PHY 1701L (Engineering Physics).

Date:- 2021/03/04

Lab Manual and Records

Reg. No:- 20BDS0405

INTEGRATED OPTICS.

APPARATUS AVAILABLE:-

- Spectrometer
- Spirit Level
- Magnifying Glass
- Glass prism
- Sodium Vapour Lamp.

SLO:

✓ To determine the apex angle of given prism using a spectrometer.

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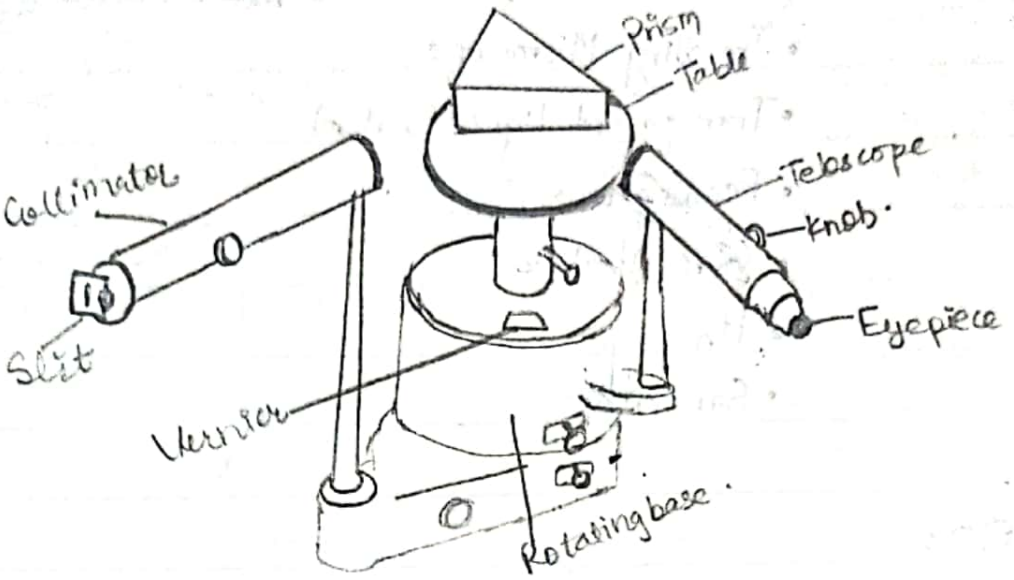

Fig:- Schematic diagram of a Spectrometer.

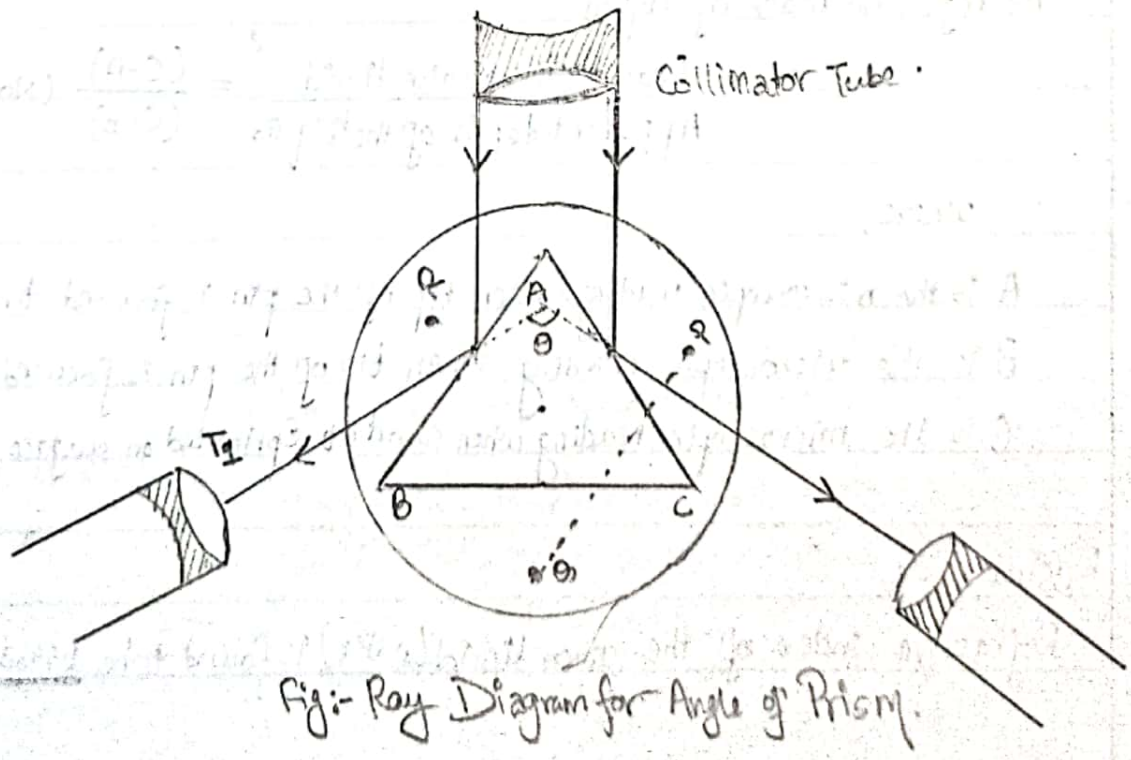

Fig:- Ray Diagram for Angle of Prism.

Tabulation:-

Least Count = 1' = $(\frac{1}{60})^{\circ}$

Reading of reflected ray	Vernier A			Vernier B.		
	MSR	VSR	Total	MSR	VSR	Total.
Reflection from side AB. (a).	293°	17'	293.28°	113°	13'	113.22
Reflection from side AC. (b).	55°	12'	55.2° +(360°)	235°	25'	235.42
Difference between 'a' and 'b'		θ_1 =	121.92°		θ_2 =	122.2

~~Mean θ~~

SAMPLE CALCULATIONS:-

For Vernier A, for reflection of ray from AB, MSR = 293°, VSR = 17'

Total = $293 + \frac{17}{60} = 293.28^{\circ}$

for reflection of ray from AC, MSR = 55°, VSR = 12'

Total = $55 + \frac{12}{60} = 55.2^{\circ} + (360^{\circ})$

$\theta_1 = (360 + 55.2^{\circ}) - 293.28^{\circ} = 121.92^{\circ}$

For Vernier B, for reflection of ray from AB, MSR = 113°, VSR = 13'

Total = $113 + \frac{13}{60} = 113.22^{\circ}$

for reflection of ray from AC, MSR = 235°, VSR = 25'

Total = $235 + \frac{25}{60} = 235.42^{\circ}$

$\theta_2 = (235.42 - 113.22)^{\circ} = 122.2^{\circ}$

Mean $(\theta) = \frac{\theta_1 + \theta_2}{2} = \frac{122.2 + 121.92}{2} = 122.06^{\circ}$

Angle of prism $(A) = \frac{\theta}{2} = \frac{122.06}{2} = 61.03^{\circ}$

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RESULT :-

The apex angle of the given equilateral prism is 61.05°