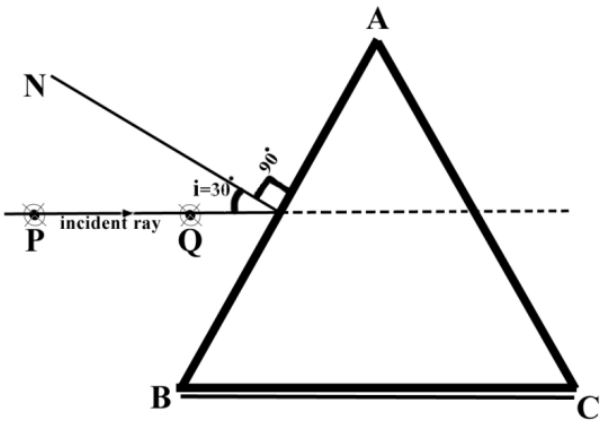
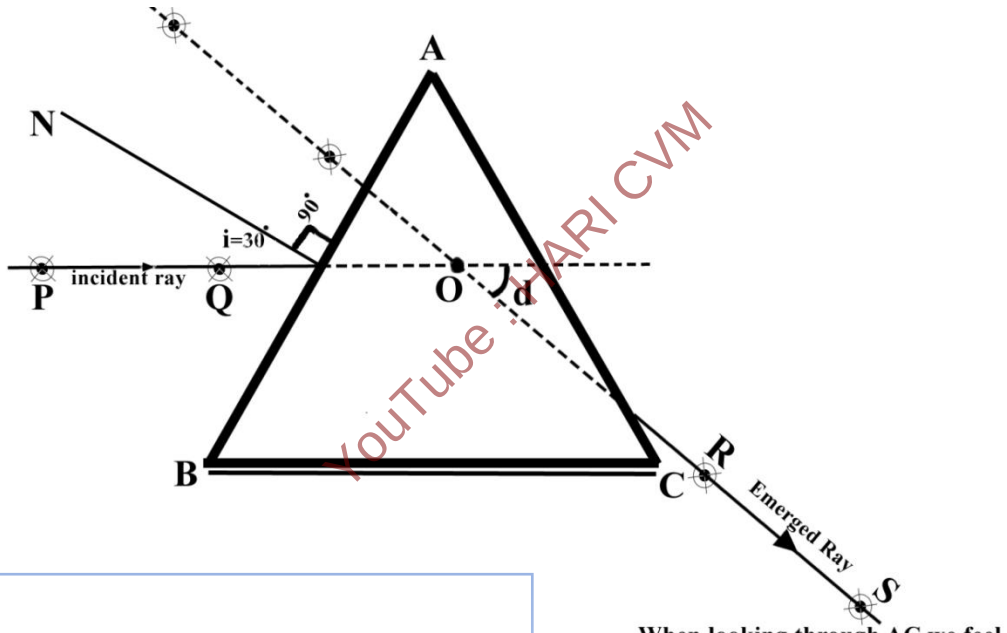
Observations and Calculation

Step 1

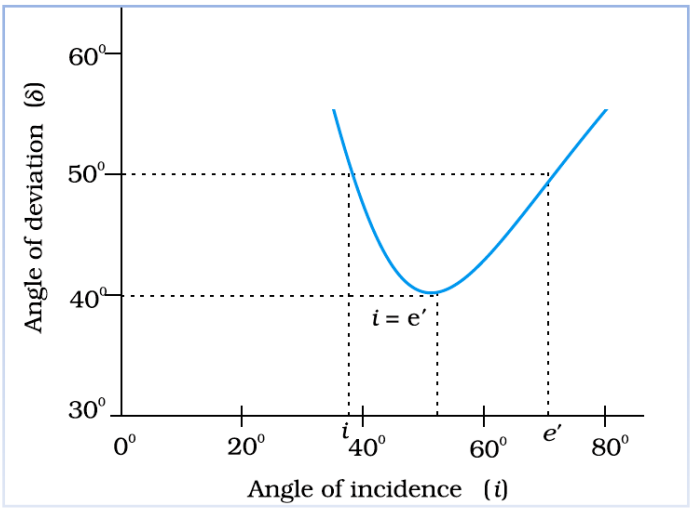
Sl no	Angle of Incidence i	Angle of deviation d
1 2 3 4 5 6		



Step 2



When looking through AC we feel that all 4 pins are in straight line



$$n = \frac{\sin\left(\frac{A + D_m}{2}\right)}{\sin\left(\frac{A}{2}\right)} = \ldots\ldots\ldots\ldots$$

The value of minimum deviation,D= ……

The refractive index of the material of prism,n= ……

REFRACTION THROUGH A PRISM

AIM

1. To study the variation of angle of deviation (d) with angle of incidence (i) for a prism
2. To plot i-d curve
3. To determine the refractive index of the material of prism

APPARATUS

Glass prism, 4 pins , scale , protractor , prism board (drawing board)

THEORY

The refractive index of the material of prism is $$n = \frac{\sin\left(\frac{A + D_m}{2}\right)}{\sin\left(\frac{A}{2}\right)}$$

where D is the angle of minimum deviation (from i-d curve)
A is the angle of prism

PROCEDURE

Fix a A4 sheet on a paper board , place prism and draw the boundary ABC. Then draw normal N (90^0 with AB) to the middle of side AB. From the meeting point draw a incident ray (PQ) at angle $i=30^0$.
Fix two pin at P and Q (pins should be vertical with paper) on the incident ray. Place prism inside marking ABC. Close one eye and look through prism side AC. Fix two pin R and S such that all 4 pins seems to be in single line when looking through prism from side AC. After removing prism, extend lines RS such that they meet at O. find the angle of deviation (d) between lines as given in fig. Repeat the same for $i=35^0,40^0,45^0,50^0$ etc.

RESULT

1. when i increases d decreases first then increases
2. i-d graph plotted. The value of minimum deviation, D= ……
3. The refractive index of the material of prism, n =