Sr. No.	Lecturer/Lab	Name of the Experiment	%Syllabus Covered	Date of Exp.
1	Week-1	Find the moment of inertia of a fly wheel about its own axies of rotation		
2	Week-2	To study the V-I characteristics of a p-n junction diode		
3	Week-3	To find the frequency of A.C. mains by using sonometer		
4	Week-4	To derive a relationship b/w frequency and length of a given wire under constant tension and plot a graph		
5	Week-5	To determine the wavelength of He-Ne Laser with the help of a single slit.		
6	Week-6	To determine the specific rotation of a cane sugar solution with the help of Polari meter		
7	Week-7	To determine the height of an Object/Line with the help of a sextant		

Sr. No.	Lecturer/Lab	Name of the topic	%Syllabus Covered	Date of topic
1	Week-1 1,2,3	Electric field and electrostatic potential for a charge distribution		
2		Divergence and curl of electrostatic field; Laplace's and Poisson's equations		
3	Week-2 1,2,3	Differential and integral form of Gauss law		
4		Energy of a charge distribution and its expression		
5	Week-3 1,2,3	Electrostatic field at axial and equatorial line of an electric dipole		
6		Electric potential of a dipole		
7	Week-4 1,2,3	Boundary conditions of electric field and electrostatic potential and displacement vector		
8		Bio-Savart law, Divergence and curl of static magnetic field		
9	Week-5 1,2,3	Vector potential and calculating it for a given magnetic field using Stokes theorem;		
10		Ampere circuital law its differential and integral form		
11	Week-6 1,2,3	Term related to magnetic field; magnetic susceptibility, magnetic permeability		
12		Condition on B and H, Magnetic material: diamagnetic, paramagnetic and ferromagnetic materials		
13	Week-7 1,2,3	Curie point, B-H curve.		
14		Faraday's law; equivalence of Faraday's law and motional EMF		

15	Week-8 1,2,3	Lenz‘s law; Differential formof Faraday’s law;		
16		Continuity equation for current densities; displacement current		
17	Week-9 1,2,3	Magnetic field arising from time-dependent electric field;		
18		Maxwell‘s equation in vacuum, Maxwell‘s equation in non-conducting medium;		
19	Week-10 1,2,3	Energy stored in an electromagnetic field; Flow of energyand Poynting vector (Qualitative only)		
20		Poynting theorem (Qualitative only)		
21	Week-11 1,2,3	Momentum in EM field (Qualitative only)		
22		The wave equation; Plane E.M. waves in vacuum,		
23	Week-12 1,2,3	E.M. Wave transverse nature and polarization		
24		Relation between electric and magnetic fields of an electromagnetic wave		
25	Week-13 1,2,3	Energy carried by electromagnetic waves and examples.		
26		Momentum carried by electromagnetic waves and resultant pressure		
27	Week-14 1,2,3	Reflection and transmission of EM waves at normal incidence		

Sr. No.	Lecturer/Lab	Name of the topic	% Syllabus Covered	Date of topic
1	Week-1 1,2,3	Scalar and vector field; gradient of a scalar field		
2		Divergence and curl of a vector field		
3	Week-2 1,2,3	Newton's laws and their applications;Form invariance of Newton's Second Law		
4		Problems including constraints		
5	Week-3 1,2,3	Laplace and Poisson equation, Potential energy function; F = - Grad V		
6		Equi-Potential surfaces and meaning of gradient.		
7	Week-4 1,2,3	Conservative and non-conservative forces, curl of a force field		
8		Central forces; Conservation of Angular Momentum		
9	Week-5 1,2,3	Kepler law, Simple harmonic Motion (SHM)		
10		Mechanical and electrical simple harmonic oscillators		
11	Week-6 1,2,3	Harmonic oscillator; Damped harmonic motion – over-damped, critically damped and lightly- damped oscillators		
12		Forced oscillations and resonance.		

13	Week-7 1,2,3	Definition and motion of a rigid body in the plane		
14		Rotation in the plane; Angular velocity& momentum		
15	Week-8 1,2,3	Moment of inertia, Parallel and perpendicular axis theorem		
16		Hooke law, Stress strain diagram		
17	Week-9 1,2,3	Angular momentum about a point of a rigid body in planar motion		
18		Inertial and non inertial frame of reference .		
19	Week-10 1,2,3	Poisson Ratio, Relation between four elastic constants		
20		Galilean transformation (velocity, acceleration) and its inadequacy,		
21	Week-11	Michelson Morley experiment and its outcome		
22	1,2,3	Postulates of Special theory of relativity		
23		Lorentz transformation		
24	Week-12 1,2,3	Length contraction, Time dilation		
25 26	Week-13 1,2,3	Mass energy equivalence Variation of mass with velocity		

Sr. No.	Lecturer/Lab	Name of the topic	%Syllabus Covered	Date of topic
1	Week-1 1,2,3	Simple harmonic Motion (SHM), Energy of a simple harmonic oscillation		
2		Simple pendulum, Mechanical and electrical simple harmonic oscillators,		
3	Week-2 1,2,3	Damped harmonic oscillator – heavy, critical and lightdamping		
4		Energy decay in a damped harmonic oscillator		
5	Week-3 1,2,3	Forced mechanical and electrical oscillators, steady state motion of forced damped harmonic oscillator		
6		Quality factor and resonance, electrical and mechanical impedance,		
7	Week-4 1,2,3	Power absorbed by oscillator.		
8		Huygen's principle, superposition of waves		
9	Week-5 1,2,3	Interference of light by division of wavefront and division of amplitude		
10		Young's double slit experiment, Fresnel biprism		
11	Week-6 1,2,3	Newton's rings; Difference between Fresnel and Fraunhoffer diffraction		
12		Fraunhoffer diffraction from a single slit, double slit		
13	Week-7 1,2,3	N-slit and plane transmission diffraction gratings		
14		Rayleigh criterion for limit of resolution and resolving power of diffraction gratings		
15	Week-8 1,2,3	Dispersive power of granting		
16		Characteristics of LASER Light: mono-chromaticity, temporal and spatial coherence, directionality and brightness		
17	Week-9 1,2,3	Spontaneous emission and stimulated emission of light		
18		Relation between Einstein's A and B coefficients		
19	Week-10 1,2,3	Pumping, population inversion, meta-stable state, components of LASER, amplification of light by stimulated emission, Lasing action,		
20		Different types of lasers; gas lasers (He-Ne)		
21	Week-11 1,2,3	Solid-state lasers (Ruby, Neodymium), Applications of LASER.		
22		Transverse wave on a string, Harmonic waves, waves at a boundary		

		Impedence matching, standing waves and their eigen frequencies		
23	Week-12 1,2,3	Longitudinal waves and its equation, acoustics waves, standing sound waves. Waves with dispersion, water waves, wave groups and group velocity.		
24		Fermat‘s principle of stationary time and laws of reflection and refraction,		
25	Week-13 1,2,3	Light as an electromagnetic wave		
26		Reflectance and transmittance		
27 28	Week-14 1,2,3	Brewster‘s angle Total internal reflection		

Sr. No.	Lecturer/Lab	Name of the topic	%Syllabus Covered	Date of topic
1	Week-1 1,2,3	Crystal Structure: Crystalline and Amorphous solids		
2		Crystal Structure: lattice translation vector		
3	Week-2 1,2,3	Space lattice, basis; Unit cell and Primitive cell, Fundamental types of lattices: two-dimensional and three dimensional Bravais lattices		
4		Characteristics of Unit cells: Simple Cubic (SC), Body Centred Cubic (BCC), Face Centred Cubic (FCC), Hexagonal Close Packed (HCP) structure;		
5	Week-3 1,2,3	Simple crystal structures: Sodium Chloride, Cesium Chloride, Cubic Zinc Sulphide		
6		Miller Indices, Bonding in Solids		
7	Week-4 1,2,3	Point defects in crystals: Schottky and Frenkel defects		
8		Need and origin of Quantum concept, Black body radiation		
9	Week-5 1,2,3	Photoelectric effect, Wave Particle duality		
10		Matter waves, Phase velocity and group velocity		
11	Week-6 1,2,3	Uncertainty Principle and Applications; Schrodinger's wave equation		
12		Time-dependent and time –independent		
13	Week-7 1,2,3	Physical Significance of wave function.		
14		Particle inone dimensional box.		
15	Week-8 1,2,3	Intrinsic and extrinsic semiconductors, n type and p type semiconductors		
16		Dependence of Fermi level on carrier-concentration and temperature (equilibrium carrier statistics)		
17	Week-9 1,2,3	Carrier generation and recombination, Carrier transport: diffusion and drift		
18		p-n junction, Current-voltage characteristics of p-n junction		
19	Week-10 1,2,3	Metal- semiconductor junction (Ohmic and Schottky).		
20		Review of Quantum Concepts		
21	Week-11 1,2,3	Free electron theory		
22		Density of states and energy band diagrams		
23	Week-12 1,2,3	Periodic potential, Kronig Penny model (Qualitative) and Energy bands in solids		

24		E-K diagram, Direct and indirect bandgaps		
25	Week-13 1,2,3	Types of electronic materials: metals, semiconductors, and insulators		
26		Occupation probability of electrons		
27 28	Week-14 1,2,3	Fermi energy & Fermi level Effective mass		