Numericals:-

1] Fringe of equal thickness are observed in a thin glass wedge of $\mu = 1.52$. The fringe spacing is 0.1 μm. Wavelength of light is 589.3 nm Calc wedge angle.

$\mu = 1.52$

$\lambda = 589.3 \times 10^{-9}$

$\beta = 0.1 \times 10^{-6}$

$\beta = \frac{\lambda}{2\mu\theta} \Rightarrow$

$\theta = \frac{\lambda}{2\mu\beta} = \frac{589.3 \times 10^{-9}}{2 \times 1.52 \times 0.1 \times 10^{-5}}$

$= 1938.4868 \times 10^{-3}$

$= 1938.48684 \times 10^{-3}$

$\theta = \frac{1.9 \times 180}{\pi}$

$\theta = 111.039°$

2] In a newtons rings exp. diameter of 10th ring due to a light of $\lambda = 6000 Å$ in air is 0.5 cm what is the radius of curvature of the plano convex lens used.

$Dn = 0.5 \times 10^{-2} m \quad \lambda = 6000 \times 10^{-10}$

3]

$n=10 \quad R=? \quad \mu=1$

$D_n^2 = \frac{4n\lambda R}{\mu}$

$10^{-4} \times 0.25 = 4 \times 10 \times 6000 \times 10^{-10} \times R$

$10^5 \times \frac{0.0625}{6000} = R$

$\therefore R = 1.04166\ m$

3] In a newtons rings exp. the dia of 12th wave was found to be 5.146 cm & that of 4th ring was 5.007 cm. If radius of curvature of the plano convex lens is 75cm. Calc. λ of light from the exp.

$m+n = 12$

$n = 4$

$\therefore m = 8$