

LESSON PLAN

DEPARTMENT OF MATH AND SCIENCE , ITT, CHOUDWAR

SUBJECT: ENGG. PHYSICS THEORY

Periods: 4 per week

SEMESTER: 1st & 2nd

NAME OF FACULTY: HARAPRIYA SAHOO

ACADEMIC YEAR.2022-2023

Semester From date: 25/10/2022 To Date: 31/01/2023

No. of weeks: 15

Week	Class Day	Theory / Practical Topics
1st	1 st	1.Unit And Dimensions,Physical quantities - (Definition),Definition of fundamental and derived units, systems of units (FPS, CGS, MKS and SI units)
	2 nd	2. Definition of dimension and Dimensional formulae of physical quantities,Dimensional equations
2 nd	1 st	3. Principle of homogeneity,Checking the dimensional correctness of Physical relations.
	2 nd	4.Scalar and Vector quantities (definition and concept), Representation of a Vector – examples, types of vectors.
3 rd	1 st	5.Triangle and Parallelogram law of vector Addition (Statement only), Simple Numerical
	2 nd	6.Resolution of Vectors – Simple Numericals on Horizontal and Vertical components,Vector multiplication (scalar product and vector product of vectors)
4 th	1 st	7. Concept of Rest and Motion,Displacement, Speed, Velocity, Acceleration & FORCE (Definition, formula, dimension & SI units)
	2 nd	8. Equations of Motion under Gravity (upward and downward motion) - no derivation
5 th	1 st	9. Circular motion: Angular displacement, Angular velocity and Angular acceleration(definition, formula & SI units),Relation between –(i) Linear & Angular velocity, (ii) Linear & Angular acceleration)
	2 nd	10. Define Projectile, Examples of Projectile
6 th	1 st	11. 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
	2 nd	12. Work – Definition, Formula & SI units,Friction – Definition & Concept,Types of friction (static, dynamic)
7 th	1 st	13. Limiting Friction (Definition with Concept),Laws of Limiting Friction (Only statement, No Experimental Verification)
	2 nd	14. Coefficient of Friction – Definition & Formula, Simple Numericals,Methods to reduce friction

8 th	1 st	15. Newton's Laws of Gravitation – Statement and Explanation, Universal Gravitational Constant (G)- Definition, Unit and Dimension
	2 nd	16. Acceleration due to gravity (g)- Definition and Concept, Definition of mass and weight, Relation between g and G
9 th	1 st	17. Variation of g with altitude and depth (No derivation – Only Explanation), Kepler's Laws of Planetary Motion (Statement only).
	2 nd	18. Simple Harmonic Motion (SHM) - Definition & Examples, Expression (Formula/Equation) for displacement
10 th	1 st	19. Velocity, acceleration of a body/ particle in SHM, Wave motion – Definition & Concept, Transverse and Longitudinal wave motion – Definition, Examples & Comparison
	2 nd	20. Definition of different wave parameters (Amplitude, Wavelength, Frequency, Time Period, Derivation of Relation between Velocity, Frequency and Wavelength of a wave, Ultrasonics – Definition, Properties & Applications.
11 th	1 st	21. Heat and Temperature – Definition & Difference, Units of Heat (FPS, CGS, MKS & SI), Specific Heat (concept, definition, unit, dimension and simple numerical), Change of state (concept), Latent Heat (concept, definition, unit, dimension and simple numerical)
	2 nd	22. Thermal Expansion – Definition & Concept, Expansion of Solids (Concept), Coefficient of linear, superficial and cubical expansions of Solids – Definition & Units, Relation between α , β & γ , Work and Heat - Concept & Relation, Joule's Mechanical Equivalent of Heat (Definition, Unit), First Law of Thermodynamics (Statement and concept only)
12 th	1 st	23. Reflection & Refraction – Definition, Laws of reflection and refraction (Statement only), Refractive index – Definition, Formula & Simple numerical, Critical Angle and Total internal reflection – Concept, Definition & Explanation, Refraction through Prism (Ray Diagram & Formula only – NO derivation), Fiber Optics – Definition, Properties & Applications
	2 nd	24. Electrostatics – Definition & Concept, Statement & Explanation of Coulombs laws, Definition of Unit charge, Absolute & Relative Permittivity (ϵ) – Definition, Relation & Unit. Electrostatics – Definition & Concept, Statement & Explanation of Coulombs laws, Definition of Unit charge, Absolute & Relative Permittivity (ϵ) – Definition, Relation & Unit
13 th	1 st	25. Electric potential and Electric Potential difference (Definition, Formula & SI Units), Electric field, Electric field intensity (E) – Definition, Formula & Unit, Capacitance - Definition, Formula & Unit, Series and Parallel combination of Capacitors (No derivation, Formula for effective/Combined/total capacitance & Simple numericals).
	2 nd	26. Magnet, Properties of a magnet, Coulomb's Laws in Magnetism – Statement & Explanation, Unit Pole (Definition), Magnetic field, Magnetic Field intensity

		(H), (Definition, Formula & SI Unit),Magnetic lines of force (Definition and Properties),Magnetic Flux (Φ) & Magnetic Flux Density (B) – Definition, Formula & Unit
14 th	1 st	27.Electric Current – Definition, Formula & SI Units,Ohm’s law and its applications,Series and Parallel combination of resistors (No derivation, Formula for effective/Combined/ total resistance & Simple numericals), Kirchoff’s laws (Statement & Explanation with diagram),Application of Kirchoff’s laws to Wheatstone bridge - Balanced condition of Wheatstone’s Bridge – Condition of Balance (Equation).
	2 nd	28.Electromagnetism – Definition & Concept,Force acting on a current carrying conductor placed in a uniform,magnetic field, Fleming’s Left Hand Rule
15 th	1 st	29. 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.
	2 nd	30. LASER & laser beam (Concept and Definition),Principle of LASER (Population Inversion & Optical Pumping),Properties & Applications of LASER,Wireless Transmission – Ground Waves, Sky Waves, Space Waves(Concept & Definition)