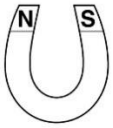
INDIAN SCHOOL AL WADI AL KABIR

Class: VI	**DEPARTMENT: SCIENCE 2020 -21**	**DATE: 4-02-2021**
WORKSHEET NO.: 16 WITH ANSWERS	**TOPIC: FUN WITH MAGNETS**	**NOTE: A4 FILE FORMAT**
NAME OF THE STUDENT	**CLASS & SEC:**	**ROLL NO.**

I. VERY SHORT ANSWERS (1M):

1. Name two magnetic substances. (Hint: iron nail, metal key)
2. Name a natural magnet. (Hint-Magnetite)
3. Define a magnet. (Hint- A substance that has the property of attracting magnetic substances such as iron, cobalt and nickel.)
4. Identify the different magnets shown.



Horseshoe magnet


U shaped magnet

Bar magnet


Ball ended magnet

5. Where is the force of attraction of a magnet maximum? (Hint: The force of attraction is maximum at the poles.)
6. In which direction does the magnet align when suspended freely? (Hint: A freely suspended magnet always align in N-S direction.)
7. What do unlike poles of the magnet do? (Hint: Unlike poles of magnet attract.)
8. How a mixture of iron filings and sand can be separated? (Hint: Mixture of iron filings can be separated by using a magnet.)
9. Why magnets should be kept away from mobiles, computer and compact disks (CDs)? (Hint: Because magnets will lose their properties and will become demagnetised.)
10. Distinguish between a magnetic and non-magnetic substances with suitable examples. (Hint: substances which get attracted by the magnet are called magnetic materials. e.g., iron nail. Substances which are not attracted by magnet are called non-magnetic substances. e.g., wood, glass)

For the questions that follows, two statements are given- one labelled Assertion (A) and the other labelled Reason (R).
Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below

i) Both A and R are true and R is correct explanation of the assertion.
ii) Both A and R are true but R is not the correct explanation of the assertion.
iii) A is true but R is false.
iv) A is false but R is true.

11. **Assertion (A):** Materials that are not attracted towards magnet are called non-magnetic.
Reason (R): Each magnet has two magnetic poles-North and South. Ans- (ii)

12. **Assertion (A):** Heat can destroy magnetic properties of a magnet.
Reason (R): There is maximum attraction in the middle of the bar magnet. Ans-(iii)

13. **Assertion (A):** Bar magnets should be kept in pairs with their unlike poles on the same side.
Reason (R): Magnets become weak if they are not stored properly. Ans-(i)

II. PASSAGE BASED QUESTIONS:

Magnets are pieces of iron or other materials which exhibit the properties of magnetism i.e. the ability to attract other objects that contain iron. Compass needles, fridge magnets and MRI scanners are some common examples of magnets.

These days magnets come in different shapes and forms such as: horseshoe magnet, bar magnet, cylindrical or a ball-ended magnet, needle magnet etc.

A great property of a magnet is that it can prove extremely helpful in navigating directions. This is because a freely suspended magnet always points in the North-South direction. This property of magnet is used to make a compass. A magnetic needle is placed inside a box with directions marked on it. It is allowed to rotate freely so that when the compass is kept at the position of rest, the needle points towards the north and south direction.

i) Study the given statements.

1) A compass is used to show directions.

2) The needle of a compass is magnetic.

3) The needle of a compass always indicates the N and the S directions of the earth.

Identify the correct statements.

a) only 1) and 2) b) only 2) and 3) c) only 1) and 3) d) all the three

ii) How is a compass useful to us?

a) In finding the altitude of a place. b) In finding only the north of a place.

c) In finding all the directions of a place. d) In making artificial magnets.

iii) Which property of magnet is used to make a magnetic compass?

a) A magnet attracts magnetic materials.

b) Like poles repel

c) A magnet can induce magnetism

d) A freely suspended magnet aligns in N-S direction.

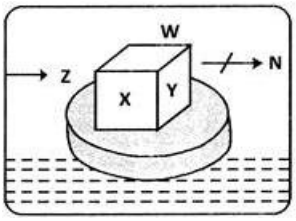
iv) A magnet in the form of a cube is placed on a piece of a cork that floats on water. The cube is marked with four directions W, X, Y and Z and the compass needle which points in the direction as shown in the figure. Which of the following denotes the N-pole and the S-pole of the cube shaped magnet?

a)

N-pole	S-pole
W	X

b)

N-pole	S-pole
X	Y



c)

N-pole	S-pole
Y	Z

d)

N-pole	S-pole
Z	W

v) Arpita is standing in the middle of a cross road with a compass. The red portion of the compass needle is pointing towards her. She wants to go towards the east, then she should turn:

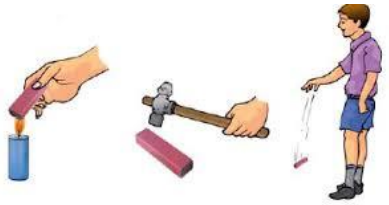
a) Right and then go straight b) Left and then go straight

c) Right and then turn left d) Left and then turn right

III.a) SHORT ANSWER TYPE QUESTIONS: (2M)

1. You are provided with two identical metal bars. One out of the two, is a magnet. How would you identify the magnet? (Hint- Take some iron filings and move the iron bars over these iron filings one by one. If iron filings are attracted very strongly at poles, then it is a magnet and if they are not attracted, then it is simply an iron bar.)
2. How can magnets be used to separate junks from junkyard? (Hint: magnets are attracted to other materials like iron, cobalt and nickel. In junkyard objects made of such magnetic material can be separated by causing them to attract to a strong magnet. Therefore, a crane with a strong magnet can be used to separate magnetic materials from the junk.)

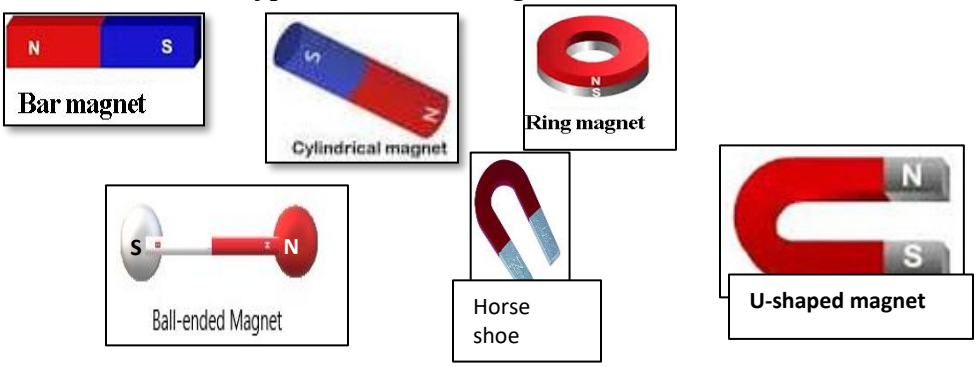
3. The picture alongside shows certain precautions. What are they and why shouldn't they be done? (Hint: a) heating a magnet b) hammering the magnet c) throwing or dropping the magnet from a height. These are the ways by which a magnet can be demagnetised.)



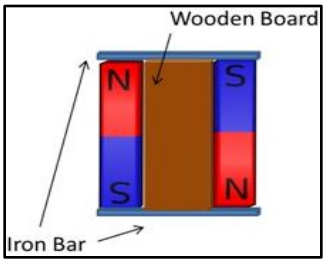
III. b) SHORT ANSWER TYPE QUESTIONS: (3M)

1. List the different properties of magnets. (Hint: A magnet attracts magnetic substances such as iron, cobalt and nickel as well as some alloys, magnet has two poles: north and south pole, unlike poles attract each other while like poles repel each other, freely suspended magnet always sets itself around north-south direction.)

2. Draw the different types of artificial magnets.

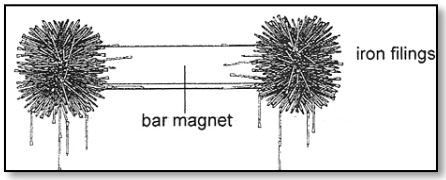


3. What will happen if a magnet is brought near a magnetic compass? (Hint: When a magnet is brought near a compass, then the magnet will attract or repel the magnetic needle of compass due to which the compass needle will be disturbed from its usual north-south direction. The compass needle will point in another direction).
4. State any four uses of magnets. (Hint: ATM, credit and debit cards have a magnetic strip that stores information and enables transactions of money, Magnets are used in junk yards to separate iron objects other waste materials, Magnetic compass is used to find directions. It has a small magnetic needle at its centre. Maglev or Magnetic levitation trains have been developed in America. These trains are without wheels and move a little above the rails.)
5. What is the correct way of storing a bar magnet and horse magnet. Also support your answer with diagrams.
   i) Bar magnet (Hint: Two-bar magnets should be placed inside a wooden box so that: a) the poles of two magnets lie opposite to each other.
   b) a wooden piece should be kept between the two magnets.
   ii)Horse-shoe magnet (Hint- Horse-shoe magnet is kept along with an iron piece across its two poles.)



IV. LONG ANSWER TYPE QUESTIONS. (5M)

1. Rahul 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 in figure.



(a) Which regions of the magnet have more iron filings sticking to it? (Hint- The two ends of the magnet have more iron filings sticking to it because magnetic strength is maximum near the ends of the magnet.)
(b) What are these regions called? (Hint-These ends are called poles of the magnet (i.e. North and South poles of magnet).
(c) How are magnetic poles named as north pole and the south pole. (Hint: The end of the magnet that points towards geographic north is called its north seeking end or the north pole of the magnet. The other end that points towards geographic south is called south seeking end or the south pole of the magnet.)

2. Describe the steps involved in magnetising an iron strip with the help of a magnet. Draw diagram to support your explanation.

(Hint-: (i) Take an iron strip which is to be magnetised.
(ii) Keep it on a wooden table.
(iii) Hold one end of a bar magnet in your hand and keep the other end of bar magnet near one edge of iron strip.
(iv)Without lifting, move it along the length of iron strip till you reach the other edge.
(v) After reaching the end of iron strip, lift the bar magnet and bring it to the same position and repeat the process again and again.
(vi)Bring some iron filings near the iron strip to check whether it has become a magnet. If not, continue the same process for some more time.)

3. How is compass used to find direction? (Hint: A compass is a small case of glass. A magnetised needle is pivoted inside the box. The needle can rotate freely. Compass also has a dial with directions marked on it. The compass is kept at the place where we want to know the directions. When the needle comes to rest it indicates north-south direction. The compass is then rotated until the north and south marked on the dial are at the two ends of the needle. Usually different colours are used to point the ends of needle to identify the north and the south poles.)

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