Department of Physics

SEMESTER – II (UG/SHPHS/C-4) CORE-T-4

WAVES AND OPTICS

Credit-4; Full Marks: 25

Subject Teacher: DR ABHIJIT SINHA

SYLLABUS UNITIZATION

Month	Week	Topics to be taught
March	2	Simple Harmonic oscillations, Differential equation of SHM and its solution.
March	3	Kinetic Energy, Potential energy, Total energy and their time-average values.
March	4	Damped oscillation, Forced oscillation: Transient and steady states.
April	1	Resonance, sharpness of resonance, Power dissipation and Quality factor.
April	2	**CLASS TEST**
April	3	Linearity and superposition principle, superposition of two collinear oscillations having (1) equal frequencies and (2) Different frequencies (beats).
April	4	Superposition of **N** collinear Harmonic oscillations having(1) equal phase differences and (2) equal frequency differences.
May	1	Superposition of two perpendicular Harmonic oscillations. Graphical and analytical methods.
May	2	Lissajous figures with equal and unequal frequency and their uses.
May	3	**CLASS TEST**
May	4	Plane and spherical waves. Longitudinal and transverse waves, Plane progressive waves (Travelling).
June	1	Wave equation, Particle and wave velocities, Differential equation.
June	2	Pressure of longitudinal waves, energy transport, Intensity of waves.
June	3	Water waves: ripple and gravity waves.
June	4	**CLASS TEST**