

LAB-I

Credit Hrs: 01

LIST OF EXPERIMENTS: Mechanics

- 1) (a) To determine the Modulus of rigidity of wire by a static method
(b) To determine the modulus of rigidity of wire by solid cylindrical rod (oscillating rod)
(c) To determine the modulus of rigidity of the material of a wire by Maxwell's needle
(d) To determine the modulus of rigidity of flat spiral spring
(e) To determine the Young's modulus of elasticity of the material of flat spring
(f) To determine the Poisson's ratio of the material of a given wire by Seale's dynamical method
- 2) (a) Measurement of viscosity of a liquid by Stokes method
(b) Measurement of viscosity of a liquid by Poisuille's method
- 3) To determine the surface tension of water by capillary tube method
- 4) (a) To determine the value of "g" by a compound pendulum
(b) To determine the value of "g" by Katter's pendulum
- 5) To determine the dependence of centripetal force on mass, radius and angular velocity of a body in circular motion
- 6) Determination of the moment of inertia of a solid sphere/ hollow cylinder and sphere
- 7) To study the conservation of energy (Hook's Law)
- 8) (a) To determine the spring constant of a spring by statistical method
(b) To determine the spring constant of a spiral spring by dynamical method and also to determine the mass of the spring.
- 9) Measuring moment of inertia of different bodies disk, hollow and solid cylinder.
- 10) Determining the modulus of elasticity.

LIST OF EXPERIMENTS:**Electricity and Magnetism**

- 1) (a) To determine an unknown resistance by using neon flash lamp and capacitor
(b) To determine the unknown high resistance by neon flash lamp and the capacitor
- 2) (a) Conversion of a galvanometer in to ammeter of range 0 to 0.1 A
(b) Conversion of a galvanometer in to voltmeter of range 0 to 3 V
- 3) (a) Calibration of an ammeter by potentiometer
(b) To calibrate a voltmeter by a potentiometer
- 4) To determine the current sensitivity and charge sensitivity of moving coil galvanometer
- 5) To compare the capacitance's of two capacitors by a ballistic galvanometer
- 6) (a) To plot B-H curve by the deflection magnetometer method and measure the magnetic parameters
(b) To plot B-H curve on oscilloscope and measure the magnetic parameters
- 7) To determine the unknown resistance by using Carey Foster's bridge
- 8) To study the characteristics of acceptor circuit (RLC series circuit)
- 9) To study the characteristics of rejector circuit (LCR series circuit)
- 10) Measurement of self/mutual inductance of transformer winding
- 11) To determine the frequency of AC supply by cathode ray oscilloscope
- 12) (a) To determine the thermal conductivity of copper (good conductor) by Searle's apparatus
(b) To determine the thermal conductivity of copper (bad conductor) by Lee's apparatus
- 13) To study voltage current characteristics of electric discharge in gases at low pressure
- 14) Determining resistance using a Wheatstone bridge/slide wire bridge
- 15) To study the characteristics of an acceptor circuit
- 16) To study the characteristics of an rejector circuit
- 17) Measurement of magnetic field using a search coil
- 18) To determine the intensity of earth's magnetic field by earth inductor

Heat and Thermodynamics

- 1) To determine thermal emf and plot temperature diagram
- 2) Determination of the temperature co-efficient of resistance of a given wire
- 3) To determine the mechanical equivalent of heat J by Calendar and Barnes method
- 4) To determine the Stefan's constant
- 5) Calibration of thermocouple the potentiometer
- 6) Determination of the temperature co-efficient of resistance of a given wire

LIST OF EXPERIMENTS:**Waves & Oscillations**

- (1) To study the damping features of an oscillating system using simple harmonic oscillator.
- (2) To study the damping features of an oscillating system using simple pendulum
- (3) Investigation of phase changes with position in travelling wave and measurement of velocity of sound by using C.R.O.
- (4) To study the combination harmonic motions (Lissajous figures).
- (5) To study the parameters of waves (the phenomenon of beats).
- (6) To study laws of vibration of stretched using Sonometer.
- (7) Study of parameter of wave i.e. amplitude, phase and time period of a complex signal by CRO.
- (8) Harmonic oscillations of helical springs-parallel and series connections of spring.
- (9) Measurement of speed of sound in air by oscilloscope.
- (10) Measurement of speed of sound in air by resonance tube apparatus.

Modern Physics

- (1) To determine the stopping potential by photocell.
- (2) Study the characteristics of photo emission and determination of Plank's constant using a photo cell.
- (3) To study the application of Lorentz force by cathode ray oscilloscope (e/m by J. J. Thomson method).
- (4) Stefan-Boltzmann law of radiation.
- (5) Characteristic curves of a solar cell.
- (6) Magnetic field of paired coils in Helmholtz arrangement.
- (7) Determination of e/m of an electron
- (8) Determination of ionization potential of mercury.
- (9) Variation of photoelectric current with intensity of light.
- (10) Measurement of Plank's constant using spectrometer.
- (11) Production of vacuum and its rough measurements with a manometer.
- (12) Frank Hertz experiment

LIST OF EXPERIMENTS: Optics

- (1) With the help of Sextant determine
 - (a) – Vertical distance between two points.
 - (b) – Height of an inaccessible object.
 - (c) – Horizontal distance.
- (2) Determination of wavelength of sodium D-lines by Newton rings.
- (3) To determine the wavelength of light/laser by diffraction grating and spectrometer.
- (4) Determination of the wavelength of sodium light by Fresnel biprism.
- (5) Measurement of wavelength of sodium light and difference of wavelength using Michelson interferometer.
- (6) To find resolving power of diffraction grating.
- (7) The measurement of specific rotation of sugar solution with Laurent half shade polarimeter.
- (8) The determination of Cauchy's constants using spectrometer.
- (9) Interference of light by Fresnel Biprism.
- (10) Coherence and width of spectral lines
- (11) Diffraction intensity for a single slit and double slit
- (12) Investigating the Fourier transform by a convex lens