

GREENLAWNS HIGH SCHOOL
PRELIMINARY EXAMINATION YEAR 2018-19

SUBJECT : PHYSICS PRACTICAL
TIME : 1 HR

CLASS : X
MARKS : 20

Note: The first 10 minutes have to be spent in reading this paper, planning your work and checking the quality of your apparatus. The one hour at the head of this 10 minutes has to be used to perform your practical.

Writing work has to be done in the following order – Aim, observation table, calculation (if any) and conclusion. Do not copy the apparatus and procedure. Attach the white sheet of paper (on which you have performed experiment) to the answer sheet.

Aim : To determine how lateral displacement depends on the angle of incidence when a ray of light gets refracted through glass slab.

Apparatus : A wooden board, white sheet of a paper, pins, a glass slab, scale, Protractor etc.

Procedure –

1. Take a white sheet of a paper and fix it on a wooden drawing board.
2. Place a glass slab on this sheet and make its outline ABCD and then remove the glass slab.
3. Mark point O (point of incidence) on the side AB (about 2cm away from point A). Draw a normal MN at point O.
4. Draw PO (Incident ray) at 30° to this normal.
5. Mark two points P and Q on Ray PO which are about 4cm apart.
6. Place the glass slab on the outline drawn and two pins on points P and Q.
7. Look at the images of Pins placed on point P and Q from side CD.
8. Fix two pins R and S, such that P, Q, R and S all seem to be in a straight line.
9. Take off the glass slab and pins. Draw small circles around the pin holes.
10. Draw a ray which passes through R and S (emergent ray) and meets CD at point O' (point of emergence)
11. Draw a normal M'N' at point O'
12. Join the points O and O'. This segment OO' is a refracted ray.
13. Extend PO with dotted line, so that it emerges out from the glass slab through side CD.
14. Measure the perpendicular distance between the extension of PO and Ray RS.
15. Repeat above all the steps (1 -14) for angles of incidence of 40° and 50° .
16. Write your conclusion and observation i.e. $\angle i$, $\angle e$ and lateral displacement.

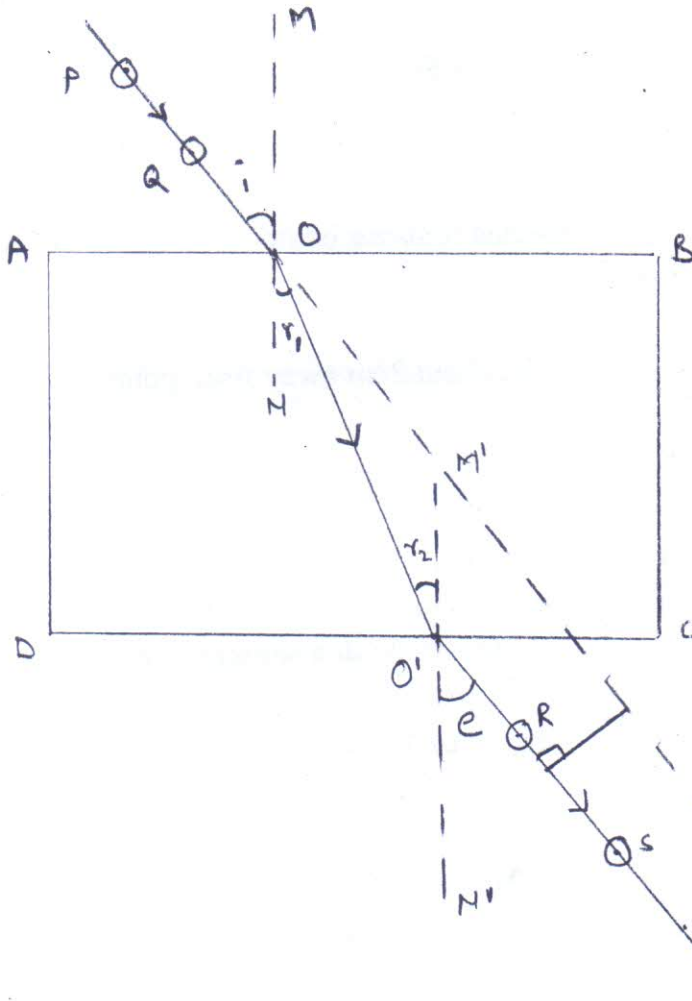
Observation table:

$\angle i$	$\angle r$		$\angle e$	Lateral displacement (cm)
	$\angle r_1$	$\angle r_2$		
30°				
40°				
50°				

Answer the following questions based on the experiment.

- 1) How does the path of ray change when it emerges out of glass slab?
- 2) Define: Lateral displacement

Refer to the following diagram for performing an experiment.



ABCD = Glass slab

Point O = point of incidence

MN and M'N' = Normals

\overrightarrow{PQ} = Incident Ray

$\overrightarrow{OO'}$ = Refracted Ray

\overrightarrow{RS} = Emergent Ray

$\angle i$ = Angle of incidence

$\angle r_1$ and $\angle r_2$ = Angle of refraction

$\angle e$ = Angle of emergence

EF = Perpendicular distance