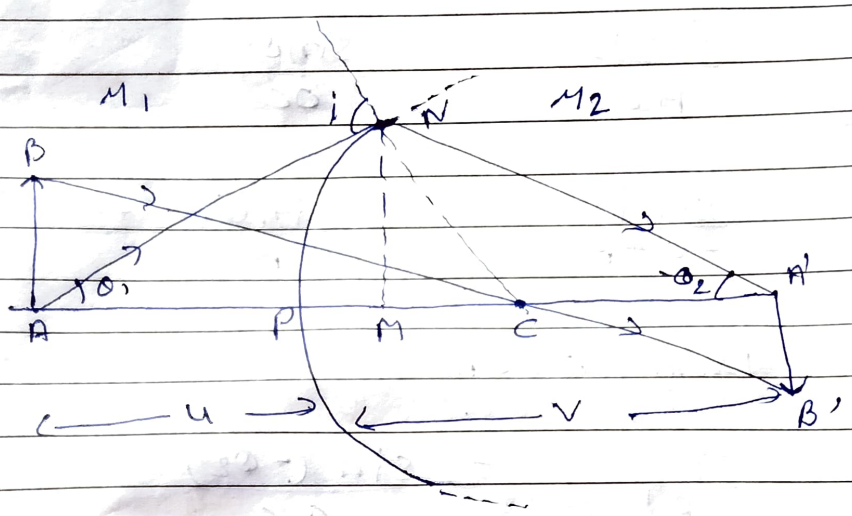
B.Sc Part - II

Smith - Helmholtz equation and Lagrange law

$$\mu_1 h_1 \tan\theta_1 = \mu_2 h_2 \tan\theta_2$$

Smith - helmholtz equation



Angular magnification

$$\alpha = \frac{\tan\theta_2}{\tan\theta_1} = \frac{\tan(-\theta_2)}{\tan\theta_1}$$

$$\boxed{\mu_1 h_1 \theta_1 = \mu_2 h_2 \theta_2}$$

Langrange's law

$$\alpha = -\frac{\tan\theta_2}{\tan\theta_1} \quad \text{---(i)}$$

$$\tan(-\theta_2) = \frac{NM}{MA'} = \frac{NM}{v}$$

$$\tan\theta_1 = \frac{NM}{AM} = \frac{NM}{-u}$$

$$\alpha = \frac{\tan\theta_2}{\tan\theta_1} = \frac{NM}{V} \times \frac{}{}$$

$$\alpha = \frac{\tan\theta_2}{\tan\theta_1} = \frac{u}{v} \quad \text{---(ii)}$$

Linear magnification

$$m = \frac{\mu_1}{\mu_2} \times \frac{v}{u} = \frac{h_2}{h_1}$$

$$m = \frac{\mu_1}{\mu_2} \times \frac{\tan\theta_1}{\tan\theta_2} = \frac{h_2}{h_1}$$

$$\frac{\mu_1}{\mu_2} \times \frac{\tan\theta_1}{\tan\theta_2} = \frac{h_2}{h_1}$$

$$\boxed{\mu_1 h_1 \tan\theta_1 = \mu_2 h_2 \tan\theta_2}$$

If Rays are paraxial.

$$\tan\theta_1 \simeq \theta$$

$$\boxed{\mu_1 h_1 \theta_1 = \mu_2 h_2 \theta_2}$$