LESSON PLAN-2023-24(S)

DISCIPLINE ELECTRICAL & MET.ENGG BRANCH	SEMESTER 2ND	NAME OF THE TEACHING FACULTY: SRI SILU MALLICK, LECT.IN PHYSICS, MATH & SC. DEPT. GOVT. POLYTECHNIC,SONEPUR
Sub:**ENGG. PHYSICS**	No. of Classes/week-4	Theory Semester from date : 29.01.24 to 14.05.2024 No. of weeks :- 15 (excluding vacation)
Week	**Class day**	**Theory**
1st	1st	Physical quantities - (Definition).
	2nd	Definition of fundamental and derived units, systems of units (FPS, CGS, MKS and SI units).
	3rd	Definition of dimension and Dimensional formulae of physical quantities.
	4th	Dimensional equations and Principle of homogeneity.Checking the dimensional correctness of Physical relations.
2nd	1st	Scalar and Vector quantities (definition and concept), Representation of a Vector – examples, types of vectors.
	2nd	Triangle and Parallelogram law of vector Addition (Statement only). Simple Numerical.
	3rd	Resolution of Vectors – Simple Numericals on Horizontal and Vertical components.
	4th	Vector multiplication (scalar product and vector product of vectors).
3rd	1st	Concept of Rest and Motion.
	2nd	Displacement, Speed, Velocity, Acceleration & FORCE (Definition, formula, dimension & SI units).
	3rd	Equations of Motion under Gravity (upward and downward motion) - no derivation.
	4th	Circular motion: Angular splacement, Angular velocity and Angular acceleration (definition, formula & SI units).
4th	1st	Relation between –(i) Linear & Angular velocity, (ii) Linear & Angular acceleration).
	2nd	Define Projectile, Examples of Projectile.Expression for Equation of Trajectory, Time of Flight, Maximum Height and Horizontal Range for a projectile fired at an angle, Condition for maximum Horizontal Range.
	3rd	Work – Definition, Formula & SI units.
	4th	Friction – Definition & Concept.
5th	1st	Types of friction (static, dynamic), Limiting Friction (Definition with Concept).
	2nd	Laws of Limiting Friction (Only statement, No Experimental Verification).
	3rd	Coefficient of Friction – Definition & Formula, Simple Numericals.Methods to reduce friction.
	4th	Newton's Laws of Gravitation – Statement and Explanation.

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6th	1st	Universal Gravitational Constant (G)- Definition, Unit and Dimension.
	2nd	Acceleration due to gravity (g)- Definition and Concept.
	3rd	Definition of mass and weight.Relation between g and G.
	4th	Variation of g with altitude and depth (No derivation – Only Explanation).Kepler's Laws of Planetary Motion (Statement only).
7th	1st	Simple Harmonic Motion (SHM) - Definition & Examples.
	2nd	Expression (Formula/Equation) for displacement, velocity, acceleration of a body/ particle in SHM.
	3rd	Wave motion – Definition &Concept.Transverse and Longitudinal wave motion – Definition, Examples & Comparison.
	4th	Definition of different wave parameters (Amplitude, Wavelength, Frequency, Time Period.
8th	1st	Derivation of Relation between Velocity, Frequency and Wavelength of a wave
	2nd	Ultrasonics – Definition, Properties & Applications.
	3rd	Heat and Temperature – Definition & Difference
	4th	Units of Heat (FPS, CGS, MKS & SI).
9th	1st	Specific Heat (concept, definition, unit, dimension and simple numerical)
	2nd	Change of state (concept), Latent Heat (concept, definition, unit, dimension and simple numerical)
	3rd	Thermal Expansion – Definition &Concept,Expansion of Solids (Concept)
	4th	Coefficient of linear, superficial and cubical expansions of Solids – Definition &Units.Relation between α, β & γ
10th	1st	Work and Heat - Concept &Relation.Joule's Mechanical Equivalent of Heat (Definition, Unit),First Law of Thermodynamics (Statement and concept only)
	2nd	Reflection & Refraction – Definition.Laws of reflection and refraction (Statement only)
	3rd	Refractive index – Definition, Formula &Simple numerical.
	4th	Critical Angle and Total internal reflection – Concept, Definition & Explanation,

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11th	1st	Refraction through Prism (Ray Diagram & Formula only – NO derivation)
	2nd	Fiber Optics – Definition, Properties & Applications.
	3rd	Electrostatics – Definition & Concept.
	4th	Statement & Explanation of Coulombs laws, Definition of Unit charge.Absolute& Relative Permittivity (ε) – Definition, Relation & Unit
12th	1st	Electric potential and Electric Potential difference (Definition, Formula & SI Units).
	2nd	Electric field, Electric field intensity (E) – Definition, Formula & Unit.
	3rd	Capacitance - Definition, Formula &Unit.Series and Parallel combination of Capacitors (No derivation, Formula for effective/Combined/total capacitance & Simple numericals).
	4th	Magnet, Properties of a magnet.Coulomb's Laws in Magnetism – Statement & Explanation, Unit Pol(Definition).
13th	1st	Magnetic field, Magnetic Field intensity (H) - (Definition, Formula & SI Unit).
	2nd	Magnetic lines of force (Definition and Properties),Magnetic Flux (Φ) & Magnetic Flux Density (B) – Definition, Formula & Unit.
	3rd	Electric Current – Definition, Formula & SI Units.
	4th	Ohm's law and its applications.
14th	1st	Series and Parallel combination of resistors (No derivation, Formula for effective/ Combined/ total resistance & Simple numericals).
	2nd	Kirchhoff's laws (Statement & Explanation with diagram). Application of Kirchhoff's laws to Wheatstone bridge – Balanced condition of Wheatstone's Bridge – Condition of Balance (Equation).
	3rd	Electromagnetism – Definition & Concept. Force acting on a current carrying conductor placed in a uniform magnetic field, Fleming's Left Hand Rule
	4th	Faraday's Laws of Electromagnetic Induction (Statement only) Lenz's Law (Statement) Fleming's Right Hand Rule,Comparison between Fleming's Right Hand Rule and Fleming's Left Hand Rule.
15th	1st	LASER & laser beam (Concept and Definition)
	2nd	Principle of LASER (Population Inversion & Optical Pumping)
	3rd	Properties & Applications of LASER
	4th	Wireless Transmission – Ground Waves, Sky Waves, Space Waves (Concept & Definition)

25/01/24 — Sign. of Subject Teacher

25/1/24 — Sign. of Academic Co-ordinator

25/1/24 — Sign. of H.O.D(Math & Sc.)