

## UNDERGRADUATE LABS. (EXPERIMENT AND RELEVANT EQUIPMENT)

### Applied Physics Lab.

Sr. No.	Title of Experiment and Relevant Equipment
1.	To Study the Temperature Dependence of the Resistance of Different Electrical Components  ➤ <b>Immersion probe, Immersion thermostat TC10, Accessory set for TC10 Bath for thermostat</b>
2.	To find Capacitance of metal Spheres and of a spherical capacitor  ➤ <b>Conductor ball (Diameter= 2,4,12 cm), Universal measuring amplifier, Digital Multi- meter</b>
3.	To find Dielectric constant of different materials  ➤ <b>Plate capacitor, Universal measuring amplifier, High voltage supply unit (0-10 kV)</b>
4.	To study the Hall effect in metals  ➤ <b>Hall Effect carrier board, Power supply (0-30 V), Universal DC measuring amplifier (0-12 VDC), Digital Teslameter (20,200,2000 mT), Hall probe</b>
5.	Measurement of Band gap energy of germanium  ➤ <b>Hall effect module, Intrinsic conductor, Ge, carrier board, Power supply (0-12 V DC), Digital Multimeter</b>
6.	To study the B-H Curve using Toroid and Electronic Galvanometer  ➤ <b>Power Supply (0-30 VDC), Toroid with stand, Electronic Galvanometer</b>
7.	To determine the frequency of AC. supply of Melde's apparatus  ➤ <b>Electric vibrator (built-in solenoid, electric bulb, soft iron rod, permanent magnet), Digital balance</b>

## Waves, Oscillations & Engineering Lab.

Sr. No.	Title of Experiment and Relevant Equipment
1.	To determine the value of 'g' by Compound Pendulum ➤ <b>A Compound pendulum, Tripod stand</b>
2.	To determine the modulus of rigidity by Maxwell Needle apparatus. ➤ <b>Maxwell's needle, Support with torsion head</b>
3.	To determine the elastic constant i.e. Modulus of rigidity of a wire by a spiral spring apparatus. ➤ <b>A flat spiral spring, Heavy Retort Stand</b>
4.	To determine the velocity of sound by Kund's tube (electric Kund's tube apparatus)  ➤ <b>LF amplifier, Sound head, Universal Clamps, Kundt's Apparatus with glass tube</b>
5.	To determine the wavelength of sodium light by diffraction grating using Spectrometer. ➤ <b>Spectrometer, Sodium lamp, Diffraction Grating</b>
6.	To determine the vertical distance between two points by sextant apparatus. ➤ <b>Sextant, Stand with clamp</b>
7.	To determine the surface tension of water by Capillary rise method using Digital Microscope. ➤ <b>Travelling Microscope, Tripod Stand,</b>
8.	To study the characteristics of an RLC series or acceptor circuit by plotting a response curve using Oscillator. ➤ <b>Audio Oscillator, Bread Board, Digital Multimeter</b>
9.	Determination of e/m of electron by Deflection Method. ➤ <b>Power Supply (0- 300 VAC &amp; DC), Power supply (0-30 V DC) Magic Eye Tube, Solenoid</b>
10.	To study the variation in Photoelectric Current with the intensity of light. ➤ <b>Photodiode • Box with scale and tungsten bulb</b>
11.	To Study the Lissajous Figures by using Cathode Ray Oscilloscope  ➤ <b>Cathode Ray Oscilloscope ( 60 MHz ), Oscillator (10kHz )</b>
12.	To find the specific heat of aluminum using block calorie method.  ➤ <b>Aluminum calorimeter, Lagging (wooden box with a dielectric lining), Low voltage supply ( 0-15 V DC )</b>

## Laser and Optics Lab.

Sr. No.	Title of Experiment and Relevant Equipment
1.	Zeeman Effect with CCD- Camera ➤ <b>Zeeman effect with CCD Camera, Fabry-Perot interferometer, power supply unit (25 VAC / 20 VDC ), Digital Multimeter, Optical profile bench</b>
2.	To study the Kerr Effect ➤ <b>Kerr cell, High voltage power supply (0- 10 KV), Laser He-Ne, Optical profile bench, Universal measuring amplifier, Digital Multimeter</b>
3.	To study the Faraday Effect ➤ <b>Glass rod for Faraday effect, Halogen lamp, power supply (25 VAC / 20 VDC ), Digital Teslameter (20,200,2000 mT), Optical profile bench</b>
4.	Determination of Cauchy's constant using Spectrometer. ➤ <b>Spectrometer , Mercury Lamp, Diffraction grating</b>
5.	i) Determination of Speed of light using semiconductor Laser. ii) To study modulation and demodulation using semiconductor Laser. ➤ <b>Semiconductor Laser, Laser Detector, Oscillator ( 10kHz ), Oscilloscope ( 20MHz )</b>

## Mechanics Lab.

Sr. No.	Title of Experiment and Relevant Equipment
1.	Measurement of Viscosity by The Stoke's/ Poiseuille's Method ➤ <b>Viscosity Tube with Glycrine, Digital Weighing Balance</b>
2.	To determine the Modulus of rigidity of material of a wire by Barton's Method. ➤ <b>Barton's apparatus stand, Screw gauge</b>
3.	To study the conservation of energy by Hook's Law. ➤ <b>Tripod Base , Barrel Base, Slotted Weights</b>
4.	To determine the Young's Modulus by bending beam Method. ➤ <b>Digital Travelling Microscope , Slotted Weights , Screw gauge</b>
5.	Determination of Movement of Inertia of a Solid / Hollow Cylinder and a sphere.

	➤ <b>Torsion pendulum tripod stand, Hollow and Solid cylinders and Spheres</b>
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**Modern Physics Lab.**

<b>Sr. No.</b>	<b>Title of Experiment and Relevant Equipment</b>
1.	To Measure the Electric Field and Electric Potential Between The Plates of the Parallel Plate Capacitor ➤ <b>Electric Field Meter • Capacitor Plates without Hole • Capacitor Plates with Hole • Potential Measuring Probe, Power Supply (0-10KV) , DC Container Power supply (0-600 V DC)</b>
2.	To find the Magnetic field outside the Current carrying Conductors using Tesla meter ➤ <b>Barrel base Right angle clamp, Power supply (15 V AC / 12V DC), Digital Tesla meter (20,200,2000 mT); Hall probe (Axial Tangential)</b>
3.	Determination of Mobility & density of charge carriers in p-type and n-type Materials using Hall Effect. ➤ <b>N-type and P-type Germanium Hall Effect Wafer • Digital Magnetic Flux Density Meter (20,200,2000 mT), Micro Voltmeter (100 <math>\mu</math> V – 100 mV )</b>
4.	Ferromagnetic Hysteresis ➤ <b>Power supply (12 V DC ) Universal, Analog, Digital Tesla-meter (20,200,2000 mT)</b>
5.	The intensity of characteristics X-rays as a function of anode current and anode voltage. ➤ <b>X-ray Basic Unit, 35 kV • Goniometer for X-ray unit 35 kV</b>
6.	Determination of Plank's constant using Photoelectric Effect apparatus. ➤ <b>Picoammeter (100 -300 pA ) , Mercury lamp with built-in Power supply</b>

**Advanced Electronics Lab. and Electronics-I Lab.**

Sr. No.	Title of Experiment
1.	<p><b><u>Electronics- I Lab.</u></b></p> <ul style="list-style-type: none"> <li>i) Design, construct and test the working of Logic Gates.</li> <li>ii) Design Clippers, Clampers, Differentiators and Integrators using discrete components and study their wave shapes.</li> <li>iii) Design and study the Power supply Regulated</li> <li>iv) Design, construct and test the working of A stable Multivibrators</li> <li>v) Design, construct and test the working of CE Amplifiers</li> <li>vi) Design and study the Power supply unregulated</li> <li>vii) Design and study the RC oscillator</li> <li>viii) Design and study the OP-Amplifiers inverted and non-inverted and implement different kinds of amplifiers.</li> </ul>
2.	<p><b><u>Advanced Electronics Lab.</u></b></p> <ul style="list-style-type: none"> <li>i) Design, construct and test the working of Adders, Subtractors, and Multipliers.</li> <li>ii) Design, construct and test the working of Code Converters, Comparators, Parity checkers, and Parity generators</li> <li>iii) Design, construct and test the working of Decoders, Encoders, Multiplexers, and Demultiplexers</li> <li>iv) Construct and study the operation of Latches and Flip-Flops</li> <li>v) Design and study the theory of counters and implement different kinds of counters</li> <li>vi) Construct and study the working of different kinds of registers</li> <li>vii) Design and study the operation of Read-Only Memory (ROM)</li> <li>viii) Design and study the operation of Random Access Memory (RAM) and also demonstrate the read/write operation of RAM</li> </ul>
3.	<p><b><u>Relevant Equipment for Electronics-I and Advanced Electronics Lab.</u></b></p> <ul style="list-style-type: none"> <li>➤ <b>Oscilloscopes (60 MHz), Digital Multimeters, Oscillators (10kHz), Project Boards (with built-in power supply)</b></li> </ul>