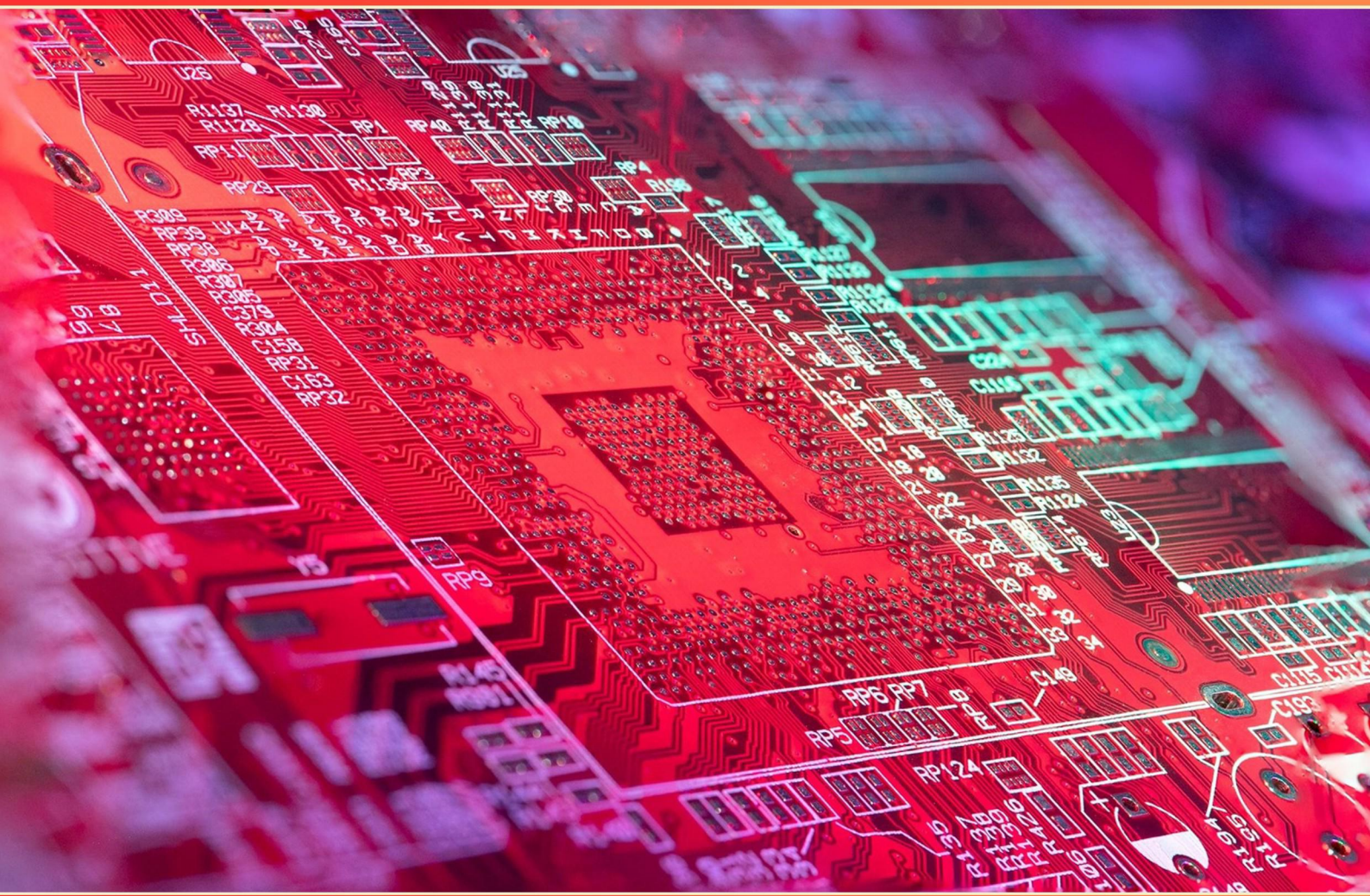
# MINDTAP AC/DC PRACTICE TEST (SAMPLE)

## STUDY GUIDE



## SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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https://mindtapacdc.examzify.com

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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

**1. The voltage across a resistor is proportional to which property?**

A. Current

B. Voltage

C. Resistance

D. Temperature

**2. The cross-sectional area of round wire is measured in circular mils.**

A. True

B. False

C. Square mils

D. Square inches

**3. In a parallel circuit, the amount of current that flows through each resistor is inversely proportional to the resistance value.**

A. Voltage

B. Capacitance

C. Resistance

D. Power

**4. The measure of a material's resistance to magnetism is known as reluctance.**

A. True

B. Not applicable

C. Sometimes

D. False

**5. In a parallel circuit, the total current flow equals the sum of the currents through all branches.**

A. Currents

B. Resistance

C. Voltage

D. Power

**6. Which statement best describes static electricity as presented?**

A. Photons are used to produce electricity from light

B. Direct current is bidirectional

C. Friction can demonstrate static charge

D. The smallest part of a compound is a molecular unit

**7. Which statement correctly describes the interaction of magnetic poles?**

A. Unlike poles repel and like poles attract

B. Poles do not interact

C. Opposite poles attract and like poles repel

D. Only opposite poles attract

**8. Which quantity's direction helps determine voltage polarity?**

A. Current

B. Direction

C. Resistance

D. Current flow

**9. Voltage polarity can be determined by observing the direction of what?**

A. Magnitude

B. Direction

C. Frequency

D. Phase

**10. A basic law of magnetism states that unlike poles repel and like poles attract.**

A. True

B. False

C. Sometimes

D. Not always

# Answers

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

# Explanations

## 1. The voltage across a resistor is proportional to which property?

A. Current

B. Voltage

C. Resistance

D. Temperature

*Voltage across a resistor follows Ohm's law: V = I R. This shows the voltage is determined by both how much current flows and how much the resistor resists that current. If you keep the current the same, increasing the resistance raises the voltage in direct proportion. So the property that sets the voltage for a given current is resistance; doubling the resistance doubles the voltage when the current stays unchanged. Temperature doesn't set this relationship, and while voltage and current are linked, the resistor's resistance is the factor that scales one to the other.*

## 2. The cross-sectional area of round wire is measured in circular mils.

A. True

B. False

C. Square mils

D. Square inches

*For round conductors, cross-sectional area is expressed in circular mils. A circular mil is a unit defined so that the area of a circle with a diameter measured in mils equals the diameter squared, giving a direct link between diameter and area without extra factors. Since a mil is one thousandth of an inch, using circular mils lets you read the area from the diameter in mils as simply d^2. This convention is standard in electrical practice because it makes resistance, current capability, and related calculations straightforward. For example, a wire with a 20 mil diameter has an area of 400 circular mils. Using square mils would require multiplying by pi/4 to convert, and square inches are far too large for typical wire sizes. So the statement is true.*

## 3. In a parallel circuit, the amount of current that flows through each resistor is inversely proportional to the resistance value.

A. Voltage

B. Capacitance

C. Resistance

D. Power

*In a parallel circuit, each resistor has the same voltage across it, so Ohm's law applies individually as I = V/R. Since the voltage is the same for every branch, the current through a branch is inversely proportional to that branch's resistance: higher resistance means less current, lower resistance means more current. That's why the quantity that varies inversely with current in this scenario is the resistance. The voltage across each resistor stays constant, while current shifts according to resistance; capacitance isn't the controlling factor in this steady-state DC setup, and power relates to current and resistance via P = I^2R or P = VI, not the inverse relationship described.*

**4. The measure of a material's resistance to magnetism is known as reluctance.**

A. True

B. Not applicable

C. Sometimes

D. False

*Reluctance is the opposition to magnetic flux in a magnetic path, and it depends on the path's length, cross-sectional area, and the material's permeability. The statement treats reluctance as the measure of a material's resistance to magnetism. That isn't quite right, because reluctance isn't a property of the material alone; it's a property of the whole magnetic circuit, including geometry and the material's ability to support flux. In formula terms, reluctance is = l/(μA). If the material has high permeability (μ large) or the path is short and wide, reluctance decreases, making flux easier to pass. If the path is long or narrow, or μ is low, reluctance increases. For a material's tendency to become magnetized, permeability (and magnetic susceptibility) are the more direct measures. So the statement is false.*

**5. In a parallel circuit, the total current flow equals the sum of the currents through all branches.**

A. Currents

B. Resistance

C. Voltage

D. Power

*Current is conserved in a parallel circuit: the current from the source splits into the different branches, and those branch currents add together to give the total current flowing from the source. In other words, I_total = I_branch1 + I_branch2 + I_branch3 + … because each branch draws its own current based on its resistance and the same voltage across all branches. This is why the correct answer is the currents. The other quantities aren't what sum across parallel branches: the resistance of multiple branches in parallel combines in a way that reduces the overall resistance (not a simple sum), the voltage across each branch is the same (not added), and power depends on both voltage and current rather than forming a simple sum of branch currents.*

**6. Which statement best describes static electricity as presented?**

A. Photons are used to produce electricity from light

B. Direct current is bidirectional

C. Friction can demonstrate static charge

D. The smallest part of a compound is a molecular unit

*Static electricity involves electric charges at rest on objects. When two materials are rubbed together, electrons can transfer from one surface to the other, leaving one object negatively charged and the other positively charged. This buildup of charge is what you observe when friction is used to demonstrate static electricity—things cling, sparks can jump, and nearby objects are attracted or repelled. So explaining static electricity through friction directly shows how charges accumulate and stay in place after contact. The other statements describe solar energy conversion, direct current behavior, and chemical structure—topics that aren't about charges at rest, so they don't describe static electricity.*

## 7. Which statement correctly describes the interaction of magnetic poles?

A. Unlike poles repel and like poles attract

B. Poles do not interact

C. Opposite poles attract and like poles repel

D. Only opposite poles attract

*Opposite magnetic poles attract and like poles repel. This comes from the way magnetic field lines run from the north pole to the south pole: when two poles are opposite, the field lines link smoothly and pull them together; when the same poles face each other, the field lines push away, creating a repulsive force. This simple rule explains why two magnets attract when opposite ends meet and push apart when like ends meet, and it underpins how devices like compasses and motors operate. Statements that claim poles don't interact or that only opposite poles attract miss the observed repulsion of like poles.*

## 8. Which quantity's direction helps determine voltage polarity?

A. Current

B. Direction

C. Resistance

D. Current flow

*Voltage polarity is set by the direction in which current flows through a component. Under the common passive sign convention, the terminal that current enters is considered positive. So knowing how current moves tells you which side of the element is at higher potential, and thus the polarity. For a resistor, the voltage drop aligns with the current's path: the entry side is positive, the exit side negative. If the current were to flow the opposite way, the labeled polarity would flip. The other quantities don't by themselves fix polarity: the magnitude of current doesn't indicate sign, direction alone needs a reference, and resistance is about how much voltage is needed for a given current, not which end is positive.*

## 9. Voltage polarity can be determined by observing the direction of what?

A. Magnitude

B. Direction

C. Frequency

D. Phase

*Voltage polarity is about which terminal is positive, and you determine it by the direction of current flow with respect to a defined reference. Under the usual convention, if current enters the terminal labeled positive, the polarity is positive; if the current would enter the other terminal, the polarity would be reversed. Magnitude, frequency, and phase describe how large the voltage is, how often it repeats, and the relative timing between signals, but they do not establish which end is positive. So the direction of current flow sets the polarity.*

**10. A basic law of magnetism states that unlike poles repel and like poles attract.**

A. True

B. False

C. Sometimes

D. Not always

*In magnetism, opposite poles attract and like poles repel. So a north pole is attracted to a south pole, while two magnets with the same poles facing each other (north–north or south–south) push apart. The statement given says the opposite, that unlike poles repel and like poles attract, which is not correct. The true idea is that opposite poles attract and like poles repel.*

# 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://mindtapacdc.examzify.com

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