

# 36 Lecture - PHY101

## Important Subjective

**What is interference in the context of waves?**

**Answer:** Interference is the interaction of two or more waves resulting in a pattern of alternating bright and dark regions called an interference pattern.

**What is the difference between constructive and destructive interference?**

**Answer:** Constructive interference occurs when waves add up to produce a higher amplitude, resulting in a bright region. Destructive interference occurs when waves cancel each other out, resulting in a dark region.

**What is the double-slit experiment?**

**Answer:** The double-slit experiment is an experiment that demonstrates interference of light waves. A beam of light is passed through two narrow slits, which act as two sources of coherent waves. The waves interfere with each other, creating an interference pattern on a screen placed behind the slits.

**What is diffraction in the context of waves?**

**Answer:** Diffraction is the bending of waves around an obstacle or through an aperture.

**What is the relationship between the size of an obstacle or aperture and the amount of diffraction?**

**Answer:** The amount of diffraction depends on the size of the obstacle or aperture relative to the wavelength of the wave. The larger the obstacle or aperture, the greater the diffraction.

**What is X-ray diffraction?**

**Answer:** X-ray diffraction is a technique used to determine the atomic structure of crystals. X-rays are passed through a crystal, and the diffraction pattern produced by the crystal is analyzed to determine the arrangement of atoms.

**What is the difference between interference and diffraction?**

**Answer:** Interference occurs when waves from different sources interact with each other, while diffraction occurs when waves encounter an obstacle or aperture.

**What is the principle behind the operation of optical devices such as lenses and mirrors?**

**Answer:** Optical devices manipulate the behavior of light by using different combinations of lenses and mirrors to create interference or diffraction patterns.

**Can sound waves diffract around corners? Why or why not?**

**Answer:** Yes, sound waves can diffract around corners because their wavelength is much larger than that of light waves.

**Can light waves diffract around corners? Why or why not?**

**Answer:** Light waves cannot diffract around corners because their wavelength is much smaller than that of sound waves.