AQA GCSE TRIPLE SCIENCE – PHYSICS 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 2 kg block on a frictionless surface is raised to height h = 3 m. What is the kinetic energy at the bottom? Use g = 9.8 m/s^2.

A. 29.4 J

B. 6.0 J

C. 58.8 J

D. 19.6 J

2. What happens to light when it enters a slower medium in terms of refraction?

A. Speed changes; bends toward the normal when entering a slower medium; away when entering a faster medium

B. Speed remains the same; no bending

C. Light slows when entering faster medium and bends away from the normal

D. Wavelength increases in all media

3. Which energy store is stored in a stretched or compressed spring?

A. Elastic potential energy

B. Magnetic energy

C. Gravitational potential energy

D. Chemical energy

4. During a fall, what happens to energy as the skydiver accelerates?

A. Kinetic energy decreases as potential energy increases

B. Potential energy decreases while kinetic energy increases; some energy becomes thermal due to air resistance

C. Total energy increases

D. Energy is created during the fall

5. What is a magnetic field line?

A. A line that marks the path of a magnetic monopole.

B. A line indicating the path of an electric current.

C. A line showing the density of magnetic field only inside magnets.

D. A line showing the direction of the magnetic field; density indicates field strength.

6. Which statement about gamma radiation, second description, is correct?

A. Positively charged heavy particle emitted by nucleus

B. High-energy electromagnetic radiation with no mass or charge; highly penetrating; requires dense shielding

C. A form of ionizing radiation consisting of electrons

D. A type of sound wave in solids

7. A resistor with I = 2 A and R = 3 Ω has what power?

A. 6 W

B. 12 W

C. 24 W

D. 8 W

8. A heater has an electrical input of 1000 J and produces 320 J of useful heat. What is its efficiency and how much energy is wasted?

A. Efficiency = 0.68; wasted energy = 320 J

B. Efficiency = 0.32; wasted energy = 680 J

C. Efficiency = 0.32; wasted energy = 320 J

D. Efficiency = 0.50; wasted energy = 180 J

9. What is the formula for gravitational potential energy near Earth's surface?

A. m g h^2

B. m g h

C. 1/2 m v^2

D. m a h

10. Which of the following is a disadvantage of solar cells?

A. Initial costs are high

B. They require constant wind to operate

C. They produce energy at night

D. They are extremely loud

Answers

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

Explanations

1. A 2 kg block on a frictionless surface is raised to height h = 3 m. What is the kinetic energy at the bottom? Use g = 9.8 m/s^2.

A. 29.4 J

B. 6.0 J

C. 58.8 J

D. 19.6 J

Energy is conserved on a frictionless path, so the block's loss of gravitational potential energy as it descends becomes kinetic energy. At the bottom, all the initial potential energy has turned into kinetic energy, so KE = m g h. Using m = 2 kg, g = 9.8 m/s^2, and h = 3 m gives KE = 2 × 9.8 × 3 = 58.8 J. That's why the kinetic energy at the bottom is 58.8 J. If you wanted the speed, you'd relate KE to velocity with KE = 1/2 m v^2, giving v = sqrt(2 g h) ≈ 7.7 m/s. The other numbers don't match m g h for these values, so they don't fit the bottom-energy result.

2. What happens to light when it enters a slower medium in terms of refraction?

A. Speed changes; bends toward the normal when entering a slower medium; away when entering a faster medium

B. Speed remains the same; no bending

C. Light slows when entering faster medium and bends away from the normal

D. Wavelength increases in all media

Refraction happens because light changes speed when it crosses into a different material. When it enters a slower medium, its speed decreases, and since the frequency stays the same, the wavelength becomes shorter. This change in speed at the boundary causes the ray to bend toward the normal. The relationship n1 sin θ1 = n2 sin θ2 (with n2 > n1) gives θ2 < θ1, so the refracted ray moves closer to the normal. In contrast, entering a faster medium would speed it up and bend away from the normal, and light does change speed in different media, so claims of no bending or no speed change aren't correct. The wavelength adjusts with speed (it gets shorter in the slower medium) while the frequency remains constant.

3. Which energy store is stored in a stretched or compressed spring?

A. Elastic potential energy

B. Magnetic energy

C. Gravitational potential energy

D. Chemical energy

Elastic potential energy is stored in a stretched or compressed spring. When you push or pull the spring, you do work on it and deform it, which stores energy in the spring's structure. The amount stored depends on how much you change its length (x) and how stiff the spring is (k), given by the form 1/2 k x^2. When the spring returns to its natural length, that stored energy can be released as motion. This is different from magnetic energy (stored in magnetic fields), gravitational potential energy (depends on height in a gravitational field), or chemical energy (stored in chemical bonds).

4. During a fall, what happens to energy as the skydiver accelerates?

A. Kinetic energy decreases as potential energy increases

B. Potential energy decreases while kinetic energy increases; some energy becomes thermal due to air resistance

C. Total energy increases

D. Energy is created during the fall

When a skydiver falls, gravity is doing work that turns gravitational potential energy into kinetic energy, so the speed increases. At the same time, air resistance acts opposite the motion and takes some of that energy away, warming the air and the diver. So the potential energy decreases, the kinetic energy increases, and some energy is transformed into thermal energy due to drag. Overall energy is conserved when you include the heat produced, but the mechanical energy (kinetic plus potential) drops as energy is dissipated as heat.

5. What is a magnetic field line?

A. A line that marks the path of a magnetic monopole.

B. A line indicating the path of an electric current.

C. A line showing the density of magnetic field only inside magnets.

D. A line showing the direction of the magnetic field; density indicates field strength.

Magnetic field lines are a way to picture the magnetic field in space. Along each line, the tangent shows the direction a magnetic north pole would experience. The closer the lines are, the stronger the field in that region. They exist both outside and inside magnets, forming closed loops from the magnet's north to its south outside, and returning inside. That's why the best description is that a line shows the direction of the magnetic field, and line density indicates field strength. The other ideas don't fit: magnetic monopoles aren't what these lines mark, the lines don't trace the path of an electric current, and the field is represented everywhere, not just inside magnets.

6. Which statement about gamma radiation, second description, is correct?

A. Positively charged heavy particle emitted by nucleus

B. High-energy electromagnetic radiation with no mass or charge; highly penetrating; requires dense shielding

C. A form of ionizing radiation consisting of electrons

D. A type of sound wave in solids

Gamma radiation is a form of electromagnetic radiation emitted from the nucleus. It has no mass and no electric charge, unlike alpha or beta radiation which are particles with mass and charge. Because it is high-energy light, gamma rays are highly penetrating and pass through most materials easily, so shielding needs to be dense and relatively thick, such as lead or several centimeters of concrete. The statement that correctly describes gamma radiation is that it is high-energy electromagnetic radiation with no mass or charge, is highly penetrating, and requires dense shielding. The other options describe charged heavy particles, electrons, or a mechanical wave (sound), which are not gamma rays.

7. A resistor with I = 2 A and R = 3 Ω has what power?

A. 6 W

B. 12 W

C. 24 W

D. 8 W

Power dissipated by a resistor depends on the current flowing through it and its resistance, using the relation P = I^2R. With I = 2 A and R = 3 Ω, P = (2)^2 × 3 = 4 × 3 = 12 W. You can confirm this by finding the voltage: V = IR = 2 × 3 = 6 V, and P = VI = 6 × 2 = 12 W. So the power is 12 W.

8. A heater has an electrical input of 1000 J and produces 320 J of useful heat. What is its efficiency and how much energy is wasted?

A. Efficiency = 0.68; wasted energy = 320 J

B. Efficiency = 0.32; wasted energy = 680 J

C. Efficiency = 0.32; wasted energy = 320 J

D. Efficiency = 0.50; wasted energy = 180 J

Efficiency is the fraction of input energy that becomes useful energy. Here, 320 J of useful heat come from a total input of 1000 J, so efficiency = 320/1000 = 0.32 (32%). The energy not used as useful heat is wasted energy, which is 1000 − 320 = 680 J. So the correct pair is efficiency 0.32 and wasted energy 680 J.

9. What is the formula for gravitational potential energy near Earth's surface?

A. m g h^2

B. m g h

C. 1/2 m v^2

D. m a h

Gravitational potential energy is the energy stored when you lift a mass against Earth's gravity. It depends on how heavy the object is, how high you lift it, and the strength of gravity. The work required to raise the mass by height h against gravity is m g h, so the potential energy near Earth's surface is m g h, where g is about 9.8 m/s^2 and h is the height relative to the reference level. This energy increases linearly with height, unlike kinetic energy, which involves velocity. The other expressions either mix in a different variable or use height squared, which isn't correct for gravitational potential energy. Hence, m g h is the right formula.

10. Which of the following is a disadvantage of solar cells?

A. Initial costs are high

B. They require constant wind to operate

C. They produce energy at night

D. They are extremely loud

A disadvantage of solar cells is their high upfront cost. Installing solar panels, inverters, wiring, and any needed mounting or rooftop work can be expensive at the start, even though running costs are low and there's no fuel to buy over time. This upfront expense often influences decisions about whether to adopt solar first. Solar energy depends on sunlight, so it doesn't produce energy at night and is less predictable on cloudy days; you'd typically need storage or a connection to the grid to cover those periods. Solar cells aren't powered by wind, and they are generally quiet since they have no moving parts like turbines.

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://aqagcsetriplesciencephysics.examzify.com

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