**Lesson Plan**

**Physics (2nd Semester)**

Name of Faculty:- Department:-Applied Physics

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| **Week** | **Theory** | | **Practical** | |
| **Lecture Day** | **Topic(Including Assignments)** | **Practical Day** | **Topic** |
| **Ist** | **1** | **Unit1:- Wave Motion and its Applications 1.1 Waves**: Definition ,types(mechanical and electromagnetic wave)  **1.2 Wave Motion**-transverse and longitudinal with examples, terms used in wave motion like displacement,amplitude,time period,frequency,wave length,wave velocity,relationship among wave velocity,frequency and wave length | **1** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-1) |
| **2** | **1.3 Simple Harmonic** **Motion(SHM):**Definitions , Examples  **1.4 Cantilever :** Definitions , Formula of Time Period(Without Derivation) | **2** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-2) |
| **2nd** | **1** | **1.5** Free, forced and resonant vibrations with examples.  **1.6 Sound waves:** Types (infrasonic, audible, ultrasonic) on the basis of frequency, noise, coefficient of absorption of sound, echo | **1** | 2) To find the time period of a simple pendulum. (Group-1) |
| **2** | **Unit2:- Optics:-**  2.1 Reflection and refraction of light with laws, refractive index  2.2 Lens: Introduction, lens formulae (no derivation), power of lens and simple numerical problems | **2** | 2) To find the time period of a simple pendulum. (Group-2) |
| **3rd** | **1** | **2.3** Total internal reflection and its applications, critical angle and conditions for total internal reflection | **1** | 3) To study variation of time period of simple pendulum with change in length of pendulum.(Group-1) |
| **2** | **2.4** Superposition of waves (concept only), definition of interference, diffraction and polarization of waves | **2** | 3) To study variation of time period of simple pendulum with change in length of pendulum. (Group-2) |
| **4th** | **1** | **2.5** Introduction of Microscope, Telescope and their applications | **1** | 4) To determine and verify the time period of Cantilever (Group-1) |
| **2** | Revision of above topics | **2** | 4) To determine and verify the time period of Cantilever.(Group-2) |
| **5th** | **1** | First Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
| **2** | First Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **6th** | **1** | **UNIT3:- Electrostatics and Electricity**  **3.1** Electric charge, unit of charge, conservation of charge | **1** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-1) |
| **2** | **3.2** Coulomb’s law of electrostatics  Assignment 1 | **2** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-2) |
| **7th** | **1** | **3.3** Electric field, electric lines of force (definition and properties), electric field intensity due to a point charge  **3.4** Definition of electric flux, Gauss law (statement and formula) | **1** | 6) To study colour coding scheme of resistance. (Group-1) |
| **2** | **3.5** Capacitor and capacitance (with formula and unit)  **3.6** Electric current and its SI Unit, direct and alternating current | **2** | 6) To study colour coding scheme of resistance. (Group-2) |
| **8th** | **1** | **3.7** Resistance, conductance (definition and unit)  **3.8** Series and parallel combination of resistances | **1** | 7) To verify laws of resistances in series combination (Group-1) |
|  | **2** | **3.9** Ohm’s law (Statement and formula)  Assignment 2 | **2** | 7) To verify laws of resistances in series combination (Group-2) |
| **9th** | **1** | Second Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Second Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **10th** | **1** | **Unit 4 Classification of Materials and their Properties**  **4.1** Definition of energy level, energy bands  **4.2** Types of materials (conductor, semiconductors (introduction only) | **1** | 8) To verify laws of resistance in parallel combination .(Group-1) |
|  | **2** | **4.3 Introduction to magnetism, type of magnetic materials:**  Diamagnetic, paramagnetic and ferromagnetic materials with examples  **4.4** Magnetic field, magnetic lines of force, magnetic flux  **4.5** Electromagnetic induction (definition) | **2** | 8) To verify laws of resistance in parallel combination.(Group-2) |
| **11th** | **1** | **Unit5 Modern Physics**  **5.1 Laser:** Introduction, principle, absorption, spontaneous emission, stimulated emission population inversion  **5.2** Engineering and medical applications of laser | **1** | 9) To find resistance of galvanometer by half deflection method (Group-1) |
|  | **2** | **5.3** Fibrelti optics: Introduction to optical fibers (definition, principle and parts), light propagation, fiber types (mono-mode, multi-mode), applications in medical, telecommunication and sensors. | **2** | 9) To find resistance of galvanometer by half deflection method (Group-2) |
| **12th** | **1** | **5.4 Nanotechnology:** Introduction, definition of nonmaterial’s with examples, properties at nano scale, applications of nanotechnology (brief) | **1** | 10) To verify laws of reflection of light using mirror (Group-1) |
|  | **2** | Assignment 3 and Revision of above topics | **2** | 10) To verify laws of reflection of light using mirror (Group-2) |
| **13th** | **1** | Third Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Third Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **14th** | **1** | Revision of above topics | **1** | 11) To verify laws of refraction using glass slab.(Group-1) |
|  | **2** | Revision of above topics | **2** | 11) To verify laws of refraction using glass slab.(Group-2) |
| **15th** | **1** | Revision of above topics | **1** | 12) To find the focal length of a concave lens, using a convex lens.(Group-1) |
|  | **2** | Revision of above topics | **2** | 12) To find the focal length of a concave lens, using a convex lens.(Group-2) |