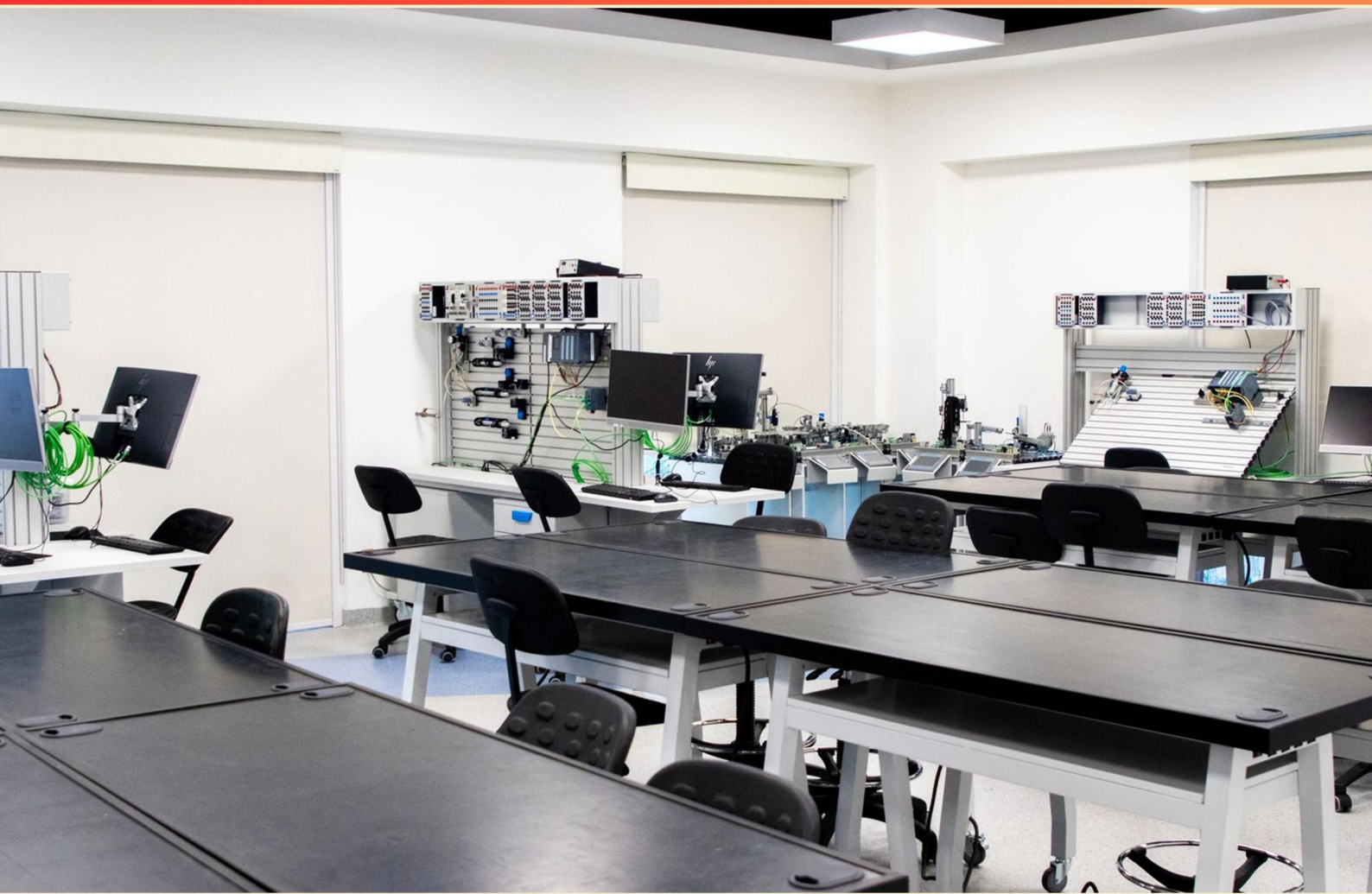


NEET PHYSICS PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR
THE FULL VERSION STUDY GUIDE

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Table of Contents

Copyright	1
Table of Contents	2
Introduction	3
How to Use This Guide	4
Questions	5
Answers	8
Explanations	10
Next Steps	16

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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

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- 1. How are frequency and wavelength related?**
- A. They are directly proportional
 - B. They are not related
 - C. They are inversely related
 - D. They have a linear relationship
- 2. Which experimental evidence supports the wave nature of electrons?**
- A. Hubble's Experiment
 - B. Davisson and Germer Experiment
 - C. Millikan's Oil Drop Experiment
 - D. Thomson's Cathode Ray Experiment
- 3. Angular momentum depends on which factors?**
- A. Mass and distance from the axis of rotation
 - B. Only mass and velocity
 - C. Velocity and time
 - D. Distance from a wall and mass
- 4. What is the relationship between the radius of hydrogen-like atoms and quantum number n ?**
- A. $r = (n^2 \cdot h^2 \cdot \epsilon) / (\pi \cdot m \cdot Z \cdot e^2)$
 - B. $r = n^2 \times 0.529 \text{ \AA}$
 - C. $\lambda = h / \sqrt{(2e m V)}$
 - D. $E = -13.6 \times (Z^2 / n^2) \times (\mu / m)$
- 5. What is the value of ϵ in SI units ($C^2/(N \cdot m^2)$)?**
- A. $\epsilon = 8.85 \times 10^{12}$
 - B. $\epsilon = 9.11 \times 10^{31}$
 - C. $\epsilon = 4.50 \times 10$
 - D. $\epsilon = 1.00 \times 10$
- 6. How is specific heat capacity defined?**
- A. The amount of heat to raise temperature of one mole by one degree Celsius
 - B. The amount of heat to raise temperature of a unit mass by one degree Celsius
 - C. The total heat energy in a substance
 - D. The energy needed to change a substance from solid to liquid

7. What role do inductors play in electrical circuits?

- A. They amplify electrical signals
- B. They store energy in an electric field
- C. They store energy in a magnetic field
- D. They convert electrical energy to mechanical energy

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

9. What is the significance of the gravitational constant (G) in physics?

- A. It determines the speed of light in a vacuum
- B. It is used to calculate the gravitational force between masses
- C. It measures energy in atomic systems
- D. It defines the amount of friction in motion

10. In the drift velocity formula, what does 'a' typically represent?

- A. Cross-sectional area of the wire
- B. Charge of the electron
- C. Number of charge carriers
- D. Electric field strength

Answers

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

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Explanations

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1. How are frequency and wavelength related?

- A. They are directly proportional
- B. They are not related
- C. They are inversely related**
- D. They have a linear relationship

Frequency and wavelength have an inverse relationship, which means that as one increases, the other decreases. This relationship is described by the wave equation: $v = f \lambda$ where v represents the speed of the wave, f is the frequency, and λ is the wavelength. As the speed of the wave remains constant in a given medium, an increase in frequency (f) results in a decrease in wavelength (λ) to maintain this relationship, and vice versa. When waves oscillate faster (higher frequency), they compress closer together, resulting in a shorter wavelength. Conversely, slower oscillations (lower frequency) lead to a longer wavelength. This is why understanding this inverse relationship is crucial in many areas of physics, such as optics and sound, where frequency and wavelength play significant roles in wave behavior.

2. Which experimental evidence supports the wave nature of electrons?

- A. Hubble's Experiment
- B. Davisson and Germer Experiment**
- C. Millikan's Oil Drop Experiment
- D. Thomson's Cathode Ray Experiment

The experimental evidence that supports the wave nature of electrons is found in the Davisson and Germer experiment. This landmark experiment conducted in 1927 demonstrated that electrons can exhibit wave-like behavior when they are diffracted. In this experiment, a beam of electrons was directed at a nickel crystal. As the electrons interacted with the crystal, they produced a diffraction pattern similar to that observed with light waves. This diffraction pattern is a hallmark of wave behavior. The resulting data not only confirmed Louis de Broglie's hypothesis that particles such as electrons exhibit both wave and particle characteristics but also provided strong empirical support for the theory of wave-particle duality. The wave nature of electrons is crucial to understanding various principles in quantum mechanics, including phenomena such as electron microscopy and the behavior of particles at the atomic and subatomic levels. In contrast, the other options do not demonstrate the wave nature of electrons: - Hubble's Experiment is related to cosmology and the expansion of the universe. - Millikan's Oil Drop Experiment measured the charge of the electron and did not address its wave properties. - Thomson's Cathode Ray Experiment was instrumental in discovering the electron itself but focused on its charge and mass rather than its wave characteristics.

3. Angular momentum depends on which factors?

A. Mass and distance from the axis of rotation

B. Only mass and velocity

C. Velocity and time

D. Distance from a wall and mass

Angular momentum is a physical quantity that represents the rotational analog of linear momentum. It is fundamentally dependent on two main factors: the mass of the rotating object and the distance of that mass from the axis of rotation. This distance is often referred to as the lever arm or moment arm. In a rotational context, angular momentum (L) can be expressed mathematically as: $L = r \times p$, where p is the linear momentum ($p = mv$), and r is the distance from the axis of rotation to the point where the mass is located. When an object rotates around a fixed axis, both its mass and how far that mass is from the axis are crucial. A greater mass or a larger distance from the axis will result in greater angular momentum, since you can think of it as how much 'spin' is produced by the object. To elaborate further: 1. **Mass (m)**: The greater the mass of an object, the greater its contribution to angular momentum. This is because the momentum of the mass (given by p) is directly proportional to its mass. 2. **Distance from the axis (r)**: The further the mass is situated from the axis of rotation, the greater the moment arm, contributing to a larger

4. What is the relationship between the radius of hydrogen-like atoms and quantum number n ?

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

B. $r = n^2 \times 0.529 \text{ \AA}$

C. $\lambda = h / \sqrt{2e m V}$

D. $E = -13.6 \times (Z^2 / n^2) \times (\mu / m)$

The relationship between the radius of hydrogen-like atoms and the principal quantum number (n) is indeed correctly expressed in the second option. For hydrogen-like atoms, which are atoms with one electron and a nucleus with a charge of $(+Ze)$, the radius of the electron's orbit can be determined by the formula that relates the radius to the quantum number (n). This expression reflects that the radius of the orbit increases with the square of the quantum number (n). Specifically, for the hydrogen atom (where $Z = 1$), the radius of the electron's orbit in its n th energy level is approximately $(0.529 \text{ \AA})$, which is the Bohr radius. Consequently, for any hydrogen-like atom, the generalized formula gives the radius as $(r = n^2 \times 0.529 \text{ \AA})$. This interpretation aligns with the principles of the Bohr model of the atom, where the quantum number (n) signifies the energy level or orbital in which the electron resides. Thus, as (n) increases, the radius of the orbit increases quadratically, leading to larger distances from the nucleus for higher energy levels. Other options do

5. What is the value of ϵ in SI units ($\text{C}^2/(\text{N}\cdot\text{m}^2)$)?

A. $\epsilon = 8.85 \times 10^{12}$

B. $\epsilon = 9.11 \times 10^{31}$

C. $\epsilon = 4.50 \times 10$

D. $\epsilon = 1.00 \times 10$

The value of ϵ , known as the permittivity of free space, is a fundamental physical constant that measures the ability of a vacuum to permit electric field lines. In SI units, it is expressed as $\text{C}^2/(\text{N}\cdot\text{m}^2)$, meaning it relates the electric charge (C), force (N), and distance (m). The accepted and widely referenced value of permittivity in free space is approximately $8.85 \times 10^{12} \text{ C}^2/(\text{N}\cdot\text{m}^2)$. This constant is essential in equations that describe electrostatic forces, such as Coulomb's law, and plays a critical role in the formulation of Maxwell's equations, which govern electromagnetism. The magnitude of ϵ is derived from various physical laws and measurements, and it reflects how electric fields behave in a vacuum. Understanding this value is crucial for solving problems related to capacitance, electric field strength, and potential difference in circuits. The other values provided in the options correspond to different physical constants or units entirely unrelated to the permittivity of free space. For example, one option resembles the mass of an electron, while others do not conform to common known constants in electrostatics. Therefore, the accurate and relevant choice for

6. How is specific heat capacity defined?

A. The amount of heat to raise temperature of one mole by one degree Celsius

B. The amount of heat to raise temperature of a unit mass by one degree Celsius

C. The total heat energy in a substance

D. The energy needed to change a substance from solid to liquid

Specific heat capacity is defined as the amount of heat required to raise the temperature of a unit mass of a substance by one degree Celsius (or one Kelvin). This concept is crucial in understanding how different materials respond to heat energy and thus how they store and transfer thermal energy. When a substance absorbs heat, its temperature increases according to its specific heat capacity; different materials have different capacities based on their physical and chemical properties. For example, water has a high specific heat capacity, allowing it to absorb a large amount of heat without experiencing a significant increase in temperature, which plays a key role in regulating climate and maintaining the temperature of living organisms. This definition indicates that specific heat capacity is a property that is intensive, meaning it does not depend on the amount of the substance present, but rather on the substance itself. Therefore, the correct understanding of specific heat capacity is fundamental in various applications, including thermodynamics, engineering, and environmental science. The other definitions do not correctly capture this concept; raising the temperature of a mole is related to molar heat capacity, and total heat energy and phase changes refer to different thermodynamic processes.

7. What role do inductors play in electrical circuits?

- A. They amplify electrical signals
- B. They store energy in an electric field
- C. They store energy in a magnetic field**
- D. They convert electrical energy to mechanical energy

Inductors play a critical role in electrical circuits by storing energy in a magnetic field. When an electric current flows through an inductor, it generates a magnetic field around it. This property allows inductors to store energy temporarily in that magnetic field and release it when needed. The ability of inductors to store energy makes them essential components in various applications, such as filters, transformers, and in energy storage systems like switch-mode power supplies. In these contexts, they help manage the flow of electricity, control voltage levels, and support the efficient transfer of energy in circuits. The other options do not accurately describe the function of inductors. For instance, inductors do not amplify electrical signals or convert electrical energy to mechanical energy; these functions are typically associated with different components or devices, such as transistors or electric motors. Additionally, energy storage in an electric field refers to capacitors, not inductors. Thus, the storing of energy in a magnetic field is specifically characteristic of inductors.

8. 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: $\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \dots$ 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

9. What is the significance of the gravitational constant (G) in physics?

- A. It determines the speed of light in a vacuum
- B. It is used to calculate the gravitational force between masses**
- C. It measures energy in atomic systems
- D. It defines the amount of friction in motion

The gravitational constant (G) plays a crucial role in gravitational physics, particularly in calculating the gravitational force between two masses. According to Newton's Law of Universal Gravitation, the force of attraction (F) between two point masses (m_1 and m_2) is directly proportional to the product of their masses and inversely proportional to the square of the distance (r) between their centers. The formula is expressed as: $F = G * (m_1 * m_2) / r^2$. Here, G, the gravitational constant, provides the proportionality factor that links mass and distance to the gravitational force, allowing us to quantitatively understand how objects with mass interact through gravity. Its value is approximately $6.674 \times 10^{-11} \text{ N(m/kg)}^2$, making it a fundamental parameter in gravitational calculations in physics, from determining the weight of objects on Earth to understanding the motion of planets and the structure of the universe. The other options relate to different concepts in physics that are not directly associated with the gravitational constant. For instance, the speed of light in a vacuum is a separate fundamental constant and does not involve G. The measurement of energy in atomic systems pertains to quantum mechanics and atomic physics, while friction is typically analyzed using different physical

10. In the drift velocity formula, what does 'a' typically represent?

- A. Cross-sectional area of the wire**
- B. Charge of the electron
- C. Number of charge carriers
- D. Electric field strength

In the drift velocity formula, particularly in the context of a metal conductor, 'a' does indeed represent the cross-sectional area of the wire. The drift velocity is defined as the average velocity that a charged particle, such as an electron, attains due to an electric field. It is given by the formula: $v_d = \frac{I}{nqA}$ where (v_d) is the drift velocity, (I) is the current, (n) is the number of charge carriers per unit volume, (q) is the charge of the charge carriers, and (A) is the cross-sectional area of the wire. The cross-sectional area plays a critical role in determining how easily current can flow through the conductor. A larger area allows more charge carriers to pass through at the same time, which can influence the drift velocity for a given current. Therefore, in this formula, 'a' as the cross-sectional area is fundamental to the relationship between current and drift velocity in conductive materials. Understanding this relationship is essential for grasping how electrical current behaves in different materials and geometries.

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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