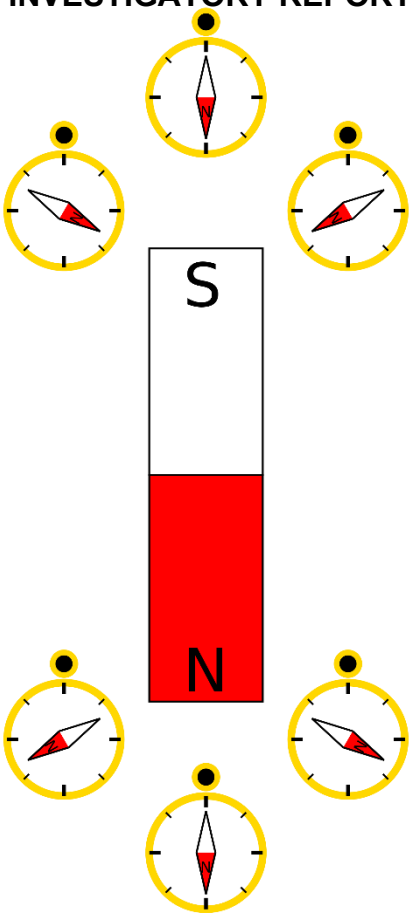
MASS PHYSICS

CLASSES FOR XI, XII & NEET-JEE BY PRABHAKAR SIR

MAGNETIC FIELD LINES

PHYSICS PROJECT
INVESTIGATORY REPORT



Submitted by:

Certificate

This is to certify that Magnetic Field Lines project is submitted to fulfil the requirement of CBSE for practical examination for academic year session

Examiner's Sign Teacher Incharge

Date:

Acknowledgement

It would be my utmost pleasure to express my sincere thanks to my Physics teacher, , in providing a helping hand in this project. My special thanks are also due to , lab assistant in our school physics lab. Their valuable support, guidance and supervision all though this project are responsible for attaining its present form. Last but not the least, I would like to thank my parents as they encouraged me to put forward my project

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Introduction

Magnetism has fascinated the mankind as early as 600BC. Shepherds in an island in Greece called Magnesia noted that their iron tipped sticks and shoes with nails often stayed struck to the ground.

Since early times, the existence of magnetic force have been known, certain kind of rocks called Lodestone would attract pieces of iron. A freely suspended Lodestone would always point in the direction; the end which pointed towards Geographic South was labelled South Pole. It therefore, would appear that the Earth acts like a giant bar magnet with its South Magnetic Pole in the Northern Hemisphere and its North Magnetic Pole in the Southern Hemisphere since opposite poles attract each other.

The directional property of magnets was known, since ancient Chinese texts dating 400BC mention the use of magnetic needles for navigation in ships.

Aim

To trace the magnetic field lines of a bar magnet and to study the effect of earth's magnetic field on it.

Apparatus

Drawing Board, paper, magnetic compass needle, bar magnet

Theory

A magnet has two poles, North and South. Opposite magnetic poles attract, while similar poles repel. When a magnet is kept at a place, it influences the space surrounding it. The effect of the magnet is recognised by the imaginary curves called the magnetic field lines. These magnetic field lines are influenced by the magnetic field of the other magnet present in the area of action. Thus the earth's magnetic field influences the field lines of the bar magnet, and thus, there is a null point found at the points, where the field of the two cut or nullify each other's effect.

Observation

1. The magnetic field lines of the magnet form continuous loops, which outside the magnet are directed from North to South Pole.
2. These lines don't intersect each other at any point.
3. The no. of magnetic field lines per unit are at a point is proportional to the magnetic field at that point. These lines are found to be more crowded near the poles.
4. The compass needle doesn't point in any particular direction indicating there is no net magnetic field at the point. Such a point is called the null point.

Result

The magnetic field and null points are as shown in attached sheet.

Conclusions

- Bar magnets act as magnetic dipoles and no isolated monopoles have ever been discovered.
- A higher density of nearby field lines indicating a strong magnetic field is seen at two poles of the bar magnet. Therefore, it can be concluded that the two poles of a bar magnet have a maximum strength of magnetic field.
- At null points, the compass doesn't point in any particular direction. At this point, the magnetic effect of a bar magnet has been neutralised by magnetic field of earth.

Bibliography

- NCERT Physics Textbook Class XII Part I & II
- www.google.com
- www.wikipedia.com