

CHAPTER - I EXPLORING MAGNETS

I. VERY SHORT ANSWER TYPE (2 MARKS):

1. What are magnetic substances? (Pg: 1.2)

Magnetic substances possess the ability to be attracted by a magnet or to undergo magnetisation.

Examples: Iron, nickel, cobalt, steel, magnetite.

2. Write the name of an iron ore that shows magnetic properties

Magnetite (Fe_3O_4)

3. Can we magnetise a magnetic material by bringing it closer to a magnet repeatedly? (Pg: 1.4)

Yes, magnetic materials like iron, cobalt and nickel can be magnetised by rubbing them with another magnet, touching with a magnet or by passing an electric current.

4. Write the properties of magnetic poles. (Pg: 1.3)

Attractive and repulsive property

Directive property

Law of magnetic poles

Pair property.

5. What is magnetism? (Pg: 1.2)

It is a force that attracts or repels objects because of their magnetic fields.

All materials contain magnetism, but it is typically so weak that it is invisible.

6. Classify the following substances in magnetic & non-magnetic substances: Aluminium, wood, paper, iron, cobalt, brass, nickel.

Magnetic substances: Non-magnetic substances:

1. Iron

1. Wood.

2. Nickel

2. Paper

3. Cobalt

3. Aluminium

4. Brass.

7. What are essential uses of the magnet? (Pg:1.4)

The magnetic needle is used in constructing marine compass.

Magnets are used to separate iron ores from ordinary rocks and the process is called magnetic separation of ores.

Powerful electro-magnets are used in electric cranes which can lift heavy weights.

Electromagnets are extensively used in tape recorders, speakers, dynamos & motors.

8. Explain about the lodestones. (Pg:1.1)

Lodestones are naturally occurring black stones that were the first magnets ever discovered.

Many people believed that lodestones possessed medical virtues.

Lodestone was shown to always align itself in a north-south direction when it was suspended freely.

9. What happens if a magnet is broken into two pieces?

When a magnet is broken into two pieces, neither piece loses its magnetism, each broken piece becomes an independent magnet,

with its own north pole and south pole.

10. Name the shapes of some artificial magnets.
Bar magnet, V-shaped magnet, cylindrical.

11. Suggest some methods that are used for making artificial magnets.
Single touch method and double touch method.

12. Why is the magnetic strip used in the door of the refrigerators?
Magnetic strips are used in refrigerator doors to create an airtight seal.

13. Name the materials which are used to make permanent magnets.
Steel, cobalt.

SHORT ANSWER TYPE (3 MARKS):

1. A magnetic needle is placed over a strong bar magnet and made to move freely. In which direction the magnetic needle will come to rest?

If a magnetic needle is placed near a strong bar magnet and allowed to move freely, the north pole of the needle points towards the south pole of the bar magnet, and the south pole of the needle points towards the north pole of the bar magnet.

2. Write the name of any three types of magnets and where are the poles located?
Bar magnet: The poles are located directly at the two opposite ends.

Horse shoe magnet: The poles are located at the two free ends that bend around to form the classic 'U' shaped.

Cylindrical magnet: The poles are located at the two circular ends of the cylinder.

3. How can we identify by south pole in a bar magnet? (Pg:103)

If a magnet is freely suspended it comes to rest always showing north and south directions. The end of the magnet which points towards Earth's north is called north pole (or) North pole of the magnet and the ends which points towards south is called South pole of the magnet.

4. Distinguish between magnetic & non-magnetic Substances. (Pg:102)

Magnetic Substance	Non-magnetic Substance
Materials that are attracted by a magnet are called magnetic materials.	Materials that are not attracted by a magnet are called non-magnetic materials
Objects made of materials such as iron, cobalt & nickel are magnetic objects	Modern coins are made of uniform mixtures of different metals so they become non-magnetic
Example: Iron filings, nail, Key.	Example: rubber, coins, straw.

5. What will happen if the northpole of a magnet is brought near
- South pole
 - The north pole of a freely suspended magnet?

- If a north pole of a magnet is brought near south pole of a magnet it attracts.
- If the northpole of a magnet is brought near the northpole of a freely suspended magnet, they will repel each other.

6. The property of attraction cannot be used to test whether a given object is a magnet or not. Give reason.

The property of attraction cannot be used to test whether an object is a magnet or not because a magnet attracts not only other magnets but also magnetic materials such as iron, nickel and cobalt.

The sure test for a magnet is the property of repulsion.

7. It is suggested that electronic devices should be kept away from magnetic objects. why?

Electronic devices should be kept away from magnetic objects because strong magnets can affect their electronic circuits and stored data.

Magnets may interfere with the proper working of devices such as computers, mobile phones and televisions.

8. Does an object kept near to the magnet experience more force as compared to an object kept a little away?

Yes, an object kept near a magnet experiences more magnetic force than an object kept farther away. This is because the magnetic force is strongest close to the magnet and decreases as the distance from the magnet increases. Therefore objects nearer to the magnet are attracted more strongly.

Q.10: Pg. no: 1.5

Q.11: Refer VSA Q.No: 9.

III LONG ANSWER TYPE (5 MARKS)

1. In a navigation ship the captain uses compass which works on the principle of the directionality. explain this briefly.

Ans: A compass is an instrument used to find directions. It contains a small magnetic needle that can rotate freely. The magnetic needle always comes to rest in the north-south direction because the Earth acts like a giant magnet.

In a navigation ship, the captain uses a compass to determine the correct direction while sailing. The north-seeking end of the needle points towards the north and the other end points towards the south. By observing the compass needle, the captain can navigate the ship accurately even when landmarks are not visible.

Thus a compass works on the directional property of a magnet.

3. Describe the construction and working of a magnetic compass.

CONSTRUCTION OF A MAGNETIC COMPASS:

A magnetic compass consists of a small magnetic needle mounted on a sharp pivot so that it can rotate freely in a horizontal plane. The needle is enclosed in a circular box marked with directions such as North (N), South (S), East (E), West (W).

WORKING OF A MAGNETIC COMPASS:

When the compass is placed on a level surface, the magnetic needle rotates freely and comes to rest in the north-south direction. This happens because the Earth acts like a giant magnet. The north-seeking end of the needle points towards the south. By observing the position of the needle, directions can be identified easily.

Thus, a magnetic compass helps in finding directions and is widely used in navigation by sailors, pilots and travellers.

Q.no: 2 - Pg: 1.3

Q.no: 4 - Pg: 1.3

Q.no: 5 - Pg: 1.2 & 1.3.