

Electrostatics Practice Test (Sample)

Study Guide



Everything you need from our exam experts!

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.

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

SAMPLE

- 1. What is the function of an electroscope?**
 - A. It measures the temperature of a conductor.**
 - B. It measures the quantity and type of charge.**
 - C. It measures the magnetic field strength.**
 - D. It measures the resistance of a wire.**

- 2. If the distance between the plates is halved, what happens to the capacitance?**
 - A. It doubles**
 - B. It halves**
 - C. It remains unchanged**
 - D. It increases by a factor of four**

- 3. Excess charge on an isolated conductor resides entirely on the outer surface.**
 - A. True**
 - B. False**
 - C. Not necessarily**
 - D. Only for spherical conductors**

- 4. What is a capacitor primarily used for?**
 - A. Storing charge and energy**
 - B. Generating magnetic fields**
 - C. Increasing kinetic energy of electrons**
 - D. Measuring current**

- 5. Which of the following is a method of charging an object by direct contact?**
 - A. Friction**
 - B. Conduction**
 - C. Induction**
 - D. Polarization**

- 6. One microcoulomb equals**
- A. 1×10^{-3} C**
 - B. 1×10^{-6} C**
 - C. 1×10^{-9} C**
 - D. 1 C**
- 7. If two identical conductive objects touch, how do the charges and voltages distribute?**
- A. They share charge so both have same charge and same voltage**
 - B. One becomes highly charged, the other neutral**
 - C. Charge remains on the larger object**
 - D. Voltage doubles for both**
- 8. What happens when you unscrew a bulb in a mixed circuit, according to the source?**
- A. Both bulbs go out**
 - B. One bulb dims while the other brightens, depending on arrangement**
 - C. Both bulbs brighten equally**
 - D. Both bulbs stay the same brightness**
- 9. Which statement about electrical potential energy in an electric field is true?**
- A. It remains constant regardless of position**
 - B. It depends on position and field strength**
 - C. It is always equal to kinetic energy**
 - D. It has no relation to charge**
- 10. During charging by induction, which component is grounded?**
- A. The charged object**
 - B. The neutral object**
 - C. The ground itself**
 - D. The surrounding air**

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. What is the function of an electroscope?

- A. It measures the temperature of a conductor.
- B. It measures the quantity and type of charge.**
- C. It measures the magnetic field strength.
- D. It measures the resistance of a wire.

The function of an electroscope is to detect electric charge and indicate it visually. When a conductor connected to the instrument carries net charge, the charges on the leaves repel each other and push apart. The amount by which the leaves diverge grows with the amount of charge, so you can tell that there is charge and get a qualitative sense of how much. With a known reference, you can also infer the type of charge, since the behavior changes with whether the charge is positive or negative. This is different from devices that measure temperature, magnetic fields, or electrical resistance, which is why an electroscope is specifically used to reveal the presence and degree of electric charge.

2. If the distance between the plates is halved, what happens to the capacitance?

- A. It doubles**
- B. It halves
- C. It remains unchanged
- D. It increases by a factor of four

Capacitance of a parallel-plate capacitor is inversely proportional to the distance between the plates. For a capacitor with area A and dielectric constant ϵ , $C = \epsilon A / d$. Halving the separation makes the denominator $d/2$, so the capacitance becomes $C' = \epsilon A / (d/2) = 2\epsilon A / d = 2C$. Therefore, the capacitance doubles. This isn't a fourfold change because the dependence is $1/d$, not $1/d^2$. The area and dielectric are unchanged, so the only change is the separation.

3. Excess charge on an isolated conductor resides entirely on the outer surface.

- A. True**
- B. False
- C. Not necessarily
- D. Only for spherical conductors

In electrostatic equilibrium, the electric field inside a conductor is zero, so any excess charge must move to the boundary of the conductor. The charges repel each other and spread out until the interior feels no field. For an isolated conductor with no charges enclosed in cavities, there is nothing inside the metal to hold charge, so all the excess ends up on the outer surface. This is why the exterior field depends only on the total net charge and the outer surface carries the excess. A small caveat: if there are hollow cavities with charges inside them, charges can induce on the inner surfaces to shield the metal, and the outer surface charge adjusts accordingly. But in the typical case described, excess charge resides entirely on the outer surface.

4. What is a capacitor primarily used for?

- A. Storing charge and energy**
- B. Generating magnetic fields
- C. Increasing kinetic energy of electrons
- D. Measuring current

A capacitor's main job is to store electric charge and energy in the electric field between its plates. When a voltage is applied, charges accumulate on the plates, creating a stored energy given by the expression $E = \frac{1}{2} C V^2$. This ability to hold charge and release it quickly makes capacitors useful for smoothing and stabilizing voltage in power supplies, filtering signals, and providing timing in circuits. Capacitors don't generate magnetic fields as their primary function—that role comes from inductors or changing currents. They also don't impart kinetic energy to electrons in a sustained way; their energy is stored in the electric field, not as increasing electrons' motion. Measuring current is done with a meter, not by a capacitor. So storing charge and energy is the correct primary purpose.

5. Which of the following is a method of charging an object by direct contact?

- A. Friction
- B. Conduction**
- C. Induction
- D. Polarization

Charging by direct contact is conduction. When a charged object touches a neutral conductor, electrons move freely through the conductor and flow across the contact until both objects reach the same electric potential. The total charge is shared between the two objects, so the previously neutral object ends up gaining a net charge in proportion to how easily charges can distribute between them (often roughly half if the objects are similar in size and shape). This is different from charging by friction, which involves rubbing two materials to transfer electrons, and from induction, which charges a object without any contact by rearranging internal charges in response to a nearby external charge. Polarization is just the slight shift of charge within a neutral object in an external field, not a net transfer of charge.

6. One microcoulomb equals

- A. $1 \times 10^{-3} \text{ C}$
- B. $1 \times 10^{-6} \text{ C}$**
- C. $1 \times 10^{-9} \text{ C}$
- D. 1 C

Understand how metric prefixes relate to the coulomb. The prefix micro (μ) means 10^{-6} , so one microcoulomb is one millionth of a coulomb. That makes $1 \mu\text{C} = 1 \times 10^{-6} \text{ C}$. Seeing the other options helps check consistency: $1 \times 10^{-3} \text{ C}$ is a milli- prefix, which is 0.001 C ($1000 \mu\text{C}$); $1 \times 10^{-9} \text{ C}$ is nano (0.000000001 C , or $0.001 \mu\text{C}$); and 1 C is the base unit with no prefix. So the quantity that equals one microcoulomb is $1 \times 10^{-6} \text{ C}$.

7. If two identical conductive objects touch, how do the charges and voltages distribute?

A. They share charge so both have same charge and same voltage

B. One becomes highly charged, the other neutral

C. Charge remains on the larger object

D. Voltage doubles for both

When conductors touch, charges move so that both objects reach the same electrical potential, since touching makes them one conductor. If the objects are identical, they have the same capacitance, so the total charge splits equally between them. The total charge is conserved, so each ends up with half of the total charge, and because they share the same capacitance, the voltage on each is the same ($V = Q/C$ with Q the same on both and C equal). So they end up with the same charge and the same voltage. The other ideas don't fit because contact allows charge to flow to equalize potential, the larger object doesn't necessarily keep all the charge, and the voltage isn't simply doubled—it's determined by the total charge and the equal capacitances, yielding equal voltages.

8. What happens when you unscrew a bulb in a mixed circuit, according to the source?

A. Both bulbs go out

B. One bulb dims while the other brightens, depending on arrangement

C. Both bulbs brighten equally

D. Both bulbs stay the same brightness

In a mixed circuit, removing a bulb changes the overall resistance and how current is distributed through the network. Because the bulbs don't sit in a single simple arrangement, the leftover current and voltage for the other bulb depend on the exact wiring. If the other bulb ends up with more current or voltage after the first is removed, it can brighten; if it loses current, it dims. That arrangement-dependent behavior is why the correct description is that one bulb dims while the other brightens, depending on how they're connected. For contrast, in a purely series setup removing one bulb would turn everything off, while in a purely parallel setup the other bulb's brightness would stay the same (for an ideal source).

9. Which statement about electrical potential energy in an electric field is true?

- A. It remains constant regardless of position**
- B. It depends on position and field strength**
- C. It is always equal to kinetic energy**
- D. It has no relation to charge**

The main idea is that electrical potential energy for a charge in a field changes with where you place the charge and with how strong the field is at that location. For a specific charge q , the potential energy is $U = qV(r)$, so it depends on the position r (through the potential V) and on the field's influence at that point. A stronger field or a point closer to the source charges changes V more rapidly, making the potential energy change more quickly as you move. This is why potential energy isn't constant and is related to both position and the local field. As you move a charge, work is exchanged between potential and kinetic energy, but potential energy is not necessarily equal to kinetic energy at any moment. Also, potential energy scales with the amount of charge involved, so it is indeed related to the charge.

10. During charging by induction, which component is grounded?

- A. The charged object**
- B. The neutral object**
- C. The ground itself**
- D. The surrounding air**

Charging by induction works by the nearby charged object creating a rearrangement of charges in a neutral conductor. To make a net transfer of charge, that neutral conductor is connected to the earth, giving electrons a path to flow between the ground and the conductor. This flow allows the conductor to acquire a net charge after the earth connection is removed and the external charge is also removed. So the component that is grounded is the neutral object—the conductor near the charged object—because it is the part that exchanges charge with the Earth. The charged object isn't connected to ground in this process, the Earth is just the reservoir for electrons, and the surrounding air isn't a conducting path in the usual electrostatic sense.

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://electrostatics.examzify.com>

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

SAMPLE