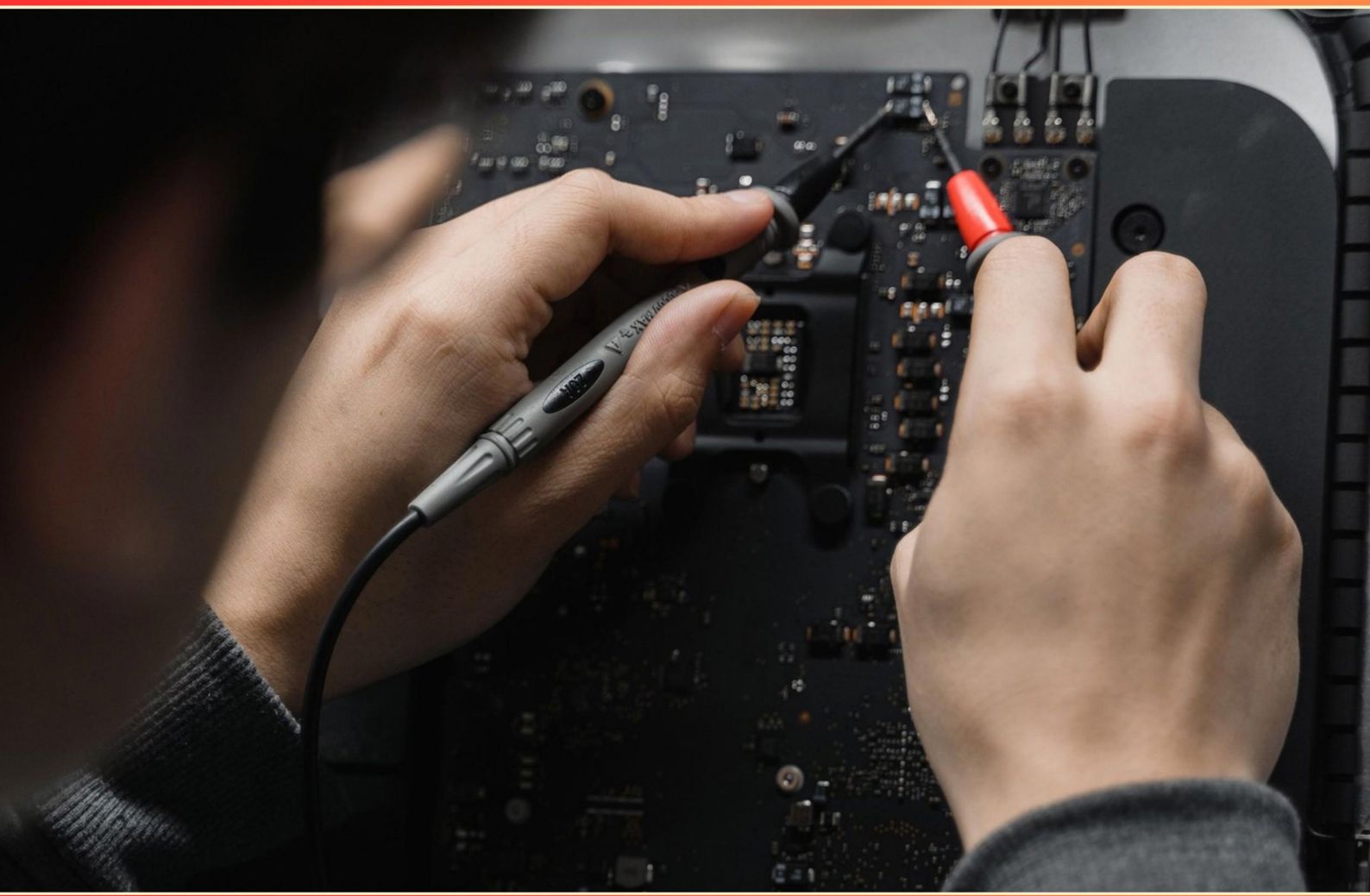
BASIC ELECTRICITY PRACTICE EXAM (SAMPLE)

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.

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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. The total inductance of two inductors in series equals the sum of their inductances under which condition?

A. When the magnetic fields of the inductors do not affect each other

B. When the inductors are wound on the same core

C. When the inductances are equal

D. In any series connection

2. Using the 14-ohm resistor example, the power dissipated equals I^2 R; if I = 0.05 A, P equals 0.035 W.

A. 0.035 W

B. 0.7 W

C. 0.5 W

D. 0.0035 W

3. What are the elements of Ohms law?

A. Voltage (E), Current (I), Resistance (R)

B. E, I, R

C. Capacitance, Inductance, Reactance

D. Power, Current, Resistance

4. What is meant by inductance?

A. The Capacity to Store Energy in Chemical Reactions

B. The Ability to Store Energy in Magnetic Fields

C. The Ability to Convert Energy Between Forms

D. The Ability to Store Electrical Energy in Electromagnetic Fields

5. Which of the following loads would require the most electrical power in a given setup?

A. Two lights requiring 3 amperes each in a 24-volt parallel system

B. One motor drawing 4 amperes at 24 volts

C. One heating element drawing 5 amperes at 24 volts

D. Two lights drawing 2.5 amperes each at 24 volts

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6. Two resistors, 8 Ω and 4 Ω, are in parallel across a 12 V source. What is the total current drawn from the source?

A. 2.0 A

B. 4.5 A

C. 6.0 A

D. 3.0 A

7. For the circuit described, what is the total current?

A. 2.0 amperes

B. 1.4 amperes

C. 0.7 amperes

D. 1.0 amperes

8. What is the basic unit of electrical quantity?

A. Volt

B. Coulomb

C. Ampere

D. Ohm

9. A 12 V source drives a 3 Ω resistor. What is the current through the resistor?

A. 4 A

B. 3 A

C. 6 A

D. 2 A

10. A 50 mH inductor carries 2 A. What is the energy stored?

A. 0.5 J

B. 0.1 J

C. 1 J

D. 2 J

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Answers

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

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Explanations

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1. The total inductance of two inductors in series equals the sum of their inductances under which condition?

A. When the magnetic fields of the inductors do not affect each other

B. When the inductors are wound on the same core

C. When the inductances are equal

D. In any series connection

When the magnetic fields of the two inductors do not influence each other, their mutual inductance is zero, so the voltages add directly as v = L1 di/dt + L2 di/dt. With the same current flowing through both, the total voltage is (L1 + L2) di/dt, which means the total inductance in series is simply L1 + L2. If there is magnetic coupling—such as inductors wound on the same core or placed close enough that their fields interact—the total inductance in series is not just L1 + L2. You get additional terms from the mutual inductance, making the total L1 + L2 ± 2M instead of a plain sum, depending on the orientation of the windings. So the requirement for the sum to hold is zero coupling between the magnetic fields. That's why the other ideas don't guarantee simple addition: coupling exists on a shared core or with close proximity, and equal values or any series arrangement don't inherently remove that coupling.

2. Using the 14-ohm resistor example, the power dissipated equals I^2 R; if I = 0.05 A, P equals 0.035 W.

A. 0.035 W

B. 0.7 W

C. 0.5 W

D. 0.0035 W

Power dissipated in a resistor is P = I^2 R. With a current of 0.05 A through a 14-ohm resistor, I^2 = (0.05)^2 = 0.0025. Multiplying by R gives 0.0025 × 14 = 0.035 W. You can also cross-check: the voltage across the resistor is V = IR = 0.05 × 14 = 0.7 V, so P = VI = 0.7 × 0.05 = 0.035 W. Another equivalent form, P = V^2 / R, yields (0.7^2)/14 = 0.49/14 = 0.035 W. So the power dissipated is 0.035 W; the other values don't match these given numbers.

3. What are the elements of Ohms law?

A. Voltage (E), Current (I), Resistance (R)

B. E, I, R

C. Capacitance, Inductance, Reactance

D. Power, Current, Resistance

Ohm's law connects voltage, current, and resistance in a simple linear relationship. In its most common form, voltage is equal to current times resistance, written as V = I R. When voltage is represented by E (the electromotive force), the same relation is E = I R. That's why the set E, I, R is the best way to express the elements of Ohm's law, since these are the standard symbols you'll see for voltage, current, and resistance. Capacitance, inductance, and reactance aren't part of this basic relation; they appear in AC analysis and impedance concepts rather than the straightforward V = IR equation. Power, while related, is not a fundamental element of the simple Ohm's law; it's derived from voltage and current (P = VI or P = I^2 R).

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4. What is meant by inductance?

A. The Capacity to Store Energy in Chemical Reactions

B. The Ability to Store Energy in Magnetic Fields

C. The Ability to Convert Energy Between Forms

D. The Ability to Store Electrical Energy in Electromagnetic Fields

Inductance is about how a circuit element stores energy in the magnetic field created by current and uses that stored energy to oppose changes in current. The energy associated with that field is part of the electromagnetic fields surrounding the conductor, which is why describing inductance as the ability to store electrical energy in electromagnetic fields is appropriate. This energy storage is primarily magnetic in nature for an inductor, unlike chemical energy storage in a battery. It isn't about converting energy between forms, but about resisting rapid current changes by building up magnetic energy that can be released back into the circuit when the current changes.

5. Which of the following loads would require the most electrical power in a given setup?

A. Two lights requiring 3 amperes each in a 24-volt parallel system

B. One motor drawing 4 amperes at 24 volts

C. One heating element drawing 5 amperes at 24 volts

D. Two lights drawing 2.5 amperes each at 24 volts

Power in a circuit is equal to voltage times current, $P = V \times I$. In a 24-volt system, every load draws power based on its own current: $P = 24 \times I$. When loads are in parallel, they all see the same voltage, so you compare by their currents, and the total power is the sum of each load's power. Two lights drawing 3 A each use $24 \times 3 = 72$ W per light, so together they draw 144 W. That is higher than the motor at 4 A (96 W), the heating element at 5 A (120 W), or the two lights at 2.5 A each (60 W each, totaling 120 W). Hence this arrangement requires the most electrical power.

6. Two resistors, 8 Ω and 4 Ω, are in parallel across a 12 V source. What is the total current drawn from the source?

A. 2.0 A

B. 4.5 A

C. 6.0 A

D. 3.0 A

When resistors are in parallel, they share the same voltage from the source, and the total current is the sum of the currents in each branch. For this circuit, the 8 Ω branch draws $I1 = 12\ V / 8\ \Omega = 1.5$ A, and the 4 Ω branch draws $I2 = 12\ V / 4\ \Omega = 3$ A. Adding them gives a total current of 1.5 A + 3 A = 4.5 A. Another way to see it is to find the equivalent resistance: $1/R_{eq} = 1/8 + 1/4 = 3/8$, so $R_{eq} = 8/3\ \Omega$. Then $I = V / R_{eq} = 12\ V / (8/3\ \Omega) = 4.5$ A.

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7. For the circuit described, what is the total current?

A. 2.0 amperes

B. 1.4 amperes

C. 0.7 amperes

D. 1.0 amperes

Total current is found by reducing the circuit to a single equivalent resistance and then applying Ohm's law. First, combine any resistors in series by adding their values, and combine any in parallel by using the reciprocal sum (R_eq = 1 / (sum of 1/R)). Once you have a single R_eq for the entire network, the total current from the source is I_total = V_source / R_eq. The value 1.4 A means the source voltage and the reduced resistance satisfy this relationship: the equivalent resistance is V_source divided by 1.4. For example, with a 7-volt source and an R_eq of 5 ohms, I = 7/5 = 1.4 A. In series, the same current flows through every component; in parallel, branch currents add up to the total. The given circuit yields 1.4 A when reduced to its equivalent resistance and applied with the source voltage.

8. What is the basic unit of electrical quantity?

A. Volt

B. Coulomb

C. Ampere

D. Ohm

Electric charge is the quantity being measured here, and its unit is the coulomb. The coulomb quantifies how much charge is present. A practical way to see it: a current of 1 ampere flowing for 1 second transfers 1 coulomb of charge, since current is the rate of charge flow (1 A = 1 C per second). The other units describe related ideas—volts measure electrical potential difference (the push that moves charge), ohms measure resistance (how much a material resists the flow), and amperes measure the flow rate itself. So for the basic quantity of electric charge, the coulomb is the correct unit. One coulomb equals about 6.24×10^18 elementary charges (electrons or protons).

9. A 12 V source drives a 3 Ω resistor. What is the current through the resistor?

A. 4 A

B. 3 A

C. 6 A

D. 2 A

Current through a resistor is found using Ohm's law: I = V / R. With a 12 V source across a 3 Ω resistor, the current is 12 / 3 = 4 A. This aligns with how voltage pushes charge through resistance, and the units V/Ω equal amperes. The other numbers would require different voltage or resistance values (for example, 3 A would need 4 Ω, 6 A would need 2 Ω, and 2 A would need 6 Ω). So, given the setup, the current is 4 amperes.

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10. A 50 mH inductor carries 2 A. What is the energy stored?

A. 0.5 J

B. 0.1 J

C. 1 J

D. 2 J

Energy stored in an inductor comes from its magnetic field and is given by E = 1/2 L I^2. Here, L = 50 mH = 0.050 H and I = 2 A, so E = 0.5 × 0.050 × (2)^2 = 0.5 × 0.050 × 4 = 0.100 J. So the energy is 0.1 joule. This shows why the energy scales with both inductance and the square of the current; doubling the current or increasing the inductance increases the stored energy accordingly.

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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:

https://basicelectricity.examzify.com

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

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