

# Comprehensive Guide to Contact, Non-Contact Forces, and Magnetism for Students Practice Exam (Sample)

## Study Guide



**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

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- 1. Which of these is an example of a non-contact force?**
  - A. Friction.**
  - B. Gravity.**
  - C. Pushing a cart.**
  - D. Tension in a rope.**
  
- 2. What is the difference between contact and non-contact forces?**
  - A. Contact forces require physical interaction, while non-contact forces act at a distance**
  - B. Contact forces are weaker than non-contact forces**
  - C. Contact forces only work in liquids**
  - D. There is no difference between the two**
  
- 3. Define the term "normal force".**
  - A. A force exerted by a surface in any direction**
  - B. A force that acts directly proportional to velocity**
  - C. A force exerted by a surface perpendicular to an object resting on it**
  - D. A force that exists only in fluid environments**
  
- 4. How can a steel nail be magnetized effectively?**
  - A. By heating it with fire.**
  - B. By rubbing a bar magnet along its length in one direction multiple times.**
  - C. By placing it in a strong magnetic field for one hour.**
  - D. By dropping it from a height onto a hard surface.**
  
- 5. What is the role of charged particles in electrostatic force?**
  - A. They are stationary and do not affect objects**
  - B. Charged particles can move from one object to another, affecting attraction or repulsion**
  - C. Charged particles only affect metallic objects**
  - D. They create heat when they collide**

- 6. What is the relationship between force and movement?**
- A. Forces always stop movement**
  - B. Forces cause the movement of an object, either by pushing or pulling**
  - C. Forces do not affect movement in any way**
  - D. Forces only act on stationary objects**
- 7. What is one common use of magnets in modern technology?**
- A. Timekeeping in clocks.**
  - B. Measuring temperature.**
  - C. Storing and retrieving data in hard drives.**
  - D. Creating light through bulbs.**
- 8. What materials are needed for the static electricity experiment?**
- A. Salt, water, and a plastic bag**
  - B. Salt, pepper, plastic spoon, dish cloth, and optionally a black piece of paper**
  - C. Rice, sugar, and a glass container**
  - D. Salt, vinegar, and a sponge**
- 9. What is the role of the Earth's magnetic field in compass operation?**
- A. It prevents the compass from turning**
  - B. It attracts or repels the compass needle, indicating direction**
  - C. It powers the compass with energy**
  - D. It creates weather patterns**
- 10. How can you determine the strength of a magnetic field?**
- A. By measuring the distance from the magnet**
  - B. By the density of magnetic field lines in an area**
  - C. By observing the temperature of the magnet**
  - D. By the color of the magnet**

## Answers

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

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## **Explanations**

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**1. Which of these is an example of a non-contact force?**

- A. Friction.
- B. Gravity.**
- C. Pushing a cart.
- D. Tension in a rope.

Gravity is indeed a prime example of a non-contact force because it acts at a distance without the need for physical contact between objects. It is the attractive force that pulls objects toward one another; Earth's gravity, for instance, pulls everything toward its center, which is evident through the phenomenon of weight. This force operates even if objects are far apart, demonstrating how non-contact forces function through fields, rather than direct interaction. In contrast, friction, pushing a cart, and tension in a rope all require physical contact to occur. Friction occurs when two surfaces rub against each other, while pushing a cart involves direct physical contact between the person's hand and the cart. Tension in a rope is also a result of contact forces, as it relies on the physical connection between the rope and the objects it is connected to. Therefore, gravity stands out as the clear example of a non-contact force among the options provided.

**2. What is the difference between contact and non-contact forces?**

- A. Contact forces require physical interaction, while non-contact forces act at a distance**
- B. Contact forces are weaker than non-contact forces
- C. Contact forces only work in liquids
- D. There is no difference between the two

The distinction between contact and non-contact forces is fundamental in understanding how various forces interact in the physical world. Contact forces indeed require physical interaction between two objects. This means that for a contact force to be exerted, one object must touch or apply a force to another. Examples include friction, tension, and normal forces, all of which depend on the direct interaction of materials. On the other hand, non-contact forces act at a distance without requiring physical contact between the interacting objects. Examples of non-contact forces include gravitational, electromagnetic, and nuclear forces. These forces can exert influence over varying distances, demonstrating that they do not depend on direct contact. This ability to affect objects over a distance is a defining characteristic that differentiates them from contact forces. The other options do not accurately convey the relationship between contact and non-contact forces. For instance, saying contact forces are weaker than non-contact forces oversimplifies the complexity of forces in physics. Additionally, stating that contact forces only work in liquids is incorrect, as contact forces are also present in solids and gases. Lastly, claiming there is no difference ignores the fundamental principles that govern how these forces operate. Therefore, recognizing the clear divide—where contact forces necessitate interaction and non-contact forces operate over distances—

### 3. Define the term "normal force".

- A. A force exerted by a surface in any direction
- B. A force that acts directly proportional to velocity
- C. A force exerted by a surface perpendicular to an object resting on it**
- D. A force that exists only in fluid environments

The normal force is defined as the force exerted by a surface that acts perpendicular to the object resting on it. This force is crucial for understanding how objects interact with surfaces, especially in mechanics. When an object is placed on a horizontal surface, the normal force counteracts the weight of the object due to gravity, preventing it from accelerating downward. In scenarios where an object is on an inclined surface, the normal force will still act perpendicular to the surface, but its value will change depending on the angle of inclination, reflecting how it interacts with the object's weight component acting parallel to the surface. This relationship is key in physics, as it helps describe not only how objects stay at rest but also how they move when acted upon by other forces. The other options do not accurately describe the normal force. A force exerted by a surface in any direction does not specify the characteristic of being perpendicular, which is essential to the definition of normal force. A force that acts directly proportional to velocity describes factors like friction or drag, which are different concepts. Lastly, a force that exists only in fluid environments does not capture the nature of normal force, as it applies to solids on surfaces, not just in fluids.

### 4. How can a steel nail be magnetized effectively?

- A. By heating it with fire.
- B. By rubbing a bar magnet along its length in one direction multiple times.**
- C. By placing it in a strong magnetic field for one hour.
- D. By dropping it from a height onto a hard surface.

A steel nail can be effectively magnetized by rubbing a bar magnet along its length in one direction multiple times. This method involves aligning the magnetic domains within the steel, which are small regions that can have their magnetic orientations altered when influenced by an external magnetic field. As the bar magnet is rubbed along the nail, the consistent directional motion causes these domains to align in the same direction, resulting in the steel nail becoming magnetized. This process emphasizes the importance of directionality; rubbing the magnet in one direction ensures that the domains are aligned properly. If the motion were to move back and forth, it could lead to a random orientation of the domains, diminishing the magnetization effect. Other options do not provide effective means of magnetization: heating the nail tends to demagnetize it instead of magnetizing it, as the heat can disrupt the alignment of the magnetic domains. Placing it in a strong magnetic field for one hour could work, but it may not be as efficient or practical as the rubbing technique, especially without the ability to ensure the correct alignment as in option B. Dropping the nail results in physical shock, which can again disrupt the magnetic domains rather than align them, leading to a loss of any existing magnetization.

**5. What is the role of charged particles in electrostatic force?**

- A. They are stationary and do not affect objects
- B. Charged particles can move from one object to another, affecting attraction or repulsion**
- C. Charged particles only affect metallic objects
- D. They create heat when they collide

Charged particles play a crucial role in electrostatic force by being able to move from one object to another, which leads to changes in attraction or repulsion between those objects. When two objects have different charges, they either attract or repel each other depending on the nature of the charges. For instance, a positively charged object will attract a negatively charged object while repelling another positively charged object. This movement of charge can happen when objects come in contact or through induction, which is a fundamental concept in understanding electrostatics. In this context, the ability of charged particles to affect the forces between different objects is critical to understanding phenomena such as static electricity, where an imbalance of these charges can lead to observable effects. The other options inaccurately limit the behavior and influence of charged particles, as they are not stationary, they can influence all types of objects, and while collisions can generate heat, it is not a defining characteristic of their role in electrostatic forces.

**6. What is the relationship between force and movement?**

- A. Forces always stop movement
- B. Forces cause the movement of an object, either by pushing or pulling**
- C. Forces do not affect movement in any way
- D. Forces only act on stationary objects

The relationship between force and movement is fundamentally rooted in Newtonian physics. Forces are the causes that initiate, accelerate, or change an object's movement. When a force is applied to an object, it results in either a change in the object's velocity or a change in direction. This interaction means that movement can only occur due to forces acting upon the object, whether it is through pushing (a force that moves the object away from the source of the push) or pulling (a force that draws the object toward the source of the pull). This principle is essential in understanding dynamics and the motion of objects, as it connects directly to Newton's second law of motion, which states that the acceleration of an object is directly proportional to the net force acting upon it and inversely proportional to its mass. Thus, recognizing that forces cause movement illustrates the dynamic nature of physical interactions and the role of forces in the movement and behavior of objects in our universe.

**7. What is one common use of magnets in modern technology?**

- A. Timekeeping in clocks.
- B. Measuring temperature.
- C. Storing and retrieving data in hard drives.**
- D. Creating light through bulbs.

The use of magnets in modern technology is prominently exemplified by their role in storing and retrieving data in hard drives. Hard drives utilize magnetic storage media to retain information. When data is written to the hard drive, it modifies the magnetic state of specific areas on a disk, which allows the information to be stored. When this data needs to be retrieved, read/write heads use the magnetic properties of these disks to access the specific data quickly and efficiently. In contrast, timekeeping in clocks typically relies on mechanical movements or electronic oscillators, not magnetic fields. Temperature measurement is carried out using thermocouples or thermistors, which do not involve magnets. Lastly, although certain types of light bulbs, such as some fluorescent bulbs, may use electromagnetic fields to operate, traditional incandescent bulbs and LED technology primarily rely on electrical circuits rather than magnetic forces for their light generation. Therefore, the application of magnets in hard drives serves as a fundamental component of data storage technology in modern computing.

**8. What materials are needed for the static electricity experiment?**

- A. Salt, water, and a plastic bag
- B. Salt, pepper, plastic spoon, dish cloth, and optionally a black piece of paper**
- C. Rice, sugar, and a glass container
- D. Salt, vinegar, and a sponge

The selection of materials in this option is particularly suitable for demonstrating static electricity due to their conductive and non-conductive properties. Salt and pepper can be effectively used to illustrate how static charge can attract or repel small particles when a charged object, such as a plastic spoon or a plastic bag, is introduced into the setup. The dish cloth can be utilized to generate static charge through friction when rubbed against the plastic materials, creating a clear demonstration of static electricity principles. The addition of a black piece of paper is optional but can enhance visibility, helping to better observe the effects of the static charge on the mixture of salt and pepper. This combination of materials allows for an engaging experiment that highlights the behavior of static electricity and offers visual and practical learning opportunities. Other options either involve materials that are not as effective for illustrating static electricity concepts or do not create the same level of interactive engagement.

**9. What is the role of the Earth's magnetic field in compass operation?**

- A. It prevents the compass from turning**
- B. It attracts or repels the compass needle, indicating direction**
- C. It powers the compass with energy**
- D. It creates weather patterns**

The Earth's magnetic field plays a crucial role in the operation of a compass by interacting with the compass needle, which is typically magnetized. The compass needle aligns itself with the magnetic field lines of the Earth, swinging freely to point toward magnetic north. This alignment allows for accurate navigation, as the needle provides a reliable indication of which direction you are facing. The magnetic field surrounds the Earth and is generated by the movement of molten iron within the planet's outer core. When the compass needle, being a small magnet itself, experiences the magnetic influences of the Earth, it responds by turning to point in the direction of the magnetic force. This phenomenon not only makes the compass an essential tool for navigation but also highlights the relationship between magnetism and geographic orientation.

**10. How can you determine the strength of a magnetic field?**

- A. By measuring the distance from the magnet**
- B. By the density of magnetic field lines in an area**
- C. By observing the temperature of the magnet**
- D. By the color of the magnet**

The strength of a magnetic field can be determined by evaluating the density of magnetic field lines in a given area. This is rooted in the principle that the closer and more numerous the magnetic field lines are in a particular region, the stronger the magnetic field in that area. When observing a magnetic field diagram, denser clusters of lines indicate a stronger magnetic influence, while more spaced-out lines represent a weaker field. This visualization helps in understanding how magnetic forces vary in space. Other methods mentioned, such as measuring the distance from the magnet, observing the temperature of the magnet, or assessing the color of the magnet, do not provide a reliable measure of magnetic field strength. The distance from a magnet can affect the strength of the magnetic force felt at that distance, but it does not directly measure field strength itself. Temperature may influence a magnet's performance, especially in terms of its magnetic properties, but it does not directly indicate field strength. Lastly, color does not correlate with the magnetic strength of a magnet; the hue is more related to the material composition or coatings of the magnet rather than its magnetic properties.

## 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](mailto:hello@examzify.com).**

**Or visit your dedicated course page for more study tools and resources:**

**<https://comprehensiveguidetocontact.examzify.com>**

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

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