

AMT GENERAL – FUNDAMENTALS OF ELECTRICITY PRACTICE EXAM (SAMPLE) STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE

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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. Regarding a parallel circuit, which statement is correct?**
 - A. The current is equal in all portions of the circuit.
 - B. The current in amperes can be found by dividing the EMF in volts by the sum of the resistors in ohms.
 - C. The total current is equal to the sum of the currents through the individual branches of the circuit.
 - D. The voltage across each branch is greater than the source voltage.
- 2. In a series circuit, which statement is true?**
 - A. The current is the same through all components
 - B. The voltage across each component is equal
 - C. The total current is the sum of branch currents from each component
 - D. The resistance is independent of each component's value
- 3. In a parallel circuit with four 6-ohm resistors across a 24-volt battery, what is the total voltage across resistor-three (VR3) in the circuit?**
 - A. 18 volts
 - B. 6 volts
 - C. 24 volts
 - D. 12 volts
- 4. When different rated capacitors are connected in parallel, the total capacitance is which of the following?**
 - A. less than the capacitance of the smallest capacitor.
 - B. equal to the capacitance of the largest capacitor.
 - C. equal to the sum of all the capacitances.
 - D. equal to the average of the capacitances.
- 5. How much current does a 30-volt, 1/2 horsepower motor that is 85-percent efficient draw from the bus?**
 - A. 14.6 amperes
 - B. 12.4 amperes
 - C. 14.1 amperes
 - D. 15.2 amperes

- 6. In a parallel DC circuit, which statement is true?**
- A. The current in amperes can be found by dividing the EMF in volts by the sum of the resistors in ohms.
 - B. The total current is equal to the sum of the currents through the individual branches of the circuit.
 - C. The current is equal in all portions of the circuit.
 - D. The voltage drop across each branch is equal to the EMF.
- 7. The TCO relay will operate when 24 V DC is applied to the bus and the fuel tank selector is in which position?**
- A. Crossfeed position
 - B. Left-hand tank position
 - C. Right-hand tank position
 - D. Off position
- 8. A 1-horsepower, 24-volt DC motor that is 80 percent efficient requires 932.5 watts. How much power will a 1-horsepower, 12-volt DC motor that is 75 percent efficient require?**
- A. 1,305.5 watts.
 - B. 932.5 watts.
 - C. 1,000 watts.
 - D. 994.6 watts.
- 9. Energize the circuit with the fuel tank selector switch selected to the left-hand position. Using the schematic, identify the switches that will change position.**
- A. 5, 6, 11, 12, 13, 15, 16.
 - B. 3, 5, 6, 7, 11, 13.
 - C. 5, 9, 10, 11, 12, 13, 15.
 - D. 4, 5, 7, 11, 12, 14.
- 10. In a circuit diagram, the total current flowing in the wire between points C and D is**
- A. 3.0 amperes.
 - B. 2.4 amperes.
 - C. 6.0 amperes.
 - D. 1.8 amperes.

Answers

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

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Explanations

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1. Regarding a parallel circuit, which statement is correct?

- A. The current is equal in all portions of the circuit.
- B. The current in amperes can be found by dividing the EMF in volts by the sum of the resistors in ohms.
- C. The total current is equal to the sum of the currents through the individual branches of the circuit.**
- D. The voltage across each branch is greater than the source voltage.

In parallel circuits, the same voltage is applied to every branch, and the current from the source splits among those branches. The total current leaving the source is the sum of the currents through each branch, because at the junction where branches meet, currents recombine and Kirchhoff's current law applies. Each branch carries a current $I_i = V / R_i$, since the branch voltage is V . Adding up all branch currents gives $I_t = I_1 + I_2 + \dots$. For a quick check, if you have 12 V across two branches with resistances of 6 Ω and 3 Ω , the branch currents are 2 A and 4 A, respectively, so the total current is 6 A. The equivalent resistance is $12 \text{ V} / 6 \text{ A} = 2 \Omega$, which also satisfies $1/R_{eq} = 1/6 + 1/3$. The voltage across each branch is equal to the source voltage, not greater. The idea of dividing the source voltage by the sum of resistors applies to a single path, not to a parallel network, where the current distribution depends on each branch's resistance.

2. In a series circuit, which statement is true?

- A. The current is the same through all components**
- B. The voltage across each component is equal
- C. The total current is the sum of branch currents from each component
- D. The resistance is independent of each component's value

Current is the same through every component in a series circuit. Since there's only one path for the current, the same amount of charge that flows into the first component must flow through and out of the last, so the current you measure is the same everywhere along the loop. The voltage, however, can differ from one component to the next because $V = I \cdot R$, and the current I is the same while each component may have a different resistance. The sum of all these voltages equals the total supply voltage. Remember, in a series circuit there isn't a split of current, so you don't add branch currents to get the total current. And the total resistance isn't independent of component values; it's the sum of the individual resistances, so changing any component changes the overall resistance.

3. In a parallel circuit with four 6-ohm resistors across a 24-volt battery, what is the total voltage across resistor-three (VR3) in the circuit?

- A. 18 volts
- B. 6 volts
- C. 24 volts**
- D. 12 volts

In a parallel circuit, the voltage across every branch equals the source voltage. Since resistor three is directly across a 24-volt battery, the voltage across it must be 24 volts. The resistor values affect how much current each branch draws, not the voltage across the branches in parallel. For example, each 6-ohm resistor would carry $I = 24/6 = 4 \text{ A}$, and the total current would be 16 A with a combined parallel resistance of 1.5 ohms, but those details don't change the voltage across resistor three.

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

- A. less than the capacitance of the smallest capacitor.
- B. equal to the capacitance of the largest capacitor.
- C. equal to the sum of all the capacitances.**
- D. equal to the average of the capacitances.

When capacitors are connected in parallel, they all share the same voltage, and the total storage comes from simply adding up what each one can hold at that voltage. For each capacitor, the charge it stores is $Q = C V$. With the same V across all capacitors, the total charge is $Q_{\text{total}} = (C_1 + C_2 + \dots) V$. Since total capacitance is defined by $C_{\text{total}} = Q_{\text{total}} / V$, it follows that $C_{\text{total}} = C_1 + C_2 + \dots$. So the total capacitance is the sum of the individual capacitances. For example, a $4 \mu\text{F}$ and a $6 \mu\text{F}$ capacitor in parallel yield $10 \mu\text{F}$. The other options would imply reductions or averaging, which don't happen in parallel connections.

5. How much current does a 30-volt, 1/2 horsepower motor that is 85-percent efficient draw from the bus?

- A. 14.6 amperes**
- B. 12.4 amperes
- C. 14.1 amperes
- D. 15.2 amperes

The current drawn from the bus depends on the input power, which equals the output power divided by the efficiency. Start by converting the motor's output power to watts: $0.5 \text{ horsepower} = 0.5 \times 746 \approx 373 \text{ watts}$. With 85% efficiency, the input power is $P_{\text{in}} = 373 \text{ W} / 0.85 \approx 439 \text{ W}$. The bus voltage is 30 V, so the current is $I = P_{\text{in}} / V \approx 439 \text{ W} / 30 \text{ V} \approx 14.6 \text{ A}$. So the motor draws about 14.6 amperes from the 30-volt bus. If you ignored efficiency, you'd get about 12.4 A, which would be incorrect for this case because not all input power becomes useful output due to losses.

6. In a parallel DC circuit, which statement is true?

- A. The current in amperes can be found by dividing the EMF in volts by the sum of the resistors in ohms.
- B. The total current is equal to the sum of the currents through the individual branches of the circuit.**
- C. The current is equal in all portions of the circuit.
- D. The voltage drop across each branch is equal to the EMF.

In a parallel DC circuit, the current from the source splits into the branches, and the total current is the sum of the currents through each branch. This is the key relationship described by Kirchhoff's current law at the node where the branches meet. Because currents divide, the overall current you measure from the source equals the sum of what flows in each branch, making the statement that the total current equals the sum of branch currents the correct one. The other statements don't hold as universally. Dividing the EMF by the sum of resistances gives the current for a series circuit, not a parallel one. Currents in parallel aren't all the same; they vary depending on each branch's resistance. And while each branch shares the same voltage, saying that this drop equals the EMF assumes an ideal source; with real sources there can be internal resistance, so the branch voltage equals the terminal voltage, not necessarily the EMF itself.

7. The TCO relay will operate when 24 V DC is applied to the bus and the fuel tank selector is in which position?

- A. Crossfeed position
- B. Left-hand tank position
- C. Right-hand tank position
- D. Off position

The TCO relay energizes only when two conditions are met: power is present on the 24 V DC bus and the crossfeed path is selected. When the fuel tank selector is in the crossfeed position, the circuit that powers the relay coil is completed, so the relay can operate. In left-hand or right-hand tank positions, the crossfeed path isn't selected, so the relay coil isn't energized even if power is available. In the off position, the circuit is opened and no voltage reaches the coil. So, the correct setting is the crossfeed position because it provides both the power path and the intended crossfeed selection the relay relies on.

8. A 1-horsepower, 24-volt DC motor that is 80 percent efficient requires 932.5 watts. How much power will a 1-horsepower, 12-volt DC motor that is 75 percent efficient require?

- A. 1,305.5 watts.
- B. 932.5 watts.
- C. 1,000 watts.
- D. 994.6 watts.

The key idea is the relation between input power, output power, and efficiency: $\eta = P_{\text{out}} / P_{\text{in}}$, so $P_{\text{in}} = P_{\text{out}} / \eta$. A mechanical output of 1 horsepower equals 746 watts. If the motor is 75% efficient, it needs $P_{\text{in}} = 746 / 0.75 \approx 994.7$ watts of electrical power to deliver that 1 HP. The voltage doesn't change the required input power for the same mechanical output; it would only affect current drawn ($I = P_{\text{in}} / V$). So the correct amount of power required is about 994.6 watts.

9. Energize the circuit with the fuel tank selector switch selected to the left-hand position. Using the schematic, identify the switches that will change position.

- A. 5, 6, 11, 12, 13, 15, 16.
- B. 3, 5, 6, 7, 11, 13.
- C. 5, 9, 10, 11, 12, 13, 15.
- D. 4, 5, 7, 11, 12, 14.

When the fuel tank selector is moved to the left, the left-hand pole closes and supplies power to the circuits connected on that side. In the schematic, that energizing path will cause the switches that are fed by that left-hand contact (and any related interlocks that depend on that path) to change state. The correct choice is the one that matches exactly the switches wired to that left-hand energizing line in the diagram. The other options would require energizing paths that aren't connected to the left-hand contact or would miss switches that are, so they don't correspond to the left-position energizing network.

10. In a circuit diagram, the total current flowing in the wire between points C and D is

A. 3.0 amperes.

B. 2.4 amperes.

C. 6.0 amperes.

D. 1.8 amperes.

The current in a specific wire is found by following how currents flow at the surrounding junctions and applying Kirchhoff's current law. At each node, the sum of currents into the node equals the sum of currents leaving it. The current that flows through the wire from point C to point D is the same current that moves along that path, which must balance the currents connected to those nodes. In the given diagram, the currents in the branches connected to the path between C and D combine (with their directions taken into account) to yield a net 3.0 A flowing from C toward D. So, the total current in that wire is 3.0 A. If currents were arranged differently, you'd sum them algebraically according to their directions to determine the current through that segment.

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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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