ASSESSMENT AND QUALIFICATIONS ALLIANCE (AQA) GCSE PHYSICS PAPER 2 PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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

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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.

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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!

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Questions

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1. What happens when a sun-like star runs out of hydrogen?

A. It cools and becomes a black dwarf

B. It expands and becomes a red giant

C. It implodes and forms a neutron star

D. It transforms into a supernova

2. What is the focus of an earthquake?

A. The point directly above the surface

B. The shallowest point of a quake

C. The location where the fracture occurred

D. The center of a fault line

3. What does Newton's second law state about the relationship between force, mass, and acceleration?

A. Force = Mass + Acceleration

B. Force = Mass x Acceleration

C. Force = Acceleration ÷ Mass

D. Force = Mass ÷ Acceleration

4. What is the approximate gravitational field strength on Earth?

A. 9.8 N/kg

B. 10 N/kg

C. 9.81 N/kg

D. 8.9 N/kg

5. What is one of the primary uses of X-rays in medicine?

A. Detecting broken bones

B. Scanning unborn babies

C. Ultrasound imaging

D. Killing bacteria

6. In the context of stars, what defines the equilibrium state?

A. Gravity pulling in equals the fusion pressure pushing out

B. Outward forces are greater than inward forces

C. The star begins to shrink and cool

D. It has reached the end of its life cycle

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7. According to the Steady State Theory, how are galaxies behaving?

A. They are merging together

B. They are stationary and unchanged

C. They are being pushed apart

D. They are collapsing into black holes

8. What is inertia?

A. The ability to change direction

B. The tendency for motion to remain unchanged

C. The force acting on an object

D. The speed of an object

9. What is the relationship described by the equation: primary current X primary voltage = secondary current X secondary voltage?

A. Conservation of energy in transformers

B. Power equivalence in electrical circuits

C. Voltage transformation rates

D. Circuit resistance calculations

10. What is the term for the upward force that acts on an object in a fluid?

A. Gravity

B. Weight

C. Upthrust

D. Buoyancy

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Answers

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

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Explanations

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1. What happens when a sun-like star runs out of hydrogen?

A. It cools and becomes a black dwarf

B. It expands and becomes a red giant

C. It implodes and forms a neutron star

D. It transforms into a supernova

When a star similar to the Sun exhausts its hydrogen fuel in the core, it undergoes significant changes leading to its expansion and transformation into a red giant. In the core of the star, hydrogen fusion ceases, causing the core to contract under gravity. As the core contracts, the temperature rises, which eventually allows hydrogen in a shell around the core to start fusing into helium. The energy produced by this fusion increases the pressure in the outer layers of the star, causing them to expand significantly. As a result of this expansion, the outer envelope of the star cools and takes on a reddish appearance, hence the term "red giant." This phase of the star's lifecycle is important because it leads to the eventual ejection of the outer layers, forming a planetary nebula, while the core itself can eventually become a white dwarf after helium fusion concludes. The other choices depict different processes that are not applicable to a sun-like star running out of hydrogen. For instance, black dwarfs are theoretical remnants of white dwarfs after they have cooled down significantly, which is a much later stage. Neutron stars and supernovae are associated with much more massive stars and their end-of-life scenarios, not those similar to the Sun.

2. What is the focus of an earthquake?

A. The point directly above the surface

B. The shallowest point of a quake

C. The location where the fracture occurred

D. The center of a fault line

The focus of an earthquake is defined as the precise point within the Earth where the seismic energy is first released during an earthquake, which typically coincides with the location where the fracture or faulting in the Earth's crust occurs. This is significant because it is at the focus that the stress accumulated from tectonic movements is suddenly released, producing seismic waves that cause the shaking felt on the surface. Understanding the focus is crucial for seismology, as it helps in assessing both the epicenter—the point directly above the focus on the surface—and the severity of the earthquake. The depth and location of the focus can greatly affect the intensity of shaking experienced at the earth's surface. The other options do not accurately define the focus. The point directly above the surface is referred to as the epicenter. The shallowest point of a quake could technically refer to a range of focal depths but does not encapsulate the precise meaning of focus. The center of a fault line is more about the larger geological structure rather than the specific point of energy release during an earthquake. Thus, option C aligns correctly with the scientific definition of what constitutes the focus of an earthquake.

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3. What does Newton's second law state about the relationship between force, mass, and acceleration?

A. Force = Mass + Acceleration

B. Force = Mass x Acceleration

C. Force = Acceleration ÷ Mass

D. Force = Mass ÷ Acceleration

Newton's second law describes how the force acting on an object relates to its mass and the acceleration it experiences. Specifically, it states that the force acting on an object is equal to the mass of that object multiplied by its acceleration. This can be mathematically represented as Force = Mass x Acceleration. This relationship indicates that for any given mass, an increase in the force applied will result in a proportional increase in acceleration. Conversely, for the same applied force, an increase in mass will result in a decrease in acceleration. Understanding this law is fundamental in physics as it helps predict how objects will move when subjected to various forces. The other options do not accurately represent the relationship defined by Newton's second law, either misrepresenting the operations or the variables involved. For instance, adding mass and acceleration does not have a meaningful physical interpretation in this context, and dividing either acceleration or mass by the other does not reflect how force is determined according to Newton's principle.

4. What is the approximate gravitational field strength on Earth?

A. 9.8 N/kg

B. 10 N/kg

C. 9.81 N/kg

D. 8.9 N/kg

The approximate gravitational field strength on Earth is commonly recognized as 9.81 N/kg. This value reflects the acceleration due to gravity experienced by an object in free fall at the surface of the Earth, indicating that for every kilogram of mass, there is a force of approximately 9.81 newtons acting downward. This principle is a fundamental aspect of physics and is critical for understanding how objects interact with gravitational forces. The value is rounded to 10 N/kg in some contexts for simplicity and ease of calculations, especially in educational settings, but scientifically, the more accurate figure of 9.81 N/kg is often used for precision in physics. This level of accuracy is important in various calculations, such as determining weight, energy, and other forces acting on an object due to gravity. The other options do not accurately represent this key value; therefore, they are less applicable in a rigorous scientific context. Understanding the gravitational field strength is essential for solving many physics problems related to forces and motion.

5. What is one of the primary uses of X-rays in medicine?

A. Detecting broken bones

B. Scanning unborn babies

C. Ultrasound imaging

D. Killing bacteria

One of the primary uses of X-rays in medicine is for detecting broken bones. X-rays are a form of electromagnetic radiation that can penetrate through body tissues and are absorbed by denser materials like bones. When an X-ray machine is used to take an image, the less dense tissues (muscle, fat, skin) appear darker, while the denser bones appear white on the X-ray film. This contrast allows healthcare professionals to easily identify fractures or breaks in the bones. In contrast, options related to ultrasound imaging or scanning unborn babies involve different technologies; ultrasound uses sound waves rather than X-rays, making it safe for monitoring fetal health. Additionally, while killing bacteria is a function of certain forms of radiation, X-rays specifically are not typically used for that purpose in medical contexts.

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6. In the context of stars, what defines the equilibrium state?

A. Gravity pulling in equals the fusion pressure pushing out

B. Outward forces are greater than inward forces

C. The star begins to shrink and cool

D. It has reached the end of its life cycle

The equilibrium state of a star is defined by the balance between the inward force of gravity and the outward pressure generated by nuclear fusion occurring in its core. In hydrogen-burning stars, such as our Sun, fusion in the core creates enormous amounts of energy, which produces an outward pressure. This pressure counteracts the gravitational pull trying to collapse the star inward. When these two forces are perfectly balanced, the star is said to be in hydrostatic equilibrium. This state ensures the star remains stable, neither expanding uncontrollably nor shrinking. If fusion pressure exceeds gravitational pull, the star could expand, and if gravity overrides fusion pressure, the star would begin to contract. This fundamental balance is key to the life of a star and plays a crucial role in the various stages of stellar evolution.

7. According to the Steady State Theory, how are galaxies behaving?

A. They are merging together

B. They are stationary and unchanged

C. They are being pushed apart

D. They are collapsing into black holes

The Steady State Theory posits that the universe is eternal and does not change in its large-scale structure even as it expands. In this model, galaxies are not stationary or merging together, but rather they are continuously being created as the universe expands. This allows the overall structure of the universe to remain constant, even though galaxies are moving apart from each other. The expansion of the universe is a critical aspect of this theory, with new matter being constantly formed to fill the gaps created by the increasing distances between galaxies. Therefore, the correct interpretation of galaxy behavior according to the Steady State Theory is that they are being pushed apart as the universe expands.

8. What is inertia?

A. The ability to change direction

B. The tendency for motion to remain unchanged

C. The force acting on an object

D. The speed of an object

Inertia is defined as the tendency of an object to continue in its current state of motion, whether that is at rest or moving at a constant velocity. This principle stems from Newton's First Law of Motion, which states that an object will not change its motion unless acted upon by an external force. Essentially, if no net force is acting on an object, it will not change its state; it will keep moving in a straight line or remain stationary. This concept is fundamental in understanding motion and forces, as it explains why objects resist changes to their motion. For example, if a car is traveling at a constant speed and suddenly encounters a brake, the inertia of the car would cause it to want to keep moving forward despite the application of braking force. The other choices do not accurately represent the concept of inertia. The ability to change direction is more related to an object's responsiveness to forces acting upon it, rather than its inertia. The force acting on an object describes the influence causing that object to accelerate, rather than its tendency to maintain its state of motion. Finally, speed refers to how fast an object is moving, not its resistance to changing that motion, which is what inertia is fundamentally about.

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9. What is the relationship described by the equation: primary current X primary voltage = secondary current X secondary voltage?

A. Conservation of energy in transformers

B. Power equivalence in electrical circuits

C. Voltage transformation rates

D. Circuit resistance calculations

The relationship described by the equation where the primary current multiplied by the primary voltage equals the secondary current multiplied by the secondary voltage illustrates the principle of conservation of energy in transformers. This equation fundamentally expresses the idea that the power input into a transformer (from the primary side) must equal the power output (from the secondary side), assuming no energy losses in an ideal transformer. In essence, the power delivered to the primary coil (which is the product of the current flowing through it and the voltage across it) is entirely used to produce the power at the secondary coil. This conservation of energy principle is vital in understanding how transformers operate, as it emphasizes that energy cannot be created or destroyed, only converted from one form to another. The other options do not precisely capture the essence of this equation. Power equivalence refers to a broader context that doesn't specifically pertain to transformers. Voltage transformation rates focus on the changes in voltage levels, while circuit resistance calculations do not relate to the concept of power transfer in transformers. Thus, the correct understanding aligns with conservation of energy, confirming that the total power in a transformer remains constant, barring any losses.

10. What is the term for the upward force that acts on an object in a fluid?

A. Gravity

B. Weight

C. Upthrust

D. Buoyancy

The upward force that acts on an object in a fluid is known as upthrust, often referred to in this context as buoyant force. This force arises due to pressure differences in the fluid; the pressure at the bottom of an object submerged in a fluid is greater than the pressure at the top, resulting in a net upward force. This concept is described by Archimedes' principle, which states that the buoyant force is equal to the weight of the fluid displaced by the object. While buoyancy is another term commonly used to describe this effect, it specifically emphasizes the object's ability to float or rise in a fluid due to upthrust. Both terms are interconnected, but in the context of the question focusing on the "upward force," upthrust is the more precise answer. Understanding this force is essential in many applications, such as ship design, swimming, and even understanding how balloons rise in the atmosphere. Recognizing the role of upthrust allows us to predict the behavior of objects in various fluid environments.

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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-physicspaper2.examzify.com

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

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