

Basic Electricity Practice Exam (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. In a PNP transistor, if the base is more positive than the emitter, what is the state of the transistor?**
 - A. On**
 - B. Saturated**
 - C. In breakdown**
 - D. Off**

- 2. In an AC circuit, the current or voltage values are typically specified as which type of value?**
 - A. Peak values**
 - B. Effective values**
 - C. Average values**
 - D. Instantaneous values**

- 3. When different rated capacitors are connected in parallel, the total capacitance is equal to which of the following?**
 - A. Equal to the product of the capacitances**
 - B. Equal to the sum of all the capacitances**
 - C. Equal to the smallest capacitance**
 - D. Equal to the average capacitance**

- 4. Which instrument is used to measure voltage?**
 - A. Ammeter**
 - B. Multimeter**
 - C. Oscilloscope**
 - D. Voltmeter**

- 5. The control valve switch must be placed in the neutral position when the landing gears are down to _____.**
 - A. Delay the horn**
 - B. Immediately sound the horn**
 - C. Prevent the warning horn from sounding when the throttles are closed**
 - D. No effect**

- 6. What are three types of DC circuits with regard to the placement of the various circuit components?**
- A. Series, Parallel, and Mixed**
 - B. Series, Parallel, and Series / Parallel**
 - C. Simple, Complex, and Hybrid**
 - D. Linear, Nonlinear, and Mixed**
- 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. Which arrangement strengthens a coil inductor?**
- A. Placing additional coils far apart**
 - B. Placing additional coils close to the existing coil**
 - C. Using thicker insulation**
 - D. Reducing turns**
- 9. The opposition offered by a coil to the flow of alternating current, disregarding resistance, is called _____.**
- A. Phase shift**
 - B. Impedance**
 - C. Capacitive reactance**
 - D. Inductive reactance**
- 10. In a parallel circuit with a fixed voltage source, the voltage across each component is**
- A. Zero**
 - B. The sum of the voltages across other components**
 - C. Equal to the source voltage**
 - D. Half the source voltage**

Answers

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

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Explanations

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1. In a PNP transistor, if the base is more positive than the emitter, what is the state of the transistor?

- A. On
- B. Saturated
- C. In breakdown
- D. Off**

For a PNP transistor to conduct, the emitter-base junction must be forward biased, which means the emitter must be more positive than the base by about 0.7 V (for silicon devices). If the base is more positive than the emitter, that junction is reverse biased, so little to no current can flow from the emitter to the base. Without base current, there's no path to amplify or allow current from emitter to collector, so the transistor remains off. In this situation the device is non-conducting.

2. In an AC circuit, the current or voltage values are typically specified as which type of value?

- A. Peak values
- B. Effective values**
- C. Average values
- D. Instantaneous values

AC voltages and currents vary with time, so we use a single number that reflects the actual power they can deliver. That number is the RMS (root-mean-square) or effective value. It's defined so that the power in a resistor with AC voltage equals the same as with a steady DC voltage of the same magnitude, i.e., $P = V_{rms}^2 / R = I_{rms}^2 R$. For a sinusoidal signal, V_{rms} is the peak voltage divided by $\sqrt{2}$; the same relation holds for current. If we used peak values, power ratings wouldn't have a consistent basis; the average value over a full cycle for a sine wave is zero, which isn't useful for power. Instantaneous values describe the exact momentary reading, but ratings and comparisons require a stable measure, hence RMS. Devices and systems are thus specified by effective (RMS) values.

3. When different rated capacitors are connected in parallel, the total capacitance is equal to which of the following?

- A. Equal to the product of the capacitances
- B. Equal to the sum of all the capacitances**
- C. Equal to the smallest capacitance
- D. Equal to the average capacitance

When capacitors are connected in parallel, they all share the same voltage and the charges they store add up. Since capacitance is defined as $C = Q/V$, each capacitor stores $Q_i = C_i \times V$. The total charge is $Q_{total} = \Sigma(C_i \times V) = V \times \Sigma C_i$, and the equivalent capacitance is $C_{eq} = Q_{total} / V = \Sigma C_i$. So the total capacitance is simply the sum of the individual capacitances. For example, 4 μF and 6 μF in parallel give 10 μF . The other ideas don't fit because product, the smallest, or an average wouldn't reflect how charges combine when the voltage is shared across parallel paths.

4. Which instrument is used to measure voltage?

- A. Ammeter
- B. Multimeter
- C. Oscilloscope
- D. Voltmeter**

Voltage is the electric potential difference between two points, so you need a device that can connect across those points and sense that potential without pulling significant current. The voltmeter is designed for this purpose: it is connected in parallel with the element under test and has high input resistance, so it measures the voltage without appreciably disturbing the circuit. An ammeter, by contrast, measures current and is placed in series, with low resistance to avoid dropping voltage. An oscilloscope can display voltage versus time, giving waveform information rather than just a single static value. A multimeter can measure voltage as well, but the instrument specifically built to measure voltage is the voltmeter.

5. The control valve switch must be placed in the neutral position when the landing gears are down to _____.

- A. Delay the horn
- B. Immediately sound the horn
- C. Prevent the warning horn from sounding when the throttles are closed**
- D. No effect

When the landing gear are down, the warning horn system is designed to stay quiet unless there's a true fault. Placing the control valve switch in the neutral position isolates the throttle-position input from the horn circuit, so closing the throttles won't trigger the horn. This keeps the cockpit from hearing a nuisance warning during approach or after landing when gear are down. Therefore, the correct outcome is to prevent the warning horn from sounding when the throttles are closed. The other options would either imply delaying or triggering the horn, or having no effect, which doesn't align with how the interlock is intended to work.

6. What are three types of DC circuits with regard to the placement of the various circuit components?

A. Series, Parallel, and Mixed

B. Series, Parallel, and Series / Parallel

C. Simple, Complex, and Hybrid

D. Linear, Nonlinear, and Mixed

How components are connected in a DC circuit determines how current flows and how voltages are shared. In simple terms, you can arrange components in a single path, across the same two nodes, or in a combination of both. In a series arrangement, all components carry the same current, and the total resistance is the sum of the individual resistances; voltages drop across each component and add up to the total supply voltage. In a parallel arrangement, the voltage across every component is the same, but currents divide among the branches and then add back up to the total current. A mixed setup, often called a series/parallel network, combines these ideas: some components are in parallel with each other, and that parallel group is then placed in series with other components, or vice versa. This yields a circuit where some parts behave like a parallel block while others behave like a series path. So the three common ways to describe DC circuit component placement are series, parallel, and series/parallel. For example, two resistors in series share the same current; two resistors in parallel share the same voltage; and a network where two resistors are in parallel while another resistor sits in series with that parallel pair shows the series/parallel concept. The other terms mentioned (like simple/complex or linear/nonlinear) refer to other properties, not how components are arranged topologically.

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 ($R_{eq} = 1 / (\text{sum of } 1/R)$). 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. Which arrangement strengthens a coil inductor?

- A. Placing additional coils far apart
- B. Placing additional coils close to the existing coil**
- C. Using thicker insulation
- D. Reducing turns

Inductance grows when the magnetic flux linking a winding increases for a given current. When you add windings right next to the existing coil, the magnetic fields couple strongly between the coils, so the flux produced by one winding links the other more effectively. This mutual coupling adds to the total flux linkage, making the inductance larger than with a single winding. If the coils are placed far apart, the magnetic coupling is weak, so there's less added flux linkage and the inductance doesn't increase as much. Using thicker insulation doesn't change the magnetic path or the number of turns, so it won't boost inductance. Reducing the number of turns reduces the magnetic field and decreases flux linkage, which lowers inductance.

9. The opposition offered by a coil to the flow of alternating current, disregarding resistance, is called _____.

- A. Phase shift
- B. Impedance
- C. Capacitive reactance
- D. Inductive reactance**

When an inductor is in an AC circuit and you ignore its ohmic resistance, the coil opposes changes in current through its inductance. This opposition is called inductive reactance. It is the imaginary part of the impedance and equals $X_L = \omega L$ (or $2\pi fL$). It increases with frequency, so higher frequencies face more opposition in an inductor. In a purely inductive situation, voltage leads current by 90 degrees. Capacitive reactance would apply to a capacitor, not a coil, and impedance would include resistance, which we're not considering here. So the term for the coil's opposition to AC flow when resistance is neglected is inductive reactance.

10. In a parallel circuit with a fixed voltage source, the voltage across each component is

- A. Zero
- B. The sum of the voltages across other components
- C. Equal to the source voltage**
- D. Half the source voltage

In a parallel circuit, components are connected across the same two nodes, so they all experience the same voltage as the source. The fixed voltage source establishes this potential difference between those two nodes, and ideal wires introduce almost no drop, so every branch sees that same voltage. The current can split among branches depending on each path's resistance, but the voltage does not add up or divide among parallel paths. Therefore the voltage across each component is equal to the source voltage (assuming an ideal source and wiring). A zero voltage would imply no potential difference, which isn't the case here, and half the source voltage or the sum of other voltages would apply to series configurations, not parallel.

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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