INTERNATIONAL GENERAL CERTIFICATE OF SECONDARY EDUCATION (IGCSE) 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.

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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. When given an unbalanced force, what will happen to the direction of an object's motion?

A. The object will continue in the same direction

B. The object will change direction towards the force

C. The object will oscillate back and forth

D. The object will reverse its direction

2. What happens to energy as particles vibrate in conduction?

A. Energy is lost as heat

B. Energy is transferred to neighboring particles

C. Energy becomes kinetic

D. Energy is converted to potential

3. What type of current is indicated by the symbol for a power supply designated as AC?

A. Direct Current

B. Alternating Current

C. Static Current

D. Continuous Current

4. If the angle of incidence is less than the critical angle, what happens reflection-wise and refraction-wise?

A. Strongly reflected ray, weakly refracted ray

B. Weakly refraction, strong reflection

C. Strongly refracted ray, weakly reflected ray

D. No reflection, total refraction

5. What type of signal is a digital signal?

A. A continuous wave signal

B. A signal that can have multiple values

C. A signal that is only on or off

D. An analogue signal

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6. Which of the following statements is true regarding radioactive materials?

A. They are only found in laboratories

B. They are entirely stable

C. They can emit radiation continuously

D. They have a fixed decay time

7. What type of wave is commonly used for communication?

A. Mechanical waves

B. Transverse waves

C. High frequency sound waves

D. Longitudinal waves

8. Which type of energy conversion is demonstrated by a loudspeaker?

A. Electrical energy to thermal energy

B. Electrical energy to sound energy

C. Mechanical energy to electrical energy

D. Thermal energy to kinetic energy

9. What happens to the speed of sound waves when they enter a more dense medium?

A. It slows down

B. It speeds up

C. It remains the same

D. It becomes unstable

10. What does it indicate if acceleration is negative?

A. The object is speeding up

B. The object is slowing down

C. The object is moving in the opposite direction

D. The object is at rest

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Answers

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

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Explanations

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1. When given an unbalanced force, what will happen to the direction of an object's motion?

A. The object will continue in the same direction

B. The object will change direction towards the force

C. The object will oscillate back and forth

D. The object will reverse its direction

When an object experiences an unbalanced force, it will change its direction towards the force being applied. According to Newton's second law of motion, the acceleration of an object is directly proportional to the net force acting on it and inversely proportional to its mass. This means that when a net force acts on an object, it will cause the object not only to accelerate but also to change its velocity, which includes changes in both speed and direction. The unbalanced force creates a net effect that alters the object's state of motion. For instance, if a force is applied to the right, the object will accelerate in that direction. This change in direction is a fundamental characteristic of motion under the influence of forces, leading to a clear path that is determined by the direction of the applied force. When forces are balanced, the object remains in its state of motion (either at rest or moving uniformly in a straight line), but unbalanced forces disrupt this balance and result in a directional change towards the force's application. In contrast, the other responses do not accurately reflect how an object interacts with unbalanced forces. For example, it is not possible for the object to continue in the same direction when a net force is acting upon it. Similarly, oscillation suggests

2. What happens to energy as particles vibrate in conduction?

A. Energy is lost as heat

B. Energy is transferred to neighboring particles

C. Energy becomes kinetic

D. Energy is converted to potential

In the context of conduction, as particles vibrate, they interact with neighboring particles, transferring energy to them. This transfer occurs through collisions or interactions between the vibrating particles, allowing energy to be relayed through the material. When one particle vibrates, it pushes against its neighbors, imparting some of its energy and causing the adjacent particles to vibrate. This process continues, and energy is effectively passed along the material, facilitating the conduction of heat. This idea is rooted in the kinetic theory of matter, which asserts that heat is a measure of the average kinetic energy of particles in a substance, and in conduction, the energy primarily flows through these particle vibrations without a significant overall movement of the particles themselves. While energy can become kinetic and transformed into heat, the correct understanding in the case of conduction specifically highlights the direct transfer to neighboring particles. Energy does not simply dissipate or get converted to potential as the primary action involves the straightforward transfer of vibrational energy through the material. Thus, the focus on the transfer aspect is key to understanding conduction in solids.

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3. What type of current is indicated by the symbol for a power supply designated as AC?

A. Direct Current

B. Alternating Current

C. Static Current

D. Continuous Current

The symbol for a power supply designated as AC indicates Alternating Current. In an AC system, the flow of electric charge periodically reverses direction, which is different from Direct Current (DC), where the flow of charge is constant and flows in one direction only. Alternating Current is commonly used in residential and commercial power supplies because it can be easily transformed to different voltages for efficient long-distance transmission. This characteristic makes it suitable for powering various electrical devices that require different voltage levels. Static Current is not a recognized type of current in electrical systems; it might imply a buildup of electrical charge rather than a flow. Continuous Current is not a standard term in electrical engineering, as it doesn't accurately reflect the behavior of either DC or AC. Thus, the choice of Alternating Current is correct as it aligns precisely with what AC represents in electric power terminology.

4. If the angle of incidence is less than the critical angle, what happens reflection-wise and refraction-wise?

A. Strongly reflected ray, weakly refracted ray

B. Weakly refraction, strong reflection

C. Strongly refracted ray, weakly reflected ray

D. No reflection, total refraction

When the angle of incidence is less than the critical angle, the behavior of light at the boundary between two different media follows specific optical principles. Under these conditions, most of the light is refracted, which means it passes through the boundary and continues into the second medium with a change in speed and direction. The refracted ray typically has a significant intensity because the angle of incidence does not exceed the critical angle, which would otherwise lead to total internal reflection. Additionally, a smaller portion of the light is reflected back into the first medium. This reflection is weaker in intensity compared to the refracted ray since the incidence is not at an angle that promotes maximum reflection (total internal reflection occurs only when light strikes the boundary at angles greater than the critical angle). Thus, the outcomes are characterized by a strong refracted ray, which travels into the second medium, and a weakly reflected ray, which bounces back into the first medium. This relationship aligns with the principles of Snell's Law, which governs the behavior of light at interfaces between different media.

5. What type of signal is a digital signal?

A. A continuous wave signal

B. A signal that can have multiple values

C. A signal that is only on or off

D. An analogue signal

A digital signal is characterized by having discrete values, typically represented as binary data, where it can be either in an 'on' state or an 'off' state. This binary representation makes digital signals distinct from analog signals, which can take on a continuous range of values. The defining feature of a digital signal is its ability to convey information in the form of distinct, separate states rather than a fluid spectrum of potential values. Thus, the correct answer highlights this fundamental nature of digital signals, emphasizing that they operate in a binary manner, easily interpretable by digital systems.

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6. Which of the following statements is true regarding radioactive materials?

A. They are only found in laboratories

B. They are entirely stable

C. They can emit radiation continuously

D. They have a fixed decay time

Radioactive materials are characterized by their ability to emit radiation as they undergo nuclear decay. This process is spontaneous and can occur continuously, meaning that radioactive materials will emit radiation over time without needing any external influence. This continuous emission of radiation is a key property of such materials, making it important in applications such as medical imaging, cancer treatment, and dating archaeological finds. While some radioactive materials are indeed found in laboratories, they are also present in nature, such as in certain rocks, minerals, and even in small amounts in the human body. The claim that they are entirely stable is inaccurate, as radioactive materials are by definition unstable; their instability is what leads them to emit radiation. Additionally, the concept of having a fixed decay time is a misunderstanding of how radioactive decay works; while the half-life (the time it takes for half of a quantity of a radioactive material to decay) can be determined for specific isotopes, it varies greatly between different isotopes and is not a fixed decay time applicable across all radioactive materials. Thus, the statement that radioactive materials can emit radiation continuously is the most accurate description of their behavior.

7. What type of wave is commonly used for communication?

A. Mechanical waves

B. Transverse waves

C. High frequency sound waves

D. Longitudinal waves

The type of wave commonly used for communication is characterized by its ability to travel through various media and convey information over significant distances. Transverse waves are a predominant type used in many communication technologies, particularly in the context of electromagnetic waves, such as radio waves, microwaves, and light waves, which are all transverse in nature. In electromagnetic waves, the oscillations are perpendicular to the direction of wave propagation, allowing them to carry information effectively. This quality makes them suitable for applications in wireless communication, television, internet data transmission, and various forms of radio communication. Mechanical and longitudinal waves do have applications in communication (like sound waves), but they generally require a medium to travel through and are less versatile than transverse waves for long-distance transmission of information, especially in modern communication systems. High-frequency sound waves, while they can carry data, are limited to use in particular contexts such as ultrasound, and are not used for the majority of communication methods, particularly those involving digital signals.

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8. Which type of energy conversion is demonstrated by a loudspeaker?

A. Electrical energy to thermal energy

B. Electrical energy to sound energy

C. Mechanical energy to electrical energy

D. Thermal energy to kinetic energy

A loudspeaker primarily converts electrical energy into sound energy. When an electrical current passes through the speaker, it creates a magnetic field that interacts with a magnet, causing a diaphragm to vibrate. These vibrations produce sound waves that we can hear. In this process, electrical energy is supplied to the loudspeaker from an audio source, such as an amplifier, and this energy is transformed into sound energy through the movement of the diaphragm. This is the fundamental operation of a loudspeaker and illustrates the principle of energy conversion from one form to another. The other options involve different types of energy transformations that do not apply to the function of a loudspeaker. For example, converting electrical energy to thermal energy would suggest that energy is wasted as heat, which is not the primary purpose of a loudspeaker. Similarly, mechanical energy to electrical energy describes the operation of devices like generators, while thermal energy to kinetic energy relates to engines or heat engines. None of these describe the specific function of transferring electrical energy into audible sound, as is found in loudspeakers.

9. What happens to the speed of sound waves when they enter a more dense medium?

A. It slows down

B. It speeds up

C. It remains the same

D. It becomes unstable

When sound waves enter a more dense medium, they indeed slow down. This phenomenon occurs because sound waves are mechanical waves that rely on the vibration of particles in the medium to propagate. In a denser medium, the particles are more tightly packed, which can initially suggest that the energy might transfer faster. However, the speed of sound is affected by the medium's elasticity and density. In general, while sound travels faster in gases than in liquids and faster in liquids than in solids, when a sound wave transitions from a less dense to a more dense medium (like from air to water), the higher density increases the mass of the particles that need to oscillate. This added mass resists movement more effectively, thus leading to a decrease in the speed of sound in that medium. The correct understanding hinges on the relationship between the elasticity and density of the medium. The increase in density typically leads to decreased speed, demonstrating how sound behaves differently in various environments.

10. What does it indicate if acceleration is negative?

A. The object is speeding up

B. The object is slowing down

C. The object is moving in the opposite direction

D. The object is at rest

When acceleration is negative, it typically indicates that the object is experiencing a decrease in its speed over time, commonly referred to as slowing down. This situation occurs when the direction of the acceleration is opposite to the direction of the velocity. For example, if a car is moving forward and begins to decelerate, the acceleration will be negative relative to the direction it was moving. Negative acceleration does not imply that an object is necessarily moving in reverse or is at rest; rather, it quantifies how the speed of the object is decreasing. Thus, the correct understanding of negative acceleration is crucial to comprehending motion dynamics.

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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://igcse-physics.examzify.com

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

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