IGCSE PHYSICS – ELECTRICITY PRACTICE TEST (SAMPLE)

STUDY GUIDE

SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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. A lamp marked 40 W at 230 V is connected. What is its resistance?

A. 460 Ω

B. 1322 Ω

C. 230 Ω

D. 60 Ω

2. Three resistors—2 Ω, 6 Ω, and 3 Ω—are connected in parallel across a 12 V source. Which set of branch currents and total current is correct?

A. $I_{2\Omega}$ = 6 A; $I_{6\Omega}$ = 1 A; $I_{3\Omega}$ = 5 A; I_{total} = 12 A

B. $I_{2\Omega}$ = 6 A; $I_{6\Omega}$ = 2 A; $I_{3\Omega}$ = 4 A; I_{total} = 12 A

C. $I_{2\Omega}$ = 4 A; $I_{6\Omega}$ = 2 A; $I_{3\Omega}$ = 6 A; I_{total} = 12 A

D. $I_{2\Omega}$ = 6 A; $I_{6\Omega}$ = 2 A; $I_{3\Omega}$ = 3 A; I_{total} = 11 A

3. An ammeter for current in a circuit should be placed where?

A. In parallel with the component

B. In series with the component whose current you want to measure

C. Across the power supply

D. Anywhere in the circuit

4. What is the purpose of an earth wire?

A. To provide a low-resistance path to earth for fault current, reducing shock risk.

B. To increase resistance in the circuit to limit current.

C. To supply extra current to the appliance.

D. To act as a fuse to protect wires.

5. What is static electricity?

A. The flow of electrons

B. The accumulation of excess electric charge on an object

C. The movement of magnetic fields

D. The production of light

6. What is the term for a device that does not obey Ohm's Law?

A. Ohmic

B. Non-Ohmic

C. Wires

D. Resistors

7. What is a thermistor and how does its resistance change with temperature?

A. A thermistor is a resistor whose resistance changes with temperature; an NTC thermistor decreases in resistance as temperature rises, while a PTC thermistor increases with temperature.

B. A thermistor is a resistor that always increases resistance with temperature.

C. A thermistor is a device that stores energy without changing resistance.

D. A thermistor has fixed resistance regardless of temperature.

8. LED stands for which of the following?

A. Light Emitting Diode

B. Light Emitting Display

C. Light Emission Device

D. Luminescent Electronic Device

9. Which statement best describes the neutral wire?

A. Copper wire coated in blue plastic that carries current away from the component and is at or near 0 V

B. Copper wire coated in brown plastic that carries current toward the component

C. Copper wire coated in green and yellow plastic that connects to earth

D. Copper wire coated in blue plastic that carries current toward the component at around 240 V

10. If 5 coulombs of charge pass and the voltage is 2 volts, what is the energy transferred?

A. 10 joules.

B. 7 joules.

C. 2 joules.

D. 5 joules.

Answers

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

<u>Explanations</u>

1. A lamp marked 40 W at 230 V is connected. What is its resistance?

A. 460 Ω

B. 1322 Ω

C. 230 Ω

D. 60 Ω

Power dissipated by a resistor relates to voltage and resistance through P = V^2 / R. For a device rated 40 W at 230 V, its operating resistance is R = V^2 / P = 230^2 / 40. Calculating, 230^2 = 52,900, and 52,900 / 40 = 1,322.5 ohms, about 1.32 kΩ. So the lamp's resistance at its operating voltage is roughly 1.32 kΩ. (In practice, incandescent lamps' resistance varies with temperature, but this uses the hot operating value corresponding to the rating.)

2. Three resistors—2 Ω, 6 Ω, and 3 Ω—are connected in parallel across a 12 V source. Which set of branch currents and total current is correct?

A. I_2Ω = 6 A; I_6Ω = 1 A; I_3Ω = 5 A; Itotal = 12 A

B. I_2Ω = 6 A; I_6Ω = 2 A; I_3Ω = 4 A; Itotal = 12 A

C. I_2Ω = 4 A; I_6Ω = 2 A; I_3Ω = 6 A; Itotal = 12 A

D. I_2Ω = 6 A; I_6Ω = 2 A; I_3Ω = 3 A; Itotal = 11 A

In a parallel circuit, each resistor has the same voltage across it, so current through each branch is found using I = V/R with V = 12 V. - For 2 Ω: I = 12/2 = 6 A - For 6 Ω: I = 12/6 = 2 A - For 3 Ω: I = 12/3 = 4 A The total current is the sum of the branch currents: Itotal = 6 + 2 + 4 = 12 A. This also matches the total resistance in parallel (1/Rtotal = 1/2 + 1/6 + 1/3 = 1, so Rtotal = 1 Ω, and Itotal = 12/1 = 12 A). So the correct set has currents 6 A, 2 A, and 4 A with a total of 12 A. The other options involve currents that don't satisfy I = V/R for the given resistors or give a total that doesn't equal the sum of the branch currents.

3. An ammeter for current in a circuit should be placed where?

A. In parallel with the component

B. In series with the component whose current you want to measure

C. Across the power supply

D. Anywhere in the circuit

To measure current through a particular component, you want the same current to flow through the meter as through that component. In a single-loop circuit, current is the same everywhere along that loop, so you place the ammeter in series with the component. This way the component and the meter share the same current, and the meter's small resistance minimally disturbs the circuit. If the ammeter were placed in parallel with the component, it would create a new path of very low resistance. Most of the current would flow through the ammeter instead of the component, giving a misleading reading and potentially altering the circuit. Placing the ammeter across the power supply would measure the total current drawn from the supply, not the current through the specific component, which isn't what you want. Placing it anywhere in the circuit isn't reliable either, because unless it's in the same series path as the component, it won't guarantee the same current flows through both. So the correct approach is to insert the ammeter in series with the component whose current you want to measure.

4. What is the purpose of an earth wire?

<u>A. To provide a low-resistance path to earth for fault current, reducing shock risk.</u>

B. To increase resistance in the circuit to limit current.

C. To supply extra current to the appliance.

D. To act as a fuse to protect wires.

The earth wire provides a low-resistance path to the ground so that any fault current has a safe route away from you and the metal parts of the appliance. If insulation fails and live touches the casing, the fault current goes through the earth wire, keeping the casing at nearly zero voltage and reducing the risk of electric shock. That large fault current also makes protective devices like fuses or circuit breakers trip quickly, cutting the supply to prevent harm. The earth wire isn't meant to carry normal current, isn't used to limit current, and isn't a fuse by itself.

5. What is static electricity?

A. The flow of electrons

<u>B. The accumulation of excess electric charge on an object</u>

C. The movement of magnetic fields

D. The production of light

Static electricity is the buildup of excess electric charge on an object, with the charges staying in place until they find a way to discharge. This happens when electrons are transferred between objects (for example, rubbing a balloon on your hair). The result is one object becoming negatively charged and the other positively charged, and the charges remain at rest on the surface until discharge or contact equalizes them. This definition fits best because it focuses on a stationary charge imbalance, unlike the flow of electrons (electric current), moving magnetic fields (magnetism), or production of light, which are not what static electricity is.

6. What is the term for a device that does not obey Ohm's Law?

A. Ohmic

<u>B. Non-Ohmic</u>

C. Wires

D. Resistors

Ohm's Law describes a constant resistance where current is proportional to voltage. When a component's resistance stays the same (for example, a simple resistor at a constant temperature), doubling the voltage doubles the current, giving a straight-line V–I relation. If the resistance changes with voltage or current, the current no longer increases in direct proportion to the voltage. Such devices don't follow Ohm's Law and are called non-Ohmic. A common example is a filament lamp: as current rises, the filament heats up, its resistance increases, so the V–I relationship bends instead of forming a straight line. Diodes also behave non-Ohmically, conducting strongly in one direction with a nonlinear V–I curve. Because it describes this non-proportional behavior, the correct term is non-Ohmic.

7. What is a thermistor and how does its resistance change with temperature?

A. A thermistor is a resistor whose resistance changes with temperature; an NTC thermistor decreases in resistance as temperature rises, while a PTC thermistor increases with temperature.

B. A thermistor is a resistor that always increases resistance with temperature.

C. A thermistor is a device that stores energy without changing resistance.

D. A thermistor has fixed resistance regardless of temperature.

A thermistor is a temperature-sensitive resistor whose resistance changes with temperature because the semiconductor material inside responds to heat. In the common type, resistance decreases as temperature rises (NTC), since higher temperature increases charge carriers and makes conduction easier. Some thermistors (PTC) do the opposite, increasing resistance with temperature. This varying resistance lets the thermistor be used to sense temperature or provide temperature-dependent behavior in circuits. The idea that it stores energy without changing resistance or that its resistance is fixed regardless of temperature isn't correct, and those descriptions don't fit how a thermistor behaves.

8. LED stands for which of the following?

A. Light Emitting Diode

B. Light Emitting Display

C. Light Emission Device

D. Luminescent Electronic Device

LED stands for Light Emitting Diode. The idea here is a diode—a semiconductor device that conducts current mainly in one direction—designed to emit light when forward biased. As current flows, electrons and holes recombine in the semiconductor and release photons, producing visible light. This makes LEDs efficient light sources for indicators, displays, and lighting. The other phrasings don't match the established name of the component. A display is a device that shows images, not the actual light-emitting component. A general term like Light Emission Device is non-specific, and Luminescent Electronic Device uses a different wording that isn't the standard name for this part.

9. Which statement best describes the neutral wire?

A. Copper wire coated in blue plastic that carries current away from the component and is at or near 0 V

B. Copper wire coated in brown plastic that carries current toward the component

C. Copper wire coated in green and yellow plastic that connects to earth

D. Copper wire coated in blue plastic that carries current toward the component at around 240 V

The neutral wire is the return path for current in a mains circuit and sits at about earth potential, close to 0 V. It is colored blue in many wiring standards. This means it carries current away from the appliance or component and back toward the power source, completing the circuit without being at a high voltage relative to the earth. This distinguishes it from the live wire, which is brown and carries current toward the component at mains voltage (around 230–240 V, depending on the country), and from the earth wire, which is green/yellow and serves as a safety path to earth rather than part of the normal current loop. So a blue-coated wire that carries current away from the component and is at or near 0 V correctly describes the neutral wire.

10. If 5 coulombs of charge pass and the voltage is 2 volts, what is the energy transferred?

A. 10 joules.

B. 7 joules.

C. 2 joules.

D. 5 joules.

When a charge moves through a potential difference, the energy transferred equals the work done on that charge, which is $E = QV$ (energy = charge × voltage). Here, 5 coulombs passing through 2 volts gives $E = 5 \times 2 = 10$ joules. So the energy transferred is 10 J. The other numbers don't fit $E = QV$ with the given values.

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!