

GREENLAWNS HIGH SCHOOL
PRELIMINARY EXAMINATION YEAR 2016-2017

SUBJECT : PHYSICS PRACTICAL

CLASS : X

TIME : 1 HOUR

MARKS : 20

Note : The first 10 minutes have to be spent in reading this paper & checking your apparatus. Use the hour at the end of these 10 minutes to perform your practical. Write aim, observation, calculation and conclusion only. Do not copy the procedure.

Aim – To determine the refractive index of a glass slab.

Apparatus – Wooden board, White sheet of paper, board pins, headed pins, glass slab, protractor, compass.

Procedure – 1) Take a white sheet of paper & fix it on a wooden drawing board with pins.

2) Place a glass slab on the paper & trace its outline. Mark the glass slab as ABCD.

3) Mark a point P, on side AB, at a distance of 1 cm from corner A. Draw a normal NPN at P.

4) Draw PX (incident ray) at 45° to this normal.

5) Mark 2 points P_1 & P_2 on PX which are 3 – 4 cm apart.

6) Place the glass slab on the outline drawn. Position 2 pins at P_1 & P_2 on line PX.

7) Look at the images of P_1 & P_2 from side CD.

8) Fix 2 pins P_3 & P_4 where the images of P_1 & P_2 are seen so that P_1, P_2, P_3 & P_4 all appear to be in a straight line.

9) Take off the slab & pins. Draw small circles around the pin holes on the sheet.

10) Draw line RY which passes through P_3 & P_4 & meets CD at R (emergent ray). Draw a normal at R & mark $\angle e$.

11) Join P & R refracted ray.

12) Measure & enter the values of $\angle r$ & $\angle e$ in your table.

13) With 'P' as centre & any suitable radius draw a circle which cuts the incident ray at 'E' & refracted ray at 'G'.

14) From points E & G, draw lines which make 90° angle with normal NPN & touch the normal at points F & H respectively.

15) Measure EF & GH & record their values in your table.

16) Find the ratio of EF & GH (correct to one decimal place) & enter this value in your table. This is the refractive index of the slab μ_1 .

17) Repeat steps 1 to 16 to calculate μ_2, μ_3 for angle of incidence 55° & 60° respectively.

18) Calculate ${}_a\mu_g$ by finding the average of μ_1, μ_2 & μ_3 .

19) a) Briefly list 2 precautions you would take to ensure the accuracy of your findings.

b) If the glass slab was heated would the values of the following rise, fall or stay same?

i) Refractive Index of the slab.

ii) Speed of light in the slab.

Observation Table

$\angle i$	$\angle r$	$\angle e$	EF(cm)	GH(cm)	$\mu = \frac{EF}{GH}$
45°					$\mu_1 =$
55°					$\mu_2 =$
60°					$\mu_3 =$

