

Magnetism Quiz Answer Key PDF

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Which part of the Earth acts like a giant magnet?

- A. The atmosphere
- B. The core ✓**
- C. The crust
- D. The mantle

What happens when like poles of two magnets are brought close together?

- A. They attract each other.
- B. They repel each other. ✓**
- C. They become demagnetized.
- D. They neutralize each other.

Which of the following materials is typically magnetic?

- A. Aluminum
- B. Copper
- C. Iron ✓**
- D. Plastic

What is the primary characteristic of a permanent magnet?

- A. It loses its magnetism when heated.
- B. It requires an electric current to function.
- C. It retains its magnetism without external influence. ✓**
- D. It only works in the presence of another magnet.

What is the angle difference between magnetic north and true north called?

- A. Magnetic inclination
- B. Magnetic declination ✓**
- C. Magnetic deviation
- D. Magnetic resonance

Who is credited with formulating the laws of electromagnetism?

- A. Isaac Newton
- B. Albert Einstein
- C. James Clerk Maxwell ✓**
- D. Nikola Tesla

Discuss the historical discovery of lodestones and their impact on the understanding of magnetism.

Lodestones, naturally magnetized pieces of mineral magnetite, were discovered in ancient times and were the first known magnets. They led to the development of the compass and advanced the study of magnetism.

Which of the following are properties of magnetic fields? (Select all that apply)

- A. They are visible to the naked eye.
- B. They exert forces on other magnets. ✓**
- C. They can be created by electric currents. ✓**
- D. They only exist in metals.

Which law states that a changing magnetic field induces an electric current?

- A. Ampère's Law
- B. Faraday's Law of Induction ✓**
- C. Ohm's Law
- D. Coulomb's Law

Which of the following are types of magnets? (Select all that apply)

- A. Permanent magnets ✓**
- B. Temporary magnets ✓**
- C. Electromagnets ✓**

D. Gravitational magnets

What is the primary use of an MRI machine in medicine?

- A. To measure blood pressure
- B. To create images of the body's internal structures ✓**
- C. To monitor heart rate
- D. To perform blood tests

Explain how a magnetic field is generated around a wire carrying an electric current.

A magnetic field is generated around a wire when an electric current flows through it, due to the movement of electric charges. This is described by Ampère's Law.

Describe the principle of operation of an electric motor using magnetism.

An electric motor operates on the principle that a current-carrying conductor placed in a magnetic field experiences a force, causing it to rotate. This is due to the Lorentz force.

Discuss the significance of Earth's magnetic field for life on the planet.

Earth's magnetic field protects the planet from harmful solar winds and cosmic radiation, helps in navigation by aligning compasses, and plays a role in animal migration.

How does Faraday's Law of Induction apply to the generation of electricity in power plants?

Faraday's Law of Induction states that a changing magnetic field induces an electric current. In power plants, this principle is used to generate electricity by rotating coils of wire within a magnetic field.

Explain the difference between magnetic declination and magnetic inclination.

Magnetic declination is the angle between magnetic north and true north, while magnetic inclination is the angle between the magnetic field lines and the surface of the Earth.

What are the effects of Earth's magnetic field? (Select all that apply)

- A. It protects the planet from solar winds. ✓**
- B. It aligns compasses to magnetic north. ✓**
- C. It causes earthquakes.
- D. It affects animal migration. ✓**

Which of the following scientists contributed to the understanding of magnetism? (Select all that apply)

- A. Michael Faraday ✓**
- B. James Clerk Maxwell ✓**
- C. Albert Einstein
- D. Galileo Galilei

Which of the following statements about electromagnets are true? (Select all that apply)

- A. They require an electric current to function. ✓**
- B. They are always stronger than permanent magnets.
- C. Their magnetic field can be turned on and off. ✓**
- D. They cannot be used in electronic devices.

What are some applications of magnetism in technology? (Select all that apply)

- A. Magnetic storage in hard drives ✓**
- B. MRI machines in medicine ✓**
- C. Solar panels
- D. Electric motors ✓**