HIGH SCHOOL PHYSICS PRACTICE TEST (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 light passes from air into water (n1 ≈ 1.00, n2 ≈ 1.33), what happens to the path of the light?

A. It bends away from the normal

B. It bends toward the normal

C. It travels at the same angle

D. It stops

2. In a double-slit experiment, under what condition is a bright fringe formed?

A. Constructive interference when $\Delta L = m \lambda$ (m = 0,1,2,...)

B. Destructive interference when $\Delta L = m \lambda$

C. Bright fringes occur when $\Delta L = (m + 1/2) \lambda$

D. Slits emit incoherent light

3. If all parts are connected end to end to provide a single path for current, what type of circuit is this?

A. Open Circuit

B. Parallel Circuit

C. Series Circuit

D. Combination Circuit

4. Which property is the opposition to the flow of electric current in a material?

A. Voltage

B. Resistance

C. Capacitance

D. Inductance

5. A car rounds a flat curve of radius 10 m at 8 m/s. What is the centripetal acceleration?

A. 2.0 m/s^2

B. 6.4 m/s^2

C. 8.0 m/s^2

D. 12.8 m/s^2

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6. What term describes the tendency of an object to resist a change in its motion?

A. Inertia

B. Friction

C. Work

D. Power

7. A charged particle q = 1.6×10^-19 C moves with velocity v = 2.0×10^6 m/s perpendicular to a uniform magnetic field B = 0.50 T. What is the magnetic force on the particle?

A. 1.6×10^-14 N

B. 1.6×10^-13 N

C. 1.6×10^-12 N

D. 3.2×10^-13 N

8. Which term describes the distance and direction of an object's change in position from the starting point?

A. Displacement

B. Speed

C. Velocity

D. Acceleration

9. In a head-on elastic collision between two identical masses, which description matches the final speeds?

A. The speeds are exchanged; the moving mass stops and the other moves with the original speed.

B. The moving mass continues with the same speed.

C. The initially stationary mass moves at speed v and the moving mass stops.

D. Both masses move away with equal speeds.

10. In photoelectric experiments, if light intensity is increased while the photon energy is above threshold, what happens to the rate of electron emission?

A. No electrons are emitted

B. The emission rate increases with intensity

C. Each emitted electron gains more kinetic energy

D. Emission stops

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Answers

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

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Explanations

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1. When light passes from air into water (n1 ≈ 1.00, n2 ≈ 1.33), what happens to the path of the light?

A. It bends away from the normal

B. It bends toward the normal

C. It travels at the same angle

D. It stops

This question tests refraction, the change in a light ray's direction when it crosses a boundary between materials with different refractive indices. Light travels faster in air than in water, since air's index is about 1.00 and water's is about 1.33. When light enters the slower medium, the change in speed causes the wavefronts to tilt and the ray to bend toward the normal—the line perpendicular to the interface. Snell's law, n1 sin θ1 = n2 sin θ2, shows why: with n2 larger than n1, sin θ2 is smaller than sin θ1, so the transmitted angle θ2 is smaller than the incident angle θ1. In other words, the path bends toward the normal. It doesn't continue at the same angle and it doesn't stop.

2. In a double-slit experiment, under what condition is a bright fringe formed?

A. Constructive interference when $\Delta L = m \lambda$ (m = 0,1,2,...)

B. Destructive interference when $\Delta L = m \lambda$

C. Bright fringes occur when $\Delta L = (m + 1/2) \lambda$

D. Slits emit incoherent light

Bright fringes appear when the two waves from the slits arrive in phase. This happens when the extra distance one wave travels relative to the other is an integer multiple of the wavelength, so the path difference $\Delta L = m \lambda$ (with m = 0, 1, 2, …). When they align in phase, their peaks add up and you see bright spots, including the central maximum at m = 0 where $\Delta L = 0$. Destructive interference, which yields dark fringes, occurs when the path difference is a half-integer multiple of the wavelength: $\Delta L = (m + 1/2) \lambda$. The option about incoherent light would not produce a stable fringe pattern at all, so it isn't correct.

3. If all parts are connected end to end to provide a single path for current, what type of circuit is this?

A. Open Circuit

B. Parallel Circuit

C. Series Circuit

D. Combination Circuit

When all parts are connected end to end to provide a single path for current, the circuit is in series. In a series arrangement, the current that leaves the source flows through each component in turn, so the same current passes through every part. The total resistance is the sum of the individual resistances, so adding more components increases the total resistance and lowers the current for a given supply voltage. If any part opens or is removed, the path is broken and current stops throughout the circuit. This is different from a parallel circuit, where current divides among multiple paths, and a combination circuit, which mixes series and parallel sections.

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4. Which property is the opposition to the flow of electric current in a material?

A. Voltage

B. Resistance

C. Capacitance

D. Inductance

Opposition to the flow of electric current in a material is called resistance. It happens because moving electrons collide with atoms and imperfections in the material, turning some of the electrical energy into heat. The more collisions there are, the higher the resistance. Temperature affects this too—heating a conductor usually increases its resistance. For a given material at a fixed temperature, resistance depends on length and cross-sectional area: longer wires resist more, while thicker wires resist less. Ohm's law ties it all together: current equals voltage divided by resistance (I = V/R). So, for a given voltage, larger resistance means smaller current. The other terms describe different ideas—voltage is the driving push, capacitance relates to storing charge, and inductance resists changes in current—so they aren't the steady opposition to flow that resistance represents.

5. A car rounds a flat curve of radius 10 m at 8 m/s. What is the centripetal acceleration?

A. 2.0 m/s^2

B. 6.4 m/s^2

C. 8.0 m/s^2

D. 12.8 m/s^2

Centripetal acceleration is given by a_c = v^2 / r, directed toward the center of the curve. With a speed of 8 m/s and a radius of 10 m, a_c = 8^2 / 10 = 64 / 10 = 6.4 m/s^2. This value exactly matches the given numbers. The other options would come from using a different radius or a wrong formula (for example, a = v/r or using a different r), which isn't the case here.

6. What term describes the tendency of an object to resist a change in its motion?

A. Inertia

B. Friction

C. Work

D. Power

Inertia is the tendency of an object to resist changes to its motion. This resistance comes from the object's mass—the more mass, the greater the inertia, so more force is needed to start moving, stop, or change direction. In Newton's first law, an object in motion keeps moving at a constant velocity and an object at rest stays at rest unless a net external force acts on it. Friction is a force that opposes motion, not the inherent resistance to change in motion. Work and power describe energy transfer and the rate of doing work, not the basic tendency to resist motion changes.

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7. A charged particle q = 1.6×10^-19 C moves with velocity v = 2.0×10^6 m/s perpendicular to a uniform magnetic field B = 0.50 T. What is the magnetic force on the particle?

A. 1.6×10^-14 N

B. 1.6×10^-13 N

C. 1.6×10^-12 N

D. 3.2×10^-13 N

The magnetic force on a moving charge is F = q v B sinθ. Since the velocity is perpendicular to the magnetic field, sinθ = 1, so F = q v B. Plugging in q = 1.6×10^-19 C, v = 2.0×10^6 m/s, and B = 0.50 T gives F = (1.6×10^-19)(2.0×10^6)(0.50) = 1.6×10^-13 N. For a positive charge, the force is perpendicular to both v and B, following the right-hand rule. The other options don't match this calculation (they differ by factors of 10 or 2), so this is the correct magnitude.

8. Which term describes the distance and direction of an object's change in position from the starting point?

A. Displacement

B. Speed

C. Velocity

D. Acceleration

Displacement describes the distance and direction of an object's change in position from the starting point. It is a vector, meaning it has both magnitude and direction—the straight-line separation from where you started to where you ended, in a specific direction. That makes it the best term for this idea. Think of it this way: you might travel along a winding path, covering more ground, but your displacement is only the straight-line distance from your starting point to your final position, with a direction from start to finish. For example, if you go 3 meters east and then 4 meters north, your displacement is the straight-line distance of 5 meters toward the northeast direction, not the total path length of 7 meters. Speed is just how fast you go (magnitude only). Velocity adds direction but is about how fast the position changes over time, i.e., displacement per unit time. Acceleration is how velocity changes with time.

9. In a head-on elastic collision between two identical masses, which description matches the final speeds?

A. The speeds are exchanged; the moving mass stops and the other moves with the original speed.

B. The moving mass continues with the same speed.

C. The initially stationary mass moves at speed v and the moving mass stops.

D. Both masses move away with equal speeds.

In a head-on elastic collision between equal masses, the velocities swap in one dimension. Here one mass starts with speed v and the other is at rest, so after the collision the initially moving mass ends up with zero velocity and the initially stationary mass takes on the speed v in the same direction. This comes from conserving momentum (m v + m·0 = m v1' + m v2') and kinetic energy (1/2 m v^2 = 1/2 m v1'^2 + 1/2 m v2'^2), which together yield v1' = 0 and v2' = v (up to labeling). So the final state is that the stationary mass moves at speed v while the moving mass stops.

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10. In photoelectric experiments, if light intensity is increased while the photon energy is above threshold, what happens to the rate of electron emission?

A. No electrons are emitted

B. The emission rate increases with intensity

C. Each emitted electron gains more kinetic energy

D. Emission stops

The key idea is that the emission rate in the photoelectric effect is tied to how many photons are arriving, assuming each photon has enough energy to overcome the work function. When the photon energy is above threshold, electrons can be emitted, and increasing the light's intensity simply increases the number of photons hitting the surface per second. Since each emitted electron requires a photon, more photons mean more electrons are emitted per unit time. The kinetic energy of each emitted electron, however, is set by the excess energy of the photon over the work function ($hf - \varphi$) and does not depend on how many photons arrive. So, raising intensity boosts the emission rate but leaves the electrons' kinetic energy per emission unchanged.

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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:

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

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