



# PHYSICS

## BOOKS - MTG IIT JEE FOUNDATION

### FUN WITH MAGNETS

#### Illustrations

1. How do you distinguish between a magnet and an iron piece if they look identical?



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2. Why will a magnet not pick up a rubber cork or a piece of wood?



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3. Ram bought some badges that he stuck on the door of his refrigerator. He observed that when he brought the badges close to the door of the refrigerator, there was a force that was

pulling them towards it. Why was this happening?



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4. Which property of magnets is being used for magical activities?



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5. Bhaskar took a bar magnet and moved it lengthwise along a bar of iron many times. He

then brought a few iron pin close to the iron bar. What would have happened and why?



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## Solved Examples

1. State three examples of each.

Magnetic material.



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2. State three examples of each.

Non-magnetic material.



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3. Differentiate between an artificial magnet and a natural magnet.



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4. Draw the shapes of different types of artificial magnets.



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5. Why does a compass needle get deflected when brought near a bar magnet?



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6. Why are magnetic keepers used to store magnets?



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7. How can you store a horse-shoe magnet and a bar magnet to prevent them from demagnetised?



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**8.** What do you mean by poles of a magnet?

How are they different from the other regions of a magnet?



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**9.** How would you classify the objects as magnetic or non-magnetic if you are given a bar magnet?



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**10.** What do you mean by magnetic field lines?

What would be the nature of magnetic field lines around a current carrying wire?



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**11.** Find the odd one out from the following and give reason for your choice.

Glass, cotton, nickel, copper



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12. Find the odd one out from the following and give reason for your choice.

Magnetite, bar magnet, dumb bell-shaped magnet, horse-shoe magnet



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## Ncert Section

1. Artificial magnets are made in different shapes such as \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.



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2. The Materials which are attracted towards a magnet are called\_\_\_\_\_.



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3. Paper is not a \_\_\_\_\_ material.



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4. In olden days, sailors used to find direction by suspending a piece of \_\_\_\_\_.



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5. A magnet always has \_\_\_\_\_ poles



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6. State whether the following statements are true or false

A cylindrical magnet has only one pole.



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7. State whether the following statements are true or false

Artificial magnets were discovered in Greece.



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8. State whether the following statements are true or false

Similar poles of a magnet repel each other.



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**9.** State whether the following statements are true or false

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



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**10.** State whether the following statements are true or false

Bar magnets always point towards North South direction



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**11.** State whether the following statements are true or false

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





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**12.** State whether the following statements are true or false

Rubber is a magnetic material



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**13.** It was observed that a pencil sharpener gets attracted by both the poles of a magnet although its body is made of plastic. Name a

material that might have been used to make some part of it.



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**14.** Column I shows different positions in which one pole of a magnet is placed near that of the other. Column II indicates the resulting action between them for each situation. Fill in the blanks.



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**15.** Write any two properties of a magnet.



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**16.** Where are a poles of a bar magnet located?



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**17.** A bar magnet has no markings to indicate its poles. How would you find out near which

end is its north pole located?



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**18.** You are given an iron strip. How will you make it into a magnet?



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**19.** How is a compass used to find directions?



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20. A magnet was brought from different directions towards a toy boat that has been floating in water in a tube. Affect observed in each case is stated in column I. Possible reasons for the observed affects are mentioned in column II. Match the statements given in column I with those in column II.



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1. Which of the following is a magnetic material?

A. Copper

B. Nickel

C. Aluminium

D. Silver

**Answer: B**



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2. The force that a magnet exerts on iron is called

A. gravitational force

B. frictional force

C. magnetic force

D. none of these

**Answer: C**



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3. Magnetite is made of mainly a chemical called

A. calcium oxide

B. iron oxide

C. sulphur dioxide

D. all of these

**Answer: B**



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4. A magnet has \_\_\_\_ poles.

A. two

B. three

C. one

D. four

**Answer: A**



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5. Unlike poles \_\_\_ and like poles \_\_\_ each other.

A. repel, attract

B. attract, attract

C. attract, repel

D. repel, repel

**Answer: C**



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**6.** A freely suspended magnet comes to rest in the \_\_\_\_ direction.

A. North-South

B. North-East

C. South-West

D. North-West

**Answer: A**



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7. The substances that are attracted by a magnet are

A. non-magnetic substances

B. magnetic substances

C. both (a) and (b)

D. neither (a) nor (b)

**Answer: B**



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**8.** The instrument which is used to identify the geographical directions is

A. manometer

B. barometer

C. periscope

D. magnetic comapss

**Answer: D**



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**9. Which of the following is used to identify north direction?**

A. Moon

B. Sun

C. Magnetic comapss

D. All of these

**Answer: C**



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**10. A magnet can induce magnetism in**

A. brass

B. aluminium

C. glass

D. iron

**Answer: D**



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**11.** A small piece of \_\_\_ ore is called a magnet.

A. copper

B. iron

C. silver

D. nickel

**Answer: B**



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**12. Which magnet is used in a compass?**

A. Bar magnet

B. Electromagnet

C. Magnetic needle

D. Horse-shoemagnet

**Answer: C**



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**13.** Heating a magnet leads to

A. demagnetisation

B. increase in magnetic strength

C. no change

D. Both (a) and (b)

**Answer: A**



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**14.** The electromagnets used to make electric doorbells are

- A. horseshoe magnets
- B. bar magnets
- C. cylindrical shaped magnets
- D. round shaped magnets

**Answer: A**



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**15.** The force by which object tend to push each other is called

A. repulsion

B. attraction

C. either repulsion or attraction

D. none of these

**Answer: A**



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**16.** The magnetic north pole of the Earth is near the

- A. geographical north pole
- B. geographical south pole
- C. neither (a) nor (b)
- D. sometimes (a) and sometimes (b)

**Answer: B**



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**17.** In a bar magnet, magnetic strength is

- A. more at both ends of the magnet
- B. more in the middle of the magnet
- C. same throughout the magnet
- D. none of these

**Answer: A**



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**18.** Which of the following is not a magnetic material?

A. Iron

B. Nickel

C. Cobalt

D. Copper

**Answer: D**



**19.** The end of the magnet which points towards geographic north is called \_\_\_\_ pole whereas the end of the magnet which points towards geographic south is called \_\_\_\_\_ pole.

A. north, south

B. south, north

C. north, east

D. south, east

**Answer: A**



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**20.** Which of the following instruments use magnet?

A. Tape recorders

B. ATM cards

C. Microphones

D. All of these

**Answer: D**



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**21.** The force by which object tend to pull each other is called

A. attraction

B. repulsion

C. both (a) and (b)

D. neither (a) nor (b)

**Answer: A**



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**22.** The magnetic south pole of the earth is near the

- A. geographical north pole
- B. geographical south pole
- C. neither (a) nor (b)
- D. sometimes (a) and sometimes (b)

**Answer: A**



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**23. Magnetite is \_\_\_\_.**

- A. an electromagnet
- B. a natural magnet
- C. an artificial magnet
- D. not a magnet

**Answer: B**



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**24.** The phenomenon of the attraction of a substance by a magnet is called

A. magnetic field

B. magnetic pole

C. magnetism

D. none of these

**Answer: C**



**25.** Artificial magnets can be made by

- A. chemical methods only
- B. mechanical methods only
- C. electrical methods only
- D. both (b) and (c)

**Answer: D**



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**26.** In ancient times, humans made navigational compass by using

A. steel

B. lodestone

C. alnico

D. soft iron

**Answer: B**



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27. Parts of the magnet where attraction or repulsion is maximum called

A. poles

B. midpoint

C. borders

D. None of these

**Answer: A**



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**28.** Which of the following of a magnet is/are used in navigation?

- A. Attractive property
- B. Directional property
- C. Pair property
- D. Repulsive property

**Answer: B**



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**29.** Magnetic force is a

- A. contact force
- B. non-contact force
- C. muscular force
- D. none of these

**Answer: B**



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**30.** Steel is an alloy of \_\_\_\_.

A. Iron

B. aluminium

C. cobalt

D. all of these

**Answer: A**



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**Exercise Multiple Choice Questions Level 2**

1. Which of the following gets attracted towards a magnet?

A. Book

B. Comb

C. Silver spoon

D. Iron ring

**Answer: D**



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2. \_\_\_\_ is the surest test of magnetisation.

A. Rotation

B. Repulsion

C. Attraction

D. All of these

**Answer: B**



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**3.** Which of the following gets demagnetised when a powerful magnet is kept near to it?

A. Compact disc

B. Cellphone

C. Both (a) and (b)

D. None of these

**Answer: C**



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4. Back of credit cards/ATM cards are designed with metal strip made of

A. copper

B. gold

C. magnet

D. none of these

**Answer: C**



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5. Magnetic force is \_\_\_\_\_ when two magnets are kept far apart.

A. increased

B. decreased

C. first decreased, then increased

D. none of these

**Answer: B**



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6. Which of the following is indicated by a magnetic compass?

A. Volcano

B. Altitude

C. Direction

D. Sea-level

**Answer: C**



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7. When a magnet is placed on a wooden plate with some iron nails spread on it, then

A. nails stick all around the magnet in a same manner

B. most of the nails stick at the centre of the magnet

C. most of the nails stick at the ends of the magnet

D. none of these

**Answer: C**



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**8. Temporary magnets are made of**

A. brass

B. lead

C. soil

D. soft iron

**Answer: D**



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9. Alnico is an alloy of

- A. Silver, Nickel, Cobalt
- B. Nickel, Aluminium, Copper
- C. Aluminium, Silver, Copper
- D. Aluminium, Nickel, Cobalt

**Answer: D**



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**10.** If you break a magnet into 6 pieces, how many north and how many south poles would there be in all?

A.  $N = 6, S = 6$

B.  $N = 3, S = 3$

C.  $N = 12, S = 12$

D.  $N = 6, S = 12$

**Answer: A**



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11. Which of the following do not have any effect when a powerful magnet is kept near it?

A. Microphones

B. Glass tumblers

C. Audio and video tapes

D. All of these

**Answer: B**



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12. How many keepers does a horseshoe magnet need for its storage?

A. 1

B. 2

C. 5

D. 8

**Answer: A**



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**13.** A substance consisting of a coil of wire with an iron core and is only magnetized when electric current flow through it is called

A. permanent magnet

B. electromagnet

C. battery

D. bar magnet

**Answer: B**



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14. If one stands facing the east, then north will be on his/her \_\_\_\_ side and south will be on the \_\_\_ side.

A. left, right

B. right, left

C. both (a) and (b) can be possible

D. can't be explained

**Answer: A**



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15. Artificially designed magnets \_\_\_\_.

A. can be made in different shapes.

B. can be made stronger than natural magnets

C. can have more than two poles

D. Both (a) and (b)

**Answer: D**



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**16.** Now-a-days magnets are made of

A. Iron

B. nickel

C. both (a) and (b)

D. copper

**Answer: C**



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17. Which of the following is true about magnets?

A. Every magnet has only two poles.

B. Different types of magnets have different number of poles.

C. Poles of the magnet can be isolated.

D. Both (a) and (c) are true.

**Answer: A**



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**18.** Magnets was found in a place called

A. Malaysia

B. Magnesia

C. Mexico

D. Denmark

**Answer: B**



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**19.** When a soft iron rod is put inside a current carrying coil, the strength of the electromagnet

A. increases

B. decreases

C. remains same

D. becomes zero

**Answer: A**



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**20.** High-speed magnetic levitation trains run without touching the track, on the power of

- A. electromagnets
- B. bar magnets
- C. natural magnets
- D. none of these

**Answer: A**



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## Exercise Fill In The Blanks

1. The magnets which are not natural are known as \_\_\_\_ magnets.



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2. The points where the power of the magnets is the strongest are called \_\_\_\_.



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3. Two south poles \_\_\_\_ each other.



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4. \_\_\_\_ is used for navigation.



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5. Materials that are not attracted by magnets are known as \_\_\_\_ materials.



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6. Electromagnets are made by passing \_\_\_\_ through them.



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7. Loss of magnetism is known as \_\_\_\_.



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8. \_\_\_\_\_ is made of Aluminium, Nickel and Cobalt.



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9. The \_\_\_\_ pole of a freely suspended magnet points towards the geographical North pole.



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10. The strips of magnetic material used to store magnets safely are called \_\_\_\_.



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## Exercise True Or False

1. Attraction is the surest test of a magnetism.



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2. Magnetite is an artificial magnet.



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**3.** Different magnets have different number of poles.



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**4.** Magnets should be stored in pairs with their opposite poles lying side by side.



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5. Hammering strengthens the magnetic properties.



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6. Permanent magnets are made of soft iron.



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7. Magnetic force acts from a distance.



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8. Magnet should be kept away from all the electronic devices.



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9. Silver is used to make magnets with high magnetic strength.



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**10.** The earth's magnetism can be considered similar to that of a huge bar magnet



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## **Exercise Assertion Reaction Type**

**1.** Assertion : Magnetite is an electromagnet.

Reason : Artificial magnets are stronger than natural magnets.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

**Answer: D**



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2. Assertion : We should not rub similar poles of two magnets.

Reason : Rubbing of similar poles leads to demagnetisation.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of

assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

**Answer: D**



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**3. Assertion :** Most of the iron filings stick to the magnet at the ends.

**Reason :** Magnetic strength is maximum on the poles of a magnet.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

**Answer: A**



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**4. Assertion :** We can never have an isolated north pole or south pole.

**Reason :** Unlike poles attract and like poles repel each other.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of

assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

**Answer: B**



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**5. Assertion :** The region around a magnet where its magnetic influence is felt is called magnetic field.

Reason : Magnetic influence of a magnet is maximum at its centre.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

**Answer: C**



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**6. Assertion :** Alloys of magnetic substances are used to make artificial magnets.

**Reason :** Alloys make the magnets strong.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

**Answer: A**



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7. Assertion :Repulsion, is the surest test of magnetism.

Reason : Like poles of magnets repel each other.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

**Answer: B**



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**8. Assertion :** A magnet can attract a copper wire.

**Reason :** Copper is a non-magnetic material.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

**Answer: D**



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9. Assertion : Magnets should be placed in keepers.

Reason : Keepers prevent self-demagnetisation of magnets.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of

assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

**Answer: A**



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**10. Assertion :** Doctors use an electromagnet to remove particles of iron or steel from a patient's eye.

Reason : An electromagnet is a temporary magnet.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

**Answer: B**



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## Exercise Comprehension Type

1. PASSAGE-I : A magnetic field is described by drawing the magnetic field lines. The magnetic field lines always begin from the north pole of magnet and end on the south pole of the magnet. They do not intersect each other. They come closer to one another near the

poles but they are widely separated at other places.

The direction of magnetic field lines outside the magnet is

- A. north to south
- B. south to north
- C. both (a) and (b)
- D. neither (a) nor (b)

**Answer: A**



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**2. PASSAGE-I :** A magnetic field is described by drawing the magnetic field lines. The magnetic field lines always begin from the north pole of magnet and end on the south pole of the magnet. They do not intersect each other. They come closer to one another near the poles but they are widely separated at other places.

The strength of magnetic field is weak at

A. north pole

B. south pole

C. centre

D. both of the poles

**Answer: C**



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**3. PASSAGE-I :** A magnetic field is described by drawing the magnetic field lines. The magnetic field lines always begin from the north pole of magnet and end on the south pole of the

magnet. They do not intersect each other. They come closer to one another near the poles but they are widely separated at other places.

The magnetic field lines

- A. intersect at right angles to one another
- B. intersect at right angle of  $45^\circ$  to one another
- C. do not cross one another
- D. cross at an angle of  $60^\circ$  to one another

**Answer: C**



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**4. PASSAGE-II :** The magnetic field of a magnet is an invisible field which is created by magnetism. Magnets are made by using electrical and mechanical methods. A temporary magnet can be made by passing electricity through a coil.

Which of the following shows a temporary magnetism?

A. Bar magnet

B. Horse-shoe magnet

C. Electromagnet

D. Earth

**Answer: C**



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**5. PASSAGE-II :** The magnetic field of a magnet is an invisible field which is created by magnetism. Magnets are made by using

electrical and mechanical methods. A temporary magnet can be made by passing electricity through a coil.

The invisible area surrounding a magnet where force is experienced is called

A. magnetic field

B. force field

C. electromagnet

D. none of these

**Answer: A**



**6. PASSAGE-II :** The magnetic field of a magnet is an invisible field which is created by magnetism. Magnets are made by using electrical and mechanical methods. A temporary magnet can be made by passing electricity through a coil.

When the south poles of two magnets are kept close, they will

A. attract

B. repel

C. rotate

D. remain same

**Answer: B**



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7. PASSAGE-III : The Earth itself behaves as a magnet. The shape of the Earth's magnetic field resembles that of an imaginary bar magnet of length one-fifth of earth's diameter.

The axis of earth's magnetic field is approximately inclined at an angle of about  $15^\circ$  with the geographical axis. There are many theories which explain this. The possible one suggests it to be due to the movement of molten iron at Earth's core. Thus, Earth acts as a giant magnet.

The axis of earth's magnetic field is inclined with the geographical axis at an angle of about

A.  $5^\circ$

B.  $15^\circ$

C.  $25^{\circ}$

D.  $35^{\circ}$

**Answer: B**



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**8. PASSAGE-III :** The Earth itself behaves as a magnet. The shape of the Earth's magnetic field resembles that of an imaginary bar magnet of length one-fifth of earth's diameter. The axis of earth's magnetic field is

approximately inclined at an angle of about  $15^\circ$  with the geographical axis. There are many theories which explain this. The possible one suggests it to be due to the movement of molten iron at Earth's core. Thus, Earth acts as a giant magnet.

The shape of the earth's magnetic field resembles that of an imaginary

A. Horse-shoe magnet

B. needle-shaped magnet

C. current-carrying circular coil

D. bar magnet

**Answer: D**



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**9. PASSAGE-III :** The Earth itself behaves as a magnet. The shape of the Earth's magnetic field resembles that of an imaginary bar magnet of length one-fifth of earth's diameter. The axis of earth's magnetic field is approximately inclined at an angle of about

15° with the geographical axis. There are many theories which explain this. The possible one suggests it to be due to the movement of molten iron at Earth's core. Thus, Earth acts as a giant magnet.

Possible cause of Earth's magnetism is

- A. movement of molten iron at Earth's core
- B. revolution of earth around the sun
- C. both (a) and (b)
- D. None of these

**Answer: A**



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## Exercise Subjective Problems Very Short Answer Type

1. Name the shapes of some artificial magnets.



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2. What are magnetic substances?



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3. Suggest some methods that are used for making artificial magnets?



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4. Write the name of an iron ore that shows magnetic properties.



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5. Can we magnetise a magnetic material by bringing it closer to a magnet repeatedly?



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6. Why is the magnetic strip used in the door of the refrigerators?



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7. Write the properties of magnetic poles.



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8. What is magnetism?



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9. Classify the following substances in magnetic and non-magnetic substances:

aluminium, wood, paper, iron, cobalt, brass, nickel



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**10.** Name the materials which are used to make permanent magnets.



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## **Exercise Subjective Problems Short Answer Type**

**1.** A magnetic needle is placed over a strong bar magnet and made to move freely. In which direction the magnetic needle will come to rest?



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2. Write the name of any three types of magnets and where are the poles located?



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3. How can we identify by south pole in a bar magnet?



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4. What are the uses of electromagnets?



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5. Distinguish between magnetic and non-magnetic substances.



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6. Write the causes of demagnetisation.



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7. What will happen if the north pole of a magnet is brought near the south pole of another magnet



**Watch Video Solution**

8. What will happen if the north pole of a magnet is brought near the north pole of a freely suspended magnet?



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9. Give an example of permanent magnet and temporary magnet.



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10. Is an electromagnet a temporary magnet or a permanent magnet? Give reason.



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11. Write the working principle of maglev train.



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**12.** How can you say that the power of a magnet is the strongest at the poles?



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**13.** What happens if a magnet is broken into two pieces?



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**14.** The property of attraction cannot be used to test whether a given object is a magnet or not. Give reason.



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**15.** It is suggested that electronic devices should be kept away from magnetic objects. Why?



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**16.** Does an object kept near to the magnet experience more force as compared to an object kept a little away? Give reason.



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## **Exercise Subjective Problems Long Answer Type**

**1.** Suggest some ways to prevent from demagnetisation of magnets.



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2. Explain, why a freely suspended magnet always points in the north-south direction.



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3. Describe the construction and working of a magnetic compass.



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4. Describe a method of making artificial magnets.



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5. What is a magnet? Explain its basic properties.



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**Exercise Integer Numerical Value Type**

1. Write the number of magnetic materials in the following:

Iron, wood, plastic, cotton, paper, glass.



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2. How many keepers does a bar magnet need for its storage?



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3. If a magnet is broken into 3 pieces, how many poles would be there in all?



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4. How many statements are true about a magnet?

A. Different types of magnets have different number of poles.

B. We can never have an isolated north pole or south pole.

C. Every magnet has two poles at its two ends where the force of attraction is the strongest.

D. Repulsion is the surest test of magnetisation.

**Answer:**



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5. How many pairs of magnets attract each other in the following cases?



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## Olympiad Hots Corner

1. The figure shows two pieces of steel P and Q arranged in line with a bar magnet.



Which of the following is true about the magnetic forces on P and Q?



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2. A plotting compass is moved slowly towards the metal bar P along the path shown in the figure.



What can you conclude about the metal bar P from the given figure?

A. Bar P is a magnetic material.

B. Bar P is a magnet.

C. Bar P is a non-magnetic material.

D. Bar P is either a magnet or a magnetic material.

**Answer: B**



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**3.** Which figure correctly shows two iron nails hanging from a bar magnet?

A. 

B. 

C. 

D. 

**Answer: D**



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4. Sheetal has some jewellery made of gold and silver. They will be \_\_\_\_.

- A. Attracted by a magnet
- B. Repelled by a magnet
- C. Attracted only by natural magnets
- D. Unaffected by magnets

**Answer: D**



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5. In the given diagrams, compasses are used for plot the magnetic field around a bar magnet with poles marked N(North) and

S(South). Which of the following diagrams correctly shows the expected field pattern?

A. 

B. 

C. 

D. 

**Answer: D**



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6. There are two trolleys X and Y in which Y is fixed, as shown in figure. A magnet is mounted on car X which can move. To move car X away from Y, Y should have a magnet placed on the top



- A. With the north pole pointing towards X
- B. With the south pole pointing towards X
- C. With either pole pointing towards X
- D. Car X cannot be moved away\

**Answer: B**



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7. A compass works \_\_\_\_.

- A. Only on high mountains
- B. Only on oceans or seas
- C. Only in forests
- D. At all places within the earth's magnetic field.

**Answer: D**



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**8.** A bar magnet is dipped in iron filings and taken out. Which of the following observations is correct?

A. The maximum quantity of filings gets stucked to the ends of the magnet.

B. The maximum quantity of filings gets stucked to the middle.

- C. The filings gets uniformly distributed.
- D. The maximum quantity will be stuck at the north pole only.

**Answer: A**



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**9. Magnets lose their magnetism if**

- A. hammered
- B. Heated strongly

C. Dropped from a height

D. All of these

**Answer: D**



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**10.** The diagram shows a magnet being used to pick up a steel bar. The S-pole of the magnet is close to the centre Y of the steel bar as shown. What are the poles induced in the

steel bar at X, Y, and Z?



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**11.** Which of the following are possible sets of polarity when magnetising a steel bar PQ by the stroking method? (For magnets, N indicates north pole and S indicates south pole)



(i)  $1 = N, 2 = S, P = N, Q = S$

(ii)  $1 = N, 2 = S, P = S, Q = N$

(iii)  $1 = S, 2 = N, P = S, Q = N$

(iv)  $1 = S, 2 = N, P = N, Q = S$

A. (i) and (ii) only

B. (iii) and (iv) only

C. (i) and (iii) only

D. (ii) and (iv) only

**Answer: D**



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12. A bar magnet gets broken into four pieces E, F, G and H.



Which of the following options shows that correct poles in broken pieces ?

A. 

B. 

C. 

D. 

**Answer: C**



13. To demagnetise a magnet using the heating method, which of the following is the correct step?

A. Heat the magnet to become red hot, and allow it to cool in the east-west direction.

B. Heat the magnet to become red hot, and allow it to cool in the north-south

direction.

C. Heat the magnet in boiling water, and allow it to cool in the north-south direction.

D. Both (a) and (b).

**Answer: A**



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14. A compass is placed between two magnets as shown in the diagram. Magnet X is stronger than magnet Y. In which direction will the compass needle point?



A. 

B. 

C. 

D. 

**Answer: C**



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15. Which of the following arrangements of four bar magnets is not possible?

A. 

B. 

C. 

D. 

**Answer: C**



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