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.