Experimental Physics

Day -I

Classical Mechanics:

1. To determine the Standard deviation of given result, of any one of the following, by algebraic formula and histogram.
    a. Vernier Calipers
    b. Screw Gauge
    c. Spherometer
2. To verify laws of parallel and perpendicular axes for moment of inertia.
3. To determine acceleration due to gravity (g) using Katter's pendulum.
4. To determine damping coefficient using a bar pendulum.
5. To determine the depression of a beam and hence to determine the Young's modulus of material of beam using Spherometer.

Day –II

Thermodynamics:

1. To verify Newton's law of cooling.
2. To study the variation of thermal current with temperature.
3. To study of blackbody spectrum using "PhET" module.
4. To study conversion of mechanical energy into heat using Joule's calorimeter.
5. To determine heating efficiency of electrical kettle with various voltages.
6. To determine thermo electromotive force by a thermocouple method.

Day -III

Optics :

1. To determine the radius of curvature of Plano convex lens using Newton's ring experiment.

2. Draw diffraction pattern with the help of straight edge and find the thickness of given thin wire using laser.

3. To determine the specific rotation of sugar solution with the help of bi quartz Polarimeter.

4. To determine the resolving power of telescope for given slit widths.

5. To verify the law of Malus for plane polarised light.

6. To determine the wavelength of given sodium vapor lamp using Fresnel's Biprism.

UNIT -IV

Quantum Mechanics:

1. Study of Photo-electric effect: understanding of the instruments.

2. Determination of Planck's Constant using different type of LEDs.

3. To calculate eigen energy values and examine bound stationary state wave functions for the one well and multiple well.

4. To verify Heisenberg's Uncertainty Principle by single slit diffraction.

5. Study of spectra of hydrogen and determination of Rydberg Constant.

6. To study the variations of count rate with applied voltage and thereby draw the plateau curve.

UNIT -V

Semiconductors:

1. To draw the *I - V* characteristic curves of a p-n junction in forward bias and reverse bias.

2. To determine the band gap of a semiconductor using a PN junction diode.

3. To study the input, output and transfer characteristics of a common emitter n-p-n transistor and calculate current gain.

4. To draw the *I - V* characteristic curves of p-n junction Zener diode in forward bias and reverse bias.

5. To study regulated power supply using Zener diode.

6. To study the Hall Effect experiment and find the Hall coefficient, carrier density and carrier mobility of a given semiconductor crystal.

Reference Books

1. B.Sc Physics Practical by Arora C.L.
2. Unified Physics Practical by R.P Goyal.
3. Engineering Physics by Hitendra K. Malik.

Course Outcomes (Cos):

CO01	Students will be able to understand and analyse the classical mechanics phenomenons.
CO02	Students able to understand the concepts of thermodynamics.
CO03	Students will be able to understand and evaluate various optics phenomenons.
CO04	They will have better understanding of quantum mechanics.
CO05	Students will be able to analyse and understand various semiconducting phenomenons.