

Board of Secondary Education, Rajasthan, Ajmer

Deleted Portion for examination 2021

Subject : Chemistry

Subject Code: 41

Class : 12

Book: Chemistry (Theory)

Unit No.	Chapter No.	Topics	Remarks
1	1	Solid State Electromagnetic and dielectric properties of solids.	
2	2	Solutions Abnormal molecular weight, van't Hoff factor.	
3	3	Electrochemistry Electrolytes, electrolysis and laws of electrolysis, electrolytic cell, electrochemical cell, Denial cell, primary and secondary cells, fuel cell.	
4	4	Chemical Kinetics Effect of temperature on the rate of reaction, (activation energy, Arrhenius equation), theories of reaction rate (introduction), collision and transition state theories.	
5	5	Surface Chemistry catalysis and types of catalysis, important properties of solid catalysis, enzyme catalysis and its mechanism, emulsions and their types.	
6	6	Principles and processes of Isolation of Elements Ores, principles and methods of extraction of metals-concentration, oxidation, reduction, electrolytic method and purification, Aluminum, copper, zinc and Iron-their occurrence and principle of extraction.	Entire Unit deleted
7	7	p-block Elements : Elements of Group 15 : (ii) structure of oxides of nitrogen (iii) Phosphorous and its allotropes, preparation and properties of phosphene and halides of phosphorous, structure of oxyacids of phosphorous. Elements of Group 16 : (iii) Sulphur and its allotropes, preparation, properties and uses of sulphur dioxide and sulphuric acid; structures of oxyacids of sulphur. Elements of Group 17 : (iii) Interhalogen compounds (only introduction). (iv) Structures of oxyacids of halogen. Elements of Group 18 : (ii) Compound of Xenon.	
8	8	d- and f-block Elements (ii) f-block elements - chemical reactivity, comparison of lanthanides and	

		actinides.	
9	9	Coordination Compounds Isomerism, qualitative analysis and importance of coordination compounds in biosystems.	
10	10	Halogen Derivatives uses of trichloro methane, iodoform, freon, DDT, BHC and their effect on environment.	
11	11	Functional groups with oxygen (Part-I) Alcohols - uses industrial production of methanol and ethanol.	
13	13	Organic compound containing functional groups with nitrogen (ii) Cyanides and isocyanides :- Methods of preparation, physical and chemical properties, uses. (iii) Diazoniumsalts : Preparation, chemical reactions, importance in synthetic chemistry.	
14	14	Biomolecules-Cells and Energy cycles Carbohydrates - classification (aldose, ketose), mono saccharides (glucose, fructose), oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose). Proteins - Composition of protein, amino acids and classification, essential amino acids, physical properties, peptide bond, polypeptide, structure of primary, secondary, tertiary and quaternary protein, denaturation of protein, enzymes, hormones (only introduction) Vitamins - classification and functions. Nucleic acids - DNA and RNA.	Entire Unit deleted
15	15	Polymers classification, methods of polymerization copolymerization and heteropolymerization, polyethene nylon, polyester, Bakelite, rubber, molecular mass of polymers, some main polymers of commercial importance (PVC, Terelene, Nylon 66, Teflon). biodegradable and non-biodegradable polymers.	Entire Unit deleted
16	16	Stereochemistry Conformational Isomerism - Saw Horse and Newman projection formula, conformational analysis of ethane conformation, types of conformations, conformational isomerism in cyclic system. Importance of stereochemistry.	
17	17	Chemistry in daily life : (1) Medicines and chemistry in human health (analgesics tranquilizers, antimicrobials, antibiotics, antihistamines or anti-allergic drugs, antiseptics, anti-fertility drugs, antacids). (2) Dyes - Dyes and pigments, characteristics of dyes (structural), presence of chromophores, classification of dyes on the basis of structure and uses. (3) Chemical in Food : Preservatives, artificial sweetners, antioxidants, food colours. (4) Detergents - Distinction between soap and detergents, classification of detergents. (5) Insect - repellents, pheromones, rocket propellants and advanced materials.	Entire Unit deleted



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Book: Chemistry (Practical)

Unit No.	Chapter No.	Topics	Remarks
2	2	Qualitative analysis of mixture of inorganic salts 1. Acidic Radicals (iv) $C_2O_4^{2-}$ (v) PO_4^{3-} 2. Basic Radicals Ag^+ , Bi^{3+} , Sb^{3+}	
3	3	Preparation of Organic Compounds Organic Compounds – Acetanilide, p-nitroacetanilide, Iodoform	
4	4	Content based experiments (i) Surface Chemistry (a) Sol (b) Emulsification (c) Tyndall Effect (d) Electrophoresis (ii) Chemical Kinetics (a) Effect of concentration of reactant on the rate of reaction. (b) Effect of temperature on the rate of reaction.	



Board of Secondary Education, Rajasthan, Ajmer

Revised Syllabus for Examination 2021

Subject: CHEMISTRY

Subject Code: 41

Class: 12

There will be a paper-Theory and a Practical examination in this subject. In which it is mandatory for the candidate to get different passing marks in the theoretical and practical examination. The subject examination plan is as follows:

Examination	Time (in hours)	Marks for the paper	Sessional Mark	Total	Maximum Marks
Theory	3.15	56	14	70	100
Practical	4	30	-	30	

Chemistry- Theory

Unit No.	Subject Topics	Marks
Unit I	Solid State Classification of solids on the basis of different bond forces-molecular, ionic, covalent, metallic solid, crystalline and non-crystalline solid (primary introduction) crystals, lattice and unit cells, calculation of density of unit cell, close-packed structures, voids, number of atoms in a unit cell, imperfection or defects in solids.	4
Unit II	Solutions Types of solution, units of concentration of solution, solubility of gases in liquids, ideal and non-ideal solutions, deviation from ideal behavior, constant boiling mixtures, solid solution, colligative properties-relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular weight by colligative properties.	4
Unit III	Electrochemistry Electrode potential, standard electrode potential, electromotive force (e.m.f.) of cell and its measurement, relation between e.m.f. and Gibb's free energy, Nernst equation and its application in electrochemical cells, conductance of electrolytic solutions, specific and equivalent conductance and molar conductance, Variation of conductivity with concentration, Kohlrausch law and application, theory of corrosion and means to protect it.	5
Unit	Chemical Kinetics	5

IV	Rate of chemical reaction, factors affecting rate of a reaction, molecularity and order of reaction, rate law and specific rate constant, integrated rate equation, half-life (for reactions of zero and first order).	
Unit V	Surface Chemistry Adsorption, difference between Adsorption and absorption, kinds of adsorption, factors affecting the adsorption of gases on solids, classification of colloids, true solution, difference between colloidal solution and suspension, properties of colloids (Tyndall effect, Brownian motion, charge on colloidal particle, electrophoresis, coagulation) purification of colloidal solutions, protection of colloids, application of colloids.	5
Unit VI	p-block Elements : Elements of Group 15 : (i) General introduction, electronic configuration, occurrence, periodicity in properties, oxidation states, chemical reactivity. (ii) Nitrogen-preparation, properties and uses, preparation and properties of ammonia and nitric acid. Elements of Group 16 : (i) General introduction, electronic configuration, occurrence, periodicity in properties, oxidation states, chemical reactivity. (ii) Preparation, properties and uses of dioxygen and ozone. Elements of Group 17 : (i) General introduction, electronic configuration, occurrence, periodicity in properties, oxidation states, chemical reactivity. (ii) Preparation, properties and uses of chlorine and hydrochloric acid. Elements of Group 18 : (i) General introduction, electronic configuration, occurrence, periodicity in properties, oxidation states, chemical reactivity.	5
Unit VII	d- and f-block Elements (i) d-block elements - General introduction, electronic configuration, characteristics of transition metals and occurrence, general tendencies of properties of elements of first transition series-metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic properties, magnetic properties, interstitial compounds and alloys. (ii) f-block elements - General introduction, electronic configuration, oxidation states, Lanthanide contraction and its effect.	4
Unit IX	Coordination Compounds General introduction, ligands and their classification, coordination numbers, coordination sphere, Nomenclature of coordination compounds (IUPAC) and formula writing, bonding in coordination compounds (VBT & CFT), colour of transition metals and complexes, stability, of coordination compounds and factors affecting the stability.	4
Unit X	Halogen Derivatives (i) Haloalkanes : Nomenclature, nature of bond physical and chemical properties, mechanism of substitution reactions (SN^1 , SN^2), elimination reactions. (ii) Haloarenes : Nomenclature, nature of C-X bond, substitution reactions, directive influence of halogen in mono substituted compounds.	5

Unit XI	Functional groups with oxygen (Part-I) Alcohols -Nomenclature, preparation, physical and chemical properties, ascending and descending carbon series in alcohols, distinction of primary, secondary and tertiary alcohols, mechanism of dehydration. Phenols - Nomenclature, preparation, physical and chemical properties, acidic nature of phenol, uses of phenols. Ether - Nomenclature, preparation, physical and chemical properties.	5
Unit XII	Functional groups with oxygen (Part-II) Aldehydes and Ketones - Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties. Mechanism of Nucleophilic addition, reactivity of hydrogen of aldehydes, similarity and dissimilarity in aldehydes and ketones, uses. Carboxylic Acids - Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.	4
Unit XIII	Organic compound containing functional groups with nitrogen (i) Amines and nitro compounds - Nomenclature, classification, methods of preparation, physical and chemical properties, uses, distinction of primary, secondary and tertiary amines. (ii) Urea - Methods of preparation, physical and chemical properties, uses.	3
Unit XVI	Stereochemistry Isomerism - definition and types (Configuration and conformation), geometrical isomerism - Nomenclature and properties of geometrical isomers. Optical isomerism - polarized light, polarity, chirality, chiral molecules, elements of symmetry, configuration of chiral molecule and Fischer - projection formula, relative and absolute configuration, racemic mixture, racemization, compounds with two chiral centers, separation of racemic mixture.	3

Chemistry Practical Syllabus for Exam 2021

Unit No.	Subject Topics	Marks
1	Volumetric Analysis – Double titration Concentration gram per litre, Molarity, Normality and Percentage Purity determination 1. Acid-Base Titration i) Oxalic Acid – Sodium Hydroxide ii) Hydrochloric Acid – Sodium Carbonate 2. Redox Titration i) Ferrous Ammonium Sulphate – Potassium Permanganate ii) Oxalic Acid – Potassium Permanganate iii) Ferrous Ammonium Sulphate – Potassium Dichromate iv) Ferrous Sulphate – Potassium Dichromate	11
2	Qualitative analysis of mixture of inorganic salts Determination of two cation and two anion in given mixture. 1. Acidic Radicals (i) CO_3^{2-} , CH_3COO^- , NO_2^- , S^{2-} , SO_3^{2-} (ii) Cl^- , Br^- , I^- , NO_3^- (iii) SO_4^{2-} 2. Basic Radicals	08

	Pb ²⁺ , Cd ²⁺ , Cu ²⁺ , As ³⁺ , Fe ³⁺ , Al ³⁺ , Cr ³⁺ , Co ²⁺ , Mn ²⁺ , Zn ²⁺ , Ni ²⁺ , Ba ²⁺ , Sr ²⁺ , Ca ²⁺ , Mg ²⁺ , NH ₄ ⁺	
3	Identification of Functional group in Organic Compound Alcoholic, phenolic, aldehydic, ketonic, carboxylic, primary amine, amide, nitro, unsaturation, ester. <p style="text-align: center;">OR</p> Detection of the presence of carbohydrates, fats and proteins in foodstuffs. <p style="text-align: center;">OR</p> Preparation of Inorganic Compounds Inorganic Compounds - Ferrous Ammonium Sulphate, Potash Alum	04
4	Content based experiments <p style="text-align: center;">3. Electrochemistry: Preparation of Daniel cell and effect of change in concentration on cell potential.</p> <p style="text-align: center;">4. Comparative test for primary, secondary, tertiary alkyl amine</p> <p style="text-align: center;">5. Comparative test for primary, secondary, tertiary alkyl alcohol.</p>	03
5	Record	02
6	Viva	02
Prescribed Books- Chemistry- I: Board of Secondary Education Rajasthan, Ajmer. Chemistry-II: Board of Secondary Education Rajasthan, Ajmer. Chemistry Practical- 2: Board of Secondary Education Rajasthan, Ajmer.		