SQA NATIONAL 5 PHYSICS PRACTICE EXAM (SAMPLE)

STUDY GUIDE

SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR THE FULL VERSION STUDY GUIDE

https://sqanational5physics.examzify.com

Table of Contents

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. The pressure exerted by gas is attributed to what phenomenon?

A. Temperature changes
B. Container collisions
C. Gas expansion
D. Fluid density

2. What can alpha particles penetrate through?

A. Thick glass
B. A few particles of air and sheet paper
C. Lead
D. Wood

3. Which part of a wave is referred to as the crest?

A. The bottom of the wave
B. The midpoint of the wave
C. The top of the wave
D. The distance between two waves

4. Which of the following is an example of a superconductor?

A. Wires used for general electrical conduction
B. Light bulbs in household circuits
C. High-temperature superconductors
D. MRI scanner

5. What is the period of a wave?

A. The time taken to produce one wave
B. The distance between two waves
C. The amplitude of the wave
D. The frequency of the wave

6. What happens to an object at rest when unbalanced forces act on it?

A. It moves in the direction of the net force
B. It remains at rest
C. It accelerates in random directions
D. It changes shape

7. Which element is most commonly associated with nuclear fusion reactions in stars?

A. Uranium

B. Hydrogen

C. Carbon

D. Helium

8. What does specific latent heat of vaporisation refer to?

A. Heat required to freeze a liquid

B. Energy needed to change 1kg of solid into 1kg of liquid

C. Energy required to change 1kg of liquid into 1kg of vapour at the same temperature

D. Heat needed to boil 1kg of solid

9. What is the process by which heat is transferred through the movement of particles?

A. Radiation

B. Conduction

C. Convection

D. Insulation

10. What occurs when light passes from air into glass?

A. It bends away from the normal

B. It speeds up and bends away from the normal

C. It slows down and bends towards the normal

D. It does not change direction

Answers

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

Explanations

1. The pressure exerted by gas is attributed to what phenomenon?

A. Temperature changes

B. Container collisions

C. Gas expansion

D. Fluid density

The pressure exerted by a gas is primarily attributed to the collisions between the gas molecules and the walls of their container. When gas molecules are in motion, they collide with each other and with the surfaces of the container. Each time a molecule strikes the surface, it exerts a force on that surface. The cumulative effect of countless molecular collisions results in what we measure as pressure. As the gas molecules collide more frequently and with greater force, the pressure within the container increases. This relationship illustrates how pressure, volume, and temperature of a gas are interconnected, as described by the gas laws. For example, increasing the temperature of a gas typically leads to increased molecular speed, resulting in more frequent and forceful collisions, thereby increasing pressure. In contrast, temperature changes, gas expansion, and fluid density contribute to different phenomena. Temperature changes affect kinetic energy and thus pressure indirectly, but they are not the direct cause of pressure. Gas expansion refers to the process where gas tends to occupy a larger volume, which can lead to pressure changes, but does not define what pressure is fundamentally. Fluid density relates to mass and volume, impacting buoyancy and other fluid dynamics rather than directly leading to pressure in a gas context.

2. What can alpha particles penetrate through?

A. Thick glass

B. A few particles of air and sheet paper

C. Lead

D. Wood

Alpha particles are a type of ionizing radiation consisting of two protons and two neutrons. Due to their relatively large mass and positive charge, alpha particles have low penetration power compared to other forms of radiation like beta particles or gamma rays. Alpha particles can be stopped very effectively by just a few centimeters of air or by a simple barrier like sheet paper. This is because they interact strongly with matter due to their charge, losing energy quickly as they collide with other atoms. Consequently, they cannot penetrate through materials such as thick glass, lead, or wood, which can all provide much greater barriers due to their density and atomic structure. The ability of alpha particles to pass through only a few particles of air and sheet paper highlights their limited range and power, confirming that this is the correct description of their penetration capabilities.

3. Which part of a wave is referred to as the crest?

A. The bottom of the wave

B. The midpoint of the wave

C. The top of the wave

D. The distance between two waves

The crest of a wave is defined as the highest point of the wave, representing the maximum displacement of the medium from its rest position. Waves, such as those seen in water or sound, exhibit periodic motion where the crest is distinguished as the peak above the equilibrium level. This peak is significant as it reflects the energy carried by the wave — more energy results in a higher crest. The other parts of the wave serve different functions: the bottom of the wave refers to the trough, which is the lowest point, while the midpoint typically indicates the equilibrium position where the medium rests with no wave passing through. The distance between two consecutive crests is referred to as the wavelength, which is another important characteristic of waves, but it does not define what a crest is. Therefore, understanding the specific role and characteristic of the crest helps in grasping wave behavior and properties in various contexts.

4. Which of the following is an example of a superconductor?

A. Wires used for general electrical conduction

B. Light bulbs in household circuits

C. High-temperature superconductors

D. MRI scanner

The choice of a superconductor correctly leads to high-temperature superconductors, which exhibit zero electrical resistance when cooled below a certain temperature, often close to that of liquid nitrogen. Superconductors are materials that can carry current without energy loss, which is a remarkable property utilized in various advanced technologies. High-temperature superconductors are particularly relevant because they operate at temperatures that are more achievable and practical for applications compared to traditional superconductors, which require more extreme cooling methods. This allows them to be used in creating powerful magnetic fields and conducting electricity with great efficiency. Although MRI scanners do utilize superconducting magnets to produce strong magnetic fields necessary for imaging, they themselves do not qualify directly as superconductors. However, they often rely on superconducting materials to function effectively. Other options, such as wires for electrical conduction or light bulbs, typically experience electrical resistance, which is the opposite of what makes a superconductor valuable. Thus, they do not meet the criteria to be categorized as superconductors.

5. What is the period of a wave?

A. The time taken to produce one wave

B. The distance between two waves

C. The amplitude of the wave

D. The frequency of the wave

The period of a wave is defined as the time taken to complete one full cycle of the wave. This means that it is the duration from the start of one wave crest (or trough) to the next identical point of the wave. The period is an important characteristic of waves as it directly relates to how frequently the wave oscillates, with shorter periods corresponding to higher frequencies. The other descriptions do not accurately define the period. The distance between two consecutive waves describes the wavelength, the amplitude refers to the maximum displacement of the wave from its rest position, and frequency is the number of complete cycles that pass a point in one second. Thus, the correct understanding of the period is crucial for comprehending wave behavior and properties in various contexts, including sound, light, and water waves.

6. What happens to an object at rest when unbalanced forces act on it?

A. It moves in the direction of the net force

B. It remains at rest

C. It accelerates in random directions

D. It changes shape

When unbalanced forces act on an object at rest, the object will move in the direction of the net force. According to Newton's first law of motion, an object will remain at rest or in uniform motion unless acted upon by a net external force. If the forces are unbalanced, this indicates that the total force acting on the object is not zero, resulting in a net force that compels the object to start moving. The net force determines the direction of the movement. For instance, if one side of the object experiences a greater force than the other side, the resultant motion will be in the direction of the greater force. This principle is fundamental in understanding how forces affect motion and is a key concept in physics, illustrating the relationship between force, mass, and acceleration, as established in Newton's second law of motion.

7. Which element is most commonly associated with nuclear fusion reactions in stars?

A. Uranium

B. Hydrogen

C. Carbon

D. Helium

Hydrogen is the element most commonly associated with nuclear fusion reactions in stars because it serves as the primary fuel for the processes that power stars, including our sun. In the cores of stars, hydrogen nuclei (protons) collide with enough energy to overcome their electrostatic repulsion and fuse together. This fusion process primarily occurs through the proton-proton chain reaction or the CNO cycle, and it results in the formation of helium nuclei while releasing a tremendous amount of energy in the form of light and heat. This energy production is what creates the radiation that makes stars shine. Other elements, such as helium and carbon, play roles in later stages of stellar evolution or in specific types of stars, but hydrogen is the fundamental building block that initiates the process of fusion. Uranium, while important in nuclear fission reactions, is not typically involved in stellar nucleosynthesis in the same way hydrogen is.

8. What does specific latent heat of vaporisation refer to?

A. Heat required to freeze a liquid

B. Energy needed to change 1kg of solid into 1kg of liquid

C. Energy required to change 1kg of liquid into 1kg of vapour at the same temperature

D. Heat needed to boil 1kg of solid

Specific latent heat of vaporisation is defined as the amount of energy required to convert 1 kilogram of a liquid into 1 kilogram of vapor without a change in temperature. During this phase change, the energy supplied is used to overcome the intermolecular forces holding the liquid molecules together. This process occurs at a constant temperature, which is essential in understanding the concept, as it emphasizes that the energy is not raising the temperature but facilitating the transition into the gaseous state. In this context, the correct answer highlights the necessity of recognizing the specific latent heat as a measure of energy associated with the change in state from liquid to vapor, distinguishing it from other forms of latent heat associated with different phase changes, such as fusion or freezing, or those involving solids, which do not pertain to the process of vaporization.

9. What is the process by which heat is transferred through the movement of particles?

A. Radiation

B. Conduction

C. Convection

D. Insulation

The process of heat transfer through the movement of particles is best described by convection. In convection, warmer, lighter fluid (which can be a liquid or gas) rises while cooler, denser fluid sinks. This creates a circulation pattern that effectively transfers heat throughout the fluid. For instance, when heating water on a stove, the water at the bottom warms up, becomes less dense, and rises to the surface, while cooler water descends to take its place, resulting in a continuous flow that distributes heat. Radiation, on the other hand, involves the transfer of heat through electromagnetic waves without the need for a medium, and conduction involves heat transfer through direct contact between materials rather than through bulk movement of particles. Insulation refers to materials used to reduce heat transfer, rather than a method of transferring heat itself. Convection specifically highlights the role of fluid movement in heat transfer, making it the correct choice in this context.

10. What occurs when light passes from air into glass?

A. It bends away from the normal

B. It speeds up and bends away from the normal

C. It slows down and bends towards the normal

D. It does not change direction

When light passes from air into glass, it slows down due to the higher refractive index of glass compared to air. The behavior of light as it enters a new medium is governed by Snell's Law, which states that the ratio of the sine of the angle of incidence to the sine of the angle of refraction is equivalent to the ratio of the velocities of light in the two media. As light moves into a denser medium like glass, its speed decreases. This change in speed causes the light to bend towards the normal line, which is an imaginary line perpendicular to the boundary surface between the two media. Because the refractive index of glass is greater than that of air, the light ray will refract toward the normal rather than away from it. Understanding this phenomenon is crucial in optics, as it illustrates fundamental principles about how light interacts with different materials.

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://sqanational5physics.examzify.com

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