

Q 3. If the source of light used in a Young's double slit experiment is changed from red to violet :

[Feb. 24, 2021 (II)]

- (a) consecutive fringe lines will come closer
- (b) the central bright fringe will become a dark fringe
- (c) the fringes will become brighter
- (d) the intensity of minima will increase

(a) Fringe width,

$$\beta = \frac{\lambda \cdot D}{d}$$

Here, λ = wavelength of light

D = Distance of screen from source

d = Distance between the slits

$$\because \lambda_R > \lambda_V$$

As wavelength of light decreases, fringe width will decrease and fringe line will come closer.