**10-WAVE OPTICS**

**1. Reflection and Refraction of Light Waves**

1. Snell’s law,  2.  3. Speed of light in vacuum,  4.  5. Wavelength in medium,  6. Optical path (in vacuum) = μ x Path in medium 7. Frequency of light remains unchanged during its reflection or refraction

**2. Amplitude and Intensity at any point in an Interference Pattern**

1. Resultant amplitude,  2. Resultant intensity,  3. When 

**3. Young’s Double Slit Experiment**

1. For the bright fringe, path difference,  2. For a dark fringe, , *n* = 1,2,3 3. Distance of *nth* bright fringe from the centre of the screen, , *n = 1,2,3*,….. 4. Distance of *nth* dark fringe from the centre of the screen,  5. Fringe width,  6. Wavelength of light used, 

7. Angular position of *nth* bright fringe,  8. Angular position of *nth* dark fringe 

**4. Intensity Ratio at Maxima and Minima of an Interference Pattern**

1. Intensity of lightWidth of slit 2. Ratio of slit widths,  3. Intensity at maxima,  4. Intensity at minima,  5. Intensity ratio at maxima and minima  where = amplitude ratio of two waves.

**5. Interference in Thin Film**

1. For reflected system of light, (i) Maxima:  (ii) Minima:  2. For transmitted system of light, (i) *Maxima*:  (ii) *Minima*: 

Where *n = 0,1,2,3,…..*

**6. Displacement of Interference Fringes**

1. When a thin transparent sheet of thickness *t* and refractive index μ is inserted in one of the interfering beams, path difference introduced,  2. Displacement of the central bright fringe, 

**7. Diffraction of Light and Fresnel’s distance**

1. For diffraction at a single slit of width *d*. (i) Condition for *nth* minimum is  where *n* = 1,2,3,…. (ii) Condition of *n*th secondary maximum is  , where *n* = 1,2,3,… (iii) Angular position or direction of *nth* minimum  (iv) Distance of *n*thminimum from the centre of the screen.  (v) Angular position of *nth* secondary maximum,  (vi) Distance of *n*th secondary maximum from the centre of the screen.  (vii) Width of central maximum,  (viii) Angular spread of central maximum on either side,  (ix) Total angular spread of central maximum,  2. For diffraction at a circular aperture of diameter *d*, (i) Angular spread of central maximum,  (ii) Linear spread,  (iii) Areal spread,  where *D* is the distance at which the effect is considered. 3. Fresnel distance, 

4. Size of Fresnel zone, 

**8. Resolving Power of (i) Telescope (ii) Microscope**

1. Limit of resolution of a telescope,  2. Resolving power of a telescope =  where D = diameter of the objective lens. 3. Limit of resolution of a microscope,  4. Resolving power of a microscope =  where = half angle of cone of light from the point object. The factor μ *sin* is called numerical aperture (N.A).

**9. The law of Malus**

Law of Malus, 

**10. Brewster Law**

1. Brewster law,  2.  3. .

**11. Doppler Effect of Light**

1. 2. 