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# CHEMISTRY

## LAB MANUAL

Class  
**XII**

A Complete Lab Activity Book



### SALIENT FEATURES

- Lab Experiments
- Investigatory Project
- Viva Voce



# Class 12 Cbse Chemistry Lab Manual

**KUNDAN KUMAR**



## **Class 12 Cbse Chemistry Lab Manual:**

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 performing 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 an 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.

**Comprehensive Practical Chemistry XII** Dr. N . K. Verma, B. K. Vermani, Dr. Neera Verma, K . K. Rehani, 2011-11      **CBSE Class 12th Chemistry (10 Most Likely Question Papers with Solution)** By Career Point Kota Career Point Kota, 2020-07-28

The CBSE has made certain changes in the assessment structure from the session 2019-20 onwards. In the new scheme of examination CCE and term system has been replaced with the Internal Assessment. Single Annual Exam by CBSE itself. Single exam conducted by CBSE will carry 80 marks, whereas 20 marks are left to the schools for internal assessment. CBSE has issued detailed guidelines on how the internal marks will be divided among different activities. From 2019 onwards there will be internal choices in board examinations with increased internal options in the question paper. Considering this change now a student has to prepare accordingly for board examinations. The new assessment format brought with it excitement as well as anxiety. And to help them prepare and excel in their CBSE board examination Career Point Kota has developed a series of 10 Most Likely Question Papers with Solutions. The Key Features of Most Likely Question Papers with Solutions Series: New OBJECTIVE TYPE question in each paper. Syllabus of CBSE 2019-20 Based on the latest CBSE Syllabus. Pattern Mind map of

each chapter is given to visualize and help acquire a better understanding Important terms facts formulae and quick revision tips are given Covers questions asked in previous year board exams Toppers Answer Sheet as released by CBSE to understand the scoring technique We hope this book will gratify students need for the new CBSE pattern board exam and smoothen their path to success We wish to utilize the opportunity to place on record our special thanks to all the members of the Content Development team for their efforts to create this wonderful book      *CBSE History Class 12 Full Course* Dr. Brajesh Kumar Srivastava,2025-10-18

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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 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 Acad 45 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 Physics - Level-1 for Classes 6-8: A Student-Friendly Practical Manual | You Can See, Feel & Explore! | 35+ Visual Experiments Based on NCERT/CBSE & NEP 2020* KUNDAN KUMAR, 2025-10-13 Discover the Magic of Physics with Over 35 Fun Safe Experiments That Will Blow Your Mind Welcome to Lab Sparks Amazing Physics Level 1 a student friendly practical manual designed for curious minds in Classes 6-8 Ages 10-14 This book brings physics to life through fun safe and visually engaging experiments that you can do at home or in school From spinning gyroscopes to balloon powered cars from bending light with water to watching sound waves vibrate every experiment is crafted to make science an experience not just a subject What's Inside Step by step instructions with emoji based visuals Real life connections see how physics works in everyday life Student 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 **NCERT/CBSE 12th Edition Biology Class 12** Dr. Sunita Bhagia, Megha Bansal, 2024-09-27 1 Reproduction in Organisms 2 Sexual Reproduction in Flowering Plants 3 Human Reproduction 4 Reproductive Health 5 Principles of Inheritance and Variation 6 Molecular Basis of Inheritance 7 Evolution 8 Human Health and Diseases 9 Strategies for Enhancement in Food Production 10 Microbes in Human Welfare 11 Principles and Processes of Biotechnology 12 Biotechnology and its Applications 13 Organism and Populations 14 Ecosystem 15 Biodiversity and Conservation 16 Environmental Issues Appendix Selected Questions Answers From Previous Years CBSE

Examinations Chapterwise Objective Type Questions Board Examination Papers      **Lab Manual Chemistry Class XII -by Dr. K. N. Sharma, Dr. Subhash Chandra Rastogi, Er. Meera Goyal (SBPD Publications)** Dr. K. N. Sharma, Dr. Subhash Chandra Rastogi, Er. Meera Goyal, 2021-07-03 Highly Useful for Various Engineering and Medical Competitive Examinations

**Practical/Laboratory Manual Chemistry Class XI based on NCERT guidelines by Dr. S. C. Rastogi & Er. Meera Goyal** Dr. S. C. Rastogi, Er. Meera Goyal, 2020-06-23 An Excellent Book in Accordance with the latest syllabus for Class 11 Prescribed by CBSE NCERT and Adopted by Various State Education Boards

**A Basic Laboratory Techniques**

- 1 To cut a glass tube or glass rod
- 2 To bend the glass rod at an angle
- 3 To draw a glass jet from a glass tube
- 4 To bore a cork and fit a glass tube into it

**B Characterisation and Purification of Chemical Substances**

- 1 To determine the melting point of the given unknown organic compound and its identification simple laboratory technique
- 2 To determine the boiling point of a given liquid when available in small quantity simple laboratory method
- 3 To prepare crystals of pure potash alum  $K_2SO_4 \cdot Al_2(SO_4)_3 \cdot 24H_2O$  from the given impure sample
- 4 To prepare the pure crystals of copper sulphate from the given crude sample
- 5 To prepare pure crystals of benzoic acid from a given impure sample

**C Measurement of pH Values**

- 1 To determine the pH value of vegetable juices fruit juices tap water and washing soda by using universal pH paper
- 2 To determine and compare the pH values of solutions of strong acid HCl and weak acid  $CH_3COOH$  of same concentration
- 3 To study the pH change in the titration of strong base Vs strong acid by using universal indicator paper
- 4 To study the pH change by common ion  $CH_3COO^-$  ion in case of weak acid  $CH_3COOH$
- 5 To determine the change in pH value of weak base  $NH_4OH$  in presence of a common ion  $NH_4^+$

**D Chemical Equilibrium**

- 1 To study the shift in equilibrium between ferric ions and thiocyanate ions by changing the concentrations of either of the ions
- 2 To study the shift in equilibrium between  $Co(H_2O)_6^{2+}$  and  $Cl^-$  ions by changing the concentrations of either of the ions

**E Quantitative Analysis**

- 1 To prepare M 10 oxalic acid solution by direct weighing method
- 2 To prepare M 10 solution of sodium carbonate by direct weighing method
- 3 To determine the strength of given solution of sodium hydroxide by titrating it against N 10 or M 20 solution of oxalic acid
- 4 To determine the strength of a given solution of hydrochloric acid by titrating it against a standard N 10 or M 20 sodium carbonate solution

**F Qualitative Analysis**

- 1 Analysis of Anions
- 2 Analysis of Cations

**G Detection of Elements in Organic Compounds**

- 1 To detect the presence of nitrogen sulphur and halogens in a given organic compound by Lassaigne's test
- 2 To detect the presence of nitrogen sulphur and halogens in the given organic compound sample number by Lassaigne's test

**INVESTIGATORY PROJECTS**

**A Checking of Bacterial Contamination in Water**

- 1 To check the bacterial contamination in drinking water by testing sulphide ions

**B Methods of Water Purification**

- 1 To purify water from suspended impurities by using sedimentation
- 2 To purify water by boiling
- 3 To purify water by distillation method
- 4 To purify water by reverse osmosis technique
- 5 To purify water by GAC method
- 6 To purify water by bleach treatment
- 7 To purify water by oxidising agent
- 8 To purify water by ozone treatment method

**C Water Analysis**

- 1 To test the hardness of different water samples

**D Foaming Capacity of Various Soaps**

- 1 To

compare the foaming capacity of different washing soaps 2 To study the effect of addition of sodium carbonate on foaming capacity of washing soap E Tea Analysis 1 To study the acidity of different samples of tea leaves tea by using pH paper F Analysis of Fruits and Vegetable Juices 1 To analyse the fruit and vegetable juices for the constituent present in them G Rate of Evaporation 1 To study the rate of evaporation of different liquids H Effect of Acids and Bases on Tensile Strength of Fibres 1 To compare the tensile strength of natural fibres and synthetic fibres 2 To study the effect of acids and bases on tensile strength of different fibres Log Antilog Table

**Chemistry Lab Manual Class XI | Follows the Latest CBSE Syllabus and Other State Board Following the CBSE Curriculum.** Edugorilla Prep Experts, 2022-07-05 Theories are incomplete without experimentation So in order to enhance the practical skills of students the CBSE conducts the practical exams for class 11 chemistry along with theoretical exams to test the scientific aptitude of students CBSE Class 11th 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 11 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 this develops a better understanding about the concept behind each class 11 chemistry theory there is an experiment which brings authentic and easy to retain conclusions through its observations and which is verified on a real time basis The aim of this Science Lab Manual is to help class 11 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

**Chemistry Lab Manual** Neena Sinha, R Rangarajan, R P Manchanda, R K Gupta, Rajesh Kumar, Lab Manual *Practical/Laboratory Manual Chemistry Class - XI* Er. Meera Goyal, 2021-05-29 1 Basic Laboratory Techniques 1 To cut a glass tube or glass rod 2 To bend the glass rod at an angle 3 To draw a glass jet from a glass tube 4 To bore a cork and fit a glass tube into it Viva Voce 2 Characterisation and Purification of Chemical Substances 1 To determine the melting point of the given unknown organic compound and its identification simple laboratory technique Viva Voce 2 To determine the boiling point of a given liquid when available in small quantity simple laboratory method Viva Voce 3 To prepare crystals of pure potash alum  $K_2SO_4 \cdot Al_2(SO_4)_3 \cdot 24H_2O$  from the given impure



sample 4 To prepare the pure crystals of copper sulphate from the given crude sample 5 To prepare pure crystals of benzoic acid from a given impure sample Viva Voce 3 Measurement of pH Values 1 To determine the pH value of vegetable juices fruit juices tap water and washing soda by using universal pH paper 2 To determine and compare the pH values of solutions of strong acid HCl and weak acid CH<sub>3</sub>COOH of same concentration 3 To study the pH change in the titration of strong base Vs strong acid by using universal indicator paper 4 To study the pH change by common ion CH<sub>3</sub>COO<sup>-</sup> ion in case of weak acid CH<sub>3</sub>COOH 5 To determine the change in pH value of weak base NH<sub>4</sub>OH in presence of a common ion NH<sub>4</sub><sup>+</sup> Viva Voce 4 Chemical Equilibrium 1 To study the shift in equilibrium between ferric ions and thiocyanate ions by changing the concentrations of either of the ions 2 To study the shift in equilibrium between Co H<sub>2</sub>O 6 2 and Cl<sup>-</sup> ions by changing the concentrations of either of the ions Viva Voce 5 Quantitative Analysis 1 To prepare M 10 oxalic acid solution by direct weighing method 2 To prepare M 10 solution of sodium carbonate by direct weighing method 3 To determine the strength of given solution of sodium hydroxide by titrating it against N 10 or M 20 solution of oxalic acid 4 To determine the strength of a given solution of hydrochloric acid by titrating it against a standard N 10 or M 20 sodium carbonate solution Viva Voce 6 Qualitative Analysis Analysis of Anions Analysis of Cations Viva Voce 7 Detection of Elements in Organic Compounds 1 To detect the presence of nitrogen sulphur and halogens in a given organic compound by Lassaigne's test 2 To detect the presence of nitrogen sulphur and halogens in the given organic compound sample number by Lassaigne's test Viva Voce INVESTIGATORY PROJECTS 1 Checking of Bacterial Contamination in Water 1 To check the bacterial contamination in drinking water by testing sulphide ions Viva Voce 2 Methods of Water Purification 1 To purify water from suspended impurities by using sedimentation 2 To purify water by boiling 3 To purify water by distillation method 4 To purify water by reverse osmosis technique 5 To purify water by GAC method 6 To purify water by bleach treatment 7 To purify water by oxidising agent 8 To purify water by ozone treatment method Viva Voce 3 Water Analysis 1 To test the hardness of different water samples Viva Voce 4 Foaming Capacity of Various Soaps 1 To compare the foaming capacity of different washing soaps 2 To study the effect of addition of sodium carbonate on foaming capacity of washing soap Viva Voce 5 Tea Analysis 1 To study the acidity of different samples of tea leaves tea by using pH paper Viva Voce 6 Analysis of Fruits and Vegetable Juices 1 To analysis the fruit and vegetable juices for the constituent present in them Viva Voce 7 Rate of Evaporation 1 To study the rate of evaporation of different liquids IViva Voce 8 Effect of Acids and Bases on Tensile Strength of Fibres 1 To compare the tensile strength of natural fibres and synthetic fibres 2 To study the effect of acids and bases on tensile strength of different fibres Viva Voce

**Comprehensive Practical Chemistry (Abhilekhan) XII** Dr. N.K. Verma,Avinash

Ojha,2008-05-01 **Lab Sparks: Amazing Chemistry - Complete Edition for Classes 6-12: The Ultimate Practical Manual | You Can See, Feel & Explore! | 70+ Experiments from Kitchen Science to Barking Dog Reaction | Aligned with NCERT, CBSE & NEP 2020** KUNDAN KUMAR,2025-07-14 The Ultimate Science Adventure Awaits Discover

the Magic of Chemistry with Over 70 Hands On Experiments That Will Blow Your Mind Welcome to Lab Sparks Amazing Chemistry 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 making balloons inflate without blowing or witnessing the Barking Dog Reaction roar this book turns abstract chemistry concepts into real touchable experiences From kitchen science to dramatic explosions every experiment is designed to spark curiosity ignite wonder and make learning unforgettable What s Inside 70 Visual Experiments From fizzing reactions to glowing liquids Step by Step Instructions with emoji based visuals diagrams Real Life Connections See how chemistry 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 Balloons that inflate using just vinegar and baking soda Liquids that change color like magic with kitchen indicators Making rainbows with a mirror and water Growing crystals at home Fire tornadoes in a jar safely observed The legendary Barking Dog Reaction that roars with blue flame 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 Chemistry Isn t Just Formulas It s Magic in a Bottle Ready to turn ordinary ingredients into extraordinary adventures Let s get started

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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

**Practical/Laboratory Manual Chemistry Class XII based on NCERT guidelines by Dr. S. C. Rastogi, Er. Meera Goyal** Dr. S. C. Rastogi, Er. Meera Goyal, 2020-06-22

**A** Surface Chemistry 1 To prepare colloidal solution sol of starch 2 To prepare a colloidal solution of egg albumin 3 To prepare colloidal solution of gum 4 To prepare colloidal solution of aluminium hydroxide  $\text{Al}(\text{OH})_3$  5 To prepare colloidal solution of ferric hydroxide  $\text{Fe}(\text{OH})_3$  6 To prepare colloidal solution of arsenious sulphide  $\text{As}_2\text{S}_3$  7 To purify a freshly prepared sol by dialysis 8 To compare the effectiveness of different common oils Castor oil cotton seed oil coconut oil kerosene oil mustard oil in forming emulsions

**Viva Voce B** Chemical Kinetics 1 To study the effect of concentration on the rate of reaction between sodium thiosulphate and hydrochloric acid 2 To study the effect of temperature on the rate of reaction between sodium thiosulphate and hydrochloric acid 3 To study the rate of reaction of iodide ions with hydrogen peroxide at different concentrations of iodide ions 4 To study the rate of reaction between potassium iodate  $\text{KIO}_3$  and sodium sulphite  $\text{Na}_2\text{SO}_3$  using starch solution as indicator

**Viva Voce C** Thermochemistry 1 Determine the enthalpy of dissolution of copper sulphate  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  in water at Room temperature 2 To determine the enthalpy of neutralization of the reaction between  $\text{HCl}$  and  $\text{NaOH}$  3 To determine enthalpy change during the interaction between acetone and chloroform

**Viva Voce D** Electrochemistry 1 To study the variation of cell potential in  $\text{Zn}|\text{Zn}^{2+}||\text{Cu}^{2+}|\text{Cu}$  with change in concentration of electrolytes  $\text{CuSO}_4$  or  $\text{ZnSO}_4$  at room temperature

**Viva Voce E** Chromatography 1 To separate the coloured components pigment present in the given extract of leaves and flowers by ascending paper chromatography and find their  $R_f$  values 2 To separate the coloured components present in the mixture of red and blue inks by ascending paper chromatography and find their  $R_f$  values 3 To separate  $\text{Co}^{2+}$  and  $\text{Ni}^{2+}$  ions present in the given mixture by using ascending paper chromatography and determine their  $R_f$  values

**Viva Voce F** Preparation of Inorganic Compounds 1 Preparation of double salt of ferrous ammonium sulphate Mohr's salt from ferrous sulphate and ammonium sulphate 2 To prepare a pure sample of potash alum fitkari 3 Preparation of crystals of potassium ferric oxalate or potassium trioxalato ferrate III

**Viva Voce G** Preparation of Organic Compounds 1 Preparation of iodoform from ethyl alcohol or acetone 2 Preparation of acetanilide in laboratory 3 Preparation of  $\beta$ -Naphthol aniline dye 4 To prepare a pure sample of dibenzalacetone 5 To prepare a pure sample of p-nitro acetanilide

**Viva Voce H** Tests for the Functional Groups Present in Organic Compounds

**Viva Voce I** Study of Carbohydrates Fats and Proteins 1 To study simple reactions of carbohydrate 2 To study simple reactions of fats 3 To study simple reactions of proteins 4 To investigate presence of carbohydrates fats and proteins in food stuffs

**Viva Voce J** Volumetric Analysis 1 To prepare 250 ml of  $M/10$  solution of oxalic acid 2 To prepare 250

ml of M 10 solution of ferrous ammonium sulphate 3 Prepare M 20 solution of oxalic acid with its help find out the molarity and strength of the given solution of potassium permanganate 4 Prepare M 20 solution of Mohr's salt using this solution determine the molarity and strength of potassium permanganate solution Viva Voce K Qualitative Analysis Viva Voce INVESTIGATORY PROJECTS 1 To study the presence of oxalate ions in guava fruit at different stages of ripening 2 To study the quantity of caseine present in different samples of milk 3 Preparation of soyabean milk and its comparison with natural milk with respect to curd formation effect of temperature etc 4 To study the effect of potassium bisulphite as food preservative at various concentrations 5 To study the digestion of starch by salivary amylase and the effect of pH and temperature on it 6 To study and compare the rate of fermentation of the following materials wheat flour gram flour potato juice and carrot juice 7 To extract essential oils present in saunf aniseed ajwain corum illaichi cardamom 8 To detect the presence of adulteration in fat oil and butter 9 To investigate the presence of NO<sub>2</sub> in brinjal

**Chemistry 123 Laboratory**

**Manual** Karen E. Eichstadt, 1992-01-01

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