

# LABORATORY MANUAL

CLASS X

## PHYSICS



# Ncert Class 12 Physics Lab Manual

**India. Department of Information  
Technology**

## Ncert Class 12 Physics Lab Manual:

INNOVATIVE SCIENCE TEACHING RADHA MOHAN,2007-02-07 Science teaching has recently evolved as a blend of conventional methods and modern aids owing to the changing needs and techniques of education This updated Third Edition aims to strike this balance between modern teaching methods and time tested theories All the existing chapters are suitably updated and new chapters on theories of learning teaching models and statistics are included in the text Checklists are provided to help teachers handpick appropriate material from the vast available resources The introductory chapter on statistics should help them interpret and analyze the test scores of their students THIS NEW EDITION FEATURES Four new chapters Statistics for Science Teacher Theories of Learning Models of Teaching and Constructivism in Science Education Updated e learning materials and website addresses relevant to science teaching and teachers Completely revised chapters and elaborate coverage of all aspects of modern teaching This edition of Innovative Science Teaching is designed for the undergraduate and postgraduate students of education specializing in science teaching It can also be used as reference by physical science teachers and teacher trainees 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 Seeing colors change like magic with acid base indicators Creating crystals that grow before your eyes This book is more than a lab manual it's a launchpad for future scientists doctors and engineers It builds critical thinking problem solving skills and a deep love for the invisible reactions 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 Chemistry Isn't Just Formulas It's Magic in a Bottle Ready to turn ordinary ingredients into extraordinary adventures Let's get started Mathematics Class 12 Dr. Ramdev Sharma, ,Er. Meera Goyal,2022-09-27

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questions **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  
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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 horse shoe 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 function in forward bias and reverse bias
- 9 To draw the characteristics curve of a zener diode and to determine its reverse break down 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 incomdescent lamp used to illuminate the L D R Keeping all the lamps in fixed position b In the Distance of a in condescent lamp of fixed power used to illuminate the L D R
- 3 To find the refractive indeces 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 turms 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 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

*Annual Report India. Department of Information Technology,2010* [Lab Sparks: Amazing Physics - Level-2 for Classes 9-12: A Student-Friendly Practical Manual | You Can See, Feel & Explore! | 30+ Visual Experiments Based on NCERT/CBSE & NEP 2020](#)

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reflections fun facts after each experiment Safety tips for every activity Aligned with NCERT CBSE syllabus and NEP 2020 guidelines Perfect for project files science fairs and classroom learning Imagine Watching a fire tornado dance in a jar Making a rainbow with just a mirror and water Building a hovercraft from a CD and balloon Feeling sound waves with your own hands Spinning motors using just magnets and wires This book is more than a lab manual it's a spark that ignites curiosity builds scientific thinking and turns every young learner into a real life physicist Perfect For CBSE State Board Students Class 6 8 Science Teachers Homeschooling Parents School Practical Files Science Exhibition 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 *Lab Sparks: Amazing Physics - Complete Edition for Classes 6-12: The Ultimate Practical Manual | You Can See, Feel & Explore! | 70+ Experiments from Kitchen Science to Electromagnetism | Aligned with NCERT, CBSE & NEP 2020* KUNDAN KUMAR,2025-10-13 The Ultimate Science Adventure Awaits Discover the Magic of Physics with Over 70 Hands On Experiments That Will Blow Your Mind Welcome to Lab Sparks Amazing Physics Complete Edition the most comprehensive and student friendly practical manual ever created for young scientists in Classes 6 12 Ages 10 18 Whether you're launching balloon rockets or building your own electric motor this book turns abstract physics concepts into real touchable experiences From kitchen science to electromagnetic wonders every experiment is designed to spark curiosity ignite wonder and make learning unforgettable What's Inside 70 Visual Experiments From fire tornadoes to magnetic levitation Step by Step Instructions with emoji based visuals diagrams Real Life Connections See how physics works in daily life Safety Tips Student Reflections after every activity Aligned with NCERT CBSE Syllabus NEP 2020 Guidelines Perfect for Practical Files Science Fairs Project Work Competitive Exam Prep NEET JEE Graded Difficulty Simple Home Experiments Class 6 8 to Advanced Lab Activities Class 9 12 Imagine Watching a fire tornado dance in a jar Making a rainbow with just a mirror and water Building a homopolar motor that spins using only a battery and magnet Feeling sound waves vibrate through the air Lighting a bulb using just a pencil lead Defying gravity with magnetic levitation This isn't just a lab manual it's a journey from Why to Wow It builds scientific thinking problem solving skills and a lifelong love for the invisible forces that shape our world Perfect For CBSE State Board Students Class 6 12 NEET JEE Mains Aspirants Science Teachers Homeschooling Parents School Practical Files Science Exhibition 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 *CBSE Laboratory Manual Physics Class 12th* Er. Akash Shukla,2022-12-13 Once Owen Chamberlain said The development of Physics like the development of any science is a continuous one It is a constant effort of NCERT that it puts on its textbooks to promote clearer understanding of concepts in every student As important as theoretical study is

practical study is also essential to prove theories into realities The freshly updated edition of LABORATORY MANUAL Physics for class XII has been designed as a complete package to understand all the relevant Physics experiments in a simple lucid and interactive manner Strictly based on CBSE guidelines each experiment includes theory to give deep insights into each concept formula term definition etc Viva Voce questions Precautions Activities Diagrams and Appendices are accumulated to make concepts clearer in accordance with the curriculum Along with the experiments suggested Investigatory Projects will reveal the complete adherence of CBSE curriculum This book serves as a step by step guide for conducting experiments in such a way that students will not need to refer to any other book for explanations of the concepts An all inclusive guidance book for Physics laboratory experiment Coverage of each experiment in a simple and lucid manner Detailed and Step by Step procedure for each experiment Necessary precautions to be followed for the experiment Viva Voce Questions to get an understanding on the experiment Suggested Investigatory Projects of the CBSE curriculum Clearly labeled Diagrams in each experiment Appendices related to some useful data TABLE OF CONTENT General Introduction of Practical Work How to Record an Experiment Experimental Errors Logarithms Basic Trigonometry Study of Graphs Section A Experiments Activities Section B Experiments Activities Suggested Investigatory Projects Appendices

### **Practical/Laboratory Manual Physics**

**Class XI based on NCERT guidelines by Dr. J. P. Goel & Er. Meera Goyal** Dr. J. P. Goel ,Er. Meera Goyal,2020-06-24

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 T and L T<sup>2</sup> 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 Viva voce SECTION B EXPERIMENTS 1 Elasticity 1 To determine the Young s modulus of elasticity of the material of the wire using Searle s apparatus Viva voce 2 Spring Constant 2 To find the spring constant of a helical spring by plotting load extension graph Viva voce 3 Boyle s Gas

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Manual is to provide the students with appropriate guidance so that they can easily understand carry out and document the experiments in the Science Laboratory Some demonstration experiments are also included to illustrate principles and laws of physics Illustrative diagrams have been used at the places where it is required The Lab Manual comes with practical lessons followed by lab experiments after each chapter projects and attached Notebook for jotting down all the essential information The aim of this Science Lab Manual is to help class 12 students to prepare and understand the complex physics concepts through experimental approach by utilizing pedagogically enhanced content of the Lab Manual and with a compact knowledge base for improving their analytical experimental skills and learning abilities

**Core Laboratory Manual of Physics for Class XII** Anil Sharma,Prashant Sharma,2020-04-16 Goyal Brothers Prakashan      **Practical/Laboratory Manual Physics Class XII based on NCERT guidelines by Dr. Sunita Bhagia & Megha Bansal** Dr. J. P. Goel ,Er.

Meera Goyal ,2020-06-23 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 horse shoe 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

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**Chemistry Lab Manual Class**

**XII Follows the Latest CBSE Syllabus and Other State Board Following the CBSE Curriculum.** Edugorilla Prep Experts, 2022-07-05 Chemistry is all about conducting various experiments and having a deep study about them. This deep analysis and study cannot solely be done with theories and practical experiments are necessary for better skill development of the students. Considering this every year CBSE conducts the chemistry practicals in addition to the theory examinations. This class 12 chemistry lab manual contains all the essential information that the students will require while commencing the practicals. CBSE class 12th chemistry lab manual has been prepared strictly according to CBSE guidelines which follows the NCERT and other State Board curriculum. All the experiments in this lab manual have been given in a simple, lucid and interactive manner. The theory given with each experiment gives complete knowledge of each term, concept and definition in order to provide a compact knowledge to the students at one place. Viva Voce questions are given with each experiment to

test students understanding of related experiments Mr Kaushalesh Dwivedi is the author of this complete lab activity book for class 12 chemistry All the lab based experiments have well labeled diagrams which clearly demonstrate the details of the apparatus that are used the correct way of handling Laboratory apparatus and perform the experiments methodically The basic purpose of this lab manual is to provide the students with appropriate guidance so that they can easily understand carry out and document the experiments in the Science Laboratory The Lab Manual comes with practical lessons followed by Lab experiments after each chapter projects and Notebook for jotting down all the essential information The aim of this Science Lab Manual is to help class 12 students to prepare and understand the complex chemistry concepts through experimental approach by utilizing pedagogically enhanced content of the lab manual and with a compact knowledge base for improving their analytical experimental skills and learning abilities

**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 Chapter-wise NCERT + Exemplar + Past 12 Years Solutions for CBSE Class 12 Physics 6th Edition Disha Experts, The book provides Step by step Chapter wise Solutions to the 3 Most Important requirements of the students NCERT Book Exemplar Book Past 12 Years Solutions for CBSE Class 12 The 6th Edition of the book is divided into 3 sections Section 1 NCERT Exercise consists of solutions to all Intext and chapter exercises Section 2 Past Year Questions of Past 12 years with Solutions Section 3 Exemplar Problems Solutions to select NCERT Exemplar problems **Lab Manual-Physics-TB-11\_E-R1** Dr R K Gupta, Lab Manual Physics TB 11\_E R1 Lab Manual-Physics-TB-12\_E-R Dr R K Gupta, Lab Manual Physics TB 12\_E R

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