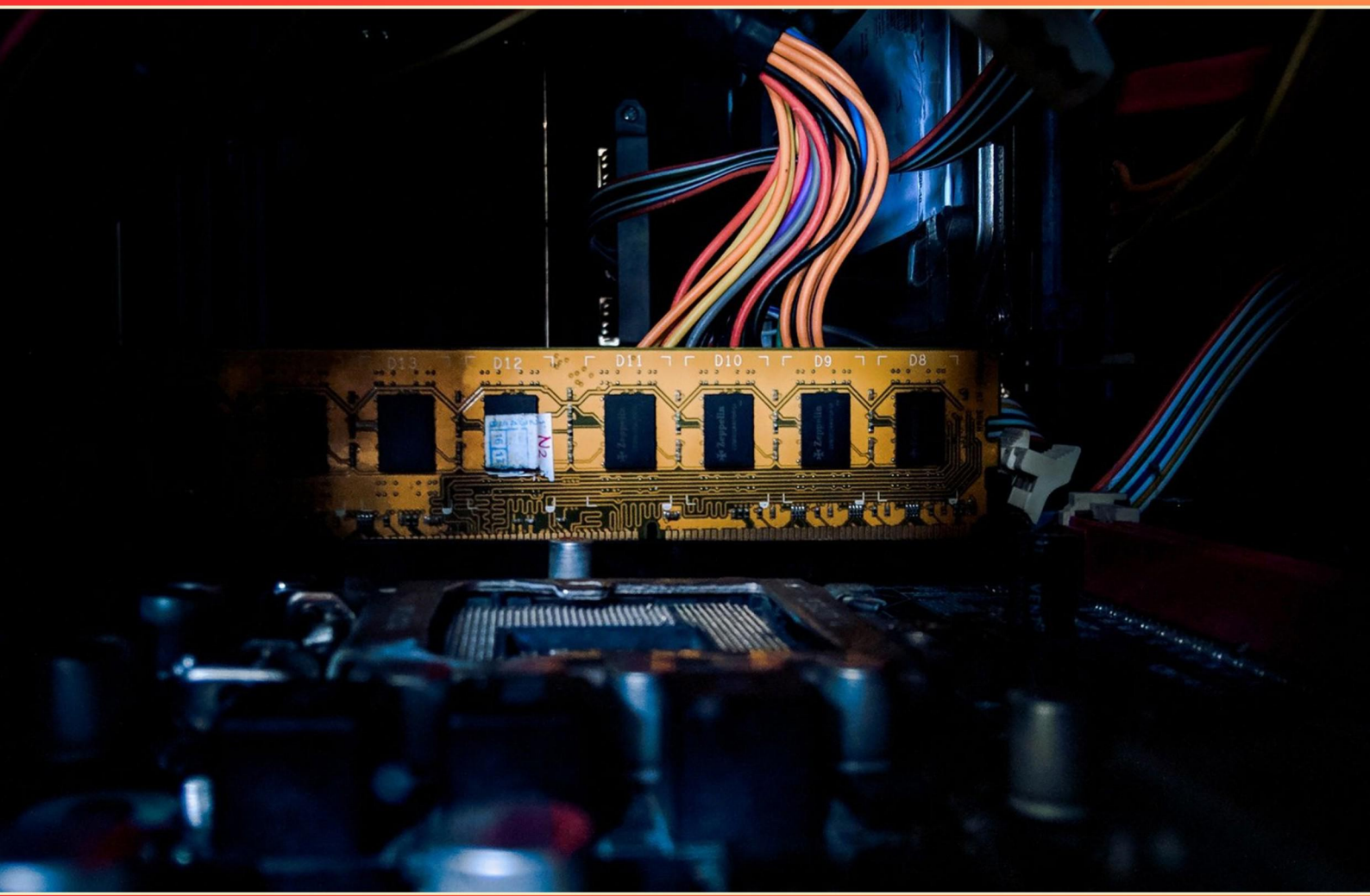
NCCER INTRODUCTION TO ELECTRICAL CIRCUITS (26103-23) PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR THE FULL VERSION STUDY GUIDE

https://nccerintrotoeleccircuits2610323.examzify.com

Copyright © 2026 by Examzify - A Kaluba Technologies Inc. product.

ALL RIGHTS RESERVED.

No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.

Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.

SAMPLE

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

SAMPLE

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.

SAMPLE

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!

SAMPLE

Questions

SAMPLE

1. The smallest unit of an element that retains its chemical properties is called an _____.

A. Atom

B. Molecule

C. Ion

D. Nucleus

2. If voltage is 120V and resistance is 24 ohms, current is

A. 5 A

B. 0.5 A

C. 24 A

D. 120 A

3. Which statement accurately describes current (I), voltage (V), and resistance (R)?

A. Current is the rate of energy transfer; Voltage is the rate of charge movement; Resistance is the rate of charge flow.

B. Current is the flow of electric charges; Voltage is the electrical pressure that pushes charges; Resistance is the opposition to current.

C. Current measures resistance; Voltage measures current; Resistance measures voltage.

D. Current is a property of the source; Voltage is a property of the conductor; Resistance is a property of the environment.

4. An atom with seven valence electrons is most likely a(n)?

A. Conductor

B. Insulator

C. Semiconductor

D. Metalloid

5. Where should a voltmeter be connected to measure the voltage across a component?

A. In parallel with the component

B. In series with the component

C. Across the power supply

D. Across the entire circuit

SAMPLE

6. An insulator is normally an atom with ___ electrons in the valence shell.

A. two

B. five or more

C. four

D. six

7. The most common method of producing electricity is through the use of _____.

A. magnetism

B. chemical energy

C. nuclear energy

D. thermal energy

8. Kirchhoff's voltage law (KVL) states what about voltages in a closed loop?

A. The sum of currents at a junction equals zero

B. The sum of voltages around any closed loop equals zero

C. Power equals current times resistance

D. The voltage across a component equals current times resistance

9. Which of the following is an SI unit of power?

A. Horsepower

B. Volt

C. Coulomb

D. Watt

10. In a parallel circuit with a 24 V source and three resistors in parallel: R1 = 8 Ω, R2 = 12 Ω, R3 = 4 Ω. What is the total current drawn from the source?

A. 9 A

B. 11 A

C. 13 A

D. 15 A

SAMPLE

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. The smallest unit of an element that retains its chemical properties is called an _____.

A. Atom

B. Molecule

C. Ion

D. Nucleus

Understanding what is the smallest unit of an element that keeps its chemical properties. An atom is the basic unit of an element. It contains a nucleus of protons and neutrons and electrons surrounding it. The chemical properties of an element—how it reacts, bonds, and interacts with other elements—are determined mainly by its electrons, especially the outermost ones. Because the atom carries the identity and characteristic behavior of that element, it is the smallest unit that retains those chemical properties. A molecule is formed when atoms bond and can have properties different from the individual element. An ion is a charged form of an atom (or group of atoms) that changes its chemical behavior compared to the neutral atom. The nucleus itself is just the center of the atom and doesn't determine chemical behavior in reactions. So, the smallest unit that preserves the element's chemical properties is the atom.

2. If voltage is 120V and resistance is 24 ohms, current is

A. 5 A

B. 0.5 A

C. 24 A

D. 120 A

Current is 5 amperes. Using Ohm's law, I = V/R, plug in 120 V and 24 Ω to get 120 ÷ 24 = 5 A. This makes sense: with a fixed voltage, increasing resistance lowers current. A quick check of power also fits: P = VI = 120 × 5 = 600 W, or P = I^2R = 25 × 24 = 600 W.

SAMPLE

3. Which statement accurately describes current (I), voltage (V), and resistance (R)?

A. Current is the rate of energy transfer; Voltage is the rate of charge movement; Resistance is the rate of charge flow.

B. Current is the flow of electric charges; Voltage is the electrical pressure that pushes charges; Resistance is the opposition to current.

C. Current measures resistance; Voltage measures current; Resistance measures voltage.

D. Current is a property of the source; Voltage is a property of the conductor; Resistance is a property of the environment.

Current is the flow of electric charges; voltage is the electrical pressure that pushes those charges through a circuit; and resistance is the opposition to that current. This aligns with how circuits behave in practice and is reflected in Ohm's Law, I = V / R, which shows that increasing voltage tends to increase current and increasing resistance tends to decrease it. If you double the voltage while keeping resistance the same, the current doubles; if you increase the resistance at the same voltage, the current drops. The statement you chose captures the correct roles of each quantity: current as flow, voltage as what drives that flow, and resistance as what resists it. The other options mix up these concepts. One describes current as the rate of energy transfer (that's power, not current) and says resistance is the rate of charge flow (which isn't correct). Another option incorrectly assigns measurements to the quantities—current would not be a measure of resistance, voltage would not measure current, and resistance would not measure voltage. The last option treats current as a property of the source, voltage as a property of the conductor, and resistance as a property of the environment, which doesn't reflect how these quantities are defined or how they interact in a circuit.

4. An atom with seven valence electrons is most likely a(n)?

A. Conductor

B. Insulator

C. Semiconductor

D. Metalloid

Valence electrons determine how easily electrons can move to carry an electric current. An atom with seven valence electrons is in the nonmetal group known as the halogens. These elements are highly nonmetallic and, in solid form, do not have freely moving electrons to conduct electricity, so they behave as insulators. They also tend to gain one electron to complete a full octet rather than lose electrons to become conductive. Semiconductors and metalloids usually have different, intermediate conduction properties tied to having four or five valence electrons in many common examples, so they don't fit the seven-valence-electron case.

SAMPLE

5. Where should a voltmeter be connected to measure the voltage across a component?

A. In parallel with the component

B. In series with the component

C. Across the power supply

D. Across the entire circuit

To measure the voltage across a component, you need the meter to read the potential difference between the two points at the component's terminals. Connecting a voltmeter in parallel with the component does exactly that: it shares the same two nodes, so the meter's reading equals the voltage across those terminals. The voltmeter is designed with relatively high internal resistance, so it draws very little current and doesn't noticeably affect the circuit. If the meter were placed in series, it would become part of the current path and alter the current flow, giving an incorrect reading for the component's voltage. If you connect it across the power supply or across the entire circuit, you'd be reading the supply voltage or the total voltage drops, not the voltage across that particular component.

6. An insulator is normally an atom with ___ electrons in the valence shell.

A. two

B. five or more

C. four

D. six

An insulator resists current because its outermost electrons are tightly bound and not easily freed to move as charge carriers. The number of electrons in the valence shell matters: when there are five or more valence electrons, those outer electrons tend to be held more tightly, making it harder for them to become free to conduct electricity. That means fewer electrons can move under an applied voltage, giving the material high resistance. In common insulating materials such as many plastics and ceramics, this higher count in the valence shell is typical, which is why they don't conduct well. In contrast, metals and many materials with fewer valence electrons allow electrons to move more freely, so they conduct better.

7. The most common method of producing electricity is through the use of _____.

A. magnetism

B. chemical energy

C. nuclear energy

D. thermal energy

Electricity is produced by converting energy stored in fuels into heat, then into motion, and finally into electrical energy. In most power plants, chemical energy in fossil fuels is burned to release thermal energy. This heat boils water to steam, which drives a turbine connected to a generator. As the turbine turns, the generator uses electromagnetic induction to convert that mechanical energy into electrical energy. So the method most commonly used is thermal energy—the heat-to-steam-to-turbine pathway that powers the vast majority of plants. Magnetic effects are essential inside the generator, but magnetism itself isn't the energy source. Nuclear energy is used in some plants, but thermal generation from fuels remains the most widespread method.

SAMPLE

8. Kirchhoff's voltage law (KVL) states what about voltages in a closed loop?

A. The sum of currents at a junction equals zero

B. The sum of voltages around any closed loop equals zero

C. Power equals current times resistance

D. The voltage across a component equals current times resistance

Kirchhoff's voltage law says that the sum of all voltages around a closed loop equals zero. This reflects conservation of energy: as you traverse the loop, every voltage rise from sources must be exactly balanced by voltage drops across the other elements, so the total change in electric potential around the loop is zero. Using a consistent sign convention, you treat a rise as positive and a drop as negative, and the equation around any loop sums to zero. This means that in any loop, the voltage supplied by sources equals the total voltage dropped across all elements like resistors. For example, a battery providing a certain voltage must be offset by the IR drops in the loop so that the net voltage is zero. The other statements describe different ideas: one is Kirchhoff's current law, which concerns how currents split and join at a junction; another is a general power relationship, and the last is Ohm's law for a resistor. They're related concepts, but they don't express the rule about the sum of voltages around a loop.

9. Which of the following is an SI unit of power?

A. Horsepower

B. Volt

C. Coulomb

D. Watt

Power is the rate at which energy is transferred or work is done. In the SI system, the unit for power is the watt, defined as one joule per second. In electrical terms, power also equals voltage times current, so power in watts is voltage multiplied by current ($P = V \times I$). That means a device rated at 60 watts uses 60 joules of energy every second. The other terms don't measure power in the SI system: horsepower is a traditional unit of power (not SI), while volt and coulomb measure electric potential and electric charge, respectively. So the correct choice is the watt.

10. In a parallel circuit with a 24 V source and three resistors in parallel: R1 = 8 Ω, R2 = 12 Ω, R3 = 4 Ω. What is the total current drawn from the source?

A. 9 A

B. 11 A

C. 13 A

D. 15 A

In a parallel circuit, the voltage across every branch is the same as the source, so the total current is the sum of the currents in each branch. Calculate each branch current with $I = V/R$: the current through the 8 Ω resistor is 24/8 = 3 A, through the 12 Ω resistor is 24/12 = 2 A, and through the 4 Ω resistor is 24/4 = 6 A. Adding them gives a total current drawn from the source of 3 + 2 + 6 = 11 A. A quick check using equivalent resistance ($1/Req = 1/8 + 1/12 + 1/4$) yields $Req \approx 2.18$ Ω, and 24 V divided by that gives about 11 A as well. The total current is 11 A.

SAMPLE

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://nccerintrotoeleccircuits2610323.examzify.com

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

SAMPLE