Magnetic Wonders

A. Choose the correct answer:

- 1. What causes a magnetic field around a current-carrying conductor?
 - a) The motion of protons
 - b) The motion of electrons
 - c) The presence of neutrons
 - d) The gravitational force

2. Which of the following materials is not magnetic?

- a) Iron
- b) Cobalt
- c) Copper
- d) Nickel
- 3. What happens when like poles of two magnets are brought close to each other?
 - a) They attract each other
 - b) They repel each other
 - c) They lose their magnetism
 - d) They merge into one magnet

B. Fill in the Blanks:

- 1. A ______ is a region around a magnet where magnetic forces can be felt.
- 2. The Earth behaves like a giant _____, with its magnetic field extending into space.
- 3. The force of attraction or repulsion between two magnets is strongest at their

C. Case Study:

A scientist, Dr. Mehta, conducted an experiment to study the effect of magnets on various materials. She took four different materials: iron nails, plastic beads, copper wires, and aluminum foil. She then brought a strong bar magnet close to each object and recorded her observations:

- The iron nails were strongly attracted to the magnet.
- The plastic beads showed no reaction.
- The copper wires were not attracted to the magnet.
- The aluminum foil showed a weak interaction.

Questions & Answers:

- 1. What was the purpose of Dr. Mehta's experiment?
- 2. Why were iron nails strongly attracted to the magnet?
- 3. Why did plastic beads not react to the magnet?
- 4. What can you conclude about aluminum's interaction with magnets based on the experiment?

D. Short Answer Questions:

- 1. What is a magnetic field?
- 2. How does the Earth generate its magnetic field?
- 3. Name three applications of magnets in daily life.

E. Long Answer Questions:

- 1. Explain the difference between permanent and temporary magnets with examples.
- 2. How does an electromagnet work? Discuss its applications.
- 3. Describe the working principle of a magnetic compass and how it helps in navigation.