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LESSON PLAN

GOVT.POLYTECHNIC,SONEPUR

Discipline –All Branches	Semester-1st	Name of The Teaching Faculty:-Sri Silu Mallick,Lect.(Stage-II) in Physics SUB: APPLIED PHYSICS-I
SESSION-2025-26(W)	No.of days/per week-04	Commencement of classes from date: 06.08.25 to 04.12.2025 No. of weeks : 15 (excluding vacation & Holidays)
Week	**Period**	**TOPICS TO BE COVERED**
1st	1st	**Unit-1(Physical World, units and measurements):**Physical quantities, fundamental and derived physical quantities
	2nd	Units and systems of units (FPS, CGS and SI units)
	3rd	Dimensions and dimensional formulae of physical quantities
	4th	Principle of homogeneity of dimensions
2nd	1st	Dimensional equations and their applications
	2nd	checking correctness of dimensional equations
	3rd	conversion from one system of units to other
	4th	derivation of simple equations by using dimensional analysis method
3rd	1st	Limitations of dimensional analysis
	2nd	Measurements: Need, measuring instruments, least count, types of measurement (direct, indirect)
	3rd	Errors in measurements (systematic and random), absolute error, relative error, error propagation, error estimation and significant figures
	4th	**Unit 2(FORCE AND MOTION):** Scalar and Vector quantities – examples, representation of vector, types of vectors. Addition and Subtraction of Vectors
4th	1st	Triangle and Parallelogram law (Statement only), Scalar and Vector Product
	2nd	Triangle and Parallelogram law (Statement only), Scalar and Vector Product
	3rd	Resolution of a Vector and its application to inclined plane and lawn roller, Force, Momentum
	4th	Statement and derivation of conservation of linear momentum, its applications such as recoil of gun, rockets, Impulse and its applications
5th	1st	Circular motion, definition of angular displacement, angular velocity, angular acceleration, frequency, time period
	2nd	Class Test-1
	3rd	Relation between linear and angular velocity, linear acceleration and angular acceleration (related numerical)

	4th	Centripetal and Centrifugal forces with live examples, Express and applications such as banking of roads and bending of cyclis
6th	1st	**Unit 3(WORK,POWER AND ENERGY):** Work: Concept and units, examples of zero work, positive work and negative work Friction: concept, types
	2nd	laws of limiting friction, coefficient of friction, reducing friction and its engineering applications
	3rd	Work done in moving an object on horizontal and inclined plane for rough and plane surfaces and related applications
	4th	Energy and its units, kinetic energy
7th	1st	gravitational potential energy with examples and derivations
	2nd	mechanical energy, conservation of mechanical energy for freely falling bodies, trans- formation of energy (examples)
	3rd	Power and its units, power and work relationship, calculation of power
	4th	numerical problems
8th	1st	**Unit 4(ROTATIONAL MOTION):** Translational and rotational motions with examples
	2nd	Definition of torque and angular momentum and their examples
	3rd	Conservation of angular momentum (quantitative) and its applications
	4th	Conservation of angular momentum (quantitative) and its applications
9th	1st	Moment of inertia and its physical significance
	2nd	radius of gyration for rigid body
	3rd	Theorems of parallel and perpendicular axes (statements only)
	4th	Moment of inertia of rod, disc, ring and sphere (hollow and solid); (Formulae only)
10th	1st	numerical problems
	2nd	Class Test-2
	3rd	**Unit 5(PROPERTIES OF MATTER):** Elasticity: definition of stress and strain
	4th	moduli of elasticity, Hooke's law, significance of stress-strain curve.
11th	1st	moduli of elasticity, Hooke's law, significance of stress-strain curve.
	2nd	Pressure: definition, units, atmospheric pressure, gauge pressure, absolute pressure
	3rd	Fortin's Barometer and its applications.
	4th	Surface tension: concept, units, cohesive and adhesive forces

12th	1st	angle of contact, Ascent Formula (No derivation)
	2nd	applications of surface tension, effect of temperature and impurity on surface tension
	3rd	Viscosity and coefficient of viscosity: Terminal velocity
	4th	Stoke's law and effect of temperature on viscosity
13th	1st	application in hydraulic systems, Numerical problems
	2nd	Hydrodynamics: Fluid motion, stream line and turbulent flow
	3rd	Reynolds's number Equation of continuity, Bernoulli's Theorem (only formula and numerical) and its applications
	4th	Reynolds's number Equation of continuity, Bernoulli's Theorem (only formula and numerical) and its applications
14th	1st	Numerical problems
	2nd	**Unit 6(HEAT AND THERMOMETRY):** Concept of heat and temperature, modes of heat transfer (conduction, convection and radiation with examples)
	3rd	specific heats, scales of temperature and their relationship
	4th	Types of Thermometer (Mercury thermometer, bimetallic thermometer, Platinum resistance thermometer, Pyrometer) and their uses
15th	1st	Expansion of solids, liquids and gases
	2nd	coefficient of linear, surface and cubical expansions and relation amongst them, Co-efficient of thermal conductivity, engineering applications
	3rd	Revision of classes
	4th	Class Test-3

Prepared by:

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HOD 23/07/25
Math&Sc

23/07/25
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