ASSESSMENT AND QUALIFICATIONS ALLIANCE (AQA) GCSE PHYSICS PRACTICE EXAM (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. **What is defined as the maximum displacement from the equilibrium position in a wave?**

   A. Wavelength

   B. Frequency

   C. Amplitude

   D. Velocity

2. **What is a black body in terms of radiation?**

   A. An ideal absorber and emitter of radiation

   B. A body that reflects all radiation

   C. A perfect conductor of heat

   D. An object that cannot emit any radiation

3. **What does the emission of an alpha particle reduce in an atom?**

   A. The atomic number

   B. The mass number

   C. The electron count

   D. The number of protons

4. **What theoretical particle is often linked with the research of dark matter?**

   A. Photon

   B. WIMP (Weakly Interacting Massive Particle)

   C. Quark

   D. Electron

5. **What is the process called when a gas changes directly into a solid?**

   A. Condensation

   B. Deposition

   C. Vaporization

   D. Evaporation

6. What is the term for the process in which liquid water turns into water vapor?

A. Condensation

B. Evaporation

C. Freezing

D. Precipitation

7. What type of transformer is designed to increase voltage levels?

A. Step-up transformer

B. Step-down transformer

C. Isolation transformer

D. Auto transformer

8. What type of image forms at a location where light rays actually meet?

A. Virtual image

B. Real image

C. Opaque image

D. Convex image

9. What type of resistor changes its resistance based on temperature?

A. Variable resistor

B. Fixed resistor

C. Thermistor

D. Capacitor

10. The main purpose of a split-ring commutator in a motor is to:

A. Supply constant voltage

B. Control the speed of the motor

C. Switch current direction

D. Increase the magnetic flux

Answers

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

Explanations

1. What is defined as the maximum displacement from the equilibrium position in a wave?

A. Wavelength

B. Frequency

C. Amplitude

D. Velocity

The maximum displacement from the equilibrium position in a wave is known as amplitude. It represents how far the wave's particles move from their rest position as the wave travels through a medium. In other words, amplitude measures the height of the wave from its central baseline to its peak or trough. This characteristic is crucial because it is directly related to the energy carried by the wave; higher amplitudes typically indicate more energy. Wavelength refers to the distance between successive crests or troughs of a wave, and frequency measures how many cycles of the wave pass a given point in a certain amount of time. Velocity represents the speed at which the wave travels through the medium. While all these terms are fundamental in the study of waves, amplitude specifically pertains to the displacement aspect of the wave's motion.

2. What is a black body in terms of radiation?

A. An ideal absorber and emitter of radiation

B. A body that reflects all radiation

C. A perfect conductor of heat

D. An object that cannot emit any radiation

A black body is defined in terms of radiation as an ideal absorber and emitter of all wavelengths of electromagnetic radiation. This means that a black body absorbs all incoming radiation without reflecting any, making it an excellent candidate for studying thermal radiation. Since it does not reflect any light, it appears black when at a lower temperature. Furthermore, when it comes to emission, a black body radiates energy at the maximum possible efficiency for a given temperature, adhering to Planck's law of black-body radiation. This is a significant concept in thermodynamics and helps in understanding how objects emit heat energy based on their temperature. In contrast to this, a body that reflects all radiation would not absorb or emit effectively, hence would not meet the definition of a black body. Similarly, a perfect conductor of heat does not relate to the concepts of absorption and emission of radiation, which are crucial in defining black body behavior. Lastly, an object that cannot emit any radiation would contradict the fundamental characteristics of a black body, as emission is a key aspect of its definition.

3. What does the emission of an alpha particle reduce in an atom?

A. The atomic number

B. The mass number

C. The electron count

D. The number of protons

The emission of an alpha particle leads to a decrease in both the atomic number and the mass number of an atom. An alpha particle consists of 2 protons and 2 neutrons, which effectively means that when it is emitted from a nucleus, the mass number—representing the total number of protons and neutrons—decreases by 4. This is because the nucleus loses 2 protons and 2 neutrons. Consequently, the atomic number, which is defined by the number of protons in the nucleus, decreases by 2 due to the loss of those 2 protons. This alteration changes the identity of the element itself, transforming it into a different element located two places to the left on the periodic table. It's important to recognize that the emission of an alpha particle does not affect the electron count directly, nor does it remove protons independently, as both changes occur simultaneously through the emission process. Therefore, the most direct result of an alpha particle's emission is the reduction in mass number by 4, making it the choice to focus on when addressing changes in the overall atomic structure.

4. What theoretical particle is often linked with the research of dark matter?

A. Photon

B. WIMP (Weakly Interacting Massive Particle)

C. Quark

D. Electron

The theoretical particle linked with the research of dark matter is often identified as a WIMP, or Weakly Interacting Massive Particle. WIMPs are hypothesized to be a class of particles that could make up dark matter due to their predicted properties. Dark matter is known to exert gravitational effects on visible matter, yet it does not interact with electromagnetic forces, which means it does not emit, absorb, or reflect light, making it invisible and detectable only through its gravitational influence. WIMPs are particularly compelling candidates because they would have mass, making them suitable for providing the necessary density of matter in the universe to explain the gravitational effects attributed to dark matter. Additionally, their weak interaction with other matter would allow them to pass through normal matter without being easily detected, aligning with the elusive nature of dark matter. In contrast, photons, quarks, and electrons do not fulfill the characteristics that make WIMPs plausible candidates for dark matter. Photons, being massless particles of light, do not contribute to mass-based gravitational effects in the same way that WIMPs would. Quarks are fundamental components of protons and neutrons but are part of the standard model of particle physics and do not account for dark matter. Electrons are well-stud

5. What is the process called when a gas changes directly into a solid?

A. Condensation

B. Deposition

C. Vaporization

D. Evaporation

The process where a gas changes directly into a solid is known as deposition. This phase transition occurs without passing through the liquid phase and is typically observed in certain conditions, such as when water vapor in the atmosphere forms frost on a cold surface. During deposition, energy is released as the gas molecules lose kinetic energy and arrange themselves into a solid structure. This phenomenon can be seen in nature and is important in various applications, including the formation of ice crystals and the preservation of certain materials. Condensation refers to the process where a gas turns into a liquid, often observed with water vapor turning into liquid water. Vaporization involves a liquid changing into a gas, and evaporation specifically refers to this process occurring at the surface of a liquid. Neither condensation nor vaporization describes the transition from gas to solid, making them less relevant in this context.

6. What is the term for the process in which liquid water turns into water vapor?

A. Condensation

B. Evaporation

C. Freezing

D. Precipitation

The process in which liquid water turns into water vapor is known as evaporation. This occurs when molecules in a liquid gain enough energy to escape the liquid's surface and enter the gaseous state. Evaporation typically happens at temperatures below the boiling point and can occur at any temperature, as long as some molecules have enough energy to overcome the intermolecular forces holding them in the liquid. In various contexts, evaporation is crucial in the water cycle, playing a significant role in how water transitions from bodies of water, like lakes and oceans, into the atmosphere. This process allows for the continuous movement of water, contributing to weather patterns and the distribution of moisture in the environment.

7. What type of transformer is designed to increase voltage levels?

A. Step-up transformer

B. Step-down transformer

C. Isolation transformer

D. Auto transformer

A step-up transformer is designed to increase voltage levels. It accomplishes this by having more turns of wire in the secondary coil compared to the primary coil. When alternating current (AC) passes through the primary coil, a magnetic field is created, inducing a voltage in the secondary coil according to Faraday's law of electromagnetic induction. Since the secondary coil has more turns, the induced voltage increases relative to the input voltage, resulting in a higher output voltage. This principle is essential for applications like electrical power transmission, where increasing voltage allows for more efficient long-distance transport of electricity, reducing energy losses. In contrast, other types of transformers serve different functions: a step-down transformer decreases voltage levels, an isolation transformer separates different sections of a circuit while maintaining the voltage level, and an auto transformer provides a variable output voltage through a single winding.

8. What type of image forms at a location where light rays actually meet?

A. Virtual image

B. Real image

C. Opaque image

D. Convex image

A real image is formed at a location where light rays actually converge and meet. When light rays come together and pass through a point after reflecting off a mirror or refracting through a lens, they produce a real image. This means that if you were to place a screen at this location, it would display the image clearly as it is constructed from actual light rays. In contrast, a virtual image is created when light rays appear to diverge from a point, making it impossible to project the image onto a screen since the rays do not actually meet. Options mentioning opaque or convex images do not directly pertain to how images are formed based on the behavior of light rays. An opaque image isn't a standard term in optics, and while a convex lens can form real images, not all images formed by convex lenses are real. The distinction lies in whether the light rays physically meet, which clearly defines a real image.

9. What type of resistor changes its resistance based on temperature?

A. Variable resistor

B. Fixed resistor

C. Thermistor

D. Capacitor

The correct answer is C, thermistor, because a thermistor is a type of resistor whose resistance varies significantly with temperature. Unlike fixed resistors, which maintain a constant resistance regardless of temperature changes, thermistors are designed to exploit this temperature dependence for various applications, such as temperature sensing and control systems. Thermistors are typically made from semiconductor materials and can be classified into two types: NTC (Negative Temperature Coefficient) thermistors, where resistance decreases as temperature increases, and PTC (Positive Temperature Coefficient) thermistors, where resistance increases with temperature. This unique characteristic allows thermistors to be used in circuits where temperature monitoring and response are critical. Other options like variable resistors and fixed resistors do not change their resistance significantly with temperature, and capacitors are not resistors; they serve a different function in circuits by storing electrical energy.

10. The main purpose of a split-ring commutator in a motor is to:

A. Supply constant voltage

B. Control the speed of the motor

C. Switch current direction

D. Increase the magnetic flux

The main purpose of a split-ring commutator in a motor is to switch the current direction. In a motor, the coil of wire (armature) rotates within a magnetic field. As the coil turns, the direction of the induced electromotive force (emf) changes, which would cause the coil to experience a reversal in torque if the current direction were not altered. The split-ring commutator performs this vital function by periodically reversing the connection of the coil to the external circuit, ensuring that the current flowing through the coil matches the required direction to maintain continuous rotation of the motor. This mechanism allows the motor to produce a steady rotational motion rather than alternating forward and backward movement. The other options are not the primary functions of a commutator; for example, while controlling speed or supplying constant voltage is essential in motor operation, these functions are usually achieved through other components or control methods rather than the split-ring commutator itself.

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:

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