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PRACTICAL/LAB MANUAL PHYSICS

CLASS 12



Class 12 Ncert Physics Practical Lab Manual

**Dr. J. P. Goel, Dr. S. C. Rastogi, Dr.
Sunita Bhagia ,Er. Meera Goyal**



Class 12 Ncert Physics Practical Lab Manual:

Practical/Laboratory Manual Physics Class - 12 Er. Meera Goyal, 2023-04-30 Sections A 1 Experiments 2 Activities Sections B 1 Experiments 2 Activities 3 Suggested Investigatory 4 Project Work Practical/Laboratory Manual Physics Class - XII -by Er. Meera Goyal (SBPD Publications) Er. Meera Goyal, 2021-07-03 In accordance to the new syllabus of Central Board of Secondary Education CBSE New Delhi and other State Boards following CBSE Curriculum *Oswaal CBSE Question Bank Class 12 Physics, Chapterwise and Topicwise Solved Papers For Board Exams 2025* Oswaal Editorial Board, 2024-01-23 Description of the product 100% Updated Syllabus Fully Solved Board Papers we have got you covered with the latest and 100% updated curriculum Crisp Revision with Topic wise Revision Notes Smart Mind Maps Mnemonics Extensive Practice with 3000 Questions Board Marking Scheme Answers to give you 3000 chances to become a champ Concept Clarity with 1000 Concepts 50 Concept Videos for you to learn the cool way with videos and mind blowing concepts NEP 2020 Compliance with Art Integration Competency Based Questions for you to be on the cutting edge of the coolest educational trends GURUKUL CBSE CHAPTER WISE BOARD QUESTIONS ANURAG SINGH, 2020-04-20 THIS BOOK CONSIST OF CBSE CHAPTER WISE BOARD QUESTIONS FROM 2008 2019 **Oswaal One for All Class 12 English, Physics, Chemistry & Mathematics (Set of 4 books) (For CBSE Board Exam 2024)** Oswaal Editorial Board, 2023-07-31 Description of the product Strictly as per the latest CBSE Syllabus dated March 31 2023 Cir No Acad 39 2023 Acad45 2023 100 % Updated for 2023 24 with Latest Rationalised NCERT Textbooks Concept Clarity with Concept wise Revision Notes Mind Maps Mnemonics 100% Exam Readiness with Previous Year s Questions Board Marking Scheme Answers Valuable Exam Insights with 3000 NCERT Exemplar Questions Extensive Practice with Unit Wise Self Assessment Questions Practice Papers NEP Compliance with Competency based questions *Lab Sparks: Amazing Chemistry - Level-2 for Classes 9-12: A Student-Friendly Practical Manual | You Can See, Feel & Explore! | 35+ Advanced Experiments* KUNDAN KUMAR, 2025-07-14 Ignite the Spark of Advanced Chemistry with Over 35 Electrifying Experiments That Will Blow Your Mind Welcome to Lab Sparks Amazing Chemistry Level 2 a student friendly practical manual designed for curious minds in Classes 9 12 Ages 14 18 This book transforms complex chemistry concepts into hands on real world experiments perfect for board practicals NEET JEE preparation and science enthusiasts From the dramatic Barking Dog Reaction to glowing liquids from color changing indicators to electrolysis of water every experiment is crafted to make advanced chemistry engaging safe and unforgettable What s Inside Step by step instructions with emoji based visuals Real life connections see how chemical reactions power rockets batteries and life itself Advanced Analysis Titration gas laws reaction kinetics and more Safety tips teacher notes for every activity Aligned with NCERT CBSE syllabus and NEP 2020 guidelines Perfect for project files science exhibitions and competitive exam prep Imagine Watching the Barking Dog Reaction roar with blue flames and sound Making light glow from chemicals chemiluminescence Splitting water into hydrogen and oxygen using electricity

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Practical/Laboratory Manual Physics Class XII based on NCERT guidelines by Dr. Sunita Bhagia & Megha Bansal Dr. J. P. Goel, Er. Meera Goyal, 2020-06-24

SECTION A EXPERIMENTS

- 1 To determine resistance per cm of a given wire by plotting a graph for potential difference versus current
- 2 To find resistance of a given wire using meter bridge and hence determine the specific resistance Resistivity of its material
- 3 To verify the laws of combination Series Parallel of resistance using a meter bridge
- 4 To compare the e.m.f. of two given primary cells using potentiometer
- 5 To determine the internal resistance of a given primary cell e.g. Leclanche cell using potentiometer
- 6 To determine the resistance of a galvanometer by half deflection method and to find its figure of merit
- 7 A To convert a given galvanometer of known resistance and figure of merit into an ammeter of desired range and to verify the same
- 7 B To convert a given galvanometer of known resistance and figure of merit into a voltmeter of desired range and to verify the same
- 8 To find the frequency of AC mains with a sonometer and horseshoe magnet

SECTION B EXPERIMENTS

- 1 To find the value of v for different values of u in case of a concave mirror and to find the focal length
- 2 To find the focal length of a convex lens by plotting graph between u and v or $1/u$ and $1/v$
- 3 To find the focal length of a convex mirror using a convex lens
- 4 To find the focal length of a concave lens using a convex lens
- 5 To determine the angle of minimum deviation for a given prism by plotting a graph between the angle of incidence and angle of deviation
- 6 To determine refractive index of a glass slab using a travelling microscope
- 7 To find the refractive index of a liquid by using a convex lens and a plane mirror
- 8 To draw I-V characteristics curve of a p-n junction in forward bias and reverse bias
- 9 To draw the characteristics curve of a Zener diode and to determine its reverse breakdown voltage
- 10 To study the characteristics of a common emitter n-p-n or p-n-p transistor and to find out the values of current and voltage gains

SECTION A ACTIVITIES

- 1 To measure the resistance and impedance of an inductor with or without

iron core 2 To measure resistance voltage AC DC current AC and check continuity of given circuit using multimeter 3 To assemble a household circuit comprising of three bulbs three on off switches a fuse and a power source 4 To assemble the components of a given electrical circuit 5 To study the variation in potential drop with length of a wire for a steady current 6 To draw the diagram of a given open circuit comprising atleast a battery resistor rheostat key ammeter and voltmeter Make the components that are not connected in proper order and correct the circuit and also the circuit diagram

SECTION B

ACTIVITIES

- 1 To study effect of intensity of light by varying distance of the source on an LDR Light Depending Resistor
- 2 To identify a diode a LED a transistor an IC a resistor and a capacitor from mixed collection of such items
- 3 Use a multimeter to
 - i identify the transistor
 - ii distinguish between n p n and p n p type transistor
 - iii see the unidirectional flow of current in case of a diode and a LED
 - iv Check whether a given electronic components e g diode transistor or IC is in working order
- 4 To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab
- 5 To observe polarisation of light using two polaroids
- 6 To observe diffraction of light due to a thin slit
- 7 To study the nature and size of the image formed by
 - i convex lens
 - ii concave mirror on a screen by using candle and a screen for different distance of the candle from the lens
- 8 To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses

SUGGESTED INVESTIGATORY PROJECT

- 1 To Study Various factors on which the Internal Resistance EMF of a cell depends
- 2 To study the variations in current following in a circuit containing L D R because of variation
 - a In the power of incandescent lamp used to illuminate the L D R Keeping all the lamps in fixed position
 - b In the Distance of a incandescent lamp of fixed power used to illuminate the L D R
- 3 To find the refractive indices of a Water b Oil Transparent using a plane mirror an equiconvex lens made from a glass of known refractive index and an adjustable object needle
- 4 To design an appropriate logic gate combination for a given truth table
- 5 To investigate the relation between the ratio of
 - i Output and Input voltage
 - ii Number of turns in secondary coils and primary coils of a self designed transformer
- 6 To Investigate the dependence of angle of deviation on the angle of incidence using a hollow prism filled one by one with different transparent fluids
- 7 To Estimate the charge induced on each one of the two identical styrofoam balls suspended in a vertical plane by making use of Coulomb's Law
- 8 To study the factors on which the self inductance of a coil depends by observing the effect of this coil when put in series with a resistor bulb in a circuit fed up by an a c source of adjustable frequency
- 9 To study the earth's magnetic field using a tangent galvanometer

APPENDIX Some Important Tables of Physical Constants

Logarithmic and other Tables

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formulas complex structures and handling complicated instruments we are trying to make education easy fun and enjoyable

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it s a launchpad for future engineers scientists and innovators It builds critical thinking problem solving skills and a deep love for the invisible forces that shape our world Perfect For CBSE State Board Students Class 9 12 NEET JEE Mains Aspirants Science Teachers Coaching Centers School Practical Files Science Fair Projects Gift for Young Scientists Who Love to Explore By Kundan Kumar PGT Chemistry Creator of Short Sweet Chemistry YouTube and Founder of Short Sweet Services Because Physics Isn t Just Formulas It s Energy in Motion Ready to turn ordinary ingredients into extraordinary adventures Let s get started

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SECTION A EXPERIMENTS

- 1 Measurement of Length
 - 1 To measure the diameter of a small spherical cylindrical body by using a vernier callipers
 - 2 To measure the dimensions of a given regular body of known mass using vernier callipers and hence find its density
 - 3 To measure the internal diameter and depth of a given cylindrical vessel say calorimeter beaker by using vernier callipers and hence find its internal volume i.e. capacity
- Viva voce 2 Screw Gauge Micrometer
- 4 To determine the diameter of a given wire using a screw gauge and find its volume
- 5 To find the thickness of a given sheet with the help of screw gauge
- 6 To measure the volume of an irregular lamina by using a screw gauge
- Viva voce 3 Spherometer
- 7 To measure the radius of curvature of a given spherical surface convex lens by using a spherometer
- Viva voce 4 Mass and Weight
- 8 To determine the mass of two different objects using a beam balance
- Viva voce 5 Parallelogram Law of Vectors
- 9 To find the weight of a given body using parallelogram law of vectors
- Viva voce 6 Simple Pendulum Measurement of Time
- 10 Using a simple pendulum plot L vs T and L vs T^2 graphs Hence find the effective length of a second's pendulum using appropriate graphs
- Viva voce 7 Friction
- 11 To study the relationship between force of limiting friction and normal reaction and to find the coefficient of friction between a block and a horizontal surface
- Viva voce 8 Motion of a Body Along an Inclined Plane
- 12 To find the downward force along an inclined plane acting on a roller due to gravitational pull of the earth and study its relationship with the angle of inclination by plotting graph between force and $\sin \theta$
- Viva voce

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- 1 Elasticity
 - 1 To determine the Young's modulus of elasticity of the material of the wire using Searle's apparatus
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 - 2 To find the spring constant of a helical spring by plotting load extension graph
 - Viva voce 3 Boyle's Gas Law
 - 3 To study the variation in volume with pressure for a sample of air constant temperature by plotting graphs between P and V and between P and $1/V$
 - Viva voce 4 Surface Tension
 - 4 To determine the surface tension of water by capillary rise method
 - Viva voce 5 Viscosity
 - 5 To determine the coefficient of viscosity of given

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based on NCERT guidelines by Dr. Sunita Bhagia & Megha Bansal Dr. J. P. Goel, Er. Meera Goyal, 2020-06-23 SECTION A

EXPERIMENTS 1 To determine resistance per cm of a given wire by plotting a graph for potential difference versus current 2

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SECTION B ACTIVITIES

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- 3 Use a multimeter to i identify the transistor ii distinguish between n p n and p n p type transistor iii see the unidirectional flow of current in case of a diode and a LED iv Check whether a given electronic components e g diode transistor or IC is in working order
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SUGGESTED INVESTIGATORY PROJECT

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- 5 To investigate the relation between the ratio of i Output and Input voltage ii Number of turns in secondary coils and primary coils of a self designed transformer
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APPENDIX Some Important Tables of Physical Constants Logarithmic and other Tables

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Physics 1 To determine the focal length of concave mirror 2 To find the focal length of convex lens by two pin method 3 To find the image distance for varying object distances in case of a convex lens and drawing corresponding ray diagrams to show the nature of image formed 4 To trace the path of the rays of light through a glass prism 5 To trace the path of a ray of light passing through a rectangular glass slab for different angles of incidence 6 To study the dependence of potential difference V across a resistor on the current I passing through it and determine its resistance Also plotting a graph between V and I 7 To determine the equivalent resistance of two resistors when connected in series and parallel

Chemistry 8 To find the pH of the following samples by using pH paper universal indicator 9 To study the properties of a base dil. NaOH solution and Acid HCl by their reaction with a Litmus solution Blue Red b Zinc metal c Solid sodium carbonate 10 To perform and observe the following reactions and to classify them into a Combination reaction b Decomposition reaction c Displacement reaction d Double displacement reaction i Action of water on quick lime ii Action of heat on ferrous sulphate crystals iii Iron nails kept in copper sulphate solution iv Reaction between sodium sulphate and barium chloride solutions 11 To observe the action of Zn Fe Cu and Al on the following salt solutions a ZnSO_4 aq b FeSO_4 aq c CuSO_4 aq d $\text{Al}_2\text{SO}_4 \cdot 3\text{H}_2\text{O}$ aq Based on the above result to arrange Zn Fe Cu and Al metals in the decreasing order of reactivity 12 To study the following properties of acetic acid ethanoic acid i Odour ii Solubility in water iii Effect on litmus iv Reaction with sodium hydrogen carbonate 13 To study the comparative cleaning capacity of a sample of soap in soft and hard water

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Core Laboratory Manual of Physics for Class XII Anil Sharma, Prashant Sharma, 2020-04-16 Goyal Brothers Prakashan

Core Science Lab Manual with Practical Skills for Class X V. K. Sally, Chhaya Srivastava, Goyal Brothers Prakashan, 2019-01-17 Goyal Brothers Prakashan

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