

**CLASS –XII PHYSICS**  
**WINTER VACATION –HOMEWORK:2024-25**

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Please complete any **one** of the investigatory projects given below and submit the project.

1. To determine the wavelength of a laser beam by diffraction.
2. To study various factors on which the internal resistance of a cell depends.
3. To construct a time switch and study the dependence of its time constant on various factors.
4. To study infrared radiations emitted by different sources using phototransistor.
5. To design an automatic traffic signal system using suitable combination of logic gates.
6. To study the luminosities of various electric lamps of different powers and make.
7. To study frequency response of (i) a capacitor (ii) an inductor (iii) LCR series circuit.

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Please complete any **one** of the investigatory projects given below and submit the project.

1. To investigate whether the energy of a simple pendulum is conserved
2. To determine the radius of gyration about the centre of mass of a metre scale used as a bar pendulum
3. To investigate changes in the velocity of a body under the action of a constant force and to determine its acceleration
4. To compare the effectiveness of different materials as insulators of heat
5. To compare the effectiveness of different materials as absorbers of sound
6. To compare the Young's modulus of elasticity of different specimen of rubber and compare them by drawing their elastic hysteresis curve
7. To study the collision of two balls in two-dimensions
8. To study Fortin's Barometer and use it to measure the atmospheric pressure
9. To study of the spring constant of a helical spring from its load-extension graph
10. To study the effect of nature of surface on emission and absorption of radiation
11. To study the conservation of energy with a 0.2 pendulum

Write the following experiments in practical record with the neat diagrams.

1. To measure diameter of a small spherical/cylindrical body and to measure internal diameter and depth of a given beaker/calorimeter using Vernier Callipers and hence find its volume.
2. To measure diameter of a given wire and thickness of a given sheet using screw gauge.
3. To determine volume of an irregular lamina using screw gauge.
4. To determine radius of curvature of a given spherical surface by a spherometer.
5. To determine the mass of two different objects using a beam balance.
6. To find the weight of a given body using parallelogram law of vectors.
- . Using a simple pendulum, plot its L-T<sup>2</sup> graph and use it to find the effective length of second's pendulum.
8. To study variation of time period of a simple pendulum of a given length by taking bobs of same size but different masses and interpret the result.