Fun with Magnets

Practice Sheet

Estimate Time : 20 minutes **Maximum Marks : 10**

Instructions

- This test contains 6 questions.
- Q.1 to Q.3 are one-mark questions, to be answer in about one word or one sentence.
- Q.4 & Q.5 are two-mark questions, to be answer in about 50 words.
- Q.6 is three-mark question, to be answer in about 80 words.

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1. What are Natural Magnets?

2. Why compass needle always points in north direction.

3. What is magnetic keepers.

4. What is Electromagnet and write down four uses of it.

5. Why a freely suspended magnet aligns in a north-south direction.

OR

Write down advantage of electromagnet over permanent magnet.

6. Write down the properties of Magnet.

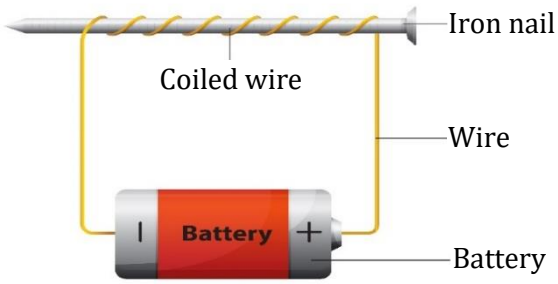
Practice Sheet Solutions

1. Natural occurring minerals or ores having magnetic properties are called 'Natural magnets'.

2. A magnetic compass needle is actually a thin magnet. the needle points in north direction because it aligns in the direction of earth's magnetic field.

3. A magnetic keeper is a piece of soft iron which is used to help preserve the strength of the magnet.

4. An **electromagnet** is a coil of wire wrapped around an iron core. When an electric current flows through the coil, it creates a magnetic field. This produces temporary magnetism in the iron core. Thus, magnetism of current carrying coil and iron core together produces a strong magnetic field.



An electromagnet

(1) They are used in radio and stereo speakers.

(2) They are used in almirah and refrigerator doors to keep them in closed position.

(3) They are used on video and audio cassette tapes.

(4) They are used on the hard discs and floppies for computers.

5. Earth has its own magnetism, similar to the magnetism of a bar magnet. The geographical north pole is the magnetic south pole, whereas the geographical south pole is the magnetic north pole. The north pole of a freely suspended magnet is attracted by the magnetic south pole of the earth. Hence, a freely suspended bar magnet points in the north-south direction.

OR

Advantage of electromagnet over permanent magnet

(i) An electromagnet can produce a strong magnetic field as compared to a permanent magnet.

(ii) The strength of magnetic field of an electromagnet can be changed easily by changing the current or the number of turns in the coil.

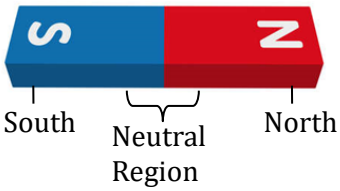
(iii) The polarity (north pole or south pole) of the electromagnet can be changed by reversing the direction of the current.

(iv) An electromagnet can be easily magnetised or demagnetised as per the requirement.

6. **Properties of a magnet**

Attractive nature

When iron filings are put near a bar magnet, the magnet attracts iron filings towards it. The attracting power is maximum (see figure) near the ends (poles) and minimum at the middle (neutral region).



A magnet has two poles

Directive property

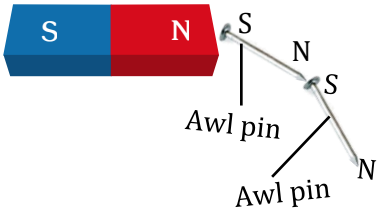
When a magnet is suspended freely, it aligns itself to north-south direction. The pole of the bar magnet pointing towards north direction when suspended freely is called 'north pole (or north seeking pole)'. The pole of the bar magnet pointing towards south direction when suspended freely is called 'south pole (or south seeking pole)'.

Poles exist in pairs

In a bar magnet there are always two poles which are equal in strength and opposite in nature. In other words, 'a magnet is always a dipole'.

Inductive nature

When certain substances like iron, steel, cobalt, nickel are placed near a bar magnet, they acquire magnetisation called 'induced magnetisation'. The phenomenon is called 'magnetic induction'. It involves inducing opposite pole in a magnetic material like iron on the side facing the magnetic pole (see figure).



Magnetic induction