Revision Notes

Class - 6 Science

Chapter 13 - Fun with Magnets

Magnet:

- Magnets are compounds that have the ability to attract materials such as
- **iron, cobalt, and nickel**.
- **Magnes**, an ancient Greek shepherd, was the first to discover magnet.
- There are two type of magnet, as

1. **Natural Magnet** :
   - The magnet that is found in nature is a Natural Magnet.
   - Magnetite, Lodestone are examples of Natural Magnets.
2. **Artificial Magnet** :
   Artificial magnets are created by humans.

Magnetic Force:

- The magnetic force is the force that a magnet uses to attract an object to itself.
- When two magnets are close enough to touch or come into contact, they exert a force on each other, similar to how electrical charges do. The magnetic force is this force.

Poles of a magnet:

- Magnetic materials (such as iron filings) do not adhere equally to all areas of a magnet when brought close to it. They stick to certain areas of the magnet more than others. These are known as the **magnet's poles**.
- At the poles, magnetic forces are the strongest.
- Every magnet is bipolar, which means it has two poles at the ends.
- The **North** and **South** poles are the two poles of a magnet.
- **North Pole:**
  The north seeking end, often known as the North Pole, is the end that points northward.
- **South Pole:**
  The end pointing south is known as the South Pole or the south seeking.
- The **N-S axis** of a **freely hanging magnet** is always aligned.
- Poles that are **similar repel** each other, while poles that are **dissimilar attract** each other.
- Magnetic poles are always found in **groups of two**.

- A bar magnet is divided into four poles when split in half, with a North and South Pole on each side.

Different types and shape of Magnets:
Magnets are categorised into numerous categories based on their shapes, these are listed as below;
1. Bar magnet
2. Ball-ended magnet (Dumb-bell)
3. Horseshoe magnet
4. Cylindrical magnet
5. Magnetic needle
6. Artificial magnet
7. Loadstone (natural magnet)
8. Ring or disc shape magnet

Temporary Magnets:
- Temporary magnets are magnets that are only used for a **limited period of time.**
- **Iron bar magnets** are used as temporary magnets.

Permanent Magnets:
- Permanent magnets have a **long lifespan**.
- They're made of **steel** or an **AlNiCo alloy**, which combines aluminium, nickel, and cobalt.

Classification of substances based on attraction to Magnets:
- **Magnetic Substances:**
  The Magnets are compounds that have the ability to attract materials such as **iron, cobalt,** and **nickel**, etc.

Non-magnetic Substances:
Nonmagnetic materials include **plastic, wood, paper, rubber, most metals** and other materials that are not attracted to a magnet.

Methods to make your own Magnet:
1. **Single Touch Method:**
   The iron object becomes magnetised when a magnet is used to massage it along its length from one end to the other, similar to combing one's hair.
2. **Double Touch Method:**
   The bar or the object becomes a magnet when it is rubbed by two

powerful bar magnets of equal strength with their opposite poles at the centre, in opposite directions.

3. **Using Electric Current:**
   The magnetic bar is inserted inside a conductor's coils, and current is passed via the wire coils.

Properties of Magnet:

1.The **North Pole** and the **South Pole** are the two poles of a magnet.
2.Poles that are **similar repel** one other.
3.**Opposing** poles are **attracted** to one another.
4.Magnetic **poles** are always found in **groups of two**.
5.There is no magnet that compares to a monopolar magnet. When it comes to magnets, they are always **bipolar**.

Applications of Magnet:

- **Compass Needle**
  The compass consists of a small glass container with a magnetised needle pivoting on an aluminium nail. The needle is unrestricted in its rotation because the earth is also a gigantic magnet, it points north-south. The magnetic field of the earth is aligned with the compass.
- In factories, it's used to move massive amounts of iron, such as scrap iron.
- **Electromagnet** is used in doorbells and chimes.
- **Permanent magnets** in loudspeakers are used by surgeons in hospitals to remove steel splinters from wounds.
- Used to separate iron and steel from non-magnetic materials in the building of telephones, electric bells, and other devices.
- A **strip of magnetic material** on credit cards, ATM cards, and identity cards retains information.
- Magnets are used in television and computer monitors.
- Magnetic material is used to store information on computer hard discs, as well as audio and video cassettes.
- In the scrapyard, magnets are used to pick up iron-based materials.

Demagnetisation, (loss of magnetic property of a Magnet):

- When a magnet is **hammered, heated, improperly stored**, or **dumped with force** and strikes against a hard substance, it loses its magnetic property.
- Each pole will destroy the other by induction if two bar magnets are not

stored with their similar poles pointing in the same direction.

- Dropping from a height dissimilar poles alongside each other is the best way to store bar magnets in pairs.
- A piece of soft iron should be placed across the poles of a horseshoe magnet when storing it.

Taking care of Magnets:

- Magnets should be stored in non-magnetic materials such as cardboard or wood when not in use.
- Keepers must be used to safeguard magnets.