

Very Short Answer Questions

Q.1. Paheli and her friends were decorating the class bulletin board. She dropped the box of stainless-steel pins by mistake. She tried to collect the pins using a magnet. She could not succeed. What could be the reason for this?

[NCERT Exemplar]

Ans. The pins are made of stainless steel which is a non-magnetic material.

Q.2. How will you test that 'tea dust' is not adulterated with iron powder?

[NCERT

Exemplar]

Ans. By using a magnet. If it has iron powder they will stick on to the magnet.

Q.3. What is magnetic force?

Ans. The force exerted between magnetic poles, producing magnetisation is called magnetic force.

Q.4. What is an electromagnet?

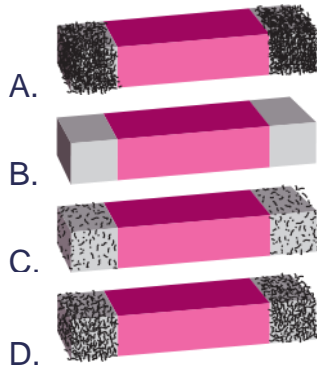
Ans. A type of magnet whose magnetic field is produced by flow of electric current is called an electromagnet.

Q.5. What is demagnetisation?

Ans. Magnets lose their magnetic properties when hammered, heated, dropped from a height or by not stored properly. This lose in magnetic property is termed as demagnetisation.

Short Answer Questions

Q.1. Four identical iron bars were dipped in a heap of iron filings one by one. The figures given below show the amount of iron filings sticking to each of them.

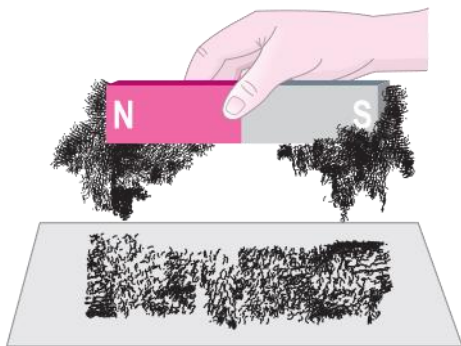


- (i) Which of the iron bars is likely to be the strongest magnet?
(ii) Which of the iron bars is not a magnet? Justify your answer.

Ans. (i) A

(ii) B because there are no iron filings sticking to it.

Q.2. Boojho dipped a bar magnet in a heap of iron filings and pulled it out. He found that iron filings got stuck to the magnet as shown. [NCERT Exemplar]



- (i) Which regions of the magnet have more iron filings sticking to it?
(ii) What are these regions called?

Ans. (i) The end of the magnet has more iron filings attached to it.
(ii) These regions are called poles of the magnet.

Q.3. Distinguish between the following.

Q. Magnetic materials and Non-magnetic materials

Ans.

S. No.	Magnetic materials	Non-magnetic materials
1	Materials which get attracted towards a magnet. For example, iron, copper, etc.	Materials which do not get attracted towards magnets. For example, steel, wood, etc.

Q. Natural magnets and Artificial magnets

Ans.

S. No.	Natural magnets	Artificial magnets
1	A magnet which comes naturally from the earth. For example, lodestone.	Magnets produced by the action of electrical circuits. For example, electromagnet.

Q.4. A toy car has a bar magnet laid hidden inside its body along its length. Using another magnet how will you find out which pole of the magnet is facing the front of the car? [NCERT Exemplar]

Ans. If the front of the toy car gets attracted to the north pole of the given magnet then it is the south pole of the bar magnet hidden inside the car.

Q.5. You are provided with two identical metal bars. One out of the two is a magnet. Suggest two ways to identify the magnet. [NCERT Exemplar]

Ans.

- i. By suspending the metal bars
- ii. By attracting iron filings
- iii. Using another magnet (*Any two*)

Q.6. Study the pictures carefully and answer the questions that follow.



Will the two magnets attract or repel each other? Why?

Ans. The two magnets will repel each other because like poles repel.

Q.7. Write four uses of magnets.

Ans.

- i. In magnetic compass to find direction;
- ii. In factories to lift heavy masses;
- iii. Used in construction of telephones;
- iv. To separate magnetic materials from non-magnetic materials.

Q.8. Boojho kept a magnet close to an ordinary iron bar. He observed that the iron bar attracts a pin as shown below.



What inference could he draw from this observation? Explain.

Ans. The magnetic properties are induced into the iron bar and it acts like a magnet till the magnet is kept near it.

Q.9. How can a magnet be demagnetised?

Ans. Magnets can be demagnetised by hammering, heating to red hot or by dropping from some height.

Long Answer Questions

Q.1. Three identical iron bars are kept on a table. Two out of three bars are magnets. In one of the magnets the North–South poles are marked. How will you find out which of the other two bars is a magnet? Identify the poles of this magnet. [NCERT Exemplar]

Ans.

- Suspend the bar magnet with marked poles freely using a stand and thread.
- Slowly bring another magnet near the south pole of the suspended magnet.
- If the magnet attracts towards it, that will be the north pole of another magnet and vice versa.
- Repeat the above steps with the third magnet.

Unlike poles attract and like poles repel each other.

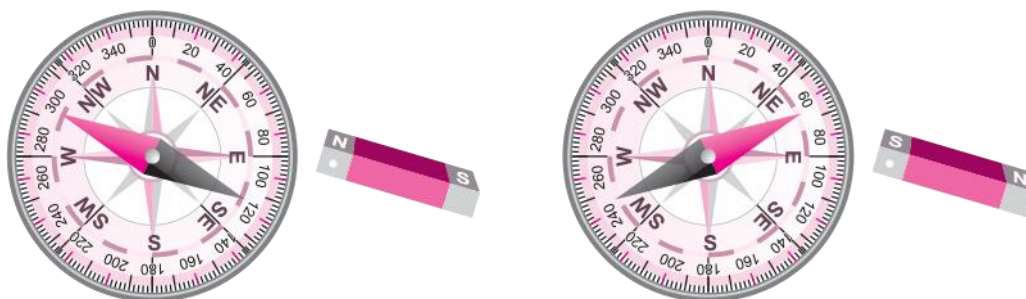
Q.2.



The figure given above shows a magnetic compass. What will happen to the position of its needle if you bring a bar magnet near it? Draw a diagram to show the effect on the needle on bringing the bar magnet near it. Also draw the diagram to show the effect when the other end of the bar magnet is brought near it.

[NCERT Exemplar]

Ans. When the north pole is brought near the compass, the needle of the compass gets deflected towards left. When the south pole is brought near the compass, the needle gets deflected towards right.

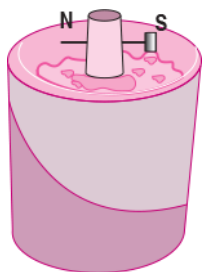


Q.3. Suggest an activity to prepare a magnetic compass by using an iron needle and a bar magnet. [NCERT]

Exemplar]

Ans. Activity:

- Magnetise an iron needle using a bar magnet as described previously.
- Take a small piece of cork or foam and insert the magnetised needle through it. Take a cup filled with water and let the cork float in it.
- Make sure that the needle does not touch the water (see figure).
- Now, your compass is ready to work. Note the direction in which the needle points when the cork is floating. Rotate the cork in different directions.
- Note the direction in which the needle points when the cork begins to float again without rotating. We see that the needle always points in the same direction, when the cork floats without rotation.



Q.4. A bar magnet is cut into two pieces A and B, from the middle, as shown in the figure.



Will the two pieces act as individual magnets? Mark the poles of these two pieces. What will happen if these magnets are further broken? [NCERT]

Exemplar]

Ans. Yes, the two pieces act as individual magnets. The poles of two pieces of magnet are:



The magnetic poles always exist in pairs. When an attempt is made to separate the magnetic poles by breaking a bar magnet in the middle, then it is observed that each of the two parts forms a complete magnet. New magnetic poles are developed at broken ends. Now if we further break each of these parts into two, even then each part will be a complete magnet and will contain a north pole and a south pole. Thus, even if a magnet

is broken into atoms, each atom will be a complete magnet. This clearly indicates that an isolated magnetic pole does not exist, *i.e.*, each magnet is a dipole.



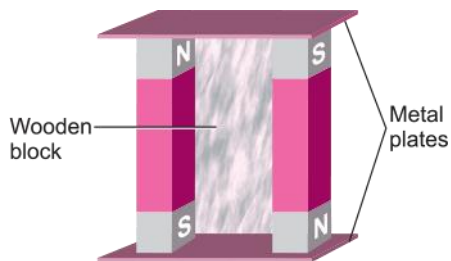
Q.5. Suggest an arrangement to store a U shaped magnet. How is this different from storing a pair of bar magnets? [NCERT

Exemplar]

Ans. U shaped magnet: One metal plate is placed across the two poles of the U shaped magnet.



Bar magnet: Bar magnets should be kept in pairs with opposite poles on the same side. Use two metal plates and one wooden block, arrange them as shown in the figure.



HOTS (Higher Order Thinking Skills)

Q.1. A tailor was stitching buttons on his shirt. The needle has slipped from his hand on to the floor. Can you help the tailor to find the needle?

Ans. The needle can be found by using a magnet. Since needle is magnetic, when a magnet is wavered over the floor, it will stick to the magnet.

Q.2. How do magnet trains run without touching the ground?

Ans. A huge magnetic field is created by electrified coils in the guideway walls, which propel the train.