

Apparatus Available :-

- Spectrometer
- Spirit level
- Magnifying glass
- Glass prism
- Sodium vapour lamp

SLO :-

To determine the refractive index of the glass prism using a spectrometer.

Calculation :-

$$\mu = \frac{\sin\left(\frac{A + \delta_m}{2}\right)}{\sin\left(\frac{A}{2}\right)} \quad (\text{No units})$$

μ - Refractive index of glass prism

A - Angle of prism

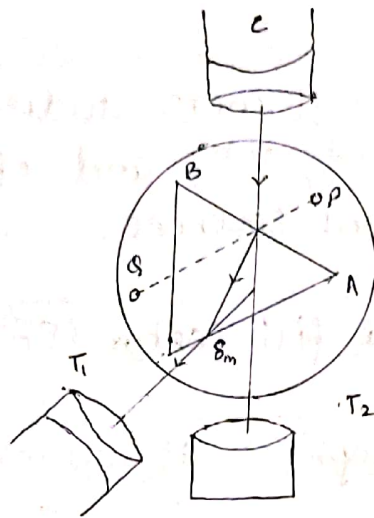
δ_m - Angle of minimum deviation

$$\mu_A = \frac{\sin(49.49165^\circ)}{\sin(30^\circ)} = 1.5206$$

$$\mu_B = \frac{\sin(49.96665^\circ)}{\sin(30^\circ)} = 1.5313$$

Result :-

The refractive index (at 589.3 nm) of the given glass prism is : 1.52595


 Ray Diagram
for Refractive
Index of Prism

Tabulation :-

 Least count =
Angle of prism, $A = 60^\circ$

Vernier	Reading for minimum deviation position (R_1)			Reading for direct ray (R_2)			$\delta_m = R_1 - R_2$	μ
	MSR ()	VSR ()	TR ()	MSR ()	VSR ()	TR ()		
A	315°	$6'$	$315^\circ 6'$	354°	$5'$	$354^\circ 5'$	$38^\circ 59'$	1.5206
B	135°	$4'$	$135^\circ 4'$	175°	$0'$	175°	$39^\circ 56'$	1.5313

$$\text{Average } \mu = \frac{1.5206 + 1.5313}{2} = 1.52595$$