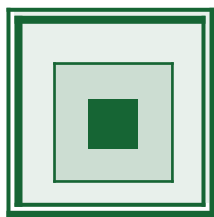


LITTLE FLOWER CONVENT SCHOOL, INDORE

Department of Science



A Practical File on

Science Practical File

Class X • practical record

Submitted in partial fulfilment of the practical examination requirements

SUBMITTED BY

Riya Sharma
Roll No. 10B18

CLASS

Class X – B

SUBMITTED TO

Mrs. Rekha Pandey

Session 2025-26

CERTIFICATE

This is to certify that Riya Sharma, a student of Class X – B, has satisfactorily completed the practical work in Science prescribed by the Central Board of Secondary Education (CBSE) during the academic session 2025–26.

The experiments recorded in this file were performed by the student in the laboratory under my supervision, and the observations and results are the student's own.

Mrs. Rekha Pandey
Subject Teacher

External Examiner
Date: -----

Sr. Mary Joseph
Principal

Acknowledgement

I would like to express my sincere gratitude to my subject teacher, Mrs. Rekha Pandey, for guidance and encouragement throughout the practical sessions, and for patiently clearing my doubts in the laboratory.

I am also thankful to Sr. Mary Joseph, Principal, for providing a well-equipped laboratory, and to the laboratory staff for their help in arranging the apparatus for every experiment.

Finally, I thank my parents and classmates for their constant support while I completed this practical file.

Riya Sharma

Index

S. No.	Name of the Experiment	Date	Remarks	Teacher's Sign
1	pH of samples using pH paper	08 Jul 2025		
2	Refraction through a rectangular glass slab	22 Jul 2025		
3	Light is necessary for photosynthesis	05 Aug 2025		
4	Properties of acetic acid	19 Aug 2025		
5	Resistors in series	02 Sep 2025		

Write the page number of each experiment in the remarks column once the file is complete.

Laboratory Safety Rules

- Wear a lab coat and closed shoes
- Never taste or smell chemicals directly
- Report any breakage or spill to the teacher at once
- Switch off and unplug equipment after use
- Wash hands before leaving the laboratory

Experiment 1: pH of samples using pH paper

Date: 08 Jul 2025

Page No.: ____

Teacher's sign: _____

Aim

To find the pH of the given samples using pH paper or universal indicator.

Apparatus / Materials Required

- Test tubes and stand
- pH paper / universal indicator and colour chart
- Samples: dilute HCl, dilute NaOH, lemon juice, water, baking soda solution

Theory

The pH scale measures how acidic or basic a solution is, from 0 to 14. A pH below 7 is acidic, 7 is neutral and above 7 is basic. Universal indicator shows a different colour for each pH value.

Procedure

1. Take about 2 mL of each sample in separate clean test tubes.
2. Dip a fresh strip of pH paper into each sample.
3. Compare the colour with the chart and note the pH.
4. Classify each sample as acidic, basic or neutral.

Observations

Sample	Colour of pH paper	pH (approx.)	Nature
Dilute HCl	Red	1	Strongly acidic
Lemon juice	Orange	2–3	Acidic
Water	Green	7	Neutral
Baking soda solution	Blue-green	8–9	Weakly basic
Dilute NaOH	Dark purple	13	Strongly basic

Observation table (sample readings – replace with your own)

Result

Result

The pH values of the samples were found and they were classified as acidic, neutral or basic (sample result).

Precautions

- Use a fresh strip for each sample.

- Handle acids and bases carefully.

Experiment 2: Refraction through a rectangular glass slab

Date: 22 Jul 2025

Page No.: ____

Teacher's sign: _____

Aim

To trace the path of a ray of light through a rectangular glass slab for different angles of incidence and measure the angles of refraction and emergence.

Apparatus / Materials Required

- Rectangular glass slab
- Drawing board, white sheet, pins
- Protractor, scale and pencil

Theory

When light passes from air into glass it bends towards the normal, and when it comes out it bends away from the normal. The emergent ray is parallel to the incident ray but laterally displaced.

Procedure

5. Fix the sheet on the board and trace the outline of the slab.
6. Draw a normal and an incident ray at 30° .
7. Fix two pins on the incident ray and two more in line with their images seen through the slab.
8. Join the points to complete the path and measure the angles.
9. Repeat for 45° and 60° .

Observations

S. No.	$\angle i (^\circ)$	$\angle r (^\circ)$	$\angle e (^\circ)$
1	30	19	30
2	45	28	45
3	60	35	60

Observation table (sample readings – replace with your own)

Result

Result

The angle of emergence equals the angle of incidence, and the emergent ray is parallel to the incident ray (sample result).

Precautions

- Pins should be vertical.
- The slab should not move during the experiment.

Experiment 3: Light is necessary for photosynthesis

Date: 05 Aug 2025

Page No.: ____

Teacher's sign: _____

Aim

To show experimentally that light is necessary for photosynthesis.

Apparatus / Materials Required

- Potted plant (destarched)
- Black paper strips and clips
- Beaker, test tube, alcohol, iodine solution, burner

Theory

Green plants make starch by photosynthesis in the presence of light. If part of a leaf is covered so that light cannot reach it, no starch is formed in that part, which can be shown with the iodine test.

Procedure

10. Keep the potted plant in the dark for 48 hours to destarch it.
11. Cover part of a leaf on both sides with black paper.
12. Place the plant in sunlight for 4–6 hours.
13. Pluck the leaf, boil it in water, then in alcohol to remove chlorophyll.
14. Wash it and add a few drops of iodine solution.

Observations

Part of leaf	Colour with iodine	Inference
Uncovered part	Blue-black	Starch present
Covered part	Brown (no change)	Starch absent

Observation table (sample readings – replace with your own)

Result

Result

Starch is formed only in the part exposed to light, which shows that light is necessary for photosynthesis.

Precautions

- Boil the leaf in alcohol using a water bath, never on a direct flame.
- Destarch the plant completely before the experiment.

Experiment 4: Properties of acetic acid

Date: 19 Aug 2025

Page No.: ____

Teacher's sign: _____

Aim

To study the properties of acetic acid: odour, solubility, effect on litmus and reaction with sodium bicarbonate.

Apparatus / Materials Required

- Test tubes
- Acetic acid, blue litmus, sodium bicarbonate, lime water

Theory

Acetic acid (ethanoic acid) is a weak carboxylic acid. It has a vinegar-like smell, is miscible with water, turns blue litmus red and reacts with bicarbonates to release carbon dioxide.



Procedure

- Smell the acid carefully by wafting.
- Add a few drops to water and observe.
- Put a drop on blue litmus paper.
- Add the acid to sodium bicarbonate and pass the gas through lime water.

Observations

Test	Observation	Inference
Odour	Smell of vinegar	Characteristic of acetic acid
Water	Mixes completely	Soluble in water
Blue litmus	Turns red	Acidic
NaHCO_3	Brisk effervescence; lime water turns milky	CO_2 evolved

Observation table (sample readings – replace with your own)

Result

Result

Acetic acid has a vinegar smell, is soluble in water, is acidic and reacts with sodium bicarbonate to give CO_2 .

Precautions

- Do not smell the acid directly.
- Use small quantities.

Experiment 5: Resistors in series

Date: 02 Sep 2025

Page No.: ____

Teacher's sign: _____

Aim

To determine the equivalent resistance of two resistors connected in series.

Apparatus / Materials Required

- Two resistors, battery, plug key
- Ammeter, voltmeter, rheostat
- Connecting wires and sandpaper

Theory

When resistors are connected in series, the same current flows through each, and the total resistance equals the sum of the individual resistances.

$$R_s = R_1 + R_2$$

Procedure

19. Find R_1 and R_2 separately using Ohm's law.
20. Connect the two resistors in series and measure V and I for the combination.
21. Calculate $R_s = V/I$ and compare with $R_1 + R_2$.

Observations

Resistor	V (V)	I (A)	R = V/I (Ω)
R_1	1.0	0.20	5.0
R_2	1.5	0.15	10.0
$R_1 + R_2$ in series	1.5	0.10	15.0

Observation table (sample readings – replace with your own)

Result

Result

The equivalent resistance of the series combination is 15.0Ω , equal to $R_1 + R_2$ (sample result).

Precautions

- Connections must be tight.
- Pass current only for a short time.

Viva Voce: Frequently Asked Questions

Q1. What is least count?

The smallest value that an instrument can measure accurately.

Q2. Why are multiple readings taken?

To reduce random errors and obtain a more reliable mean value.

Q3. What is a systematic error?

An error that shifts all readings in the same direction, such as a zero error.

Q4. Why is a graph preferred over a single calculation?

It averages out random errors and shows whether the relationship is linear.

Q5. What is the difference between accuracy and precision?

Accuracy is closeness to the true value; precision is closeness of repeated readings to each other.

Bibliography

- Laboratory manual issued by the department / school.
- Prescribed textbook for the subject (latest edition).
- Class notes and practical demonstrations by the subject teacher.