Vidya Pratishthan's

Dr. Cyrus Poonawalla School (CBSE)

Annual Planning 2024-25

Sub- Chemistry (I) **Class: XII**

Month/Unit/No. of Periods	Topic /Sub Topic	Learning Objective/outcome	Practical/Project
March, April Unit I: Solutions No. of Periods -19	Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties.	Students will be able to Describe the formation of different types of solutions • Express concentration of solution in different units. • State and explain Henry's law and Raoult's law. • Distinguish between ideal and no-ideal solutions. • Explain deviation of real solutions from Raout's law. • Describe colligative properties of solutions and correlate these with molar masses of the solutes. • Explain abnormal colligative properties exhibited by some solutes in solutions.	Worksheet, MCQ Test.

May, June Unit II: Electrochemistry Unit:16 No. Periods-16	Redox reactions, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, Relation between Gibbs energy change and EMF of a cell, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis.	The student will be able to • Describe an electrochemical cell and differentiate between galvanic and electrolytic cells. • Apply Nernst equation for calculating the emf of galvanic cell and define standard potential of the cell. • Derive relation between standard potential of the cell, Gibbs energy of cell reaction and its equilibrium constant. • Define resistivity (ρ conductivity (K) and molar conductivity (Λ) of ionic solutions. • Differentiate between ionic (electrolytic) and electronic conductivity • Describe the method for measurement of conductivity of electrolytic solutions and calculation of their molar conductivity; • Describe the method for measurement of conductivity of electrolytic solutions and calculation of their molar conductivity. • Justify the variation of conductivity and molar conductivity	Project:1) To study the presence of Oxalate ion in Guava fruit at different stages of ripening. 2) To study the quality of Casein present in different samples of milk. 3)Preparation of soybean milk and its comparison with natural milk with respect to curd formation etc. 4)A comparative study of the rate of fermentation of following materials: Wheat flour, potato juice, carrot juice, apple juice, etc. Worksheet, MCQ test

		of solutions with change in their concentration and • Define m (molar conductivity at zero concentration or infinite dilution). • Enunciate Kohlrausch law and learn its applications; • Understand quantitative aspects of electrolysis; • Describe the construction of some primary and secondary batteries and fuel cells; • Explain corrosion as an electrochemical process.	
June Unit III: Chemical Kinetics No. of Periods: 15	Rate of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst; order and molecularity of a reaction, rate law and specific rate constant, integrated rate equations and half-life (only for zero and first order reactions).	The student will be able to • Understand the importance of rate of a reaction in daily life. • Understand the factors affecting rate of a reaction. • Understand average rate & instantaneous rate. • Apply Arhennius equation & activation energy. • Explain the role of temperature & concentration on the Rate of a reaction. • Understand the mechanism of reaction. • Explain the role of catalyst with the help of energy	Unit Test - 1 A. Surface Chemistry (a) Preparation of one lyophilic and one lyophobic sol Lyophilic sol - starch, egg albumin and gum Lyophobic sol - aluminium hydroxide, ferric hydroxide, arsenous sulphide. (b) Dialysis of sol-prepared in (a) above. (c) Study of the role of emulsifying agents in stabilizing the emulsion of different oils. B. Chemical Kinetics

		profile diagram.	(a) Effect of concentration and temperature on the rate of reaction between Sodium Thiosulphate and Hydrochloric acid. (b) Study of reaction rates of any one of the following: (i) Reaction of Iodide ion with Hydrogen Peroxide at room temperature using different concentration of Iodide ions. (ii) Reaction between Potassium Iodate, (KIO_3) and Sodium Sulphite: (Na_2SO_3) using starch solution as indicator (clock reaction).
July, August Unit IV: d and f Block Elements No. of Periods: 26	General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first row transition metals – metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation.	The student will be able to • Describes the importance of d & f block elements in our daily life. • Describes the general properties of d & f block elements. • Distinguishes d & f block elements on the basis of their electronic configuration. • Writes the general outer electronic configuration of d & f block elements. • Understands the reason for different properties of d & f block	Periodic Test C. Thermochemistry Any one of the following experiments i) Enthalpy of dissolution of Copper Sulphate or Potassium Nitrate. ii) Enthalpy of neutralization of strong acid (HCI) and strong base (NaOH) iii) Determination of enthaply change during

	Lanthanoids - Electronic configuration, oxidation states and lanthanoid contraction and its consequences.	elements. • Calculates magnetic moment and expresses it in correct unit. • Understands the splitting of d orbitals and explains colour of compounds. • Understands the preparation of potassium dichromate and potassium permanganate from their ore. • Draws the structure of chromate , dichromate , manganate and Permanganate ions. • Writes ionic equation showing oxidizing property of potassium dichromate and potassium permanganate. • Understands lanthanide contraction and explains its reason. • Projects the consequences of lanthanide contraction. • Understands the components of alloy misch metal and knows its use.	interaction (Hydrogen bond formation) between Acetone and Chloroform. D. Electrochemistry 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. E. Chromatography i) Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of Rf values. ii) Separation of constituents present in an inorganic mixture containing two cations
September, October Unit V: Coordination Compounds No. of Periods:24	Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding,	The student will be able to • To develop appreciation for the postulates of Werner's theory of coordination compounds; • To know the meaning of the terms: coordination entity, central	Unit Test -2 F. Preparation of Inorganic Compounds Preparation of double salt of Ferrous Ammonium Sulphate or Potash Alum.

	Werner's theory, VBT, and CFT.	atom/ion, ligand, coordination number, coordination sphere, coordination polyhedron, oxidation number, homoleptic and heteroleptic; • To learn the rules of nomenclature of coordination compounds; • To Write the formulas and names of mononuclear coordination compounds; • To define different types of isomerism in coordination compounds; • To understand the nature of bonding in coordination compounds in terms of the Valence Bond and Crystal Field theories; • To appreciate the importance and applications of coordination compounds in our day to day life.	Preparation of Potassium Ferric Oxalate. G. Preparation of Organic Compounds Preparation of any one of the following compounds i) Acetanilide ii) Di –benzalAcetone iii) p-Nitroacetanilide iv) Aniline yellow or 2 - Naphthol Anilinedye. H. Tests for the functional groups present in organic compounds. I. Characteristic tests of carbohydrates, fats and proteins in pure samples and their detection in given foodstuffs. J. Determination of concentration/ molarity of $KMnO_4$ solution by titrating it against a standard solution of: i) Oxalic acid, ii) Ferrous Ammonium Sulphate. Half Yearly Examination Determination of one cation one anion in the compound.
November	Revision		
December	Preboard Examinations		
January	Practical Examination		
