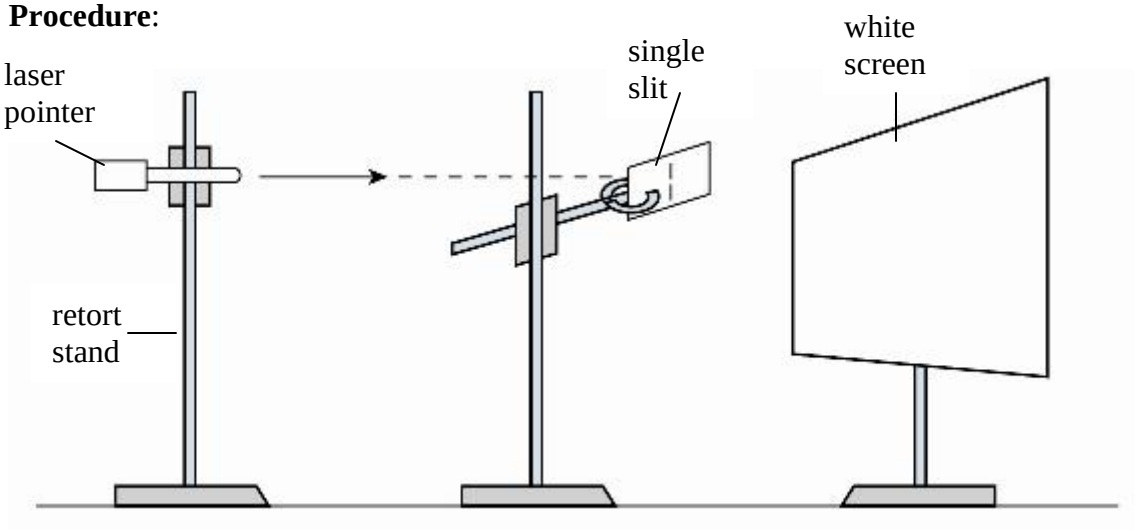
CHAPTER 6: WAVES

EXPERIMENT ON THE DIFFRACTION OF LIGHT WAVES

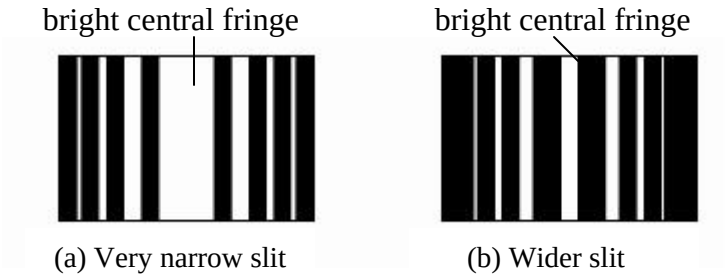
Aim: To study the diffraction of light waves
Apparatus and materials: Laser pointer, white screen, retort stands and 2 single slits of different widths

Procedure:



1. The apparatus is set up as shown in the above diagram.
2. The laser pointer is adjusted until the laser beam is directed towards the single slit and a visible diffraction pattern is formed on the white screen.
3. The procedure is repeated using the second single slit with a larger width.

Observation:



1. With a narrow slit, the bright fringes are further apart.
2. With a wider slit, the bright fringes are closer to the central bright fringe.

EXTRA INFO

Characteristics of Diffraction

1. When diffraction occurs:
   (a) wave direction changes;
   (b) wavelength is unchanged;
   (c) frequency is unchanged;
   (d) speed is unchanged;
   (e) wave velocity changes.

2. If the gap through which the wave is passing is narrower, the effect of diffraction will be greater.
3. The smaller the size of the obstacle is, the greater the effect of diffraction will be.
4. The amplitude of the diffracted wave is smaller than that of the incident wave.