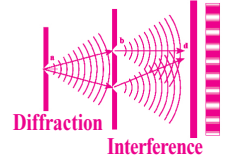


Diffraction



3. WAVE OPTICS



IMP DEFINITIONS & FORMULAS

- Wave optics** is the study of light in terms of diffraction, interference & polarisation of light.
- Coherent waves:** Two wave sources are coherent if their frequency and wave form are identical. **Ex:** The slits in Young's double slit experiment are coherent sources. They cause interference pattern.
- Interference of Light:** The phenomenon of superposing of two waves coming from coherent sources is called Interference. Interference forms bright and dark fringes.
- Principle of Super position:** Displacements of two or more 'interfering waves' can be added algebraically to produce a resulting wave. $y = y_1 + y_2 + \dots$
- Diffraction :** The phenomenon of bending of light at the sharp corners of an obstacle placed in the path of light is called diffraction of light.
- Polarisation:** Restriction of the transverse vibrations of light waves to one plane is called polarization.
- Doppler effect in Light:** The change in apparent frequency or wavelength of light due to relative motion of the source is called Doppler effect in light.
- Malus' Law :** $I = I_0 \cos^2 \theta$
- Brewster's law :** $n = \tan i_B$
- Fresnel distance:** $z_F = \frac{a^2}{\lambda}$

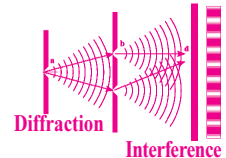
BULLET MASTER'S

PHYSI BEATS!

Diffraction



3) WAVE OPTICS [1 SAQ]



Second Chapter RAY OPTICS అంటే ఎలాగైతే Reflection, Refraction of Light గుర్తుకొస్తాయో అలాగే

WAVE OPTICS అంటే రకీమని గుర్తుకూరావల్సినవి Interference & Diffraction of Light

Interference of light waves is understood from 'Young's Double slit Experiment'.

Overlapping of waves causes **Interference** (Constructive or Destructive)

Colourful spectrum in soap bubbles is due to interference of light.

Diffraction (bending and diffusion) of light rays happens when they pass through a small aperture.

X-ray diffraction(Bragg's Equation), Solar corona are examples for diffraction.

IPE View

- ☞ **IMP SAQ :** Doppler effect in light, Intensity at interference pattern, Conservation of energy in interference and diffraction