

LABORATORY MANUAL

# Chemistry

## CBSE Class XII



# Cbse Class 12 Chemistry Lab Manual

**Dr. S. C. Rastogi , Er. Meera Goyal**



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

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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  $\text{Co}^{2+}$  and  $\text{Cl}^-$  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

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Chemistry Lab Manual Neena Sinha, R Rangarajan, R P Manchanda, R K Gupta, Rajesh Kumar, Lab Manual

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**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  $Al(OH)_3$
- 5 To prepare colloidal solution of ferric hydroxide  $Fe(OH)_3$
- 6 To prepare colloidal solution of arsenious sulphide  $As_2S_3$
- 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  $KIO_3$  and sodium sulphite  $Na_2SO_3$  using starch solution as indicatorl Viva Voce

**C Thermochemistry**

- 1 Determine the enthalpy of dis solution of copper sulphate  $CuSO_4 \cdot 5H_2O$  in water at Room temperature
- 2 To determine the enthalpy of neutralization of the reaction between  $HCl$  and  $NaOH$
- 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  $Zn|Zn^{2+}||Cu^{2+}|Cu$  with change in concentration of electrolytes  $CuSO_4$  or  $ZnSO_4$  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  $Co^{2+}$  and  $Ni^{2+}$  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 pottasium trioxlato 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 b 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

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