# JAC Board Class 12 Chemistry Reduced Syllabus 2020-21 PDF

विषय : रसायन विज्ञान

| Unit | Selected topics | Deleted topics |
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| **Solid state** | Classification of solids based on different binding forces: molecular, ionic, covalent and metallic solids, amorphous and crystalline solids,crystal lattice and unit cell: primitive, bcc, fcc, end centred cubic, bravais lattices, calculation of no. Of atoms per unit cell,radius and density,coordination number,point defects- frenkel ans | Closed packed structure, voids, packing effeciency,inpurity defects,non-stoichiometric defects, electrical properties, conduction of electricity in solid,conduction of electricity in semi-conductors,application of n- |

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| | schottky only,magnetic properties: paramagnetism,diamagnetism and ferromagnetism. | type, p- type semi-conductor, magnitic properties,anti-ferromagnetism,ferrimagnetism. |
| **Solutions** | Types of solutions, expression of concentration of solutions of solids in liquids, vapour pressure of liquid solutions (raoult's law), ideal and non ideal solutions, colligative properties and determination of molecular mass using colligative properties(relative lowering of vapour pressure ,elevation of boiling point, depression of freezing point) | Solubility of gases in liquids(henry's law),osmotic pressure reverse osmosis and water purification,abnormal molar mass, van't hoff factor |
| **Electrochemistry** | Redox reactions, conductance in electrolytic solutions,molar conductivity,kohlrausch's law,electrolysis and faraday's laws of electrolysis,electrochemical cell,differece between galvanic and electrolytic cell,measurement of electrode potential and emf of the cell | Nernst equation , equilibrium constant from nernst equation,gibb's free energy ,measurement of conductivity of ionic solutions,batteries,fuel cells,corrosion |
| **Chemical kinetics** | Rate of reaction: average and instantaneous rate,factors affecting rate of reaction(concentration only),rate law rate expression and rate constant, order and molecularity,integrated rate equations and half life period (zero and first order only) | Pseudo first order reaction ,temperature dependence of rate of reaction,arrhenius equation,effect of catalyst,collision theory. |
| **Surface chemistry** | Adsorption, distinguish between adsorption and absorption,types of adsorption:physisorption and chemisorption,distinguish between true solution,colloids and suspension,classification of colloids based on physical state and nature of interaction between dispersed phase and dispersion medium,properties of colloid: tyndall effect,browian movement ,electrophoresis ,emulsions(oil in water and water in oil) | Mechanism of adsorption,adsorption isotherm,catalysis,macromolecular, multimolecular and associated colloids,preparation of colloids ,purification of colloids ,charge on colloidal particles,coagulation,protection of colloids |
| **General principles and processes of isolation of elements** | Occurrence of metals, concentration of ores : hydraulic washing ,magnetic separation,froth floation method,leaching,metallurgy of aluminium and copper,refining: liquation, electrolysis,zone refining ,vapour phase refining(mond's process and van arkel method) | Thermodynamic principles of metallurgy,ellingham diagram,metallurgy and uses of iron and zinc |

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| **P-block elements** | **Group 15 elements** :electronic configuration, occurrence, trends in physical and chemical properties,preparation properties and uses of ammonia,oxides of nitrogen (structure only),oxoacids of phosphorous (structure only) **group 16 elements:** occurrence ,electronic configuration, trends in physical and chemical properties ,preparation(by contact process) properties and uses of sulphuric acid ,oxoacids of sulphur(structure only) **group 17 elements:** occurrence ,electronic configuration, trends in physical and chemical properties, structure of oxoacids of halogens and interhalogen compounds. **Group 18 elements** :occurrence , electronic configuration ,trends in physical and chemical properties, structure of xef2 , xef4,xef6, xeo3 and xeof4 | **Group 15 elements:**preparation properties and uses of dinitrogen,nitric acid,method of preparation of oxides of nitrogen allotropic forms of phosphorous,preparation, properties and uses of phosphine ,pcl5 and pcl3 **Group 16 elements:** preparation, properties and uses of dioxygen,ozone,sulphur dioxide and allotropic form of sulphur **group 17 elements:** preparation, propertiesand uses of chlorine ,hcl,interhalogen compounds. **Group 18 elements** :preparation properties and uses of xef2 , xef4 &xef6. |
| **D- & f- block elements** | Introduction , electronic configuration,general trends in properties of 1st row of transition elements : metallic character,oxidation state colour , catalytic properties,magnetic properties intertitial compounds ,alloy formation ,preparation and properties of kmno4 | Trends in standard electrode potential,trends in stability of higher oxidation state,chemical reactivity and e values,preparation and properties of k2cr2o7,lanthanoids and actinoids |
| **Co-ordination compounds** | Introduction,ligands,coordination number,oxidation state,iupac nomenclature of mononuclear co-ordination compounds, isomerism(structural only) | Colour ,magnetic properties and shape of coordination compounds ,bonding in coordination compound( werner's theory,vbt,cft),stereoisomerism,bonding in metal carbonyls,stabilityof coordination compounds |
| **Haloalkanes and haloarenes** | **Haloalkanes** :nomenclature , nature of c-x bond,method of preparation :from alkanes by free radical halogenation,from alkenes and halogen exchange(finkelstein and swarts reaction),physical properties ,chemical properties, sn1 and sn2 reactions, wurtz reaction **haloarenes:** nature of c-x bond,method of preparation:from amine by sandmeyer reaction only,physical properties ,electrophilic substitution | Methods of preparation from alcohol,chemical properties:stereochemical aspect of nucleophilic substitution reaction,elimination reaction,reaction with metals,grignard reagent chemical properties nucleophilic substitution reaction,wurtz fittig reaction,fittig reaction,uses |

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| | reaction (directive influence of halogens) | and environmental effect of dichloromethane,trichloromethane,tetrachloromethane,iodoform freons and ddt. |
| **Alcohols, phenols and ethers** | **Alcohols:** nomenclature,methods of preparation from alkene(acid catalysed hydration),by the reduction of carbonyl compounds,from grignard reagent,physical properties,chemical properties: esterification,reaction with hx(distinguish between three classes of alcohols by lucas reagent), dehydration of alcohols excluding mechanism,oxidation of alcohols. **Phenols:** nomenclature,methods of preparation: from haloarenes,from diazonium salts,physical properties,chemical properties: electrophilic substitution reaction ,reimer tiemann reaction,reaction with zn dust ethers:nomenclature , methods of preparation :from williamson synthesis only,physical properties,chemical properties: cleavage of c-o bond(reaction with hx),electrophilic substitution reaction(friedel crafts alkylation and acylation) | Alcohols: methods of preparation by hydroboration oxidation,by reduction of carboxylic acids and esters,chemical properties: acidity of alcohol,mechanism of dehydration of alcohol,some important compounds like methanol and ethanol. Phenols: methods of preparation from benzene sulphonic acid,from cumene ,chemical properties: acidity of phenol,kolbe's reaction,oxidation ethers: method of preparation by dehydration of alcohol,chemical properties : electrophilic substitution reaction. |
| **Aldehydes , ketones and carboxylic acids** | **Aldehydes and ketones:** nomenclature,nature of carbonylgroup,methods of preparation from oxidation of alcohols,ozonolysis of alkenes,rosenmund reduction ,stephen's reduction,from acyl chloride,from benzene and substituted benzene(freidel crafts acylation),physical properties,chemical properties: mechanism of nucleophilic addition reaction,reactivity,reduction to alcohols. Reduction to hydrocarbons(clemmensen only),oxidation reaction(reaction with tollen's reagent and fehling's solution),aldol condensation, cannizzaro's reaction,electrophilic substitution reaction uses. **Carboxylic acids:** nomenclature,methods of preparation: by oxidation of primary alcohols and aldehydes,from alkyl benzenes,from nitriles and amides and by hydrolysis of esters,physical properties,chemical properties: esterification,reaction with | **Aldehydes and ketones:** methods of preparation from dehydrogenation of alcohols,by hydration of alkynes,from hydrocarbon ,by oxidation of methyl benzene,use of chromic oxide,by side chain chlorination followed by hydrolysis,gatterman koch reaction,from nitriles,chemical properties: addition of hcn,nahso3,rmgx,alcohol,ammonia and its derivatives,wolf kishner reduction,haloform reaction,cross aldol condensation. **Carboxylic acids:** methods of preparation: from acyl halides and anhydrides,chemical properties: acidity ,formation of anhydride,reaction with |

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| | pcl3,pcl5,socl2,reduction ,halogenation(hvz reaction),electrophilic substitution reaction | ammonia,decarboxylation. |
| **Amines** | nomenclature,classification,methods of preparation :by reduction of nitro compounds,reduction of nitriles,hoffman bromamide degradation reaction,physical properties,chemical properties: carbylamine reaction,reaction with nitrous acid,reaction with hinsberg reagent(arylsuphonyl chloride) diazonium salts:nomenclature,methods of preparation: by diazotisation reaction only ,physical properties,chemical properties:sandmeyer's reaction,replacement by h,replacement by hydroxyl group | Structure of amines ,methods of preparation ammonolysis of alkyl halide,reduction of amide,gabriel phthalimide synthesis,chemical properties:bascity of amine,alkylation acylation electrophilic substitution reaction diazonium salts: gatterman reaction ,replacement of f- ,i- and no2 group,coupling reactions ,importance of diazonium salts in synthesis of aromatic compounds |
| **Biomolecules** | Carbohydrates: classification(aldoses and ketoses), monosaccharides(glucose and fructose),disaccharides(sucrose ,maltose,lactose) proteins:elementary idea of α-amino acids,peptide bond,polypeptides,denaturation of proteins nucleic acids: dna and rna vitamins: classification and functions. | Polysaccharides,importance of carbohydrates,structure of protein:primary , secondry, tertiary and quaternary structure,enzymes and hormones. |
| **Polymers** | Classification: natural and synthetic,mode of polymerisation:addition and condensation,homo and copolymers,monomers of some important polymers:polythene, pvc,natural rubber,teflon,buna -n,buna-s,nylon-6,nylon-6,6,terylene,bakelite | Classification based on structure,molecular forces,mechanism of addition polymerisation,hdp,ldp,pan, melamine formaldehyde resin,vulcanisation of rubber,neoprene,biodegradable polymers,molecular mass of polymer |
| **Chemistry in everyday life** | Chemicals in medicine: antacids,antihistamines,analgesics,antibiotics, antiseptics, disinfectents, tranquilizers, antifertility drugs | Drug and their classification, chemical in food, artificial sweetening agents ,food preservatives,antioxidant in food,cleansing action of soaps and detergents |