High School Physics Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

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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 the name for the pair of forces that occur when one object pushes on another and the second pushes back with equal magnitude in the opposite direction?**

   A. Normal Force

   B. Action-Reaction Pair

   C. Buoyant Force

   D. Gravitational Potential Energy

2. **A physical quantity that has magnitude only is called**

   A. Vector

   B. Scalar

   C. Direction-Quantity

   D. Quantity with Magnitude Only

3. **What energy is stored in a stretched or compressed object, such as a spring?**

   A. Kinetic Energy

   B. Momentum

   C. Elastic Potential Energy

   D. Conservation of Energy

4. **A submerged object experiences a buoyant force equal to the weight of the displaced water. If the object's volume is 0.002 m^3, the water density is 1000 kg/m^3, and g = 9.8 m/s^2, what is the buoyant force?**

   A. 19.6 N

   B. 9.8 N

   C. 39.2 N

   D. 4.9 N

5. **The bending of a wave as it passes from one medium to another at an angle is known as**

   A. Reflection

   B. Diffraction

   C. Interference

   D. Refraction

6. The quantity of rotation of a body, which is the product of its moment of inertia and its angular velocity.

A. Linear Momentum

B. Torque

C. Angular Momentum

D. Energy

7. Which concept describes the product of force and distance moved in the direction of the force?

A. Friction

B. Normal Force

C. Power

D. Work

8. If a wave has a short period, what is true about its frequency?

A. Low

B. High

C. Undefined

D. Medium

9. Which force acts parallel to a surface and opposes sliding between surfaces in contact?

A. Buoyant Force

B. Normal Force

C. Friction

D. Inertia

10. A flow of electric charge is called what?

A. Electrical Power

B. Electrical Current

C. Voltage

D. Resistance

Answers

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

Explanations

1. What is the name for the pair of forces that occur when one object pushes on another and the second pushes back with equal magnitude in the opposite direction?

A. Normal Force

B. Action-Reaction Pair

C. Buoyant Force

D. Gravitational Potential Energy

When two objects push on each other, the forces involved have equal strength and opposite directions. This is Newton's third law in action: for every action force, there is an equal and opposite reaction force, and they act on different objects at the same time. The name for this paired interaction is the action-reaction pair. For example, pushing on a wall: your hand exerts a force on the wall, and the wall exerts an equal and opposite force on your hand. Normal force is the contact force a surface exerts on an object, buoyant force is the fluid's push on an immersed object, and gravitational potential energy is a form of energy, not a force. The correct term for the pair of forces is the action-reaction pair.

2. A physical quantity that has magnitude only is called

A. Vector

B. Scalar

C. Direction-Quantity

D. Quantity with Magnitude Only

A quantity described by a magnitude alone is a scalar. Scalars have size but no direction, so you can describe them with just a number and units. Think of mass, temperature, time, or distance—these have how much there is, but not which way something is moving. A vector, by contrast, has both magnitude and direction, so you must specify orientation in addition to size and use vector addition that accounts for direction. That's why the description "magnitude only" points to a scalar.

3. What energy is stored in a stretched or compressed object, such as a spring?

A. Kinetic Energy

B. Momentum

C. Elastic Potential Energy

D. Conservation of Energy

Elastic potential energy is the energy stored when an object is stretched or compressed. When you deform a spring, you do work against its restoring force, and that work becomes stored as elastic potential energy in the spring. The amount stored grows with how stiff the spring and how far you deform it, described by U = 1/2 k x^2 for an ideal spring. When the deformation is released, that stored energy can convert into kinetic energy as the spring moves back toward its natural length. This distinguishes it from kinetic energy, which is energy of motion, and from momentum, which is a property of moving objects; conservation of energy is the principle describing how energy changes form, not a type of energy itself.

4. A submerged object experiences a buoyant force equal to the weight of the displaced water. If the object's volume is 0.002 m^3, the water density is 1000 kg/m^3, and g = 9.8 m/s^2, what is the buoyant force?

A. 19.6 N

B. 9.8 N

C. 39.2 N

D. 4.9 N

Buoyant force comes from Archimedes' principle: it equals the weight of the fluid the object displaces. Since the object is fully submerged, it displaces a volume of water equal to its own, 0.002 m^3. The displaced water has mass m = rho * V = 1000 kg/m^3 × 0.002 m^3 = 2 kg. Its weight is m g = 2 kg × 9.8 m/s^2 = 19.6 N. Therefore the buoyant force is 19.6 N. The other numbers would require different volume, density, or gravity (for example, 9.8 N would need 0.001 m^3 of water, or less density), but with the given values, 19.6 N is correct.

5. The bending of a wave as it passes from one medium to another at an angle is known as

A. Reflection

B. Diffraction

C. Interference

D. Refraction

Refraction is the bending of a wave when it passes from one medium into another at an angle. This happens because the wave travels at different speeds in the two media, so the part of the wavefront that enters the new medium first changes speed while the rest is still in the old medium. That change in speed tilts the wave's path, making the direction change as it crosses the boundary. For light, when entering a slower medium, the ray bends toward the normal (the line perpendicular to the boundary); when entering a faster medium, it bends away from the normal. The bending magnitude is described by Snell's law, which relates the angles to the refractive indices of the two media. Other phenomena have different behaviors: reflection is the wave bouncing off the boundary, diffraction is bending around edges or through openings, and interference is the combination of waves producing a new pattern.

6. The quantity of rotation of a body, which is the product of its moment of inertia and its angular velocity.

A. Linear Momentum

B. Torque

C. Angular Momentum

D. Energy

Angular momentum describes how much rotation a body has. For rotation about an axis, the amount of rotational motion is measured by the product of the mass distribution and the spin rate: L = I ω. Here, I is the moment of inertia, telling how mass is spread relative to the axis (more spread-out mass means a larger I and makes it harder to spin), and ω is the angular velocity, how fast it's turning. The angular momentum vector points along the axis of rotation (direction given by the right-hand rule). A key relation is that only external torques can change it, with torque equal to the time rate of change of angular momentum (τ = dL/dt). Rotational kinetic energy, on the other hand, is 1/2 I ω^2, a different quantity. So the product I ω captures the quantity that describes rotation itself—the angular momentum.

7. Which concept describes the product of force and distance moved in the direction of the force?

A. Friction

B. Normal Force

C. Power

D. Work

Work is the transfer of energy that occurs when a force acts on an object as it moves through a distance in the direction of that force. The amount of work is given by W = F · d = F d cos θ, where θ is the angle between the force and the displacement. If the force points the same way as the motion, the work is positive; if it points opposite, the work is negative; if the force is perpendicular to the motion, the work is zero. So the phrase "product of force and distance moved in the direction of the force" is exactly the definition of work. For example, pushing a 5 N block 2 m in the same direction adds 10 joules of energy to the block (positive work). Power, on the other hand, is how fast that work is done (P = W/t). Friction is a force that can do work (often removing energy as heat) but the statement describes work in general, not a specific force. Normal force usually does no work in straightforward horizontal sliding because it acts perpendicular to the displacement.

8. If a wave has a short period, what is true about its frequency?

A. Low

B. High

C. Undefined

D. Medium

Frequency is how many cycles pass each second, while period is how long one cycle takes. They are inversely related: f = 1/T. So a short period means each cycle happens quickly, leading to more cycles per second, which is a high frequency. For example, a period of 0.01 s gives a frequency of 100 Hz. If the period were longer, say 2 s, the frequency would be 0.5 Hz. The other options don't fit because a long period corresponds to a low frequency, a nonperiodic signal wouldn't have a well-defined frequency, and "medium" isn't a specific result of the inverse relationship.

9. Which force acts parallel to a surface and opposes sliding between surfaces in contact?

A. Buoyant Force

B. Normal Force

C. Friction

D. Inertia

Friction is the force that acts parallel to the contact surface and opposes sliding between the surfaces in contact. It arises from the microscopic roughness of surfaces and the interactions at their contact, and it always acts to oppose the relative motion or the tendency to move. For example, when you push a book across a table, friction points opposite your push, resisting the motion. If you push hard enough, the book starts to slide and kinetic friction takes over, which is typically proportional to the normal force through the coefficient of friction. This is different from buoyant force, which acts upward perpendicular to the surface of a fluid; the normal force, which pushes perpendicular to the contact surface; and inertia, which is the tendency of an object to resist changes in its motion rather than a force acting along the surface. Therefore, the force described is friction.

10. A flow of electric charge is called what?

A. Electrical Power

B. Electrical Current

C. Voltage

D. Resistance

Electric current is the flow of electric charge. It tells you how much charge passes a point in a circuit per unit time, and it's measured in amperes. In metal conductors, electrons actually move, so the physical charge flow is electrons moving opposite to the direction of conventional current, which is the direction used in circuit diagrams. This flow is driven by voltage—the potential difference that pushes charges—and it is opposed by resistance, with the relation I = V/R. Electrical power describes how fast energy is transferred, P = VI or I^2R, but it's about energy flow, not the charge flow 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:

https://highschoolphysics.examzify.com

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