

LABORATORY MANUAL CHEMISTRY

Class XII

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BOOK

Laboratory Manual Chemistry Class Xii Ncert

Dr. J. P. Goel, Er. Meera Goyal



Laboratory Manual Chemistry Class Xii Ncert:

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 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 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 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 $\text{Zn}|\text{Zn}^{2+}||\text{Cu}^{2+}|\text{Cu}$ 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 potassium trioxalate 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 β -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 $\text{M}/10$ solution of oxalic acid 2 To prepare 250 ml of $\text{M}/10$ solution of ferrous ammonium sulphate 3 Prepare $\text{M}/20$ solution of oxalic acid with its help find out the molarity and strength of the given solution of potassium permanganate 4 Prepare $\text{M}/20$ 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 NO₂ in brinjal

*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 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 ameter 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 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 mirror 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 incandescent lamp used to illuminate the L D R Keeping all the lamps in fixed position b In the Distance of a incandescent lamp of fixed power used to illuminate the L D R 3 To find the refractive indices 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 turns 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 one 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 **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

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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 $\text{Co}(\text{H}_2\text{O})_6^{2+}$ 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

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