**23A56101P-ENGINEERING PHYSICS LAB**

# (Common to All Branches of Engineering)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course Category:** | Basic sciences & Humanities | | **Credits:** | 1 |
| **Course Type:** | Practical | | **Lecture-Tutorial-Practical:** | 0-0-2 |
| **Pre-requisite:** | Basic principles in physics | | **Sessional Evaluation:**  **External Exam Evaluation:**  **Total Marks:** | 30  70  100 |
| **Course**  **Objectives** | Students undergoing this course are expected: | | | |
| To study the concepts of optical phenomenon like interference, diffraction etc., recognize the importance of energy gap in the study of conductivity and Hall effect in semiconductors and study the parameters and applications of dielectric and magnetic materials by conducting experiments. | | | |
| **Course**  **Outcomes** | On completion of this course,the students are able to :- | | | |
| **CO1** | Operate optical instruments like travelling microscope and spectrometer. | | |
| **CO2** | Estimate the wavelengths of different colours using diffraction grating. | | |
| **CO3** | Plot the intensity of the magnetic field of circular coil carrying current with distance. | | |
| **CO4** | Evaluate dielectric constant and magnetic susceptibility for dielectric and magnetic materials respectively. | | |
| **CO5** | Calculate the band gap of a given semiconductor. | | |
| **CO6** | Identify the type of semiconductor using Hall effect. | | |
| **Course Content** | **List of Experiments**   1. Determination of radius of curvature of a given planoconvex lens by Newton’s rings. 2. Determination of wavelengths of different spectral lines in mercury spectrum using diffraction grating in normal incidence configuration. 3. Verification of Brewster’s law 4. Determination of wavelength of Laser light using diffraction grating. 5. Estimation of Planck’s constant using photo electric effect. 6. MagneticfieldalongtheaxisofacurrentcarryingcircularcoilbyStewartGee’sMethod. 7. Determination of dielectric constant using charging and discharging method. 8. Study the variation of B versus H by magnetizing the magneti material (B-H curve). 9. Determination of magnetic susceptibility by Kundt’s tube method. 10. Determination of the resistivity of semiconductors by four probe methods. 11. Determination of energy gap of a semiconductor using p**-**n junction diode. 12. Determination of Hall voltage and Hall coefficient of a given semiconductor using Hall effect. 13. Determination of temperature coefficients of a thermistor. 14. Determination of rigidity modulus of the material of the given wire using Torsional pendulum. 15. Determination of young’s modulus for the given material of wooden scale by non-uniform bending (or double can til ever)method. 16. Determination of Frequency of electrically maintained tuning fork by Melde’s experiment. 17. Sono meter: Verification of laws of stretched string. 18. Determination of acceleration due to gravity and radius of Gyration by using a compound pendulum.   **Note:** Any **TEN** of the listed experiments are to be conducted. Out of which any **TWO** experiments may be conducted in virtual mode. | | | |
| **Reference Books** | 1. ATextbookofPracticalPhysics-S.Balasubramanian,M.N.Srinivasan,S.ChandPublishers,2017. | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Contribution of Course Outcomes towards achievement of Program Outcomes (3-High, 2-Medium, 1-Low) | | | | | | | | | | | | | | |
|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| CO1 | 3 | 2 | - | - | - | - | 1 | 2 | 2 | 2 | - | - | - | - |
| CO2 | 3 | 2 | - | - | - | - | 1 | 2 | 2 | 2 | - | - | - | - |
| CO3 | 3 | 2 | - | - | - | - | 1 | 2 | 2 | 2 | - | - | - | - |
| CO4 | 3 | 2 | - | - | - | - | 1 | 2 | 2 | 2 | - | - | - | - |
| CO5 | 3 | 2 | - | - | - | - | 1 | 2 | 2 | 2 | - | - | - | - |
| CO6 | 3 | 2 | - | - | - | - | 1 | 2 | 2 | 2 | - | - | - | - |