

ASSESSMENT AND QUALIFICATIONS ALLIANCE (AQA) GCSE PHYSICS PRACTICE EXAM (SAMPLE) STUDY GUIDE



Prepare with structure. Pass with confidence



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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

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1. Which form of heat transfer involves direct contact between materials?

- A. Conduction
- B. Convection
- C. Radiation
- D. Leverage

2. What describes lines or surfaces that are side by side and consistently spaced apart?

- A. Parallel
- B. Perpendicular
- C. Converging
- D. Diverging

3. What kind of therapy involves the use of X-rays to destroy cancerous tumors?

- A. Radiation therapy
- B. Biological therapy
- C. Surgical therapy
- D. Chemotherapy

4. What do we call a form of matter that has a definite shape and volume?

- A. Gas
- B. Liquid
- C. Sublimate
- D. Solid

5. What is black body radiation?

- A. Radiation from a perfect insulator
- B. Radiation emitted by a theoretical perfect emitter and absorber
- C. Radiation that has no wavelength
- D. Radiation that cannot be detected

6. What is the process called that involves the emission of ionising radiation from atomic nuclei?
- A. Fission
 - B. Fusion
 - C. Radioactivity
 - D. Transmutation
7. Which seismic waves are known as the slowest and are classified as surface waves?
- A. Primary waves
 - B. Secondary waves
 - C. Long waves
 - D. Seismic waves
8. What is the process called when a substance changes from a liquid to a gas?
- A. Vaporization
 - B. Condensation
 - C. Evaporation
 - D. Melting
9. Which of the following particles is considered to be a beta particle?
- A. Proton
 - B. Neutron
 - C. Electron
 - D. Helium nucleus
10. What characteristic does an LED have compared to regular diodes?
- A. It allows current to flow in both directions
 - B. It emits light when current flows through it
 - C. It can store energy
 - D. It has no polarity

Answers

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

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Explanations

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1. Which form of heat transfer involves direct contact between materials?

A. Conduction

B. Convection

C. Radiation

D. Leverage

Conduction is the form of heat transfer that requires direct contact between materials. In conduction, heat is transferred through collisions between particles within a material or between materials that are in direct contact. When one part of a material is heated, the particles in that area gain energy and vibrate more rapidly. These energized particles collide with neighboring particles, transferring some of their energy and causing those particles to vibrate more as well. This process continues through the material until the heat is distributed evenly. In contrast, convection involves the transfer of heat through the movement of fluids (liquids and gases) where warmer areas rise and cooler areas sink, creating a circulation pattern. Radiation, on the other hand, is the transfer of heat through electromagnetic waves and does not require any medium or direct contact. The term "leverage" does not relate to heat transfer and is not a recognized method of heat transfer in physics. Thus, conduction is the correct choice, as it is characterized by the necessity of contact for heat transfer to occur.

2. What describes lines or surfaces that are side by side and consistently spaced apart?

A. Parallel

B. Perpendicular

C. Converging

D. Diverging

The term that accurately describes lines or surfaces that are side by side and consistently spaced apart is "parallel." In geometry, parallel lines are defined as two lines or surfaces that run in the same direction but never intersect, maintaining an equal distance between them at all points. This consistent spacing is a key characteristic of parallelism, distinguishing it from the other options. Perpendicular lines, for example, intersect at a right angle, meaning they are not consistently spaced apart but instead meet at a specific point. Converging lines would be moving toward each other, suggesting that they are getting closer and would eventually intersect. Diverging lines, on the other hand, move away from each other, indicating increasing distance rather than consistent spacing. These definitions help clarify why the concept of parallelism is the correct choice when describing lines or surfaces that are consistently side by side.

3. What kind of therapy involves the use of X-rays to destroy cancerous tumors?

- A. Radiation therapy**
- B. Biological therapy
- C. Surgical therapy
- D. Chemotherapy

Radiation therapy, often referred to as radiotherapy, is a medical treatment that utilizes high doses of radiation, such as X-rays, to target and destroy cancerous tumors. The primary mechanism involves damaging the DNA of cancer cells, which inhibits their ability to grow and divide. This therapy can be administered externally, with machines that direct radiation from outside the body, or internally through the use of radioactive substances placed close to the tumor. This treatment is specifically designed to target rapidly dividing cancer cells, while aiming to minimize damage to surrounding healthy tissues. It can be used as a primary treatment, or in conjunction with other modalities like surgery or chemotherapy, depending on the type and stage of cancer being treated. The precision of radiation therapy is one reason it is a pivotal component in the management of various cancers.

4. What do we call a form of matter that has a definite shape and volume?

- A. Gas
- B. Liquid
- C. Sublimate
- D. Solid**

A form of matter that has a definite shape and volume is classified as a solid. Solids are characterized by their closely packed particles, which are held together by strong intermolecular forces. This arrangement allows solids to maintain their shape and volume regardless of the container they are in, unlike liquids, which take the shape of their container but have a fixed volume, or gases, which neither have a fixed shape nor a fixed volume and will expand to fill their container. The term "sublimate" refers to the process of transitioning directly from a solid to a gas without passing through the liquid phase, and is not a type of matter. Therefore, solids uniquely possess the properties of both definite shape and definite volume.

5. What is black body radiation?

- A. Radiation from a perfect insulator
- B. Radiation emitted by a theoretical perfect emitter and absorber**
- C. Radiation that has no wavelength
- D. Radiation that cannot be detected

Black body radiation refers to the electromagnetic radiation emitted by an idealized object known as a black body, which is defined as a perfect emitter and absorber of radiation across all wavelengths. This theoretical object absorbs all incident radiation without reflecting any, and as a result, it emits radiation in a characteristic spectrum that depends only on its temperature. The key aspects of black body radiation include its dependence on temperature and the fact that it serves as a standard against which real emitters can be measured. The spectrum of radiation emitted by a black body shifts with temperature, described by Planck's law, indicating that higher temperatures lead to higher intensity and shorter wavelengths of emitted radiation. Understanding black body radiation is foundational in multiple areas of physics, particularly in thermodynamics and quantum mechanics, as it illustrates the principles of thermal emission and energy distribution.

6. What is the process called that involves the emission of ionising radiation from atomic nuclei?

- A. Fission
- B. Fusion
- C. Radioactivity**
- D. Transmutation

The process involving the emission of ionising radiation from atomic nuclei is known as radioactivity. This phenomenon occurs when unstable nuclei of atoms decay by releasing energy in the form of radiation. This emission can include alpha particles, beta particles, or gamma rays, which are all types of ionising radiation. Radioactivity is a natural process that occurs in certain isotopes that are not stable. These unstable isotopes undergo spontaneous decay, leading to the transformation of the nucleus and often resulting in the formation of new elements or isotopes. This concept is fundamental in understanding nuclear physics and the behavior of different elements in terms of their stability and radioactive properties. In contrast, fission refers to the splitting of a heavy nucleus into lighter nuclei, usually accompanied by the release of energy, while fusion is the process where light nuclei combine to form a heavier nucleus, also releasing energy in the process. Transmutation involves changing one element into another, which can occur through radioactive decay but is distinct from the process specifically described by radioactivity. Radioactivity is therefore unique in its focus on the spontaneous emission of radiation from atomic nuclei.

7. Which seismic waves are known as the slowest and are classified as surface waves?

- A. Primary waves
- B. Secondary waves
- C. Long waves**
- D. Seismic waves

The classification of seismic waves reveals that the slowest waves, which travel along the surface of the Earth, are indeed referred to as Long waves or Love waves. These waves are distinct from primary waves, which are the fastest, and secondary waves, which are faster than long waves but slower than primary waves. Long waves, or surface waves, typically result in more significant ground shaking and damage during an earthquake because they travel along the Earth's surface, affecting structures directly. Their ability to cause greater destruction is attributed to their longer wavelength and lower frequency compared to the other types of seismic waves.

8. What is the process called when a substance changes from a liquid to a gas?

- A. Vaporization**
- B. Condensation
- C. Evaporation
- D. Melting

Vaporization refers to the process where a substance transitions from a liquid state to a gaseous state. This occurs when the molecules within the liquid gain enough energy to break free from the bonds holding them together, leading to the formation of vapor. This process can happen in any part of the liquid and is primarily associated with the concept of boiling, where the temperature of the liquid reaches a point that allows for rapid vaporization throughout the volume of the liquid. Evaporation is a specific type of vaporization that occurs at the surface of a liquid at temperatures below its boiling point and can happen over a longer period, while boiling (a more general term for vaporization) happens throughout the liquid. Condensation, on the other hand, is the opposite process where gas turns into a liquid, and melting refers to the transition from solid to liquid. Thus, vaporization encompasses both evaporation and boiling, making it the correct choice for when discussing the general process of a liquid transforming into a gas.

9. Which of the following particles is considered to be a beta particle?

- A. Proton
- B. Neutron
- C. Electron**
- D. Helium nucleus

A beta particle is a type of subatomic particle that is associated with beta decay, a process in which an unstable atomic nucleus transforms into a more stable one by emitting a beta particle. There are two types of beta particles: beta-minus (β^-) and beta-plus (β^+). The beta-minus particle is an electron, while the beta-plus particle is a positron (the antimatter counterpart of an electron). In this context, the electron is the correct answer because it directly corresponds to the beta-minus decay, where a neutron is converted into a proton while emitting an electron (the beta particle) and an antineutrino. This process is fundamental in nuclear physics and helps to illustrate how isotopes can change their identities and achieve stability. The other choices do not represent beta particles, as protons and neutrons are baryons that make up the atomic nucleus, while a helium nucleus consists of two protons and two neutrons, which is also not a beta particle. Therefore, the electron is identified as the beta particle due to its role in nuclear decay processes, solidifying its significance in particle physics.

10. What characteristic does an LED have compared to regular diodes?

- A. It allows current to flow in both directions
- B. It emits light when current flows through it**
- C. It can store energy
- D. It has no polarity

An LED, or Light Emitting Diode, is specifically designed to emit light when an electric current passes through it. This phenomenon occurs because the LED is made of semiconductor materials that release energy in the form of photons when electrons recombine with holes in the semiconductor structure. This property of emitting light is what distinguishes LEDs from regular diodes, which do not have this feature. While other diode types may allow current to flow in one direction and may have specific functionalities such as rectification or switching, the defining characteristic of an LED is its ability to give off visible light. This makes LEDs popular in various applications, from indicator lights to full-scale displays and lighting solutions.

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://aqa-gcse-physics.examzify.com>

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

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