

# PHYSICS

## Grad XI-XII

### LIST OF PRACTICAL FOR GRADE XI

#### Standard experiments

- 1- Measure length and diameter of a solid cylinder and hence estimate its volume quoting proper number of significant figures using Vernier callipers.
- 2- Measure the diameters of a few ball bearings of different sizes using Screw Gauge and estimate their volumes. Mention the uncertainty in each result.
- 3- Determine the radius of curvature of convex lens and a concave lens using a spherometer.
- 4- Determine the weight of a body by vector addition of forces.
- 5- Verify the two conditions of equilibrium using a suspended metre rod.
- 6- Measure the free fall time of a ball using a ticker-timer and hence calculate the value of 'g'. Evaluate your result and identify the source of error and suggest improvements.
- 7- Investigate the value of 'g' by free fall method using electronic timer.
- 8- Investigate momentum conservation by colliding trolleys and ticker-timer for elastic and inelastic collisions.
- 9- Investigate the downward force, along an inclined plane, acting on a roller due to gravity and study its relationship with the angle of inclination by plotting graph between force and  $\sin\theta$ .
- 10-Determine the moment of inertia of a fly wheel.
- 11-Investigate the fall of spherical steel balls through a viscous medium and determine. (i) terminal velocity (ii) coefficient of viscosity of the fluid
- 12-Verify that the time period of the simple pendulum is directly proportional to the square root of its length and hence find the value of 'g' from the graph.
- 13-Determine the acceleration due to gravity by oscillating mass-spring system.
- 14-Determine the value of 'g' by vibrating a metal lamina suspending from different points.
- 15-Determination of frequency of A.C by Melde's apparatus / electric sonometer.
- 16-Investigation of the laws of vibration of stretched strings by sonometer or electromagnetic method.

- 17-Determine the wavelength of sound in air using stationary waves and to calculate the speed of sound using resonance tube.
- 18-Determine the wavelength of light by using a diffraction grating and spectrometer.
- 19-Determine the slit separation of a diffraction grating by using laser light of unknown wavelength.
- 20-Measure the diameter of a wire or hair using laser.
- 21-Determine the pick count of a nylon mesh by using a diffraction grating and a laser.
- 22-Measure the mechanical equivalent of heat by electric method.
- 23-Determine the specific heat of a solid by electrical method.

**Note:**

1. At least 20 standard practicals along with exercises are required to be performed during the course of studies of class XI.
2. Use of centimetre graph paper be made compulsory. .

**LIST OF PRACTICAL FOR GRADE XII**

Standard experiments

1. Determine time constant by charging and discharging a capacitor through a resistor.
2. Determine resistance of wire by slide Wire Bridge.
3. Determine resistance of voltmeter by drawing graph between R and I/V.
4. Determine resistance of voltmeter by discharging a capacitor through it.
5. Analyse the variation of resistance of thermistor with temperature.
6. Determine internal resistance of a cell using potentiometer.
7. Determine emf of a cell using potentiometer.
8. Determine the emf and internal resistance of a cell by plotting V against I graph.
9. Investigate the relationship between current passing through a tungsten filament lamp and the potential applied across it.
10. Convert a galvanometer into voltmeter of range 0 – 3 V.
11. Determine the relation between current and capacitance when different capacitors are used in AC circuit using different series and parallel combinations of capacitors.
12. Determine the impedance of a RL circuit at 50Hz and hence find inductance.

13. Determine the impedance of a RC circuit at 50Hz and hence find capacitance.
14. Determine Young's modulus of the material of a given wire using Searle's apparatus.
15. Draw characteristics of semiconductor diode and calculate forward and reverse current resistances.
16. Study the half and full wave rectification by semiconductor diodes by displaying on CRO
17. Study of the variation of electric current with intensity of light using a photocell.
18. Determine Planck's constant using internal potential barrier of different light emitting diodes.
19. Observe the line spectrum of mercury with diffraction grating and spectrometer to determine the wavelength of several different lines, and hence, draw a conclusion about the width of visible spectrum.
20. Using a set of at least 100 dice, simulate the radioactive decay of nuclei and measure the simulated half-life of the nuclei.
21. Draw the characteristics curve of a Geiger Muller tube.
22. Determine the amount of background radiation in your surrounding and identify their possible sources.
23. Set up a G.M. point tube and show the detection of alpha particles with the help of CRO and determine the count rate using scaler unit.

**Note:**

1. At least 20 standard practical alongwith exercises are required to be performed during the course of studies of grade XII.
2. Use of centimetre graph paper be made compulsory.