

Ch. - 6 : Magnetism

classmate

Date _____

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B. Short/Long Answer Questions :

1. What is a magnet?

→ A substance which can attract iron is called a magnet.

2. What are magnetic & non-magnetic substances? Give two examples of each.

→ The substances which are attracted by a magnet are called magnetic substances.

Ex. - iron, steel,

The substances which are not attracted by a magnet are called non-magnetic substances.

Ex. - paper, wood,

3. What are natural & artificial magnets?

→ The one of magnetite (or lodestone) found in nature are called the natural magnets.

The magnets that are made by us are called artificial magnets.

4. How is an artificial magnet prepared from a natural magnet?

→ Artificial magnets are prepared by imparting the properties of natural magnets to the magnetic substance by rubbing with the magnet or by the process of induction.

5. State two ways of magnetising an iron piece.

→ The two ways of magnetising an iron piece are : -

(i) By single touch method.

(ii) By double touch method.

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6. How can magnetic properties of a magnet be destroyed?

→ The magnetic properties of a magnet can be destroyed by the following five ways:

- By rough handling.
- By hammering the magnet repeatedly.
- By dropping the magnet repeatedly on a hard surface.
- By heating the magnet to a high temperature.
- By passing alternating current through a coil around the magnet keeping it in east-west direction.

7. Why does a freely suspended magnet always rest in north-south direction?

→ If we suspend a magnet such that it is free to swing, we see that it always rests in the north-south direction.

The reason is that like poles repel & unlike poles attract. ∴, there must be the magnetic south pole of the earth in the geographic north so that it attracts the north pole of the suspended magnet. Similarly, the magnetic north pole of the earth must be in the geographic south so as to attract the south pole of the suspended magnet.

8. Draw diagrams of artificial magnets of four different shapes.

→ Page-79 (Fig. 6.1 Artificial magnets)

9. Why are artificial magnets preferred over the natural magnets?

→ Because natural magnets are found quite in irregular & odd shapes. Natural magnets are weak in strength. So, they are not of much use.

But artificial magnets are made of iron & steel in various shapes & sizes as required for the use. These magnets are strong.

10. Describe an experiment to show that the maximum attractive property is at the poles of a magnet.

→ Page-80 (If a bar magnet is brought near small iron nails, little in the middle of the magnet. Fig. 6.3)

11. State four important properties of a bar magnet.

→ Four important properties of a bar magnet are:-

- A magnet attracts small pieces of iron.
- A magnet always rests in north-south direction, if it is free to swing.
- Like poles repel each other & unlike poles attract each other.
- Poles always exist in pairs, they cannot be isolated.

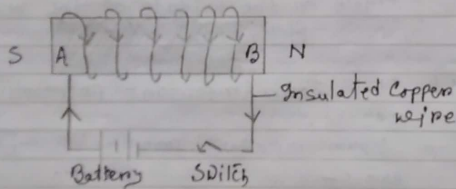
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Q.12. Same as Q.10.

Q.13. Describe a method by which an iron bar can be made a magnet.

→ An iron bar can be made a magnet by 'Electrical Method'.

Electrical Method :- Take the given iron bar AB. Wound several turns of insulated copper wire over the bar. Connect the ends of the wire to a battery through a switch as shown in the fig. Press the switch to pass current. After some time, the bar AB becomes a magnet.



The end A of the bar at which the current enters the coil in clockwise direction becomes the south pole (S) & the end B of the bar becomes the north pole (N).

Q.14. How are the magnets kept safely? What is the role of keepers in storing magnets?

⇒ To store magnet 'magnetic keepers' are used. The magnetic keepers are pieces of soft iron.

Keepers are soft iron plates that are placed on the poles of a magnet to prevent the demagnetisation of magnet.

Q.15. Magnetic field of a magnet :- The space around a magnet in which if a magnetic substance such as small piece of iron, are placed, they get attracted towards the magnet, is called the magnetic field.

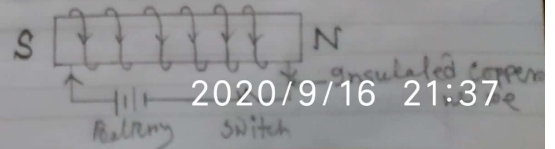
2nd part :- Page - 82

(Recognition of the magnetic field around a magnet) :- If a magnet is placed..... It is strong nears the magnet while weak at a distance from the magnet.

Fig. - 6.7

Q.16. 1st part :- Take the given iron bar AB. Wound several turns of insulated copper wire over the bar. Connect the ends of the wire to a battery through a switch. Press the switch to pass current. After some time the iron bar becomes a magnet.

2nd part :-

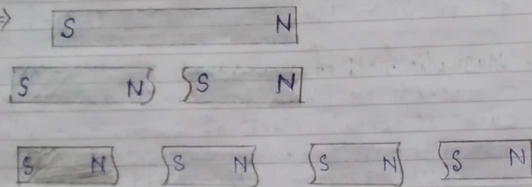


Q.17. State two ways of increasing the strength of an electromagnet.

→ The strength of an electromagnet can be increased :-

- (i) By increasing the current in the coil.
- (ii) By increasing the total numbers of turns of the coil.

Q.18 →



Q.19 State three important uses of a magnet?

⇒ Three important uses of a magnet are -

- (i) Strong electromagnets are used for loading & unloading ships of iron.
- (ii) Permanent magnets are used in electrical measuring instruments such as galvanometers, ammeters, voltmeters etc.
- (iii) Magnets are used in electric motors, dynamo, speakers, computers etc.

Q.20. What is magnetic induction? Explain with the help of a diagram.

⇒ Magnetic induction is the process in which a piece of iron temporarily behaves like a magnet in the presence of another magnet.

Explain :- When a piece of iron is placed nearby (or brought near) a magnet, it becomes a magnet i.e., it acquires the properties of a magnet. But as soon as the magnet is removed, the iron piece no longer remains a magnet. This process is called magnetic induction.

Diagram :-

- (a) Page-83 (Fig. 6.9 No pin clings to the nail).
- (b) Page-83 (Fig. 6.10 Some pins cling to the nail)
- (c) Page-84 (Fig. 6.11 On removal of the magnet, pins fall down)

Thus by magnetic induction, the nail or bar becomes a temporary magnet only in the presence of an external magnet.

Q.21. ⇒ If we suspend a magnet such that it is free to swing, we see that it always rests in the north-south direction. The north pole of the magnet lies in the geographic north direction & the south pole of the magnet lies in the geographic south direction.

The reason is that like poles repel & unlike poles attract.

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Therefore, there must be the magnetic south pole of the earth in the geographic north so that it attracts the north pole of the suspended magnet. Similarly, the magnetic north pole of the earth must be in the geographic south so as to attract the south pole of the suspended magnet.

Q.22. State three differences between temporary & permanent magnet?

⇒ Temporary Magnet Permanent Magnet.

- | | |
|--|--|
| (i) It is made of soft iron. | (i) It is made of steel. |
| (ii) Its magnetic strength can be changed. | (ii) Its magnetic strength can not be changed. |
| (iii) It is easily demagnetised. | (iii) It is not easily demagnetised. |

Q.23. State three ways of demagnetising a magnet?

⇒ A magnet can be demagnetised by the following five ways:

- By rough handling.
- By hammering the magnet repeatedly.
- By dropping the magnet repeatedly on a hard surface.
- By heating the magnet to a high temperature.

(V) By passing alternating current through a coil around the magnet keeping it in east-west direction.

Q.24. Suggest one way to recognise the magnetic field of the earth.

⇒ If we suspend a magnet such that it is free to swing, we see that it always rests in the north-south direction. The north pole of the magnet lies in the geographic north direction & the south pole of the magnet lies in the geographic south direction. So it aligns itself in N-S direction.

Q.25. (a) For the temporary magnet, the material of core is soft iron.

(b) For the permanent electromagnet, the material of core is steel.

Q.26. Making of an electromagnet:-

Fig.- 6.17 Making of an electromagnet Page- 86.

Take a long piece of insulated copper. Wrap it around a long screw (nail) as shown in the fig. Attach the free ends of the wire to the terminals of a dry cell. Now you have an electromagnet with which you can pick up small pieces of iron such as paper clips or filings of iron. However, if two or three cells are joined in series to increase the current in the coil, the

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electromagnet will show stronger magnetic attraction,

Q.27. \Rightarrow Page - 81 (Activity - 2)
Explain both the points (1 & 2) with the help of diagram.

Q.28. Magnetic Keepers :- Magnetic Keepers are soft iron bars placed at the either end of the pairs of magnets & it is used to avoid self-demagnetisation of magnets.

The material of magnetic keepers are small pieces of soft iron.

Q.29. How are the north & south poles of a magnet located? Explain.

\rightarrow Suspend a bar magnet with a silk thread from a wooden ~~stick~~ stand as shown in the Fig. - The magnet swings for some time & then eventually comes to rest in a particular direction i.e., north-south direction. If we disturb the magnet a little, the magnet again comes to rest in the north-south direction.

Fig. - 6.2 A freely suspended magnet rests in north-south direction.

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