

NCERT QUESTIONS WITH SOLUTIONS

1. Fill in the blanks

- (i) Unlike poles of two magnets _____ each other, whereas like poles _____ each other.
- (ii) The materials that are attracted towards a magnet are called _____
- (iii) The needle of a magnetic compass rests along the _____ direction.
- (iv) A magnet always has _____ poles.

Solution

- (i) Attract, repel
- (ii) Magnetic materials
- (iii) North-South
- (iv) Two

2. State whether the following statements are True (T) or False (F).

- (i) A magnet can be broken into pieces to obtain a single pole.
- (ii) Similar poles of a magnet repel each other.
- (iii) Iron filings mostly stick in the middle of a bar magnet when it is brought near them.
- (iv) A freely suspended bar magnet always aligns with the north-south direction.

Solution

- (i) False
- (ii) True
- (iii) False
- (iv) True

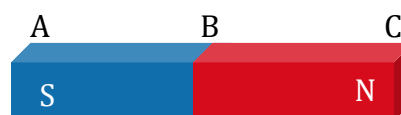
3. Column I shows different positions in which one pole of a magnet is placed near that of the other. Column II indicates the resulting interaction between them for different situations. Fill in the blanks.

Column I	Column II
N – N	_____
N – _	Attraction
S – N	_____
_ – S	Repulsion

Solution

Column I	Column II
N – N	Repulsion
N – S	Attraction
S – N	Attraction
S – S	Repulsion

4. Atharv performed an experiment in which he took a bar magnet and rolled it over a heap of steel U-clips (figure) According to you, which of the options given in the table is likely to be his observation?



	Position A	Position B	Position C
(i)	10	2	10
(ii)	10	10	2
(iii)	2	10	10
(iv)	10	10	10

Solution

- (i) 10– 2–10

5. Reshma bought three identical metal bars from the market. Out of these bars, two were magnets and one was just a piece of iron. How will she identify which two amongst the three could be magnets (without using any other material)?

Solution

She must start with any two metal bars and needs to perform attraction and repulsion tests. If both tests are confirmed, then YES they are magnets. If not, switch any one metal piece with the remaining piece and repeat the attraction and repulsion test.

This is how she can identify which one are magnet and which one is iron piece.

6. You are given a magnet which does not have the poles marked. How can you find its poles with the help of another magnet which has its poles marked?

Solution

To identify the poles of the magnets you must do attraction and repulsion tests.

7. A bar magnet has no markings to indicate its poles. How would you find out near which end its North pole is located without using another magnet?

Solution

There are many ways to locate North pole, one of them is to suspend it (magnet) with thread. The magnet will align itself to North - South direction and the side of magnet pointing towards North direction is North pole of a magnet.

8. If the earth is itself a magnet, can you guess the poles of earth's magnet by looking at the direction of the magnetic compass?

Solution

Yes, magnetic compass points towards geographical north (magnetic south) and geographical south (magnetic north) poles.

9. While a mechanic was repairing a gadget using a screw driver, the steel screws kept falling down. Suggest a way to solve the problem of the mechanic on the basis of what you have learnt in this chapter.

Solution

The mechanic can magnetise the screw driver by stroking it with a magnet several times.

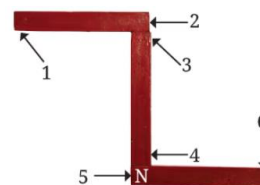
10. Two ring magnets X and Y are arranged as shown in Fig. It is observed that the magnet X does not move down further. What could be the possible reason? Suggest a way to bring the magnet X in contact with magnet Y, without pushing either of the magnets.



Solution

Initially, both the magnets having same poles facing each other either north pole or south pole. If contact of both the magnets is to be made without pushing, either of magnet must be flipped and thus north pole of the one magnet will attract south pole of attract magnet.

11. Three magnets are arranged on a table in the form of the shape shown in Fig. What is the polarity, N or S, at the ends 1, 2, 3, 4 and 6 of the magnets? Polarity of one end (5) is given for you.



Solution

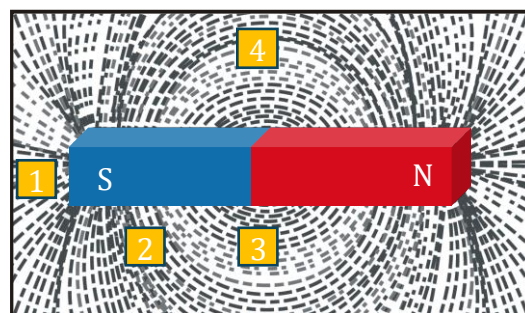
1 → N	2 → S	3 → N
4 → S	5 → N	6 → S

EXERCISE-01

Multiple choice questions

1. Earth can be thought of as a giant magnet because it **PEG054**
 (1) orbits around the Sun.
 (2) has a magnetic field.
 (3) rotates on its axis.
 (4) has a moon.
2. Which of the following is not true about permanent magnets? **PEG055**
 (1) They have two poles.
 (2) They are surrounded by magnetic fields.
 (3) They have magnetic force.
 (4) They can be turned on and off.
3. What is the shape of Earth's magnetic field similar to? **PEG056**
 (1) That of a horseshoe magnet
 (2) That of a bar magnet
 (3) That of a ball ended magnet
 (4) None of these
4. Magnetism in materials is due to **PEG057**
 (1) electrons at rest
 (2) motion of electrons around the nucleus
 (3) protons at rest
 (4) neutrons at rest
5. What happens when a magnet is brought near an iron nail? **PEG058**
 (1) The magnet repels the nail.
 (2) The nail repels the magnet.
 (3) The nail becomes magnetic.
 (4) Nothing will happen.

6. Iron attracts **PEG059**
 (1) only the north pole of a magnet.
 (2) only the south pole of a magnet.
 (3) both north and south poles of a magnet.
 (4) the north pole but repels the south pole.
7. In which part of a bar magnet the magnetisation is minimum? **PEG060**
 (1) At the centre (2) At both poles
 (3) At south pole (4) At north pole
8. Iron filings were sprinkled around a magnet and acquired the pattern shown below. **PEG061**



- Where is the magnetic force strongest?
- (1) 1 (2) 2 (3) 3 (4) 4
9. An iron bar is considered as a magnet if the south pole of any other magnet **PEG062**
 (1) repels its both the ends.
 (2) attracts its both the ends.
 (3) neither attracts nor repels any of its ends.
 (4) attracts its one end and repels its other end.
 10. A bar is confirmed to be a magnet when it **PEG063**
 (1) attracts all metal.
 (2) attracts another magnet.
 (3) attracts an unmagnetised piece of iron.
 (4) repels a magnet.

- 11.** You are given two similar unmarked bars. One of them is a magnet while the other is a magnetic material. Without any other aid, how would you deduce which one of them is a magnet? **PEG064**

- (1) By placing the two bars parallel to each other.
- (2) By placing the tip of one of the bars near the middle point of the other bar.
- (3) By placing the tip of one of the bars near that other bar such that they are parallel to each other.
- (4) By placing the tip of one of the bars near that of other such that they are perpendicular to each other.

- 12.** Freely suspended magnet stays in direction of **PEG065**

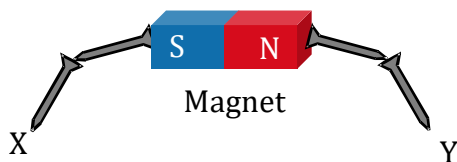
- (1) east-west
- (2) northeast- southwest
- (3) north-south
- (4) northwest-southeast

- 13.** When any magnet is cut into two equal parts and then they are again joined by quick fix then new magnet will behave as

- (1) four bar magnets. **PEG066**
- (2) four ordinary rods.
- (3) one ordinary bar magnet.
- (4) one ordinary iron rod.

- 14.** Observe the figure given below. The polarity of ends X and Y are respectively

PEG067



- (1) North pole and north pole
- (2) South pole and south pole
- (3) South pole and north pole
- (4) North pole and south pole

- 15.** Magnetic force becomes stronger when magnets are **PEG068**

- (1) both metal.
- (2) farther apart.
- (3) different sizes.
- (4) closer together.

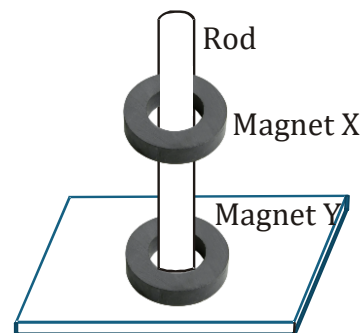
- 16.** Where is the magnetic force exerted by a magnet strongest? **PEG069**

- (1) at both poles
- (2) at north pole
- (3) at south pole
- (4) at centre

- 17.** What happens to the magnetic force as the distance between two magnetic poles decreases? **PEG070**

- (1) Remains constant
- (2) Increases
- (3) Decreases
- (4) Becomes zero

- 18.** Two ring magnets, X and Y are connected through a rod as shown below. Magnet X floats above magnet Y because **PEG071**



- (1) Magnet X is lighter than magnet Y.
- (2) Magnet Y is more powerful than magnet X.
- (3) The like poles of both magnets are facing each other.
- (4) The unlike poles of both magnets are facing each other.

19. When two pieces of solid materials each of same shape and size repel each other then **PEG072**

- (1) one of them must be a magnet.
- (2) both of them must be magnets.
- (3) one of them must be a non-magnetic substance.
- (4) both of them must be non-magnetic substances.

20. A compass points north because **PEG073**

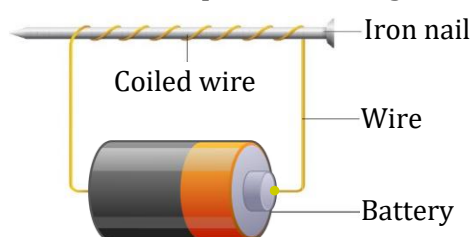
- (1) Earth's gravity is strongest at the north pole.
- (2) Earth's magnetic field has poles that are exactly at geographic poles.
- (3) Earth's magnetic field has poles that are near the geographic poles.
- (4) Earth's magnetic field has poles that are in east-west direction.

21. A loudspeaker uses electromagnet to

PEG074

- (1) turn electrical energy into sound.
- (2) turn electrical energy into light.
- (3) turn motion into electrical energy.
- (4) turn sound into electrical energy.

22. Look at the simple electromagnet below.



How can you make the electromagnet's magnetic field stronger? **PEG075**

- (1) Remove the iron nail.
- (2) Use a wooden nail instead of an iron nail.
- (3) Wrap more coils of wire around the nail.
- (4) Wrap fewer coils of wire around the nail.

23. Which of the following would not change the strength of an electromagnet?

PEG076

- (1) Increasing the amount of current.
- (2) Changing the current's direction.
- (3) Inserting an iron core inside the coil.
- (4) Increasing the number of loops.

24. How is an electromagnet different from a permanent magnet? **PEG077**

- (1) It has north and south poles.
- (2) It attracts magnetic substances.
- (3) Its magnetic field can be turned off.
- (4) Its poles cannot be reversed.

25. The most suitable material to be used as the core of an electromagnet is **PEG078**

- (1) Aluminium
- (2) Iron
- (3) Copper
- (4) Zinc

True or false

1. Artificial magnets were discovered in Greece. **PEG079**

2. Rubber is a magnetic material. **PEG080**

3. A cylindrical magnet has only one pole. **PEG081**

4. Maximum iron filings stick in the middle of a bar magnet when it is brought near them. **PEG082**

5. Attraction of material with a magnet is a clear proof that 'it is a magnet'. **PEG083**

6. Bar magnets always point towards North-South direction. **PEG084**

7. Similar poles of a magnet repel each other. **PEG085**

8. A compass can be used to find East-West direction at any place. **PEG086**

9. An electric bell uses a bar magnet. **PEG087**

10. Magnetic properties of a magnet reduces by repeatedly hammering it. **PEG088**

1. **Match the column** **PEG089**

Column-I		Column-II	
(1)	A magnet is dropped from a height on a hard rock.	(a)	Magnetism is induced in the iron bar.
(2)	An electric current is passed through a coil of copper wire wound around an iron bar.	(b)	Magnetism is lost.
(3)	An iron bar is placed in line with a magnet.	(c)	Iron bar is a magnet.
(4)	A magnet repels an iron bar placed near it.	(d)	Electro-magnet

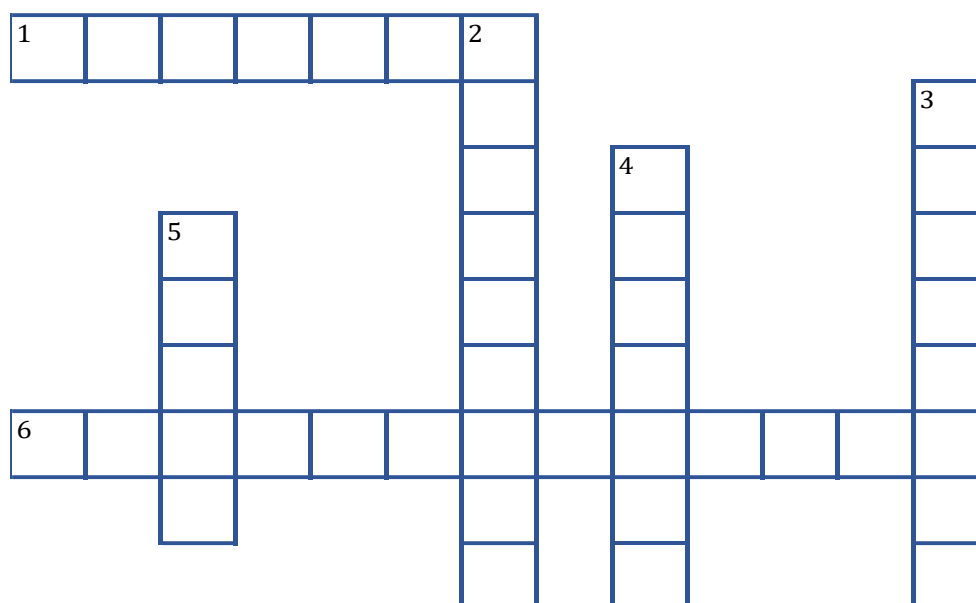
2. **Match the column** **PEG090**

Column-I		Column-II	
(1)	Natural magnet	(a)	Electromagnet
(2)	Temporary magnetism	(b)	Lodestone
(3)	North pole of a magnet	(c)	Magnetic keeper
(4)	Protection of magnet	(d)	Points towards north when suspended freely

Fill in the blanks

- Any object that has magnetic force is called a _____. **PEG091**
- A material that maintains its magnetic properties even when it is not close to another magnet is called a _____. **PEG092**
- Materials similar to iron that have strong magnetic properties are called _____. **PEG093**
- Every magnet has a north and a south _____. **PEG094**
- The region of magnetic force around a magnet is called its _____. **PEG095**
- The influence created by a magnet that exerts forces on other magnetic objects is known as a _____. **PEG096**
- Two magnetic north poles _____ each other. **PEG097**
- A north pole and a south pole _____ each other. **PEG098**
- Earth's magnetic field causes a _____ to point north. **PEG099**
- Electric current produces a magnetic field in an _____. **PEG100**

1. Crossword

**Across**

1. _____ magnets have irregular shape and weak attracting power.
6. An _____ is a coil of wire wrapped around an iron core.

Down

2. Magnetite contains iron and it is also called _____.
3. _____ is the ability of an object to push or pull another object that has the magnetic property.
4. Magnetic _____ is an instrument that uses Earth's magnetic field to help people to find out directions.
5. The region in a bar magnet where the attracting power is maximum are called _____.

ANSWER KEY

Multiple choice questions

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Solution	2	4	2	2	3	3	1	1	4	4	2	3	3	3	4
Question	16	17	18	19	20	21	22	23	24	25					
Solution	1	2	3	2	3	1	3	2	3	2					

True or false

- | | | | |
|----------|----------|----------|----------|
| 1. False | 2. False | 3. False | 4. False |
| 5. False | 6. True | 7. True | 8. True |
| 9. False | 10. True | | |

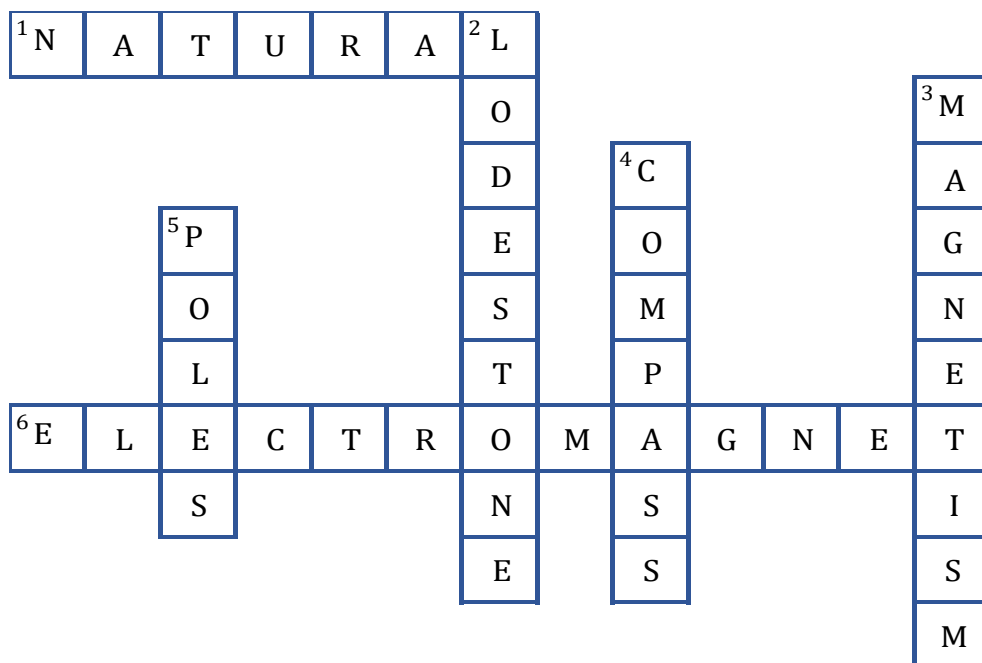
Match the column

1. (1) → b ; (2) → d ; (3) → a ; (4) → c
 2. (1) → b ; (2) → a ; (3) → d ; (4) → c

Fill in the blanks

- | | | |
|---|---------------------|-----------------------|
| 1. Magnet | 2. Permanent magnet | 3. Magnetic materials |
| 4. Pole | 5. Magnetic field | 6. Magnetic field |
| 7. Repel | 8. Attract | |
| 9. Magnetic compass needle or freely suspended bar magnet | | |
| 10. Electromagnet | | |

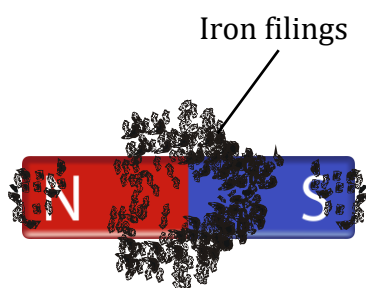
1. Crossword



EXERCISE-02

Very short answer type questions

1. What is a magnet? **PEG102**
2. Name two materials which are magnetic and two that are non-magnetic. **PEG103**
3. Which magnetic pole is attracted to a south magnetic pole? **PEG104**
4. A bar magnet is rolled in the iron filings and then lifted up. What is wrong in figure of that magnet shown below? **PEG105**



5. Why the north end of a compass always points to the northern part of the Earth? **PEG106**
6. What do you think, the following magnets will repel or will attract each other? **PEG107**

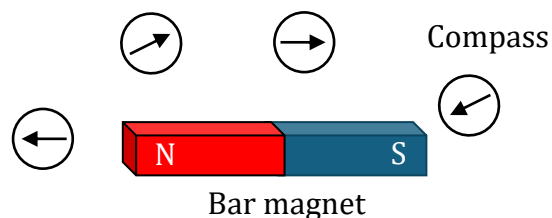


7. What happens when like magnetic poles are brought close together? **PEG108**
8. Describe, what is meant by the term magnetic field. **PEG109**

9. What happens if a magnet is heated? **PEG110**
10. What are magnetic keepers? **PEG111**

Short answer type questions

1. Why does a magnet attract unmagnetized piece of iron? Write the name of phenomenon involved in it. **PEG112**
2. What do you call the type of material that is attracted to a magnet or can be magnetised? Give any two examples of this type of material. **PEG113**
3. A scientist says, "Magnetic poles of magnets and electric charges on bodies apply forces in similar ways." Explain what is meant by this statement? **PEG114**
4. What happens to the poles of a magnet if it is cut into pieces? **PEG115**
5. Suppose astronauts land on Planet Z. Planet Z does not have a magnetic field. Will the astronauts be able to use a compass to find direction? Give reason. **PEG116**
6. Use the figure below to answer questions. **PEG117**



- (i) Explain why the compass needles are pointed in different directions?
- (ii) What will happen to the compass needles when the bar magnet is removed?

7. Why does a compass change direction when it is kept near a magnet? **PEG118**
8. How is a compass used to find directions?
PEG119
9. What is the difference between a permanent magnet and an electromagnet? **PEG120**
10. Large electromagnetic cranes are used in junk yards for moving scrap metal from one location to another. Why would an electromagnet be more useful in this application than a permanent magnet?
PEG121

Long answer type questions

1. You are given an iron strip. How will you turn it into a magnet? Make figure.
PEG122
2. Write any four properties of a magnet. Make figures. **PEG123**
3. (i) Where are the poles of a bar magnet located? **PEG124**
(ii) A bar magnet has no markings to indicate its poles. How would you find out near which end is its north pole located? Make figure.
4. (i) What is an electromagnet? **PEG125**
How it works? Make figure of an electromagnet.
(ii) How an electromagnet is better than a permanent magnet?
5. Write some safety measures for magnets.
PEG126



