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| APPLIED PHYSICS LAB (Common for CSE, CSM & CSDS and IT) |
| **Course Code:** 23PY1202 | **Credits: 1.5** |
| Instruction**:** L - 0, T- 0 P – 3 | Sessional Marks: 50 |
| End Exam : 3 Hours | EndExam Marks :50 |

**Course Objectives:**

 To enable the students to acquire skill, technique and utilization ofthe Instruments

**Course Outcomes:**

At the end of this course, the students will be able to

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|  | **COURSE OUTCOMES** |
| CO-1 | **Apply** the theoretical knowledge as working principles of Laboratory experiments related to Optics, Mechanics, Electromagnetic and Electronics. (L3) |
| CO-2 | **Adop**t the experimental procedure to perform the experiments for Data procurement / Acquisition. (L3) |
| CO-3 | **Compute** the required parameters by suitable formula using experimental values (observed values) in Mechanics, Optics, Electromagnetic and Electronics. (L3) |
| CO-4 | **Analyze** the experimental data and obtain the results through graphical interpretation. (L4) |
| CO-5 | **Perform** effectively as an individual or as a team and be Accountable / Responsible to the work rendered. (L4) |

**CO-PO Mapping:**

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| **COs** | **Program Outcomes (POs)** | **PSOs** |
| **Domain Specific POs** | **Domain Independent POs** |
| PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| CO1 | 3 |  |  |  | 1 | 2 |  |  |  |  |  | 3 |  |  |
| CO2 |  | 2 | 1 |  |  |  |  |  |  |  |  |  |  |  |
| CO3 |  |  |  | 2 |  |  |  | 1 |  |  |  |  |  |  |
| CO4 | 1 |  |  | 3 |  |  |  |  |  |  |  | 1 |  |  |
| CO5 |  |  |  |  |  |  |  | 2 | 3 | 1 | 2 |  |  |  |

**List of experiment (any eight to ten experiments have to be completed)**

1. Estimation of thickness of a thin paper by forming parallel interference fringes-Wedge method.
2. Newton’s rings- determination of radius of curvature of a convex lens
3. Find out the wavelengths of spectral lines in mercury spectrum-using diffraction grating in normal incidence position.
4. Evaluation of refractive indices o-ray and e-ray in quartz crystal (double refraction)
5. Calculation of Cauchy’s constants of the material of the prism using spectrometer.
6. Determination of band gap of semiconductor (Thermistor) by varying resistance with temperature
7. Verification of laws of resistance and determination of specific resistance of wire by using Carey- Foster’s bridge.
8. Calibration of a low-range voltmeter using potentiometer.
9. Study of variation of magnetic field along the axis of a current carrying circular coil – Stewart and Gee’s apparatus
10. Determination of the frequency of an electrically maintained tuning fork - Melde’s experiment.
11. Find the Numerical aperture of a given optical fiber
12. Estimation of the wavelength of diode laser using a transmission grating
13. Determination of dielectric constant by variation of temperature method (Ferro electric crystal)
14. Magnetic Hysteresis curve experiment (B-H curve)
15. V-I characteristics of Semiconductor diode.

**Beyond the syllabus Experiments:**

1. Determination of the velocity of ultrasound in liquids by using the phenomenon of diffraction of light by ultrasound
2. Determination of the particle size of micro particles (Lycopodium powder) using laser diffracting grating.
3. Estimation of rigidity modulus and moment of inertia using Tensional pendulum
4. Evaluation of moment of inertia by using Flywheel
5. Estimation of the Resolving power of the Grating

**Learning Outcomes:**

***The students will be able to***

* **Handle** optical instruments like microscope and spectrometer
* **Determine** thickness of a hair/paper with the concept of interference
* **Estimate** the wavelength and resolving power of different colours using diffraction
grating
* **Plot** the intensity of the magnetic field of circular coil carrying current with varying
distance
* **Determine** the band gap of a given semiconductor
* **Evaluate** the acceptance angle of an optical fiber and numerical aperture
* **Determine** resistance and resistivity of the given material
* **Plot** the accuracy / correction of low range voltmeter using potentiometer
* **Evaluate** the refractive index using double refraction phenomena
* **Determine** frequency of electrically maintained tuning fork
* **Evaluate** the loss of energy in magnetic materials

**Prescribed Book**

 Physics Laboratory Manual Prepared by Department of Physics ANITS

**Reference books**

1. D.P Siva Ramaiah and V. Krishna Murthy, “Practical Physics”, Marutibook Depot, 2000.
2. A.R Vegi, “Comprehensive Practical Physics”, Vegi Publishers Pvt.Ltd., 2004.