



Physics Investigatory Project **work**

To study the Earth's magnetic Field
using a compass, field lines, and
tangent Galvanometer.

2024-25

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Class XII - S2

CBSE Roll No -

CERTIFICATE

This is to certify that ANUPAM KUMARI of class XII-S2 has completed her investigatory project on the Earth's magnetic Field Using a Compass, field lines, and tangent Galvanometer, under the guidance of Ms. DEEPIKA WANKHEDEKAR for the academic year 2025-26. The certified student has been dedicated throughout their research and completed his work before the given deadline without missing any important details from the project.

MRS.DEEPIKA WANKEDEKAR

School Stamp

ACKNOWLEDGEMENT

I have taken great efforts in the completion of this project. However, it would not have been possible without the kind support and help of many individuals. I would like to extend my sincere thanks to all of them. I am highly indebted to Mr Suvendu for his guidance and constant supervision as well as for providing necessary information regarding the project and also for his support in completing the project. His constant guidance and willingness to share his vast knowledge made me understand this project and its manifestations in great depths and helped me to complete the assigned tasks on time. I would like to express my gratitude towards my parents' cooperation and

encouragement which helped me in completion of this project.

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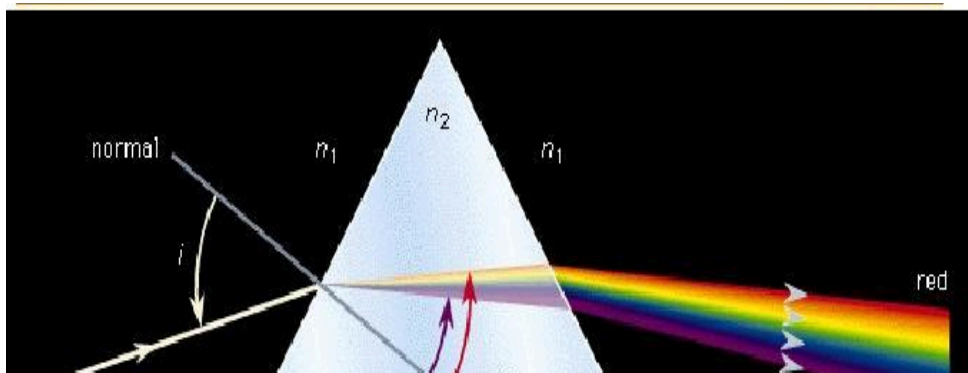
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THEORY

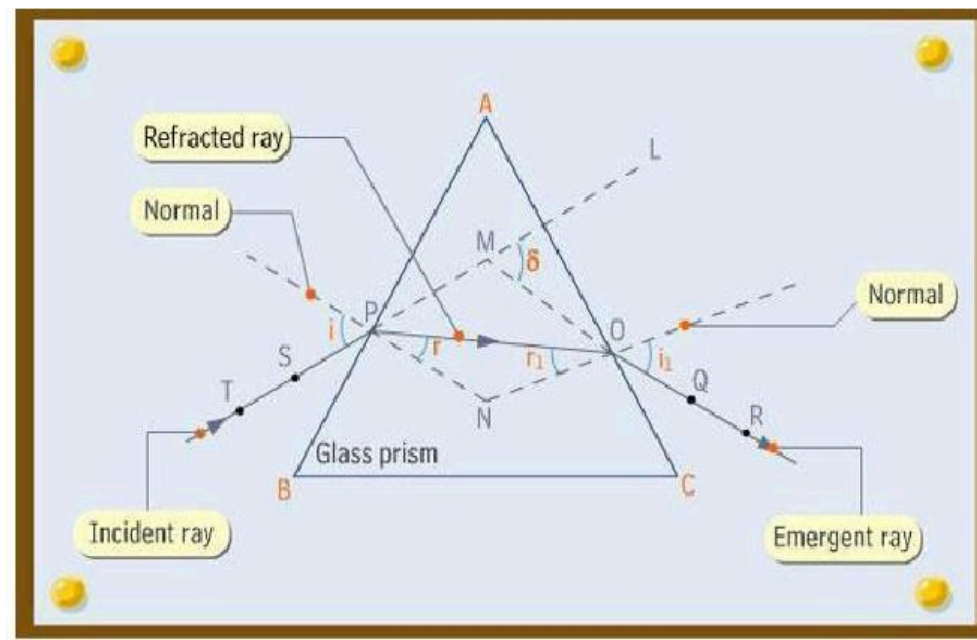
PRISM: A prism is a transparent optical element with flat, polished surfaces that refract light. Prisms can be made from any material that is transparent including glass, plastic and fluorite.

A prism can be used to break light up into its constituent spectral colors. Prisms can also be used to reflect light, or to split light into components with different polarizations.



REFRACTION: The refractive index of the liquid
Is given by the formula:

$$\mu = \frac{\sin i}{\sin r} = \frac{\sin \frac{(A + \delta_m)}{2}}{\sin \left(\frac{A}{2} \right)}$$



Where:

μ = refractive index of the liquid

δ_m = the angle of minimum deviation

r = angle of refraction

i = angle of incidence

A = angle of prism

<i>FLUIDS</i>	REFRACTIVE INDEX
<i>Water</i>	1.33
<i>Glycerine</i>	1.47
<i>Ethyl Alcohol</i>	1.36
<i>Vegetable Oil</i>	1.45
<i>Acetone</i>	1.36
<i>HCl</i>	1.34

PROCEDURE

- Fix a white sheet of paper on the drawing board with the help of drawing pins.
- Keep the prism and mark the outline of it as ABC.
- Drop a normal PQ on the side AB.

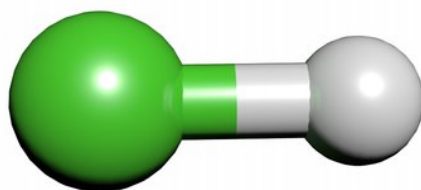
- Draw the angle of incidence in accordance with the normal PQ and place 2 pins so that they appear to be in the straight line.
- Place the prism filled with a given sample of liquid ,on the marked outline ABC.
- Now take the pins and place them on the side AC so that all the 4 pins appear to be in the same line.
- Remove the prism and draw the line joining the points so obtained.
- Mark the diagram as shown in the figure.
- Repeat this with different liquids and different angles of incidence.

OBSERVATION

TABLES

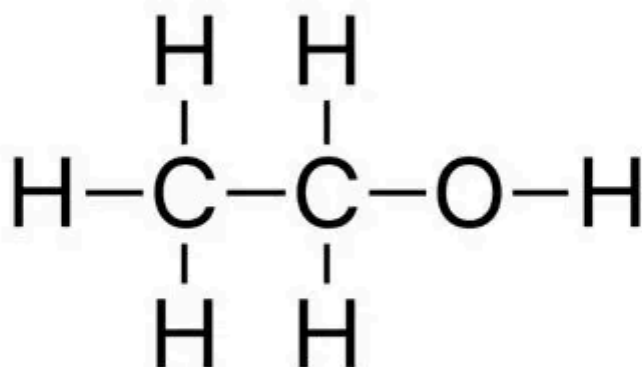
1. HCL

S.No.	i	d	A
1.	35	24	60
2.	40	30	60
3.	45	25	60
4.	50	26	60
5.	55	28	60



2. Ethyl alcohol

S.No.	i	e	d	A
1.	35	52	26	60
2.	40	44	25	60
3.	45	41	25	60
4.	50	36	26	60
5.	55	32	27	60



RESULTS

THE REFRACTIVE INDEX OF ETHYL ALCOHOL

- EXPERIMENTAL-1.36
- CALCULATED- 1.34

THE REFRACTIVE INDEX OF HCL

- EXPERIMENTAL- 1.34
- CALCULATED- 1.34

PRECAUTIONS

- Angle of incidence should lie b/w 35-60 degree.
- Pins should be vertically fixed and should lie in the same line.
- Distance b/w two points should not be less than 10mm.
- Same angle of prism should be used for all observations.
- Arrow heads should be marked to represent emergent and incident rays.



BIBLIOGRAPHY

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