IGCSE Physics – Electricity Practice Test (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

1. Which device converts AC to DC in power supplies?

A. Diode-based power packs

B. Inductors

C. Resistors

D. Lamps

2. If the voltage across a resistor doubles while its resistance remains the same, what happens to the current?

A. It doubles

B. It halves

C. It stays the same

D. It quadruples

3. Which of the following are examples of conductors?

A. Copper, Silver, Gold.

B. Glass, Plastic, Wood.

C. Copper, Plastic, Wood.

D. Silver, Rubber, Plastic.

4. Mains electricity refers to which description?

A. Direct current at 50 Hz and 230 V

B. Alternating current with a frequency of 50 Hz at 230 V that is provided to houses, shops, etc.

C. Direct current at 110 V

D. Alternating current at 60 Hz

5. Which device is an electric lamp consisting of a wire filament that emits light when heated and is non-ohmic?

A. Filament bulb

B. Thermistor

C. LDR

D. Diode

6. Which term describes a resistor whose resistance can be changed by adjusting the portion of the resistor the current travels through?

A. Variable resistor

B. Fixed resistor

C. Fixed value resistor

D. Potentiometer

7. What term describes devices whose resistance does not remain constant under changing conditions?

A. Ohmic

B. Non-Ohmic

C. LDR

D. Diode

8. What is the SI unit of charge?

A. Coulomb, C

B. Joule, J

C. Volt, V

D. Watt, W

9. What is the source of energy in a circuit?

A. The source of energy in a circuit.

B. A device that measures current.

C. A resistor that dissipates heat.

D. A switch that controls flow.

10. A detector whose resistance decreases as light intensity increases is known as what?

A. LDR (Light Dependent Resistor)

B. Thermistor

C. Filament bulb

D. Diode

Answers

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

Explanations

1. Which device converts AC to DC in power supplies?

A. Diode-based power packs

B. Inductors

C. Resistors

D. Lamps

Rectification is the process of turning alternating current into direct current. This relies on a component that conducts current in only one direction. A diode does exactly that: it passes current forward but blocks it when the current would reverse. In a diode-based rectifier circuit, AC is converted into a unidirectional, pulsating DC output, which is then often smoothed to a steady DC by capacitors. This is why power supplies use diode-based devices to provide DC. Inductors store energy and oppose changes in current, but they don't create DC from AC. Resistors simply dissipate energy as heat and don't change AC to DC. Lamps convert electrical energy into light (and heat) and likewise don't provide a DC output from AC.

2. If the voltage across a resistor doubles while its resistance remains the same, what happens to the current?

A. It doubles

B. It halves

C. It stays the same

D. It quadruples

The important idea is Ohm's law: current through a resistor equals the voltage across it divided by its resistance, I = V/R. If the resistance stays the same and you double the voltage, the current must double as well because I = (2V)/R = 2(V/R). So the current doubles.

3. Which of the following are examples of conductors?

A. Copper, Silver, Gold.

B. Glass, Plastic, Wood.

C. Copper, Plastic, Wood.

D. Silver, Rubber, Plastic.

Electric current flows easily in materials that have free charge carriers. Metals provide a sea of delocalized electrons that can move in response to a potential difference, so they conduct well. Copper, silver, and gold are classic examples of good conductors because all three have lots of free electrons and low resistance. The other materials listed—glass, plastic, wood, and rubber—are insulators: their electrons are tightly bound and don't move freely, so they resist electrical current. Since the question asks for examples of conductors, the all-metal option is the only one where every material listed conducts electricity.

4. Mains electricity refers to which description?

A. Direct current at 50 Hz and 230 V

B. Alternating current with a frequency of 50 Hz at 230 V that is provided to houses, shops, etc.

C. Direct current at 110 V

D. Alternating current at 60 Hz

Mains electricity is the alternating current supplied by the power grid to buildings. This means the current changes direction and the voltage varies in a 50 Hz cycle in many regions, with a typical effective (RMS) voltage of about 230 V. That combination—alternating current, 50 Hz, and 230 V—describes the common domestic supply to houses, shops and similar places. It isn't direct current, and some countries use 60 Hz or different voltages, so the 50 Hz at 230 V description is the one that matches the typical mains supply used for everyday appliances.

5. Which device is an electric lamp consisting of a wire filament that emits light when heated and is non-ohmic?

A. Filament bulb

B. Thermistor

C. LDR

D. Diode

The main idea is a light source that emits light because its wire filament is heated to a high temperature. A filament bulb does this with a tungsten filament so hot that it glows and emits visible light. As current flows, the filament heats up, and its resistance changes with temperature—specifically, it increases as it gets hotter. That change means the current is not simply proportional to voltage, so the device is non-ohmic. Other options don't fit the description of a heated-wire lamp. A thermistor and a light-dependent resistor have resistances that vary with temperature or light, but they don't emit light themselves. A diode conducts mainly in one direction and has a forward voltage drop, but it's not a heated-filament lamp either.

6. Which term describes a resistor whose resistance can be changed by adjusting the portion of the resistor the current travels through?

A. Variable resistor

B. Fixed resistor

C. Fixed value resistor

D. Potentiometer

Being able to adjust resistance means the device lets you change how much of the resistive material the current travels through. For a uniform resistor, the resistance is proportional to the length of the path the current takes. So by moving a contact along the resistor to pick a different portion of the track, you change the length the current flows through and thus change the resistance. This is the hallmark of a variable resistor. A potentiometer is a specific type of variable resistor with a sliding contact, and it's often used as a voltage divider. When used as a two-terminal component, it also behaves as a variable resistor, but its main common use is as a three-terminal device for dividing voltage. The other options describe resistors whose resistance is fixed and does not change.

7. What term describes devices whose resistance does not remain constant under changing conditions?

A. Ohmic

B. Non-Ohmic

C. LDR

D. Diode

Non-Ohmic describes devices whose resistance changes when conditions such as voltage, current, temperature, or light change. Ohmic devices follow Ohm's law, so their resistance stays constant and the current is proportional to the voltage, giving a straight-line V–I relationship. In contrast, the LDR and the diode don't keep a fixed resistance—their current-voltage behavior is nonlinear because factors like light level or forward bias alter how easily current flows. So the term that fits devices whose resistance does not stay constant under changing conditions is non-ohmic. An ohmic resistor would have a constant resistance, while the LDR and diode illustrate non-ohmic behavior.

8. What is the SI unit of charge?

A. Coulomb, C

B. Joule, J

C. Volt, V

D. Watt, W

Charge is a quantity tied to the flow of electric current over time. In the SI system, the unit of electric charge is the coulomb. One coulomb is the amount of charge that passes a point when a steady current of one ampere flows for one second. Since current equals charge per time (Q = I × t), the coulomb is essentially an ampere-second. The other units correspond to different quantities: joule for energy, volt for electric potential difference, and watt for power, so they are not units of charge.

9. What is the source of energy in a circuit?

A. The source of energy in a circuit.

B. A device that measures current.

C. A resistor that dissipates heat.

D. A switch that controls flow.

The energy in a circuit comes from the power source, such as a battery or generator. This source provides the energy by creating a potential difference that pushes charges around the circuit. As charges move through the components, that electrical energy is transferred and transformed (for example into light, sound, or heat). A device that measures current doesn't supply energy; it mainly measures and may add a tiny resistance. A resistor dissipates some of the electrical energy as heat, but it does not add energy to the circuit—its job is to use some of the energy provided by the source. A switch simply controls whether the circuit is complete or open, so it doesn't supply energy either. So the source of energy in a circuit is the power source (battery, generator, etc.).

10. A detector whose resistance decreases as light intensity increases is known as what?

A. LDR (Light Dependent Resistor)

B. Thermistor

C. Filament bulb

D. Diode

Light affects a detector's ability to conduct electricity through a property called photoconductivity. In a light-dependent resistor, darkness leaves the material with few charge carriers, giving it a high resistance. When light shines on it, photons provide energy that frees more charge carriers, so conductivity increases and resistance falls. The stronger the light, the lower the resistance becomes, making it a straightforward light sensor. Other components don't respond to light in this same way. A thermistor changes resistance with temperature, not light—and it can either rise or fall with heat depending on the type. A filament bulb's resistance increases as it heats up, which is a thermal effect, not a light-detection behavior. A diode mainly governs current in one direction and isn't defined by a simple decrease in resistance with light, though some light-sensitive devices exist, the described detector is the light-dependent resistor.

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://igcsephysicselectricity.examzify.com

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