**LESSON PLAN**

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| **Discipline:**  Comp.Sc Engg, Electrical Engg & E&TC Engg | **Semester:**  (Second )2nd | **Name of the Faculty:** Mr. Ajaya Kumar Rout |
| **Subject:**  Engg. Physics | **No. of days/week**  **class allotted:**  Six (6) | **Semester from Date: 29.01.2024 to Date: 14.05.2024**  **No. of Weeks:** 15 |
| **WEEK** | **CLASS DAY** | **THEORY TOPICS** |
| 1st | 1st | **Chapter-01 (Units & Dimension)**  Introduction to Physical quantities |
| 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. |
| 5th | **Review Class** |
| 6th | **Chapter-02 (Vector & Scalar)**  Scalar and Vector quantities (definition and concept), Representation of a Vector – examples, types of vectors. |
| 2nd | 1st | Triangle and Parallelogram law of vector Addition (Statement only). Simple Numerical. |
| 2nd | Resolution of Vectors – Simple Numerical on Horizontal and Vertical components. |
| 3rd | Vector multiplication (scalar product and vector product of vectors). |
| 4th | **Review Class** |
| 5th | **Chapter-03 (Kinematics)**  Concept of Rest and Motion. Displacement, Speed, Velocity, Acceleration & Force (Definition, formula, dimension & SI units). |
| 6th | Equations of Motion under Gravity (upward and downward motion) - no derivation. |
| 3rd | 1st | Circular motion: Angular displacement, Angular velocity and Angular acceleration (definition, formula & SI units). |
| 2nd | Relation between– (i) Linear & Angular velocity,  (ii) Linear & Angular acceleration). |
| 3rd | Define Projectile, Examples of Projectile. Expression for Equation of Trajectory, Time of Flight |
| 4th | Maximum Height, and Horizontal Range for a projectile fired at an angle, Condition for maximum Horizontal Range |
| 5th | **Review Class** |
| 6th | **Monthly Test-1** |
| 4th | 1st | **Chapter No.- 04 (Work & Friction)**  Work –Introduction, Definition, Formula & SI units. |
| 2nd | Friction – Definition & Concept. Types of friction: Static, Dynamic, Limiting Friction (Definition with Concept). |
| 3rd | Laws of Limiting Friction (Only statement, No Experimental Verification). Coefficient of Friction – Definition & Formula. |
| 4th | Simple Numerical. Methods to reduce friction. |
| 5th | **Review Class** |
| 6th | **Chapter No.- 05 (Gravitation)**  Newton’s law of Gravitation: Statement & Explanation. Universal Gravitational Constant (G) - Definition, Unit and Dimension. |
| 5th | 1st | Acceleration due to gravity (g)- Definition and Concept. Definition of mass and weight. Relation between g and G. |
| 2nd | Variation of g with altitude and depth (No derivation – Only Explanation). |
| 3rd | Kepler’s Laws of Planetary Motion (Statement only). |
| 4th | **Review Class** |
| 5th | **Chapter No.- 06 (Oscillations & Waves)**  Simple Harmonic Motion (SHM) - Definition & Examples. |
| 6th | Expression (Formula/Equation) for displacement, velocity, acceleration of a body/ particle in SHM. |
| 6th | 1st | Wave motion – Definition & Concept. Transverse and Longitudinal wave motion:– Definition, Examples & Comparison. |
| 2nd | Definition of different wave parameters (Amplitude, Wavelength, Frequency, Time Period. Derivation of Relation between Velocity, Frequency and Wavelength of a wave. |
| 3rd | Ultrasonic – Definition, Properties & Applications. |
| 4th | **Review Class** |
| 5th | **Monthly Test-2** |
| 6th | **Chapter No.- 07 (Heat & Thermodynamics)**  Heat and Temperature – Definition & Difference. Units of Heat (FPS, CGS, MKS & SI). |
| 7th | 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). Coefficient of linear, superficial and cubical expansions of Solids – Definition & Units. |
| 4th | Relation between **α**, **β** & **ϒ** |
| 5th | Work and Heat - Concept & Relation. Joule’s Mechanical Equivalent of Heat (Definition, Unit). First Law of Thermodynamics (Statement and concept only) |
| 6th | **Review Class** |
| 8th | 1st | **Chapter No.- 08(Optics)** Reflection & Refraction – Definition. Laws of reflection and refraction (Statement only) |
| 2nd | Refractive index – Definition, Formula. Solving Numerical. Refraction through Prism (Ray Diagram & Formula only – NO derivation). |
| 3rd | Critical Angle and Total internal reflection – Concept, Definition & Explanation. |
| 4th | Fiber Optics – Definition, Properties & Applications. |
| 5th | **Review Class.** |
| 6th | **Chapter No.- 09 (Electrostatics & Magnetism)**  Electrostatics – Definition & Concept. Statement & Explanation of Coulombs laws, Definition of Unit charge. |
| 9th | 1st | **Monthly Test-3** |
| 2nd | Absolute & Relative Permittivity (**ε**) – Definition, Relation & Unit. |
| 3rd | Electric field, Electric field intensity (E) – Definition, Formula & Unit |
| 4th | Capacitance - Definition, Formula & Unit. Series and Parallel combination of Capacitors (No derivation, Formula for effective/Combined/total capacitance & Simple numerical). |
| 5th | Magnet, Properties of a magnet. Coulomb’s Laws in Magnetism – Statement & Explanation, |
| 6th | Magnetic field, Magnetic Field intensity (H) - (Definition, Formula & SI Unit). Magnetic lines of force (Definition and Properties) |
| 10th | 1st | Magnetic Flux (**Φ**) & Magnetic Flux Density (B) – Definition, Formula & Unit. Unit Pole |
| 2nd | **Review Class** |
| 3rd | **Chapter No.- 10 (Current electricity)**  Electric Current – Definition, Formula & SI Units. Ohm’s law and its applications |
| 4th | Series and Parallel combination of resistors (No derivation, Formula for effective/ Combined/ total resistance & Simple numerical). |
| 5th | Kirchhoff’s laws (Statement & Explanation with diagram). |
| 6th | Application of Kirchhoff’s laws to Wheatstone bridge - Balanced condition of Wheatstone’s Bridge. |
| 11th | 1st | **Review Class** |
| 2nd | **Monthly Test-4** |
| 3rd | **Chapter No.- 11 (Electromagnetism & Electromagnetic induction)** Electromagnetism – Definition & Concept. |
| 4th | Force acting on a current carrying conductor placed in a uniform magnetic field, Fleming’s Left Hand Rule. |
| 5th | Faraday’s Laws of Electromagnetic Induction (Statement only), Lenz’s Law (Statement) |
| 6th | Fleming’s Right-Hand Rule Comparison between Fleming’s Right Hand Rule and Fleming’s Left Hand Rule. |
| 12th | 1st | **Review Class.** |
| 2nd | **Chapter No.- 12 (Morden Physics)** LASER & laser beam (Concept and Definition). Principle of LASER (Population Inversion & Optical Pumping) |
| 3rd | Properties & Applications of LASER |
| 4th | Wireless Transmission – Ground Waves, Sky Waves, Space Waves ( Concept & Definition) |
| 5th | **Review Class.** |
| 6th | Revision class |
| 13th | 1st | Revision class |
| 2nd | Revision class |
| 3rd | Revision class |
| 4th | Revision class |
| 5th | Revision class |
| 6th | Revision class |
| 14th | 1st | Revision class |
| 2nd | Revision class |
| 3rd | Revision class |
| 4th | Revision class |
| 5th | Revision class |
| 6th | Revision class |
| 15th | 1st | Previous year (2023)questions answer discussion |
| 2nd | Previous year (2023)questions answer discussion |
| 3rd | Previous year(2022) questions answer discussion |
| 4th | Previous year(2022) questions answer discussion |
| 5th | Previous year (2021)questions answer discussion |
| 6th | Previous year (2021)questions answer discussion |