19. Properties of a Magnetic field.

Q1) Write the appropriate term in the blanks.

a. The alloys called..... and .....are used for making industrial magnets.

Ans: Nipermag and alnico

b. A magnetic field can pass through .....and.....

Ans: Cardboard and water

c. The intensity of magnetic field is indicated by the lines of.....

Ans: Force

d. The real test of a magnet is..... .

Ans: Repulsion

Q 2) With whom should I pair up ?

Group 'A'	Group 'B'
1. Compass	a. The highest magnetic force.
2. Door of a cupboard	b. Like poles
3. Repulsion	c. A magnet
4. Magnetic pole	d. A magnetic needle

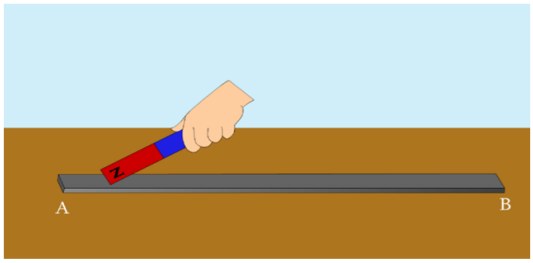
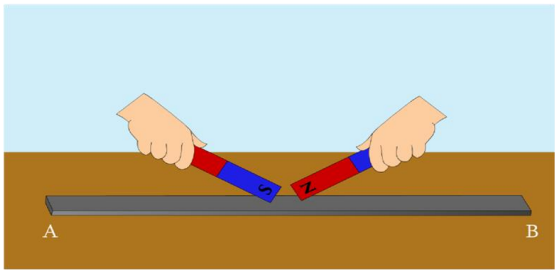
Ans :

Group 'A'	Group 'B'
1) Compass	A magnetic needle
2) Door of a cupboard	A magnet
3) Repulsion	Like poles
4) Magnetic pole	The highest magnetic force.

Q 3) Write answers to the following questions:

1. Distinguish between the two methods of making artificial magnets.

Ans :

Single-touch method	Double-touch method
1.  Single-touch method	1.  Double-touch method
2. 'N' pole of one bar magnet is rubbed over a steel bar from the end A to the end B. On repeating this procedure 15-20 times magnetism is developed in the steel bar. This method	2. Take two bar magnets and place their two opposite poles at the centre of the steel bar, both the magnets are rubbed over the steel bar from one end to the other such as south pole of one of

is called the single-touch method.	magnet is at the 'A' end and the north pole of the another bar magnet is at the 'B' end. On repeating this procedure 15 to 20 times magnetism is developed in the steel bar. This method is called the double- touch method.
3. The magnetism created by this method is of low strength and lasts for a short while.	3. The magnetism created by this method is long lasting as compared to that of single touch method.

2. Which substances are used for making electromagnets?

Ans : Electromagnet is made using- an iron nail, copper wire of about 1 meter, a battery and pins and can be tasted.

3. Write a note on ' Magnetic field '.

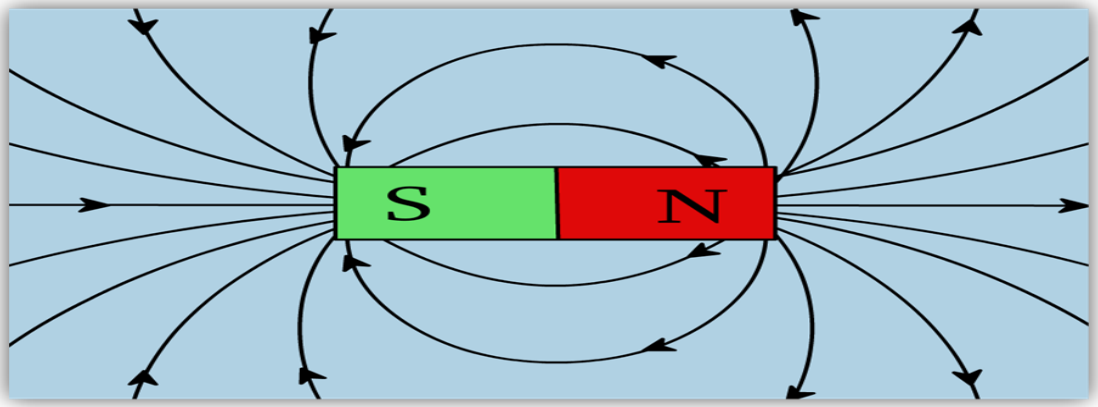
Ans : Michael Faraday implemented the idea of magnetic lines of force to explain the magnetic field. The magnetism of a magnet acts upon defined distance from the magnet. The magnetic force acts on an object, around the space in the magnet is called a magnetic field. The magnetic field around the magnet is indicated with magnetic lines of force.

4. Why is a magnetic needle used in a compass?

Ans: The magnetic needle which is used in a compass rotate freely and always settles in the north- south direction due to property of a magnet. So a magnetic needle can be used to definitely know to direction. Hence, magnetic needle is used in a compass.

5. Explain with the help of a diagram how the intensity and direction of the magnetic field of a bar magnet can be determined.

Ans:



Magnetic Field

1) The intensity of magnetic field is shown by the magnetic lines of force in that specific area. 2) Intensity of magnetic field in a specific area can be known by the number of field lines passing perpendicular through that unit area, then intensity of magnetic field is more if the lines of force are more concentrated. 3) The direction of

magnetic field is known by the directions of magnetic lines of force. The magnetic lines of force always start from the North Pole and end on the South Pole. In this way manner, the direction of magnetic field is from North Pole to South Pole.

Q 4) Give detailed information about how the merchants of olden times used a magnet while travelling.

Ans : The merchants of olden times often carried compass for ensuring directions while they travelled. In a compass, a magnetic needle is fitted. This magnetic needle is supported on a sharp point that can freely rotate in horizontal plane. When a traveler is traveling because of magnetic property, Magnetic needle always gets settled in the north-south direction. When, the north direction is known, other directions can be easily known, at the oceans only water is seen everywhere or at the desert areas only sand is at sight, it is troublesome to know the direction at night. At such times, the compass is useful for merchants to know the direction.

Q 5) Use your brain power!

1. What is the difference between gravitational force and magnetic force?

Ans : Any object which contains mass the gravitational force acts on it. There is no repulsion for the gravitational force but only attraction.

The magnetic force does not act on an object, rather it acts between magnets and magnets and magnetic substances. Both attraction and repulsion take place in the magnetic force.

2. Why is repulsion the real test for identifying a magnet?

Ans : If there is an attraction between two objects, it is unsure that both the objects are magnet. This is because, one of them can be magnet and other object can be substance like an iron.

If there is attraction between the ends of these objects and after keeping an end of one object unchanged, the end of the other object is changed, and if repulsion take place between these two ends of the objects, it is sure that both the objects are magnets. This is due to, repulsion between like poles of the magnet and attraction between unlike poles of the magnet. Thus, repulsion is the real test for identifying a magnet.

3. Which direction will a magnetic needle show on the geographic North Pole?

Ans : The magnetic lines of force of the earth's magnet are tangential to the ground towards both the poles of the earth. Thus, the magnetic needle that freely rotates, would settle almost vertical that means it would settle perpendicular to the ground. Its north pole would be at the ground and South Pole would be in the upward direction.

4. Is magnetic force a vector or a scalar quntity?

Ans : Magnetic force has both magnitude and direction, so magnetic force is a vector quantity.

5. How will you find a magnet from among the various articles given to you?

Ans : Firstly we shall take a bar magnet. Bring its any pole near both the ends of each object given. If there is attraction between both these poles then it is understood that the object is not a magnet but it is a magnetic substance such as iron, nickel or cobalt. If there is no attraction between both the ends then we understand that it is non-magnetic substance. If there is attraction at one of the end and repulsion at the other end then the other object is a magnet, because repulsion is the real test for identifying a magnet.

6. What is meant by magnetic force?

Ans: The force of attraction or repulsion that is between the poles of the magnet or the force by which magnetic substances are attracted towards the magnet is called magnetic force.

7. How does a magnetic force act without direct contact?

Ans: The magnetic lines of force produce magnetic force. Magnetic lines of force start from the North Pole and end on the South Pole. Thus, these lines of force are spread in the region around the magnet. Due to this, the magnetic force acts up to a certain distance from the magnet. Therefore, a magnetic force acts without direct contract.
