

5 In a Young's double slit experiment, light of 500 nm is used to produce an interference pattern. When the distance between the slits is 0.05 mm, the angular width (in degree) of the fringes formed on the distance screen is close to :

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- (a) 0.17° (b) 0.57° (c) 1.7° (d) 0.07°

Ans

(b) Given : Wavelength of light, $\lambda = 500 \text{ nm}$
Distance between the slits, $d = 0.05 \text{ mm}$
Angular width of the fringe formed,

$$\theta = \frac{\lambda}{d} = \frac{500 \times 10^{-9}}{0.05 \times 10^{-3}} = 0.01 \text{ rad} = 0.57^\circ.$$