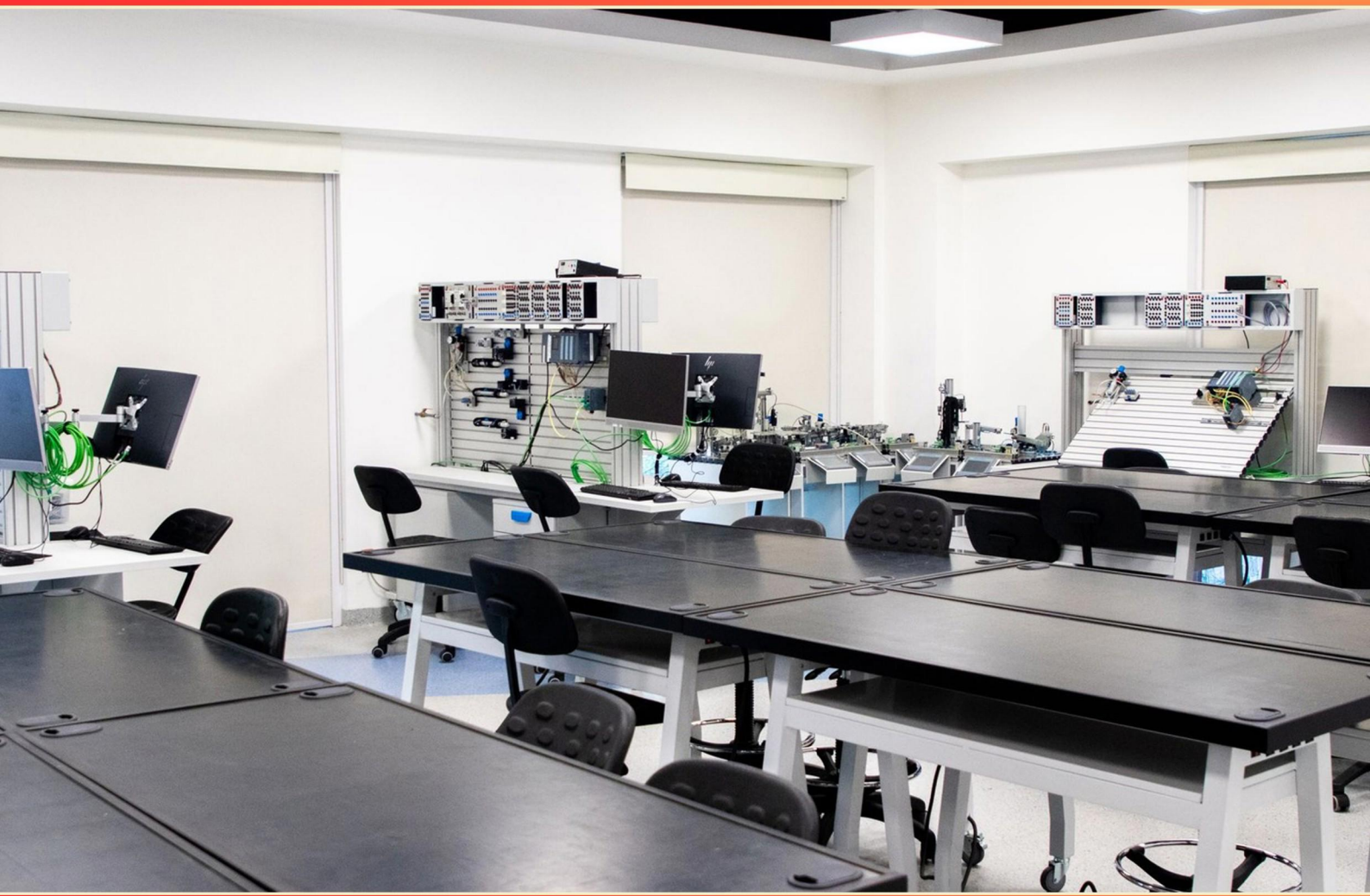
NEET PHYSICS PRACTICE EXAM (SAMPLE)

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. Which formula represents the magnetic field from a coil or solenoid?

A. $B = (\mu\ I\ n) / (2\ r)$

B. $B = (\mu\ I\ R^2) / (2\ (x^2 + R^2)^{(3/2)})$

C. $B = (\mu\ I) / (4\pi\ r)$

D. $B = (\mu\ I) / (2\pi\ r)$

2. In terms of small angles, which approximation is correct for sin(x)?

A. $\sin(x) \approx 2x$

B. $\sin(x) \approx x^2$

C. $\sin(x) \approx x$

D. $\sin(x) \approx 1/x$

3. What does the term "impedance" refer to in AC circuits?

A. It measures the voltage across the circuit.

B. It measures the current flowing through the circuit.

C. It combines resistance and reactance to oppose current flow.

D. It describes the power consumed by the circuit.

4. What is thermal expansion?

A. Contraction of matter in response to temperature change

B. A change in pressure caused by temperature variations

C. The change in shape or volume of matter due to temperature increase

D. A phenomenon only observed in gases

5. When determining torque, why is the sine of the angle used?

A. To relate to electric potential

B. To account for direction of torque

C. To find the magnitude of force

D. To measure inductance

6. Which equation represents the relationship between energy and frequency according to Planck's theory?

A. $E = mc^2$

B. $E = hf$

C. $E = PV$

D. $E = nkT$

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7. How is electric flux (Φ) defined according to Gauss's Law?

A. $\Phi = q / \varepsilon$

B. $\Phi = \varepsilon * E$

C. $\Phi = q * \varepsilon$

D. $\Phi = E / \varepsilon$

8. What is the resistance formula?

A. $R = \rho (L / A)$

B. $R = L / (\rho A)$

C. $R = A / (\rho L)$

D. $R = \rho A / L$

9. What is the Rydberg Constant (R)?

A. 1.097 × 10 /m

B. 1.097 × 10 /m

C. 1.097 × 10 /m

D. 1.097 × 10 /m

10. For hydrogen-like atoms, what is the formula to calculate the radius?

A. $r = (n^2 * h^2 * \varepsilon) / (\pi * m * Z * e^2)$

B. R(1/n1^2 - 1/n2^2)

C. $r = n^2 \times 0.529$ Å

D. KE = hv –

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Answers

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

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Explanations

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1. Which formula represents the magnetic field from a coil or solenoid?

A. $B = (\mu I n) / (2 r)$

B. $B = (\mu I R^2) / (2 (x^2 + R^2)^{(3/2)})$

C. $B = (\mu I) / (4\pi r)$

D. $B = (\mu I) / (2\pi r)$

The formula that accurately represents the magnetic field inside a long solenoid or coil is derived from Ampere's Law, and it emphasizes the key parameters that contribute to the strength of the magnetic field. In the context of a solenoid, the magnetic field is represented as $B = \mu I n$, where μ is the permeability of free space, I is the current flowing through the solenoid, and n is the number of turns per unit length of the solenoid. In general, the correct answer is a specific case of this formula where it also relates to an external point at distance r from a long solenoid. The dependency on the geometry of the solenoid and the current flowing through it explains how the magnetic field lines are concentrated within the solenoid and have a relatively uniform field inside, diminishing outside the coil. The other choices do not accurately represent the magnetic field produced by a solenoid or coil in either their context or their applications: - One mentions the magnetic field at a certain distance from a circular loop of wire, which applies to different configurations and distances. - Others relate to specific cases rather than the general representation of an infinite solenoid and thus do not apply to the ideal conditions typically assumed when discussing solenoids.

2. In terms of small angles, which approximation is correct for sin(x)?

A. $\sin(x) \approx 2x$

B. $\sin(x) \approx x^2$

C. $\sin(x) \approx x$

D. $\sin(x) \approx 1/x$

The approximation for sin(x) when x is small is based on the Taylor series expansion of the sine function, which is given by: $\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \ldots$ When x approaches zero, higher-order terms (like $\frac{x^3}{6}$ and beyond) become negligible compared to the linear term x. Therefore, for small values of x, the sine function can be approximated quite accurately by the first term of its series: $\sin(x) \approx x$ This approximation is valid for angles measured in radians and is particularly useful in physics for simplifying problems involving small angular displacements, such as those that might occur in pendulum motion or small oscillations. The other options don't provide accurate representations of the sine function for small angles. For instance, while $2x$ and x^2 both bear some mathematical relationship to the value of sin(x) at different scales, they do not accurately reflect its behavior near zero. Additionally, $1/x$ deviates significantly from sin(x) as x approaches zero, indicating a

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3. What does the term "impedance" refer to in AC circuits?

A. It measures the voltage across the circuit.

B. It measures the current flowing through the circuit.

C. It combines resistance and reactance to oppose current flow.

D. It describes the power consumed by the circuit.

Impedance in AC circuits is a fundamental concept that represents the total opposition to the flow of alternating current. It is not only about resistance, but also includes reactance, which arises from inductors and capacitors in the circuit. Specifically, impedance combines these two elements—resistance (the pure opposition to current flow due to resistive elements) and reactance (which arises from the effects of capacitors and inductors). Mathematically, impedance is represented as a complex quantity, with resistance as the real part and reactance as the imaginary part. This combination gives a more comprehensive understanding of how the circuit behaves in an AC environment, where current and voltage may not be in phase due to inductive or capacitive effects. Consequently, impedance plays a crucial role in determining how much current will flow for a given voltage, as it helps characterize how different components in the circuit affect that current flow. As such, impedance goes beyond just measuring voltage or current, which are specific aspects of circuit behavior. By including both resistance and reactance, it offers a complete picture of a circuit's response to alternating current.

4. What is thermal expansion?

A. Contraction of matter in response to temperature change

B. A change in pressure caused by temperature variations

C. The change in shape or volume of matter due to temperature increase

D. A phenomenon only observed in gases

Thermal expansion refers to the change in shape or volume of matter when its temperature increases. As temperature rises, the energy of the particles within a substance increases, causing them to vibrate more vigorously. This heightened motion leads to an increase in the average distance between particles, resulting in the expansion of the material. This phenomenon can be observed in solids, liquids, and gases, as they all expand when heated. For example, when heating a metal rod, it becomes longer and potentially wider, demonstrating thermal expansion in solids. In liquids, like water, thermal expansion can be seen when it is heated, causing the water level to rise. Gases also exhibit thermal expansion; as air is heated, it expands and increases in volume. Other options do not accurately define thermal expansion: contraction relates to a decrease in size rather than an increase, changes in pressure stem from different principles, and the idea that thermal expansion is only seen in gases is inaccurate since it is applicable to all states of matter. Thus, the correct understanding acknowledges thermal expansion as a universal property of matter in response to increased temperature.

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5. When determining torque, why is the sine of the angle used?

A. To relate to electric potential

B. To account for direction of torque

C. To find the magnitude of force

D. To measure inductance

*When calculating torque, the sine of the angle is used because torque is defined as the product of the force applied and the distance from the pivot point (or axis of rotation) to the line of action of that force, taking into account the angle between the force vector and the lever arm. Mathematically, torque (τ) can be expressed as τ = r * F * sin(θ), where r is the distance from the pivot to the point of force application, F is the magnitude of the force, and θ is the angle between the force vector and the lever arm. The sine function is crucial here because it effectively projects the force into a component that is perpendicular to the lever arm, which is the only component that contributes to rotational motion. If the force is aligned with the lever arm, the angle is zero, leading to sin(0) equals zero, which means there would be no torque produced. Conversely, when the force is applied at a right angle (90 degrees), sin(90) equals one, maximizing torque. This relationship highlights how torque not only depends on the magnitude of the force but also on how effectively that force produces rotation around a pivot point, taking into account its direction and position relative to the lever arm.*

6. Which equation represents the relationship between energy and frequency according to Planck's theory?

A. $E = mc^2$

B. $E = hf$

C. $E = PV$

D. $E = nkT$

The relationship between energy and frequency according to Planck's theory is represented by the equation E = hf. This equation states that the energy (E) of a photon is directly proportional to its frequency (f), with h being Planck's constant. This means that as the frequency of electromagnetic radiation increases, the energy of the associated photons also increases. Planck's theory introduced the concept that light has a particle-like property, and the quantization of energy levels was a significant advancement in quantum mechanics. The equation E = hf highlights the fundamental relationship in quantum physics, where light can be treated as discrete packets of energy (quanta), known as photons. This relationship has profound implications for understanding phenomena such as the photoelectric effect, where the energy of emitted electrons from a material is dependent on the frequency of incident light. The other given equations correspond to different concepts in physics: $E = mc^2$ refers to the mass-energy equivalence from Einstein's theory of relativity, E = PV represents the work done in thermodynamics for gases, and E = nkT relates energy to temperature in the context of statistical mechanics for an ideal gas. Each of these reflects different physical principles, making E = hf the correct choice in the context of energy and frequency according

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7. How is electric flux (Φ) defined according to Gauss's Law?

A. $\Phi = q / \varepsilon$

B. $\Phi = \varepsilon * E$

C. $\Phi = q * \varepsilon$

D. $\Phi = E / \varepsilon$

The definition of electric flux according to Gauss's Law states that the electric flux (Φ) through a closed surface is directly proportional to the electric charge (q) enclosed within that surface. This relationship is expressed mathematically as $\Phi = q / \varepsilon$, where ε is the permittivity of free space. This formulation reflects the fundamental principle of Gauss's Law, which indicates that the total electric flux passing through a closed surface is determined not by the shape or size of the surface but solely by the charge enclosed. The concept reinforces the idea that if you increase the enclosed charge, the electric field lines emanating from it—and thus the total flux passing through an enclosed surface—will increase proportionally. In contrast, the other options do not correctly apply Gauss's Law. For instance, options that suggest a direct multiplication of electric field (E) with ε do not correlate to how flux derives from charge. Similarly, the formulation involving division of E by ε misrepresents the relationship established by Gauss's Law, which focuses on charge rather than solely on electric field strength or permittivity. Thus, understanding the direct link between the enclosed charge and electric flux is crucial in applying Gauss's

8. What is the resistance formula?

A. $R = \rho (L / A)$

B. $R = L / (\rho A)$

C. $R = A / (\rho L)$

D. $R = \rho A / L$

The resistance formula, represented as $R = \rho (L / A)$, describes how the electrical resistance of a conductor relates to its physical dimensions and the material it is made from. In this formula, R stands for resistance, ρ (rho) is the resistivity of the material, L is the length of the conductor, and A is the cross-sectional area. This relationship illustrates that the resistance increases with the length of the conductor; a longer conductor has more material for electrons to collide with, thus encountering higher resistance. Conversely, having a larger cross-sectional area reduces the resistance since there is more space for electrons to flow through, leading to fewer interactions with the atoms of the material. Additionally, the resistivity (ρ) is an intrinsic property of the material, which indicates how strongly it opposes the flow of electric current. Materials with higher resistivity will inherently exhibit greater resistance for the same dimensions. Understanding this formula is crucial for applications in circuits and electrical engineering, as it allows for accurate calculations of resistance based on material and geometric properties.

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9. What is the Rydberg Constant (R)?

A. 1.097 × 10 /m

B. 1.097 × 10 /m

C. 1.097 × 10 /m

D. 1.097 × 10 /m

The Rydberg Constant is a fundamental physical constant used in atomic physics, specifically in the calculation of wavelengths of spectral lines in many chemical elements. It is denoted by R and is particularly important in the context of hydrogen and hydrogen-like atoms. The value of the Rydberg Constant is approximately 1.097 × 10 /m, which corresponds to the wavelengths of light emitted or absorbed when an electron transitions between energy levels in an atom. This constant arises from the Rydberg formula, which is used to predict the positions of spectral lines based on the quantum mechanics of electrons within atoms. When dealing with hydrogen, the Rydberg formula can be written as: \[\frac{1}{\lambda} = R_H \left(\frac{1}{n_1^2} - \frac{1}{n_2^2} \right) \] where \(\lambda \) is the wavelength of the emitted or absorbed light, and \(n_1 \) and \(n_2 \) are the principal quantum numbers of the electron's initial and final energy levels, respectively. The Rydberg Constant sets the scale for the distances between these energy levels and, consequently, the

10. For hydrogen-like atoms, what is the formula to calculate the radius?

A. $r = (n^2 * h^2 * \varepsilon) / (\pi * m * Z * e^2)$

B. R(1/n1^2 - 1/n2^2)

C. $r = n^2 \times 0.529$ Å

D. KE = hv –

For hydrogen-like atoms, the correct formula to calculate the radius is derived from the Bohr model of the atom. The formula for the radius of an electron's orbit in a hydrogen-like atom, which has only one electron and atomic number Z, is given as: $r = (n^2 * h^2 * \varepsilon) / (\pi * m * Z * e^2)$. In this equation: - n represents the principal quantum number (energy level). - h is the Planck constant. - ε is the permittivity of free space. - m is the mass of the electron. - Z is the atomic number (number of protons in the nucleus). - e is the charge of the electron. This formula shows that the radius is proportional to the square of the quantum level (n^2) and inversely proportional to the atomic number (Z). As the principal quantum number increases, the radius increases, while a greater atomic number leads to a smaller radius due to the stronger electrostatic attraction between the nucleus and the electron. The other options are formulas relevant to different aspects of atomic physics but do not specifically address the calculation of the radius for hydrogen-like atoms. For instance, the second option relates to the energy levels of

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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://neetphysics.examzify.com

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

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