LAB 6: REFRACTION OF LIGHT – GLASS BLOCK

AIM: To determine the refractive index of a rectangular glass block

APPARATUS & MATERIALS:

rectangular glass block	paper
optical pins	tape
protractor	wooden board

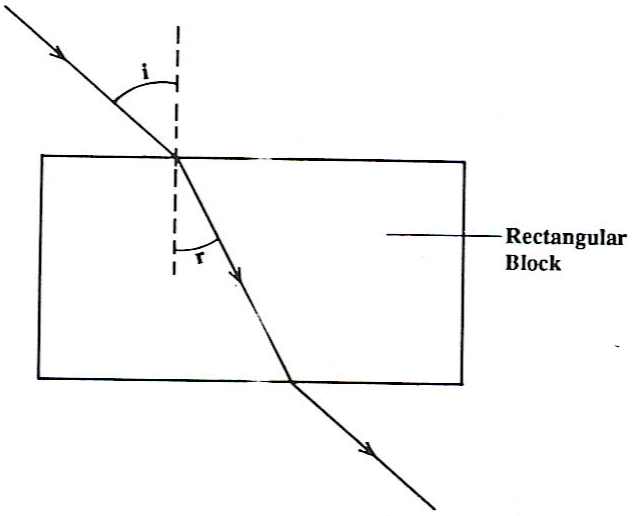

Diagram: Apparatus for the refraction of light

METHOD:

- Fasten a sheet of paper to a drawing board or flat surface into which pins can be pressed easily.
- Draw accurately the outline of the rectangular glass block.
- Using a protractor, draw a normal, in a position as shown in the diagram, and measure the angle of incidence, ***i*** **= 15^{o}**
- Press ***pin1*** and ***pin2*** into the paper at the positions shown in the figure above.
- Place the rectangular accurately into the outline.
- With your eye at bench level, look into the rectangular and find a position where the image of ***pin2*** covers ***pin1***. Now press in first ***pin3*** and ***pin4*** so that they in turn cover the images of ***pin1***

and ***pin2***. ***Pin3*** and ***pin4*** will be in line with the images of ***pin1*** and ***pin2***. ***Pin3*** and ***pin4*** mark the position of the refracted ray.

- Remove all pins and draw the line through ***pin3*** and ***pin4***.
- Remove the glass block, draw in the emergent ray and the refracted ray and measure the angle of refraction, ***r***.
- Repeat the experiment for the other angles of incidences, **0^{o}, 30^{o}, 45^{o} and 60^{o}**
- Tabulate the values of the angles ***i*** and ***r,*** and also using the calculator, the values of ***sin i*** and ***sin r***.

THEORY:

- State the laws of refraction.
- State Snell's Law. State the formula.

OBSERVATIONS / RESULTS:

- Fasten trace into SBA book. (a fully labelled diagram)
- Record and tabulate all results in table below (showing all headings and units)

Angle of incidence, *i*	**Angle of refraction, *r***	***sin i***	**sin r**

- Plot the graph of ***sin i*** against ***sin r***.

CALCULATIONS:

- Calculate the gradient from the graph to determine the refractive index of the rectangular glass block.

CONCLUSION:

- State the refractive index of the glass block.
- State the laws of refraction and Snell's law