NEET Physics Practice Exam (Sample)

Study Guide

BY EXAMZIFY

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. 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**

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

- **A.** $B = (\mu_0 I n) / (2 r)$
- **B.** $B = (\mu_0 I R^2) / (2 (x^2 + R^2)^{(3/2)})$
- **C.** $B = (\mu_0 I) / (4\pi r)$
- **D.** $B = (\mu_0 I) / (2\pi r)$

3. Which of the following best defines the focal length (f) in lens formulas?

- **A. Distance from the lens to the object**
- **B. Distance from the lens to the image**
- **C. Average distance of the lens**
- **D. Difference between object and image distances**

4. What is the equation for calculating the wavelength of light emitted by a hydrogen-like atom?

- **A.** $R(1/n1^2 - 1/n2^2)$
- **B.** $E = -13.6 \times (Z^2 / n^2) \times (\mu / m_e)$
- **C.** $\lambda = h / \sqrt{(2e\, m\, V)}$
- **D.** $r = (n^2 * h^2 * \varepsilon_0) / (\pi * m * Z * e^2)$

5. What is nuclear fission?

- **A. The fusion of light atomic nuclei**
- **B. The process where a heavy nucleus splits into smaller nuclei**
- **C. The emission of photons from an atom**
- **D. The binding of electrons to form molecules**

6. **What is the formula for fringe separation in double-slit diffraction?**

   A. x = (λL) / a

   B. x = (Lλ) / a

   C. x = (aλ) / L

   D. x = (λa) / L

7. **How is the power (P) of a lens calculated?**

   A. P = f / 1

   B. P = 1 / f

   C. P = f × 1

   D. P = 1 + f

8. **What is the formula for gravitational potential energy?**

   A. $U = 1/2\ kx^2$

   B. U = mgh

   C. U = Fd

   D. $U = mv^2$

9. **What is the diffraction condition for constructive interference?**

   A. d sin(θ) = nλ

   B. d sin(θ) = (m + 1/2)λ

   C. a sin(θ) = mλ

   D. Δy = (λL) / d

10. **How is the force of gravity related to a satellite's motion?**

   A. It repels the satellite away from Earth

   B. It provides the centripetal force necessary for orbit

   C. It has no effect on the satellite's trajectory

   D. It decreases as the satellite orbits Earth

Answers

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

Explanations

1. 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.

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

A. $B = (\mu_0 I n) / (2 r)$

B. $B = (\mu_0 I R^2) / (2 (x^2 + R^2)^{(3/2)})$

C. $B = (\mu_0 I) / (4\pi r)$

D. $B = (\mu_0 I) / (2\pi r)$

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 $B = \mu_0 I n$, where μ_0 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.

3. Which of the following best defines the focal length (f) in lens formulas?

A. Distance from the lens to the object

B. Distance from the lens to the image

C. Average distance of the lens

D. Difference between object and image distances

The focal length (f) of a lens is a crucial parameter that defines how the lens converges or diverges light. It is characterized as the distance from the lens's optical center to its focal point, where parallel rays of light either converge (for converging lenses) or appear to diverge (for diverging lenses) after passing through the lens. When considering the lens formula, the focal length is directly related to the geometric arrangement of the object and the image formed by the lens. The distance from the lens to the image is directly used in the calculations involved in characterizing the lens's behavior; it helps in determining the nature and position of the image based on the object distance. Thus, identifying this distance as the focal length clarifies the relationship between object distance, image distance, and the focal point itself, reflecting the lens's functionality in optics. The other options do not appropriately define focal length. For instance, the distance from the lens to the object does not relate to how the lens focuses light, nor does the average distance of the lens adequately capture this essential property. Additionally, the difference between object and image distances is a useful relation in optical formulas but does not specifically define the focal length itself. Hence, it is the distance

4. What is the equation for calculating the wavelength of light emitted by a hydrogen-like atom?

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

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

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

D. $r = (n^2 * h^2 * \varepsilon_0) / (\pi * m * Z * e^2)$

The equation for calculating the wavelength of light emitted by a hydrogen-like atom is represented correctly in the selected answer, which states $R(1/n_1^2 - 1/n_2^2)$. This equation is derived from the Rydberg formula for spectral lines in hydrogen-like atoms, where R is the Rydberg constant, n_1 is the lower energy level, and n_2 is the upper energy level in the atom's electron transitions. When an electron in a hydrogen-like atom transitions between energy levels, it emits or absorbs a photon of light. The wavelength of that photon can be calculated using the difference in energy between these two levels, which is encapsulated in the term $1/n_1^2 - 1/n_2^2$. Here, n_1 and n_2 are quantum numbers corresponding to the initial and final energy states of the electron. This formula is fundamental in understanding how the energy levels of electrons in atoms relate to the light spectra of those atoms. The other options pertain to different physical concepts, such as energy levels, kinetic energy, or radii of electron orbits, which

5. What is nuclear fission?

A. The fusion of light atomic nuclei

B. The process where a heavy nucleus splits into smaller nuclei

C. The emission of photons from an atom

D. The binding of electrons to form molecules

Nuclear fission is defined as the process where a heavy nucleus splits into smaller nuclei, along with the release of energy. This phenomenon typically occurs with isotopes of heavy elements, like uranium-235 or plutonium-239, when they absorb a neutron. The absorption causes the nucleus to become unstable, leading to its division into two smaller nuclei, called fission fragments. In addition to producing smaller nuclei, fission also releases additional neutrons and energy in the form of kinetic energy of the fission fragments and electromagnetic radiation. The released neutrons can then initiate further fission reactions in a chain reaction, which is the principle behind nuclear reactors and atomic bombs. Understanding nuclear fission is crucial in fields such as nuclear energy generation, as well as in understanding the mechanisms involved in nuclear weaponry and astrophysical processes in stars.

6. What is the formula for fringe separation in double-slit diffraction?

A. $x = (\lambda L) / a$

B. $x = (L\lambda) / a$

C. $x = (a\lambda) / L$

D. $x = (\lambda a) / L$

The formula for fringe separation in double-slit diffraction is \(x = \frac{\lambda L}{a} \), where \(x \) represents the fringe separation (the distance between adjacent bright or dark fringes on a screen), \(\lambda \) is the wavelength of the light used, \(L \) is the distance from the slits to the screen, and \(a \) is the separation between the two slits. This formula arises from the interference pattern created when light waves emanate from the two slits. The path difference between the light waves traveling from the slits to a particular point on the screen leads to constructive or destructive interference, resulting in bright and dark fringes. For small angles, the linear approximation holds, allowing us to relate the fringe spacing to the wavelength and other parameters using this specific formula. As the wavelength or the distance to the screen increases, the fringe separation increases, which is intuitively consistent with the nature of wave interference; longer wavelengths produce wider separations due to the increased distance over which the waves can diverge. The other formulas involve the terms rearranged or placed in a context that does not accurately represent the relationship inherent in the setup of the double-slit experiment, thus not

7. How is the power (P) of a lens calculated?

A. P = f / 1

B. P = 1 / f

C. P = f × 1

D. P = 1 + f

The power of a lens is calculated using the formula where power (P) is the reciprocal of the focal length (f) of the lens, expressed in meters. This means that the power is given in diopters (D), which is the unit of measure for lens power. The formula can be stated as: P = 1 / f The focal length (f) in this context is the distance from the lens at which parallel rays of light converge or appear to diverge. A shorter focal length corresponds to a stronger lens and thus a higher power, while a longer focal length indicates a weaker lens. This relationship is fundamental in optics and helps in the design of various optical devices such as glasses, cameras, and microscopes. The inverse relationship is crucial because it indicates that as the focal length decreases, the power increases and vice versa, directly relating to the lens's ability to converge light. Other options do not accurately represent the relationship between lens power and focal length. Therefore, the correct calculation method emphasizes the importance of understanding the underlying principles of optics.

8. What is the formula for gravitational potential energy?

A. U = 1/2 kx²

B. U = mgh

C. U = Fd

D. U = mv²

The formula for gravitational potential energy is given by $U = mgh$, where U represents gravitational potential energy, m is the mass of the object in question, g is the acceleration due to gravity, and h is the height above a reference point. This formula arises from the work done against the gravitational force to elevate an object to a height h. As an object is lifted, work must be done against the gravitational pull, which results in an increase in the object's potential energy. The potential energy increases linearly with both the mass of the object and the height to which it is raised, reflecting the direct relationship among these variables. In contrast, the other formulas represent different concepts: the first option describes the potential energy stored in a spring (Hooke's Law), the third pertains to work done by a force along a distance, and the last reflects kinetic energy, which is related to the motion of an object rather than its position in a gravitational field. Thus, the selection of $U = mgh$ accurately describes gravitational potential energy, illustrating how an object's position in a gravitational field determines its potential energy.

9. What is the diffraction condition for constructive interference?

A. $d \sin(\theta) = n\lambda$

B. $d \sin(\theta) = (m + 1/2)\lambda$

C. $a \sin(\theta) = m\lambda$

D. $\Delta y = (\lambda L) / d$

The diffraction condition for constructive interference is represented by the equation $d \sin(\theta) = n\lambda$, where d is the distance between adjacent slits in a double-slit setup, θ is the angle of diffraction, n is an integer representing the order of the maximum (0, 1, 2, ...), and λ is the wavelength of the light being used. This equation articulates the requirement that for constructive interference to occur, the path difference between light coming from different slits must be an integer multiple of the wavelength. When this condition is met, the waves arriving at a point on a distant screen or detector reinforce each other, resulting in a bright fringe or maximum at that same angle. In contrast, other options describe different scenarios related to interference. For instance, the equation used for finding the positions of minima or dark fringes involves a path difference of half a wavelength, while some formulas pertain to different setups or aspects of diffraction entirely. The differentiating factor for the correct condition for constructive interference lies in ensuring that the path difference equates to whole wavelengths, thereby establishing a clear pattern of light intensity represented by bright fringes.

10. How is the force of gravity related to a satellite's motion?

A. It repels the satellite away from Earth

B. It provides the centripetal force necessary for orbit

C. It has no effect on the satellite's trajectory

D. It decreases as the satellite orbits Earth

The relationship between the force of gravity and a satellite's motion is fundamentally linked to the concept of centripetal force. When a satellite orbits Earth, it is in free fall towards the planet due to the gravitational attraction. However, because the satellite also has a tangential velocity, it continues to move forward, creating a curved path around Earth rather than falling straight down. In this scenario, the gravitational force acts as the centripetal force that keeps the satellite in orbit. For an object to maintain a circular motion, it needs a force directed towards the center of the circle. In the case of a satellite, this inward force is provided entirely by gravity. This balance between the forward motion of the satellite (its inertia) and the gravitational pull of Earth results in a stable orbit. Therefore, the gravitational force is crucial for a satellite’s motion, ensuring it remains in orbit rather than crashing into Earth or drifting away into space. Understanding this relationship helps explain why satellites can remain in stable orbits as long as their velocities and distances from Earth are appropriate.

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!