

Name of Teacher: Dr. Meena Devi

Session (2023-24) Even Semester

B. Sc. IInd year (4th Sem), Paper: Wave & Optics II

January 2024

2nd week: Polarization: Polarisation by reflection, refraction and scattering, Malus Law, Phenomenon of double refraction, Huygen's wave theory of double refraction (Normal and oblique incidence)

3rd week: Analysis of polarized Light. Nicol prism, Quarter wave plate and half wave plate,

4th week: production and detection of (i) Plane polarized light (ii) Circularly polarized light and (iii) Elliptically polarized light.

5th week: Optical activity, Fresnel's theory of optical rotation, Specific rotation, Polarimeters (half shade and Biquartz)

February 2024

2nd week: Numerical problems of Unit I, Introduction of Unit II, Fourier theorem and Fourier series,

3rd week: evaluation of Fourier coefficient, importance and limitations of Fourier theorem, even and odd functions,

4th week: Fourier series of functions $f(x)$ between (i) 0 to 2π , (ii) $-\pi$ to π , (iii) 0 to π , (iv) $-L$ to L , complex form of Fourier series, Application of Fourier theorem for analysis of complex waves: solution of triangular

5th week: rectangular waves, half and full wave rectifier outputs, Parseval identity for Fourier Series, Fourier integrals. Numerical problems of Unit II, Introduction of Unit III,

March 2024

2nd week: Fourier transforms and its properties, Application of Fourier transform (i) for evaluation of integrals,

3rd week: Matrix methods in paraxial optics,

4th week: effects of translation and refraction, derivation of thin lens and thick lens formulae, unit plane, nodal planes, system of thin lenses.

5th week: Holly Break

April 2024

1st week: Chromatic, spherical, coma, astigmatism and distortion aberrations and their remedies.

2nd week: Optical fiber, Critical angle of propagation, Mode of Propagation, Acceptance angle, Fractional refractive index change, Numerical aperture,

3rd week: Types of optics fiber, Normalized frequency, Pulse dispersion, Attenuation, Applications,

4th week: Fiber optic Communication, Advantages.

5th week: Revision