

CLASS – 6 PHYSICS CHAPTER – 6 MAGNETS [EXERCISE SOLUTIONS]

Test Your Understanding [Page No. 102]

1. Match the columns.

Column A	Column B
1. Magnet attracts iron filling	a. Directive property
2. A magnet has both north and south poles	b. Repel each other
3. Magnet aligns in north-south direction	c. Attract each other
4. Like poles	d. Poles of magnet always exist in pairs
5. Unlike poles	e. Attractive property

Answer : 1 – (e), 2 – (d), 3 – (a), 4 – (b), 5 – (c)

EXERCISES

A. Choose the correct option :

1. A magnet is made of :

Answer : (d) iron

2. What happens when we hit a magnet with a hammer?

Answer : (b) It demagnetises

3. A free-turning magnet will always rest in :

Answer : (a) North-South direction

4. We can use a magnet to separate :

Answer : (c) steel staples from sand

5. The electromagnet is a :

Answer : (c) temporary magnet

6. Which of the following items cannot be picked up by a magnet?

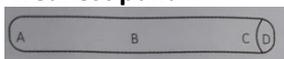
Answer : (c) Aluminium foils

7. What will happen when the two magnets shown below are pushed towards each other?



Answer : (b) They will repel each other

8. Which part of the following rod magnet has the weakest pull?



Answer : (b) B

B. Write T for True and F for False statements :

1. Artificial magnets were discovered in Greece.

Answer : True

2. A cylindrical magnet has only one pole.

Answer : False

3. Maximum iron fillings stick in the middle of a bar magnet when it is brought near them.

Answer : False

4. Rubber is a magnetic material.

Answer : False

5. A nickel wire is attracted by a magnet.

Answer : True

6. Similar poles of the magnets repel each other.

Answer : True

7. A freely suspended bar magnet always points along East-West direction.

Answer : False

8. Freely suspended bar magnets always point towards North-South direction.

Answer : True

9. A compass can be used to find East-West direction at any place.

Answer : False

C. Fill in the blanks :

1. A magnet attracts.....substances towards it.

Answer : magnetic

2.is a strong magnetic substance.

Answer : Iron

3. Magnetic poles always exist in.....

Answer : end

4. A magnet, no matter how big or small, will always have two.....

Answer : poles

5. The magnetic field lines come closer to one another near the.....

Answer : poles

6. A.....magnet loses its magnetic property in a short period of time.

Answer : temporary

7. A permanent magnet can lose its magnetic properties if it is.....violently several times.

Answer : hammered

8. The space surrounding a magnet in which magnetic force is exerted, is called a.....

Answer : magnetic field

D. Name the following :

1. Materials repelled by magnets.

Answer : Diamagnetic materials (Silver and Copper).

2. Instrument used by sailors to find direction at sea.

Answer : Magnetic strips, Magnetic compass.

3. Materials which are strongly attracted by a magnet.

Answer : Ferromagnetic materials (Iron, Nickel and Cobalt).

4. The end points of a magnet where most of its magnetic property is concentrated.

Answer : Poles.

5. The end point of a bar magnet which when freely suspended, points towards the geographic north pole.

Answer : South pole of Earth (Geographical North).

6. Temporary magnets that are made by using the magnetic field produced by electric current.

Answer : Electromagnets.

E. Answer the following questions in short.

1. What happens when a bar magnet is left to move freely?

Answer : A freely suspended magnet will always rest in the North-South direction.

2. Name two magnetic materials other than iron and steel.

Answer : Nickel and Cobalt.

3. What do you use a compass for?

Answer : A magnetic compass is used by sailors to indicate geographic direction.

4. State whether attraction or repulsion will be produced when :

(a) N pole is brought near to another N pole.

(b) N pole is brought near to the S pole.

Answer : (a) Repulsion

(b) Attraction

5. Which of the following are stored in pairs : horseshoe magnets or bar magnets?

Answer : Bar magnets.

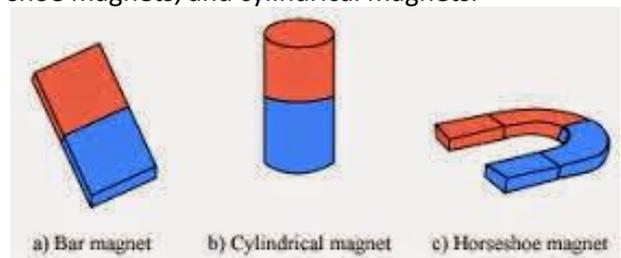
6. What is a magnet? Of what material are magnets usually made?

Answer : A material that attracts substances made of iron, steel, nickel, and cobalt.

Magnets are made of iron, steel or other alloys of iron by the process of magnetisation.

7. Artificial magnets are made in different shapes. Name these shapes and draw their sketches.

Answer : Artificial magnets are made in different shapes such as bar magnets, horseshoe magnets, and cylindrical magnets.



8. What happens to magnetic materials when placed near magnets? How would each of the following materials behave near a magnet?

- (a) Nickel
- (b) Plastic
- (c) Iron

Answer : The magnetic materials when placed near magnets are attracted by the magnet.

- (a) Nickel is a magnetic material so, it is attracted by a magnet when placed near a magnet.
- (b) Plastic is a non-magnetic material so, it is not attracted by a magnet when placed near it.
- (c) Iron is also an magnetic material so, it is also attracted by a magnet when placed near it.

9. Where on a bar magnet do things like iron fillings stick mainly? What does it show?

Answer : Iron filling mainly stick to the poles of the magnet. It shows magnet attracts metals.

10. How will you show that a steel bar is a magnet?

Answer : A bar magnet attracts the object made of iron. If steel bar is magnet, then it will attract the iron objects.

11. What are the various ways in which magnets can lose their magnetism?

Answer : Methods of removing or weaken the magnetic property :

- (i) Hammering
- (ii) Heating
- (iii) Mishandling

12. State any two properties of magnets.

Also write two uses of magnets.

Answer : Properties of Magnets :

- (i) A freely suspended magnet always points in North-South direction (Directive Property of Magnets).
- (ii) Like Poles repel and Unlike Poles attract each other.

Uses of Magnets :

- (i) Magnets are used to hold objects like stickers, doors of refrigerator, lids of pencil boxes, pins, etc.
- (ii) Magnets are used to separate discarded iron and steel objects from other waste materials.

F. Answer the following questions in detail.

1. What are (a) magnetic materials, and (b) non-magnetic materials? Name two magnetic materials and two non-magnetic materials.

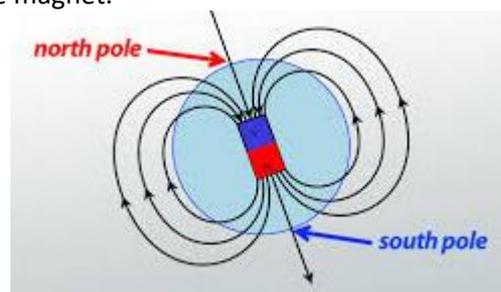
Answer : **Magnetic materials :** The materials which are attracted by a magnet are called magnetic materials. **For example :** Iron, steel, nickel and cobalt.

Non-magnetic materials : The materials which are not attracted by a magnet are called non-magnetic materials. **For example :** Wood, plastic, rubber, paper, cloth, glass, leather, etc.

2. What is meant by the poles of a magnet? Where are the poles of a bar magnet located? Draw a sketch to show the poles of a bar magnet.

Answer : **Magnetic Poles :** Regions of a magnet where magnetic force is concentrated.

Location of the poles of a magnet can be determined by suspending it freely. A freely suspended bar magnet always points in north-south direction. The end that points towards north direction is the north pole of the magnet while the end that points towards south direction is the south pole of the magnet.



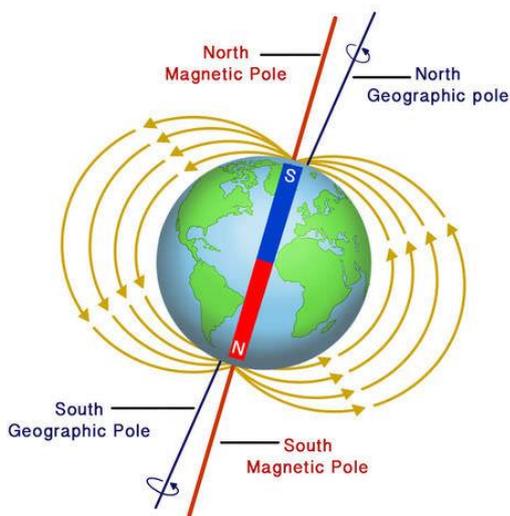
3. You are given a bar magnet whose N and S poles are not marked. Describe briefly how you would find out which end is the south-pole.

Answer : Take another bar magnet with labelled poles on it. If we bring the north pole of this magnet near the one end of the unmarked magnet and if it shows repulsion then this pole is North pole and if it shows attraction then this pole is South pole. That's

how you can easily find which pole is North and which one is South.

4. Describe how our Earth behaves like a magnet.

Answer : A freely suspended magnet always points in the North-South direction even in the absence of any other magnet. This suggests that the earth itself behaves as a magnet which causes a freely suspended magnet (or magnetic needle) to point always in a particular direction : **North and South.**



5. What are magnetic field and magnetic lines? Write the properties of magnetic lines.

Answer : Magnetic Field : The space or region around a magnet where its influence (effect) is felt.

Magnetic Lines : Magnetic lines of force are lines around a magnet that represent the direction of the magnetic field.

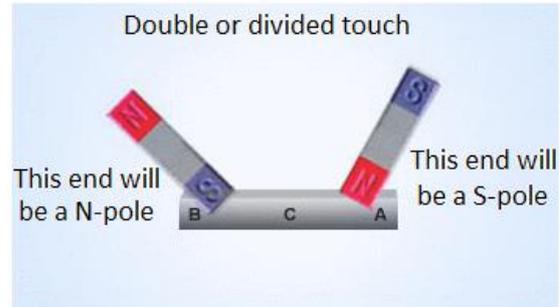
Properties of Magnetic Field Lines :

- (i) The magnetic field lines originate from the north pole of a magnet and end at its south pole.
- (ii) The magnetic field lines come closer to one another near the poles of a magnet but they are widely separated at other places.
- (iii) The magnetic field lines do not intersect (or cross) one another. This is due to the fact that the resultant force on a north pole at any point can only be in one direction.

6. Describe briefly a method of making a magnet. Draw a labelled sketch to illustrate the method.

Answer : Double Touch Method : Take an iron piece and place it on the table. Take two

bar magnets and place them at the centre of the iron piece. Rub the iron piece with them several times without changing the poles and direction of the magnets. This iron piece when brought near the iron filings attracts them showing that it is magnetised.



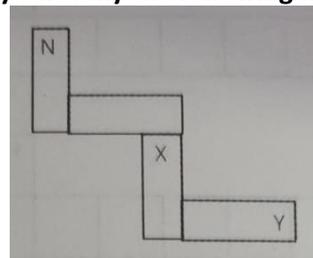
7. What is an electromagnet? How can you make your own electromagnet?

Answer : Electromagnet : The magnet made by using electric current is called an electromagnet.

We can make our own Electric Magnet by **Electrical Method :** A long coil of insulated copper wire is coiled around an iron rod. When the two ends of the coil are connected to a cell, a current passes through the coil and produces a magnetic effect. This magnetic effect magnetises the iron rod. So, the iron rod becomes a magnet.

Picture-Based Questions

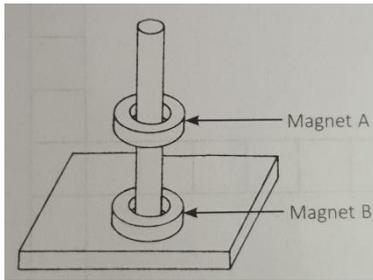
1. Study carefully the following magnets.



What type of magnetic pole is (a) X, and (b) Y?

Answer : X – North Pole
Y – South Pole

2. Magnet A is floating above magnet B as shown in the following diagram. What is the reason for this?



Answer : This is because the upper pole of magnet B and the lower pole of magnet A both are same. Like, if the upper pole of magnet B is North pole then the lower pole of magnet B is also North.

Application-Based Questions

1. Radhika's mother was arranging her stitching box. Suddenly, the stitching box slipped from her hand and all the needles in the box got scattered on the ground. How can she collect all the needles without wasting much of her time?

Answer : Radhika can use a magnet to collect all the needles from the floor as it is easy and saves a lot of time. Needles are usually not clearly visible on the floor. So, collecting by hand, one may miss any of the needles.

2. You got two similar iron bars. Of these, one is a magnet. How will you find that which one of them is not a magnet?

Answer : Well, the property of a magnet that we need to use here is that the magnetic strength of magnets is more at the poles than the central region. Hold a pole of one of the bars close to the centre of the second bar. If the second bar gets attracted towards the pole of the first bar then the first bar is a magnet and the second is iron and if it does not get attracted then the first bar is iron and the second one, magnet.

3. In a waste dumping site, variety of waste is found. Why do the government authorities use magnets fitted with crane at these sites?

Answer : An electromagnet is attached to the long arm of a crane that is used for separating discarded iron and steel articles from the heap of waste material.