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Exploring Magnets

A. Multiple Choice Questions.

1. Which is an example of a magnetic substance?
 - a. Iron
 - b. Nickel
 - c. Cobalt
 - d. All of these

2. Which of the following is a use of magnets?
 - a. In electric motors
 - b. In food processing
 - c. In paper production
 - d. In glass manufacturing

3. Which materials are attracted to a magnet?
 - a. Magnetic materials
 - b. Non-magnetic materials
 - c. Both a & b
 - d. None of the above

4. What are the two poles of a magnet?
 - a. North and South
 - b. East and West
 - c. Up and Down
 - d. Left and Right

5. When a bar magnet is brought near iron dust, most of the dust sticks
 - a. Near the middle
 - b. Equally everywhere
 - c. Near two ends
 - d. At the middle and ends

6. What is a magnetic compass used for?
 - a. Finding directions
 - b. Measuring weight
 - c. Telling time
 - d. Measuring temperature

7. What kind of magnets were used by sailors in the olden days?
 - a. Artificial magnets
 - b. Lodestones
 - c. Electromagnets
 - d. Temporary magnets

8. Which shape of magnet is commonly used in a magnetic compass?
 - a. Bar magnet
 - b. Ring magnet
 - c. Horseshoe magnet
 - d. Needle-shaped magnet

9. What happens when like poles of two magnets are brought close together?
 - a. They attract each other
 - b. They repel each other
 - c. They do not affect each other
 - d. They rotate

10. Magnets have a shape
 - a. Cylindrical
 - b. Ball ended
 - c. Horseshoe
 - d. All of these

B. Fill in the Blanks.

occur	magnetic	storing	two	circular
repel	north-south	red	stars	break

1. The sailors used _____ to find directions at night.
2. Similar poles of two magnets _____ one another.
3. A magnet has _____ magnetic poles.
4. The poles of a magnet is where the _____ force is strongest.
5. A freely suspended magnet comes to rest along the _____ direction.
6. Magnetic poles always _____ in pairs.
7. The magnetic properties can be preserved by _____ properly.
8. We should not drop the magnet, shouldn't heat it, shouldn't _____ it.
9. A magnetic compass is usually a small _____ device with a transparent cover.
10. South pole of a magnet is painted _____.

C. State true or false.

- | | |
|--|--------------------------|
| 1. All materials are magnetic material. | <input type="checkbox"/> |
| 2. Magnetic materials are attracted to a magnet. | <input type="checkbox"/> |
| 3. Magnets can have different shapes, not just bar shapes. | <input type="checkbox"/> |
| 4. A magnetic compass is used to find directions. | <input type="checkbox"/> |
| 5. A magnet with single magnetic pole can exist. | <input type="checkbox"/> |
| 6. Like poles of two magnets attract each other. | <input type="checkbox"/> |
| 7. Heat can destroy magnetic properties of a magnet. | <input type="checkbox"/> |
| 8. Attraction but not repulsion is the sure test of magnetism. | <input type="checkbox"/> |
| 9. The North pole of a magnet is usually painted blue. | <input type="checkbox"/> |
| 10. Keep magnets in pairs with unlike poles on the same side. | <input type="checkbox"/> |

D. Answer the following questions.

1. What is a magnet?
 Ans. _____

2. How can you identify the North pole and south pole of a magnet?
 Ans. _____

3. How many north poles and south poles would there be all if you break an into 20 pieces?

Ans. _____

4. Write three properties of a magnet.

Ans. _____

5. How can you make a simple compass at home?

Ans. _____

6. What should you avoid to keep magnets safe?

Ans. _____

E. Give reason.

1. Why do you think the iron filings stick more to the ends (poles) of the magnet rather than the middle?

Ans. _____

2. Why do you think it's impossible to find a magnet with just one pole?

Ans. _____

3. Why freely suspended magnet rests along the north-south direction?

Ans. _____

F. Match the Following.

Column A	Column B	Ans.
1. Electric bell	i. Natural magnet	a. _____
2. Magnetic compass	ii. Regions of maximum attraction	b. _____
3. Magnetic poles	iii. Uses magnet	c. _____
4. Lodestones	iv. Attract each other	d. _____
5. Unlike poles	v. A navigational tool	e. _____

G. Give One-Word Answers.

- Device used to find direction :- _____
- Loss of magnetism over the time :- _____
- Materials that gets attracted towards the magnet :- _____
- The end of the magnet that points towards north direction :- _____

5. The end of the magnet that points towards South direction :- _____

6. The ancient Indian navigation tool :- _____

H. Group the objects given below as magnetic or non-magnetic objects.

Write their names under correct heading.

Coin, plastic, iron, aluminium foil, paper, cobalt rod, glass,
stainless steel, rubber, copper wire, wood, cloth, gold.

Magnetic	Non-magnetic

I. Difference between the following.

1. Magnetic and Non-magnetic material

Magnetic material	Non-magnetic material

2. Natural and Artificial magnets

Natural magnets	Artificial magnets

J. Five use of magnet.

Answer

- A.
- | | | |
|-----------------------|-------------------------|--------------------------|
| 1. All of these | 5. Near two ends | 9. They repel each other |
| 2. In electric motors | 6. Finding directions | 10. All of these |
| 3. Magnetic materials | 7. Lodestones | |
| 4. North and South | 8. Needle-shaped magnet | |
- B.
- | | | |
|-------------|----------------|-------------|
| 1. stars | 5. north-south | 9. circular |
| 2. repel | 6. occur | 10. red |
| 3. two | 7. storing | |
| 4. magnetic | 8. break | |
- C.
1. False 2. True 3. True 4. True 5. False 6. False 7. True 8. False 9. True 10. False
- D.
- A magnet is a material that has the property of attracting certain materials, such as iron, nickel, and cobalt.
 - The north pole of a magnet is the end that points north when the magnet is freely suspended. The south pole points south.
 - There would be 20 north poles and 20 south poles.
 - Three properties of a magnet are: (1) it attracts certain materials, (2) it has two poles, and (3) it can be made to lose its magnetism.
 - To make a simple compass at home, you can float a needle on a piece of cork in a bowl of water. The needle will align itself with the north-south direction.
 - To keep magnets safe, you should avoid dropping them, heating them, and breaking them.
- E.
- The iron filings stick more to the ends (poles) of the magnet rather than the middle because the magnetic field is strongest at the poles.
 - It is impossible to find a magnet with just one pole because magnetic poles always occur in pairs.
 - A freely suspended magnet rests along the north-south direction because the Earth's magnetic field is aligned in a north-south direction.
- F.
- | | | | | |
|--------|------|-------|------|-------|
| 1. iii | 2. v | 3. ii | 4. i | 5. iv |
|--------|------|-------|------|-------|
- G.
- | | |
|-----------------------|-----------------------------|
| 1. Compass | 4. north pole of the magnet |
| 2. Demagnetization | 5. South pole of the magnet |
| 3. Magnetic materials | 6. Matsya-yantra |
- H.
- Magnetic** : Iron, cobalt rod, stainless steel, Coin
Non-magnetic : plastic, aluminium foil, paper, glass, rubber, copper wire, wood, cloth, gold
- I.
- Magnetic material:** A material that can be attracted or repelled by a magnet.
Attraction to magnet Strongly attracted. Examples:-Iron, nickel, cobalt, magnetite
Non-magnetic material: A material that is not attracted or repelled by a magnet. Attraction to magnet not attracted. Examples:- Copper, aluminium, wood, plastic
 - Natural magnets:** Magnets found in nature, such as lodestones. Generally have weaker magnetic fields compared to artificial magnets.
Artificial magnets: Magnets created by humans. Artificial magnets can be made with much stronger magnetic fields through controlled manufacturing processes.
- J.
- Electric motors
 - Magnetic storage devices (hard drives, tapes)
 - Medical equipment (MRI machines)
 - Compasses
 - Holding doors closed