

# **LIST OF EQUIPEMENTS**

## **(DEPT. OF PHYSICS)**

### **{Mechanics (1<sup>st</sup> sem)}**

1. To determine the value of  $g$  using Kater's Pendulum
2. To determine the height of a building using a Sextant.
3. Measurements of length (or diameter) using vernier caliper, screw gauge and travelling microscope.
4. To study the Motion of Spring and calculate (a) Spring constant, (b)  $g$  and (c) Modulus of rigidity.
5. To determine Coefficient of Viscosity of water by Capillary Flow Method (Poiseuille's method).

### **{Electricity & Magnetism (2<sup>nd</sup> sem)}**

1. To determine self inductance of a coil by Anderson's bridge.
2. Measurement of field strength  $B$  and its variation in a solenoid/artificial coil (determine  $dB/dx$ )
3. To study response curve of a Series LCR circuit and determine its (a) Resonant frequency, (b) Impedance at resonance, (c) Quality factor  $Q$ , and (d) Band width.
4. To study the response curve of a parallel LCR circuit and determine its (a) Antiresonance frequency and (b) Quality factor  $Q$ .

### **{Wave & Optics (2<sup>nd</sup> sem)}**

1. To determine the frequency of an electric tuning fork by Melde's experiment and verify  $2T$  law.

### **{Thermal Physics (3<sup>rd</sup> sem)}**

1. To determine the Temperature Coefficient of Resistance by Platinum Resistance Thermometer (PRT).
2. To study the variation of Thermo-emf of a Thermocouple with Difference of Temperature of its Two Junctions.
3. To determine the specific heat of liquid by the method of cooling

4. To determine the specific heat of solid by applying radiation correction.

### **{Analog Systems and Applications (3<sup>rd</sup> sem)}**

1. To study the V-I characteristics of a Zener diode and its use as voltage regulator.
2. Study of V-I and power curves of solar cells, and find maximum power point and efficiency.
3. To study the characteristics of a Bipolar Junction Transistor in CE configuration and draw load line.
4. To design and study OP Amp-IC (741/351) as inverting and non inverting amplifier.
5. To design and study OP Amp-IC (741/351) as integrator and differentiation and study frequency response.
6. To design and study OP Amp-IC (741/351) as adder and subtractor.
7. To design a Wien bridge oscillator for given frequency using a non-amp.
8. To design a phase shift oscillator of given specifications using BJT.
9. To study the Colpitt's oscillator.

### **{Elements of modern physics (4<sup>th</sup> sem)}**

1. To show the tunneling effect in tunnel diode using I-V characteristics.
2. To determine the wavelength of laser source using diffraction of single slit.
3. To determine the wavelength of laser source using diffraction of double slits.
4. To determine the value of  $e/m$  by (a) Magnetic focusing or (b) Bar magnet.
5. To setup the Millikan oil drop apparatus and determine the charge of an electron.

### **{Digital systems and applications (4<sup>th</sup> sem)}**

1. Student should know how to measure (a) Voltage, and (b) Time period of a periodic waveform using CRO.

2. To design an stable multivibrator of given specifications using 555Timer.
3. To design a monostable multivibrator of given specifications using 555 Timer.

### **{Solid state physics (5<sup>th</sup> sem)}**

1. Measurement of susceptibility of paramagnetic solution (Quinck's TubeMethod)
2. To measure the Magnetic susceptibility of Solids.
3. To measure the Dielectric Constant of a dielectric Materials and variation with frequency
4. To determine the Hall coefficient of a semiconductor sample.
5. To draw the BH curve of Fe using solenoid and to determine the energy loss from Hysteresis
6. To measure the resistivity and band gap of a given semiconductor by fourproblem method.
7. To study PE hysteresis loop of a ferroelectric crystal.

### **{EM theory (6<sup>th</sup> sem)}**

1. To verify the law of Malus for plane polarized light.
2. To determine the specific rotation of sugar solution using Polarimeter.
3. To analyze elliptically polarized Light by using a Babinets compensator.
4. To determine the Boltzmann constant using V-I characteristics of PN junction diode.
5. To determine wavelength and velocity of ultrasonic wave in liquid.
6. To determine the refractive index of liquid by total internal reflection using Wollastonsair-film.
7. To verify the Stefan's law of radiation and to determine Stefan's constant.

### **{Basic Instrumentation (6<sup>th</sup> sem)}**

1. To observe the loading effect of a multimeter while measuring voltage across a low resistance and high resistance.
2. To measure Q of a coil and its dependence on frequency, using a Q-meter.

3. Measurement of voltage, frequency, time period and phase angle using CRO.
4. Measurement of rise, fall and delay times using a CRO.
5. Measurement of time period, frequency, average period using universal counter/ frequency counter.

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