PRAXIS STUDY COMPANION – PHYSICS (5266) 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.

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. **If the cross-sectional area doubles, keeping length and material constant, the resistance will**

   A. Double.

   B. Decrease by half.

   C. Increase.

   D. Remain the same.

2. **Polarization (optics) is**

   A. Filtering light depending on wavelength

   B. Filtering light depending on direction of oscillation

   C. Changing the color of light

   D. Increasing the speed of light in a medium

3. **The true statement about boundary refraction and critical angles:**

   A. Refraction occurs with any angle; no total internal reflection.

   B. Snell's law does not apply to this boundary.

   C. The refracted angle is always equal to the incident angle.

   D. If the incident angle exceeds the critical angle, total internal reflection occurs.

4. **Which statement describes a transformer?**

   A. A device that stores electrical energy in a magnetic field

   B. A device that converts DC to AC

   C. A device that measures resistance

   D. A device that increases or decreases the voltage of alternating current

5. **If the source of a wave moves toward an observer, what happens to the observed frequency?**

   A. The observed frequency increases when the source moves toward the observer

   B. The observed frequency decreases when the source moves toward the observer

   C. The observed frequency remains the same regardless of motion

   D. The observed frequency is unrelated to motion

6. Sublimation is the phase change from which to which?

A. Gas to liquid

B. Solid to gas

C. Liquid to gas

D. Solid to liquid

7. Which equation expresses the photon energy in the photoelectric effect?

A. E = hf = work function + KE

B. E = mc^2

C. p = h/λ

D. F = ma

8. What is the work function in simple terms?

A. The minimum energy required to liberate an electron from a material

B. The energy of the incident photon

C. The energy of the emitted electron

D. The energy gained by the nucleus during decay

9. In an electric field, the force on a positive test charge is in the same direction as the field. Which statement is correct?

A. True; the force is in the same direction as the field.

B. False; the force is opposite to the field.

C. The force is perpendicular to the field.

D. The force is unrelated to the field direction.

10. In Bohr's model, the angular momentum of the electron in the n = 1 orbit is L = nħ. What is L for n = 1 in terms of ħ?

A. L = ħ

B. L = 0

C. L = 2ħ

D. L = 1/2 ħ

Answers

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

Explanations

1. If the cross-sectional area doubles, keeping length and material constant, the resistance will

A. Double.

B. Decrease by half.

C. Increase.

D. Remain the same.

Resistance depends on how easily charges can flow through a material. For a uniform conductor, R equals resistivity times length over cross-sectional area: R = ρL/A. If length and material stay the same, changing the area only changes the denominator. Doubling the cross-sectional area doubles the available pathways for electrons, so the resistance halves. In other words, the new resistance is half the original value. If the area didn't change, the resistance would stay the same; if the area were reduced, the resistance would increase.

2. Polarization (optics) is

A. Filtering light depending on wavelength

B. Filtering light depending on direction of oscillation

C. Changing the color of light

D. Increasing the speed of light in a medium

Polarization in optics describes the orientation of the electric field as light travels. Light is a transverse wave, so its electric field can oscillate in different directions perpendicular to the direction of travel. A polarizing filter transmits only the component of that oscillation along its transmission axis and blocks the perpendicular component. In other words, it filters light by the direction of the electric field's oscillation, not by its color or speed. This is why the correct idea is that polarization filters light according to the direction of oscillation of the electric field. It does not inherently filter by wavelength (color), change the light's color, or increase its speed in a medium.

3. The true statement about boundary refraction and critical angles:

A. Refraction occurs with any angle; no total internal reflection.

B. Snell's law does not apply to this boundary.

C. The refracted angle is always equal to the incident angle.

D. If the incident angle exceeds the critical angle, total internal reflection occurs.

When light moves from one medium to another, its path bends according to Snell's law, which relates the incident and refracted angles to the refractive indices. A critical angle exists when light goes from a denser medium to a less dense one. For incident angles smaller than this critical angle, the light refracts into the second medium at an angle less than 90 degrees. At the critical angle itself, the refracted ray skims along the boundary (90 degrees to the normal). If the incident angle is larger than the critical angle, there is no refracted ray in the second medium because Snell's law would require a sine greater than 1. Instead, all the light is reflected back into the first medium—this is total internal reflection. This is why the statement about total internal reflection occurring when the incident angle exceeds the critical angle is the true one. The other ideas don't hold: refraction does not occur for all angles once you're past the critical angle; Snell's law still governs the boundary (its requirement would be impossible to satisfy for a refracted ray beyond the critical angle); and the refracted angle is not generally equal to the incident angle.

4. Which statement describes a transformer?

A. A device that stores electrical energy in a magnetic field

B. A device that converts DC to AC

C. A device that measures resistance

D. A device that increases or decreases the voltage of alternating current

Transformers rely on electromagnetic induction to move energy between two coils. When alternating current flows in the primary winding, it creates a changing magnetic field in the core. This changing field links with the secondary winding and induces a voltage there. The ratio of voltages depends on how many turns each winding has: more turns on the secondary give a higher voltage, fewer turns give a lower voltage. In an ideal transformer, voltage and turns are directly related, and power is roughly conserved, so the current changes inversely with the turns. Crucially, this only works with alternating current because a changing current is needed to keep the magnetic flux varying; direct current would produce a constant flux after the initial moment and produce little to no secondary voltage. So the device's defining role is to increase or decrease the voltage of alternating current, transferring energy without storing it like a battery or capacitor.

5. If the source of a wave moves toward an observer, what happens to the observed frequency?

A. The observed frequency increases when the source moves toward the observer

B. The observed frequency decreases when the source moves toward the observer

C. The observed frequency remains the same regardless of motion

D. The observed frequency is unrelated to motion

When the source of a wave moves toward an observer, the waves are emitted with crests that are closer together along the line to the observer. Since the wave speed in the medium stays the same, this shorter spacing means a smaller wavelength reaching the observer. Frequency is linked to speed and wavelength by $f = v/\lambda$, so a smaller λ produces a higher observed frequency. In other words, approaching motion compresses the wavefronts and raises the pitch you hear. If the source were moving away, the crests would be spaced farther apart and the observed frequency would decrease.

6. Sublimation is the phase change from which to which?

A. Gas to liquid

B. Solid to gas

C. Liquid to gas

D. Solid to liquid

Sublimation is the phase change from solid directly to gas, bypassing the liquid stage. This happens when a solid gains enough energy for its particles to overcome intermolecular forces and escape into the vapor phase without becoming liquid first. It occurs at conditions where the solid has a noticeable vapor pressure compared to the surrounding environment, such as dry ice turning into CO_2 gas at room temperature. In a phase diagram, sublimation occurs along the boundary between the solid and gas, usually above the triple point. The process is endothermic, requiring heat to be added to drive it. The other transitions are different: gas to liquid is condensation, solid to liquid is melting, and liquid to gas is vaporization or boiling.

7. Which equation expresses the photon energy in the photoelectric effect?

A. E = hf = work function + KE

B. E = mc^2

C. p = h/λ

D. F = ma

In the photoelectric effect, the energy of the incoming photon must do two things: supply enough energy to overcome the surface's work function and provide any remaining energy as the kinetic energy of the emitted electron. That gives the relation hf = φ + KE, where hf is the photon energy, φ is the work function, and KE is the electron's kinetic energy. This shows exactly how the photon's energy is partitioned and why the photon energy is expressed as the sum of the work function and kinetic energy. If hf is less than φ, no emission occurs; if hf exceeds φ, the excess energy becomes KE, KE = hf − φ. The other options don't describe photon energy in this context: rest energy (E = mc^2) is not about photon interactions with matter here, momentum-magnitude form (p = h/λ) describes momentum, and a force equation (F = ma) is unrelated to photon energy.

8. What is the work function in simple terms?

A. The minimum energy required to liberate an electron from a material

B. The energy of the incident photon

C. The energy of the emitted electron

D. The energy gained by the nucleus during decay

The work function is the energy you must supply to pull an electron out of a material's surface into free space. It represents the barrier the electron must overcome to escape, so in simple terms it's the minimum binding energy to liberate the electron from the surface. In the photoelectric context, if light has less energy than this barrier, no electrons are ejected. If the photon energy exceeds the work function, electrons are emitted and the extra energy becomes their kinetic energy (E_photon = work function + KE_max). The exact value depends on the material and surface conditions. This isn't the energy of the incident photon itself, nor the energy of the emitted electron, nor energy gained by a nucleus in decay, which is why those options don't describe the work function.

9. In an electric field, the force on a positive test charge is in the same direction as the field. Which statement is correct?

A. True; the force is in the same direction as the field.

B. False; the force is opposite to the field.

C. The force is perpendicular to the field.

D. The force is unrelated to the field direction.

In an electric field, the force on a positive test charge points in the same direction as the field because the force on a charge q is F = qE. When q is positive, F has the same direction as E, which is exactly what the statement says. The electric field is defined as the direction a positive test charge would be pushed, so for a positive charge the force and the field align. If the charge were negative, the force would point opposite to the field, which is why the other ideas don't fit. The force isn't generally perpendicular to the field in this basic electrostatic situation, and it's not unrelated to the field's direction.

10. In Bohr's model, the angular momentum of the electron in the n = 1 orbit is L = nħ. What is L for n = 1 in terms of ħ?

A. L = ħ

B. L = 0

C. L = 2ħ

D. L = 1/2 ħ

In Bohr's model, the orbital angular momentum is quantized in units of ħ: L = nħ, where n is the principal quantum number for the orbit. For the ground state, n = 1, so the angular momentum has magnitude L = ħ. This means the electron carries one quantum of orbital angular momentum in the lowest orbit. (Spin would add its own ±ħ/2 contribution, but the orbital part in this model is nonzero even at n = 1.)

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://praxis5266.examzify.com

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