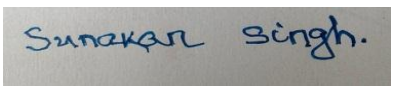
PNS SCHOOL OF ENGINEERING & TECHNOLOGY, MARSHAGHAI

DEPARTMENT OF SCIENCE AND HUMANITIES

LESSON PLAN

DISCIPLINE :MECHANICAL SEMESTER: 1ST SUBJECT: ENGG PHYSICS NO.OF DAYS/WEEK CLASS ALLOTED: 05			NAME OF THE TEACHING FACULTY: MR KSHITISH KUMAR SINGH SEMESTER FROM DATE: 16/08/2023 TO DATE: 11/12/2023 NO OF WEEKS: 17
WEEK		CLASS DAY	THEORY TOPICS
1st week	UNIT 1	1	Physical quantities - (Definition).Definition of fundamental and derived units, systems of units (FPS, CGS, MKS and SI units).
		2	Definition of dimension and Dimensional formulae of physical quantities. Dimensional equations and Principle of homogeneity
		3	Checking the dimensional correctness of Physical relations.
	UNIT 2	4	Scalar and Vector quantities (definition and concept), Representation of a Vector – examples, types of vectors. Triangle and Parallelogram law of vector Addition (Statement only). Simple Numerical
		5	Resolution of Vectors – Simple Numericals on Horizontal and Vertical components.
2nd week		6	Vector multiplication (scalar product and vector product of vectors).
	UNIT 3	7	Concept of Rest and Motion.
		8	Displacement, Speed, Velocity, Acceleration & FORCE (Definition, formula, dimension & SI units).
		9	Equations of Motion under Gravity (upward and downward motion) - no derivation. Circular motion: Angular displacement, Angular velocity and Angular acceleration (definition, formula & SI units).
		10	Relation between –(i) Linear & Angular velocity, (ii) Linear & Angular acceleration). Time of Flight, Maximum Height and Horizontal Range for a projectile fired at an angle, Condition for maximum Horizontal Range.
3rd week		11	Define Projectile, Examples of Projectile. 3.7 Expression for Equation of Trajectory
		12	Time of Flight, Maximum Height and Horizontal Range for a projectile fired at an angle, Condition for maximum Horizontal Range.
	UNIT 4	13	Work – Definition, Formula & SI units.
		14	Friction – Definition & Concept.
		15	Types of friction (static, dynamic), Limiting Friction (Definition with Concept).
4th week		16	Laws of Limiting Friction (Only statement, No Experimental Verification).
		17	Coefficient of Friction – Definition & Formula, Simple Numericals. Methods to reduce friction.
	UNIT 5	18	Newton's Laws of Gravitation – Statement and Explanation.Universal Gravitational Constant (G)- Definition, Unit and Dimension.
		19	Acceleration due to gravity (g)- Definition and Concept. Relation between g and G. .
		20	Definition of mass and weight.
5th week		21	Variation of g with altitude and depth (No derivation – Only Explanation)
		22	Kepler's Laws of Planetary Motion (Statement only).
	UNIT 6	23	Simple Harmonic Motion (SHM) - Definition & Examples. 6.2 Expression (Formula/Equation) for displacement, velocity, acceleration of a body/ particle in SHM.
		24	Wave motion – Definition & Concept
		25	Transverse and Longitudinal wave motion – Definition, Examples & Comparison.
6th week		26	Definition of different wave parameters (Amplitude, Wavelength, Frequency, Time Period.
		27	Derivation of Relation between Velocity, Frequency and Wavelength of a wave
		28	Ultrasonics – Definition, Properties & Applications.
	UNIT 7	29	Heat and Temperature – Definition & Difference Units of Heat (FPS, CGS, MKS & SI).
		30	Specific Heat (concept, definition, unit, dimension and simple numerical) Change of state (concept), Latent Heat (concept, definition, unit, dimension and simple numerical)
		31	Thermal Expansion – Definition & Concept Expansion of Solids (Concept)

7th week		32	Coefficient of linear, superficial and cubical expansions of Solids – Definition & Units.
		33	Relation between α, β & Y
		34	Work and Heat - Concept & Relation. Joule's Mechanical Equivalent of Heat (Definition, Unit)
		35	First Law of Thermodynamics (Statement and concept only)
8th week	UNIT 8	36	Reflection & Refraction – Definition. Laws of reflection and refraction (Statement only) .
		37	Refractive index – Definition, Formula &Simple numerical. Critical Angle and Total internal reflection – Concept, Definition & Explanation
		38	Refraction through Prism (Ray Diagram & Formula only – NO derivation).
		39	Fiber Optics – Definition, Properties & Applications.
	UNIT 9	40	Electrostatics – Definition & Concept. Statement & Explanation of Coulombs laws, Definition of Unit charge.
9th week		41	Absolute & Relative Permittivity (ε) – Definition, Relation & Unit. Electric potential and Electric Potential difference (Definition, Formula & SI Units).
		42	Electric field, Electric field intensity (E) – Definition, Formula & Unit.
		43	Capacitance - Definition, Formula & Unit. Series and Parallel combination of Capacitors No derivation
		44	Formula for effective/Combined/total capacitance & Simple numericals.Magnet, Properties of a magnet.
		45	Coulomb's Laws in Magnetism – Statement & Explanation, Unit Pole (Definition). Magnetic field, Magnetic Field intensity (H) - (Definition, Formula & SI Unit).
10th week		46	Magnetic lines of force (Definition and Properties). Magnetic Flux (Φ) & Magnetic Flux Density (B) – Definition, Formula & Unit.
	UNIT 10	47	Electric Current – Definition, Formula & SI Units. .
		48	Ohm's law and its applications.
		49	Series and Parallel combination of resistors .No derivation, Formula for effective/ Combined/ total resistance .
		50	Simple numericals
11th week		51	Kirchhoff's laws (Statement & Explanation with diagram)
		52	Application of Kirchhoff's laws to Wheatstone bridge - Balanced condition of Wheatstone's Bridge – Condition of Balance (Equation).
	UNIT 11	53	Electromagnetism – Definition & Concept.
		54	Force acting on a current carrying conductor placed in a uniform magnetic field, Fleming's Left Hand Rule
		55	Faraday's Laws of Electromagnetic Induction (Statement only)
12th week		56	Lenz's Law (Statement) Fleming's Right Hand Rule
		57	Comparison between Fleming's Right Hand Rule and Fleming's Left Hand Rule.
	UNIT 12	58	LASER & laser beam (Concept and Definition) Principle of LASER (Population Inversion & Optical Pumping)
		59	Properties & Applications of LASER
		60	Wireless Transmission – Ground Waves, Sky Waves, Space Waves (Concept & Definition)



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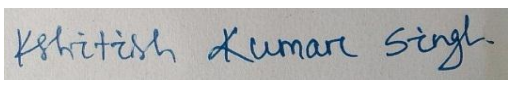

Signature of the Teacher