



Fig 6.1. Determination of angle of minimum deviation

Refractive Index of a PrismApparatus Available:

Spectrometer, spirit level, magnifying glass, glass prism, mercury vapour lamp.

Student Learning Objectives:

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

Theory:

$$\mu = \frac{\sin \left(\frac{A + \delta_m}{2} \right)}{\sin \left(\frac{A}{2} \right)}$$

where μ = refractive index of glass prism, A = angle of prism, δ_m = angle of minimum deviation

Calculations:

Least count of vernier scale = $\frac{\text{Least count of main scale}}{\text{Number of vernier divisions}}$

$$= \frac{0.5^\circ}{30}$$

$$= \frac{30'}{30}$$

$$= 1'$$

Least count of vernier scale is $1'$ (1 minute).

Teacher's Signature _____

vernier	Readings for minimum deviation position (R_1)			Readings for direct ray (R_2)			$S_m = R_1 - R_2$	μ
	MSR	VSR	Total	MSR	VSR	Total		
A	40	4	40.067	345.5	9	345.65	54.42	1.68
B	220	3	220.05	165.5	12	165.7	54.35	1.68

Table 6.1. Observations to find refractive index of prism

Result:

The refractive index (at given wavelength) of the glass prism is 1.68.