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# CHEMISTRY

## LAB MANUAL

CLASS  
**XII**



Vishal Publication

# Arya Publications Lab Manual Class 12 Chemistry

**Dr. N.K. Verma, Avinash Ojha**



## **Arya Publications Lab Manual Class 12 Chemistry:**

*Intelligent Computing Techniques for Smart Energy Systems* Akhtar Kalam, Khaleequr Rehman Niazi, Amit Soni, Shahbaz Ahmed Siddiqui, Ankit Mundra, 2019-12-16 The book compiles the research works related to smart solutions concept in context to smart energy systems maintaining electrical grid discipline and resiliency computational collective intelligence consisted of interaction between smart devices smart environments and smart interactions as well as information technology support for such areas It includes high quality papers presented in the International Conference on Intelligent Computing Techniques for Smart Energy Systems organized by Manipal University Jaipur This book will motivate scholars to work in these areas The book also prophesies their approach to be used for the business and the humanitarian technology development as research proposal to various government organizations for funding approval *Forthcoming Books* Rose Army, 1998 **Comprehensive Practical Chemistry XII** Dr. N . K. Verma, B. K. Vermani, Dr. Neera Verma, K . K. Rehani, 2011-11

Chemistry Lab Manual Class XII Follows the Latest CBSE Syllabus and Other State Board Following the CBSE Curriculam. 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

*Laboratory Manual in Chemistry* Bhushan, B, 1996 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      **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  
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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 casein 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 coriander illaichi cardamom
- 8 To detect the presence of adulteration in fat oil and butter
- 9 To investigate the presence of  $\text{NO}_2$  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
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- 4 To bore a cork and fit a glass tube into it

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- 2 To determine the boiling point of a given liquid when available in small quantity simple laboratory method Viva Voce
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**6 Qualitative Analysis**

Analysis of Anions Analysis of Cations Viva Voce

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Viva Voce

**INVESTIGATORY PROJECTS**

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- 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

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**Laboratory Manual for Chemistry**, 1966 *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

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## **Table of Contents Arya Publications Lab Manual Class 12 Chemistry**

1. Understanding the eBook Arya Publications Lab Manual Class 12 Chemistry
  - The Rise of Digital Reading Arya Publications Lab Manual Class 12 Chemistry
  - Advantages of eBooks Over Traditional Books
2. Identifying Arya Publications Lab Manual Class 12 Chemistry
  - Exploring Different Genres
  - Considering Fiction vs. Non-Fiction
  - Determining Your Reading Goals
3. Choosing the Right eBook Platform
  - Popular eBook Platforms
  - Features to Look for in an Arya Publications Lab Manual Class 12 Chemistry
  - User-Friendly Interface
4. Exploring eBook Recommendations from Arya Publications Lab Manual Class 12 Chemistry
  - Personalized Recommendations
  - Arya Publications Lab Manual Class 12 Chemistry User Reviews and Ratings
  - Arya Publications Lab Manual Class 12 Chemistry and Bestseller Lists
5. Accessing Arya Publications Lab Manual Class 12 Chemistry Free and Paid eBooks
  - Arya Publications Lab Manual Class 12 Chemistry Public Domain eBooks
  - Arya Publications Lab Manual Class 12 Chemistry eBook Subscription Services
  - Arya Publications Lab Manual Class 12 Chemistry Budget-Friendly Options
6. Navigating Arya Publications Lab Manual Class 12 Chemistry eBook Formats
  - ePub, PDF, MOBI, and More
  - Arya Publications Lab Manual Class 12 Chemistry Compatibility with Devices
  - Arya Publications Lab Manual Class 12 Chemistry Enhanced eBook Features
7. Enhancing Your Reading Experience
  - Adjustable Fonts and Text Sizes of Arya Publications Lab Manual Class 12 Chemistry
  - Highlighting and Note-Taking Arya Publications Lab Manual Class 12 Chemistry
  - Interactive Elements Arya Publications Lab Manual Class 12 Chemistry
8. Staying Engaged with Arya Publications Lab Manual Class 12 Chemistry

- Joining Online Reading Communities
- Participating in Virtual Book Clubs
- Following Authors and Publishers Arya Publications Lab Manual Class 12 Chemistry
- 9. Balancing eBooks and Physical Books Arya Publications Lab Manual Class 12 Chemistry
  - Benefits of a Digital Library
  - Creating a Diverse Reading Collection Arya Publications Lab Manual Class 12 Chemistry
- 10. Overcoming Reading Challenges
  - Dealing with Digital Eye Strain
  - Minimizing Distractions
  - Managing Screen Time
- 11. Cultivating a Reading Routine Arya Publications Lab Manual Class 12 Chemistry
  - Setting Reading Goals Arya Publications Lab Manual Class 12 Chemistry
  - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Arya Publications Lab Manual Class 12 Chemistry
  - Fact-Checking eBook Content of Arya Publications Lab Manual Class 12 Chemistry
  - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
  - Utilizing eBooks for Skill Development
  - Exploring Educational eBooks
- 14. Embracing eBook Trends
  - Integration of Multimedia Elements
  - Interactive and Gamified eBooks

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