6

Magnetism

Magnet

- The substances having the property of attracting iron in known as magnets.
- A magnet has two poles.
- The tip which points to the north direction is called the North pole.
- The tip which points to the south direction in called the South pole.
- Magnet always comes in rest in north-south direction when suspended freely.
- Similar poles repel each other and dissimilar poles attract each other.

Types of magnet

There are mainly two types of magnet

(i) Natural magnet

(ii) Artificial or man-made magnet

Natural Magnet

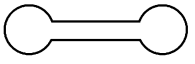
- The stones or minerals having magnetic properties are called natural magnets. e.g. Iodestone.
- These magnets have low magnetism.
- These magnets are brittle and connot be used in laboratories.
- These magnets are of irregular shape.
- Magnetite is a natural magnet.
- Magnetite contains iron.

Artificial Magnet

- The magnet which is made by man by magnetising small pieces of iron or nickel is called artificial magnets.
- Strong magnets are made after magnetisation of some metals or alloys usually called alnico by special methods.
- Mostly they are made of steel.
- Artificial magnets are prepared in different shapes. These are
- **Bar Magnet** A magnet in a shape of a rod or a bar is called a bar magnet.

Bar Magnet

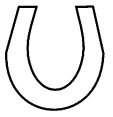
- **Circular Ends Magnet** It is in the shape of thin rod and its ends are circular.



Circular Ends Magnet

- **Magnetic Needle** It is a small thin leaf made of steel. It is sharp at ends and thick at middle. It is balanced on a nail.
- **Horse-shoe magnet** It is turned in the shape of horse-shoe.
- **Compass Needle** It is a small magnetic needle which is placed in a small box. A glass plate is fixed on it. North-south ends are printed in.

Magnetic Needle



Horse-shoe magnet

Horse-shoe magnet

Magnetic and Non-Magnetic Materials

- The materials which get attracted towards a magnet are called **magnetic materials**. e.g. Iron, nickel, cobalt, etc.
- The materials which are not attracted towards a magnet are called non-magnetic materials. e.g. Wood, Plastic, sand, etc.

Electric Bell

- An electric bell contains a coil of wire wound on an iron core that acts as an electromagnet. An armature having a hammar at one end is kept close to the electromagnet facing its poles.
- For making the bell ring continuously, a device (interrupter) is used to keep the hammer moving back and forth.

Practice Exercise

1. Which of the following material attracts toward Magnet?
(a) Pen (b) iron
(c) Wood (d) None of these

2. Magnets was first found in a place called
(a) Asia (b) Greece
(c) Denmark (d) Australia

3. Pole which points toward north is called
(a) N-Pole (b) S-Pole
(c) W-Pole (d) E-Pole

4. When a magnet is freely suspended it always comes in
(a) east direction
(b) north-south direction
(c) west direction
(d) north-east direction

5. The wood magnet is derived from the name of a/an ..... in ..... called ..... . Magnetite contains .....
Choose the correct word sequence to fill the blanks.
(a) river, Australia, iron, gold
(b) island, Greece, Magnesia, iron
(c) pond, Magnesia, iron, silver
(d) island, Greece, iron, magnesia

6. Dissimilar poles of two magnets
(a) first repel then attract
(b) neither repel not attract
(c) attract each other
(d) repel each other

7. Which of the following devices is used to find the direction by soldiers?
(a) Magnetic pencil
(b) Magnetic compass
(c) Bar magnet
(d) Electromagnet

8. All the magnetic materials, loss their magnetic properties when
(a) dipped in water
(b) dipped in oil

(c) brought near a piece of iron
(d) strongly heated

9. A substance consisting of a coil of wire with an iron core and in only magnetised when an electric current flow through it is called
(a) magnet (b) electromagnet
(c) battery (d) coil

10. On winding the wire around soft iron, the temporary magnet becomes
(a) horse-shoe magnet
(b) electrode
(c) domain
(d) electromagnet

11. When the magnet is brought near the iron needle, it behaves as
(a) non-magnetic material
(b) electromagnet
(c) permanent magnet
(d) temporary magnet

12. On heating the magnet,
(a) there is on effect on magnet
(b) it becomes permanent magnet
(c) it becomes strong magnet
(d) its magnetic properties are destroyed

13. The magnet used in electric bell is
(a) temporary magnet
(b) permanent magnet
(c) bar magnet
(d) None of the above

14. Magnets are stored in
(a) thin papers (b) thin clothes
(c) electromagnets (d) keepers

15. Which of the following is/are magnetic materials?
(a) Iron (b) Nickel
(c) Cobalt (d) All of these

16. Which of the following is/are non-magnetic materials?
(a) Wood
(b) Glass
(c) Iron
(d) Both (a) and (b)

17. Among given which is suitable for making permanent magnets.
(a) steel (b) soft iron
(c) silicon-steel (d) All of these

18. Which of the following statement(s) is/are true?
(a) Artificial magnets are cheaper than the natural magnets.
(b) A magnet can be broken into N and S poles
(c) The distance between the North and South poles of a magnet is its effective length
(d) Poles of a magnet lie exactly at its ends

19. Electromagnets are made of
(a) steels (b) copper
(c) brass (d) soft iron

Answers

1	*(b)*	2	*(b)*	3	*(a)*	4	*(b)*	5	*(b)*	6	*(c)*	7	*(b)*	8	*(d)*	9	*(b)*	10	*(d)*
11	*(d)*	12	*(d)*	13	*(c)*	14	*(d)*	15	*(d)*	16	*(d)*	17	*(a)*	18	*(c)*	19	*(d)*		