

Lesson Plan

Name : Dr. Wasim Javed
Discipline : Common for all branches
Semester : 2nd
Subject : Applied Physics
Code : 180013
Duration : 6 month
Session : 2023-24
Work Load : 2 Lectures, and 2 practical per week

| Theory | | Practical |
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| Lecture | Topic | Topic |
| 1. | Waves: definition, types (mechanical and electromagnetic wave) | Familiarization with apparatus (resistor, rheostat, key, ammeter, voltmeter, telescope, microscope etc.) |
| 2. | Wave motion- transverse and longitudinal with examples | Revision & Checked practical note book |
| 3. | Terms used in wave motion like displacement, amplitude, time period, frequency, wavelength, wave velocity; | To find the time period of a simple pendulum. |
| 4. | relationship among wave velocity, frequency and wave length | To study variation of time period of a simple pendulum with change in length of pendulum. |
| 5. | Simple harmonic motion (SHM): definition, examples | Revision & Checked practical note book |
| 6. | Cantilever: definition, formula of time period (without derivation) | To determine and verify the time period of Cantilever. |
| 7. | Free, forced and resonant vibrations with examples | Revision & Checked practical note book |
| 8. | Sound waves: types (infrasonic, audible, ultrasonic) on the basis of frequency, noise, | To verify Ohm's laws by plotting a graph between voltage and current. |
| 9. | coefficient of absorption of sound, echo | Revision & Checked practical note book |
| 10. | Reflection and refraction of light with laws, refractive index | To study colour coding scheme of resistance. Revision & Checked practical note book |
| 11. | Lens: introduction, lens formulae (no derivation) | To verify laws of resistances in series combination. |
| 12. | power of lens and simple numerical problems | To verify laws of resistance in parallel combination. |
| 13. | Total internal reflection and its applications, | Revision & Checking of practical note books |
| 14. | Definition of electric flux, Gauss law (statement and formula) | To find resistance of galvanometer by half deflection method. |
| 15. | Capacitor and capacitance (with formula and unit) | Revision & Checking of practical note books |

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| 16. | Electric current and its SI Unit, | To verify laws of reflection of light using mirror. |
| 17. | Direct and alternating current | Revision & Checking of practical note books |
| 18. | Resistance, conductance (definition and unit) | |
| 19. | Series and parallel combination of resistances | |
| 20. | Ohm's law (statement and formula). | To verify laws of refraction using glass slab. |
| 21. | Definition of energy level, energy bands | Revision & Checking of practical note books |
| 22. | Types of materials (conductor, semiconductor, insulator and dielectric) with examples | To find the focal length of a concave lens, using a convex lens. |
| 23. | Intrinsic and extrinsic semiconductors (introduction only) | Revision & Checking of practical note books |
| 24. | Introduction to magnetism, | Revision & Checking of practical note books |
| 25. | Type of magnetic materials: diamagnetic, paramagnetic and ferromagnetic materials with examples | |
| 26. | Magnetic field, magnetic lines of force, magnetic flux | Revision & Checking of practical note books |
| 27. | Electromagnetic induction (definition) | Revision & Checking of practical note books |
| 28. | Introduction, principle, absorption, spontaneous emission | Revision & Checking of practical note books |
| 29. | Stimulated emission, population inversion | Revision & Checking of practical note books |
| 30. | Engineering and medical applications of laser | Revision & Checking of practical note books |
| 31. | Fibre optics: introduction to optical fibers (definition, principle and parts), light propagation, | Revision & Checking of practical note books |
| 32. | fiber types (mono-mode, multi-mode), | Revision & Checking of practical note books |
| 33. | Applications in medical, telecommunication and sensors | |
| 34. | Nanotechnology: introduction, definition of nanomaterials with examples | |
| 35. | Properties at nanoscale, | |
| 36. | Applications of nanotechnology (brief) | |
| 37. | Revision of unit 1 | |
| 38. | Revision of unit 1 | |

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| 39. | Revision of unit 2 | |
| 40. | Revision of unit 2 | |
| 41. | Revision of unit 3 | |
| 42. | Revision of unit 3 | |
| 43. | Revision of unit 4 | |
| 44. | Revision of unit 5 | |
| 45. | Revision of unit 5 | |