

**02.** Consider the diffraction pattern for a small pinhole. As the size of the hole is increased

- a. the size decreases.
- b. the intensity increases.
- c. the size increases.
- d. the intensity decreases.

**Sol.** (a) and (b) are correct.

We know that width ( $B_0$ ) of central maxima  $B_0 = \frac{D\lambda}{d}$  and width of nth secondary maxima =  $\frac{\lambda}{d}$   
here distance (D) between slit and screen, the wavelength  $\lambda$  of source does not change.

So on increasing width of hole of pinhole, 'd' increase. Hence the size of central maxima decreases verifies the option (a).

As the energy passing through the hole increased on increasing the size of the hole. So the intensity of pattern will increase. Hence verifies the option (b).