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# CHEMISTRY LAB MANUAL

Class  
**XII**

A Complete Lab Activity Book



## SALIENT FEATURES

- Lab Experiments
- Investigatory Project
- Viva Voce



# Cbse Class 12 Chemistry Lab Manual

**Dr. Brajesh Kumar Srivastava**



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

*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 Section A Archaeology Ancient India 1 The Story of the First Cities Harappan Archaeology 2 Political and Economic History from the Mauryan to the Gupta Period 3 Social History With Special Reference to Mahabharata 4 History of Ancient Indian Religions with Special Reference to Buddhism and Sanchi Stupa Section B Medieval India 5 The Ain I Akbari Agrarian Relations 6 The Mughal Court Reconstructing History through Chronicles 7 Architecture of Hampi Vijaynagara 8 Religious History The Bhakti Sufi Tradition 9 Medieval Society through Foreign Travellers Accounts Section C Modern India 10 Colonialism and Rural Society Evidence from Official Reports 11 1857 A Review 12 Colonial Cities Urbanisation Planning and Architecture 13 Mahatma Gandhi through Contemporary Eyes and His Role in the Indian Politics 14 Partition of India and Its Study through Oral Sources 15 Making of the Indian Constitution Appendix 1 Chronology of Important Events in Indian History 2 Major Dynasties and Associated Kings of Indian History 3 Sacraments and Symbols 4 Foreign Travellers in India 5 Ancient and Medieval Texts 6 Major Wars Battles of Indian History and their Consequences 7 British Governors Governor Generals and Viceroys of India 8 Famous Slogans and Related Personalities of the Indian National Movement 9 Famous Hindi Newspapers of Modern India Year of Inception Their Founder and Place 10 Major Political Social and Nationalist Organizations of Modern India 11 India s Leading Leaders

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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  $\text{K}_2\text{SO}_4 \cdot \text{Al}_2(\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$  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  $\text{HCl}$  and weak acid  $\text{CH}_3\text{COOH}$  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  $\text{CH}_3\text{COO}^-$  ion in case of weak acid  $\text{CH}_3\text{COOH}$
- 5 To determine the change in pH value of weak base  $\text{NH}_4\text{OH}$  in presence of a common ion  $\text{NH}_4^+$

**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  $\text{Co}(\text{H}_2\text{O})_6^{2+}$  and  $\text{Cl}^-$  ions by changing the concentrations of either of the ions

**E Quantitative Analysis**

- 1 To prepare  $\text{M}/10$  oxalic acid solution by direct weighing method
- 2 To prepare  $\text{M}/10$  solution of sodium carbonate by direct weighing method
- 3 To determine the strength of given solution of sodium hydroxide by titrating it against  $\text{N}/10$  or  $\text{M}/20$  solution of oxalic acid
- 4 To determine the strength of a given solution of hydrochloric acid by titrating it against a standard  $\text{N}/10$  or  $\text{M}/20$  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  
Manchanda, R K Gupta, Rajesh Kumar, Lab Manual

**Chemistry Lab Manual** Neena Sinha, R Rangarajan, R P  
**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  $\text{Al(OH)}_3$  5 To prepare colloidal solution of ferric  
hydroxide  $\text{Fe(OH)}_3$  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 cardomom 8 To detect the presence of adulteration in fat oil and butter 9 To investigate the presence of NO<sub>2</sub> in brinjal **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<sub>2</sub>SO<sub>4</sub> Al<sub>2</sub> SO<sub>4</sub> 3 24H<sub>2</sub>O 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 o 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 - 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      *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

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

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