

Branch : Mechanical Engg.

Semester : First

Subject : Applied Physics-I

Session : August 2024- November 2024

Teacher : Amit Pathak

Class Room : L-3

Sr. No.	No. of Lectures	Chapter/ Unit Description	Detail of Contents	Reference Resources	Remarks
1	10	3rd, 4th and 5th week of August Physical world, Units and Measurements	Physical quantities: fundamental and derived Units and systems of units (FPS, CGS and SI units) Dimensions and dimensional formulae of physical quantities Principle of homogeneity of dimensions, Dimensional equations and their applications (conversion from one system of units to other) (checking of dimensional equations and derivation of simple equations), Limitations of dimensional analysis. Errors in measurements (systematic and random), absolute error, relative error, error estimation and significant figures Revision of whole Chapter	R1, R2, R3 and R4	
2	12	1st, 2nd and 3rd week of September Force and Motion	Scalar and Vector quantities – examples, representation of vector, types of vectors. Addition and Subtraction of Vectors, Triangle and Parallelogram law (Statement only) Scalar and Vector Product, Resolution of a Vector and its application to inclined plane (Rectangular components) and lawn roller. Linear momentum, its applications such as recoil of gun & rockets, Impulse and its applications. Circular motion, definition of angular displacement, angular velocity, angular acceleration, frequency, time period. Relation between linear and angular velocity, linear acceleration and angular acceleration (related numerical), Centripetal and Centrifugal forces with live examples, Expression and applications such as banking of roads and bending of cyclist and Class test-I. Revision of whole Chapter	R1, R2, R3 and R4	
3	12	4th week of sept. and 1st, 2nd week of October Work, Power and Energy	Work: Concept and units, examples of zero work, positive work and negative work Friction: concept, types, laws of limiting friction, coefficient of friction methods for reducing friction and its engineering applications Work done in moving an object on horizontal and inclined plane for rough and plane surfaces and related applications. Energy and its units, kinetic energy, gravitational potential energy with examples and derivations Mechanical energy, conservation of mechanical energy for freely falling bodies, transformation of energy (examples). Power and its units, power and work relationship, calculation of power (numerical problems). Revision of whole Chapter	R1, R2, R3 and R4	

4	7	3rd, 4th week of October	Rotational Motion	<p>Translational and rotational motions with examples.</p> <p>Definition of torque and angular momentum and their examples.</p> <p>Conservation of angular momentum (quantitative) and its applications.</p> <p>Moment of inertia and its physical significance, radius of gyration for rigid body, Theorems of parallel and perpendicular axes (statements only),</p> <p>Moment of inertia of rod, disc, ring and sphere (hollow and solid): (Formulae only).</p> <p>Revision of whole Chapter</p>	R1, R2, R3 and R4
5	7	5th week of October and 1st, 2nd week of November	Properties of Matter	<p>Elasticity: Definition of stress and strain, different types of moduli of elasticity, Hooke's law, significance of stress-strain curve.</p> <p>Pressure: definition, units, atmospheric pressure, gauge pressure, absolute pressure.</p> <p>Fortin's Barometer and its applications.</p> <p>Surface tension: concept, units, cohesive and adhesive forces, angle of contact,</p> <p>Ascent Formula (No derivation), applications of surface tension, effect of temperature and impurity on surface tension</p> <p>Revision of whole Chapter</p>	R1, R2, R3 and R4
6	11	3rd, 4th, 5th week of November	Heat and Thermometry	<p>Concept of heat and temperature.</p> <p>Modes of heat transfer (conduction, convection and radiation with examples),</p> <p>scales of temperature and their relationship,</p> <p>Types of Thermometer (Mercury thermometer, bimetallic thermometer, Platinum resistance thermometer, Pyrometer) and their uses.</p> <p>Expansion of solids, liquids and gases.</p> <p>coefficient of linear, surface and cubical expansions and relation amongst them.</p> <p>Co-efficient of thermal conductivity.</p> <p>Revision of whole Chapter</p>	R1, R2, R3 and R4

REFERENCE RESOURCES

- Applied -Physics-I by R.A. Banwat {R1}
- Khanna Publications {Hindi Medium}(A.P.-I) {R2}
- Modern ABC of Physics-I {R3}
- Katson Publications (A.P.-I) {R4}
- Wikipedia, edX, ed-tech, flipgurd, Ted etc.

Signature of Teacher with Date

Signature of H.O.D. with Date