Solution: Δy_0 = displacement of images = 5β

$$\therefore \frac{D}{d}(\mu - 1)t = 5 \times \frac{\lambda D}{d}$$

$$t = \frac{5\lambda}{\mu - 1} = \frac{5 \times 5890 \times 10^{-8}}{1.52 - 1}$$

or $t = 5.66 \times 10^{-4}$ cm.

Example: In an interference arrangement similar to YDSE, slits S_1 and S_2 are illuminated with coherent microwave sources each of frequency 10MHz. The sources are synchronized to have zero phase difference. The slits are separated by distance 15m. The intensity is measured as a function of θ, θ is defined as shown in the figure. If I_0 is maximum intensity, calculate I_θ for (a) $\theta = 0^0$ (b) $\theta = 30^0$ and (c) $\theta = 90^0$