

SRI Y.N.COLLEGE (Autonomous) NARSAPUR-534275											
ANNUAL CURRICULAR PLAN-YEAR 2017-2018											
Name of the Lecturer: Dr. B. Ananda Kumar, Ch.Srinivasa Rao				Paper – I & II				Class: I B.Sc			
S. No	Month	Syllabus-Topic	Additional inputs Value Addition	Curricular activity				Co-curricular activity			
				Activity	Hours allotted	Whether Conducted	If not alternate days	Activity	Hours allotted	Whether Conducted	If not alternate days
.	JUN	<b>(Inorganic Chemistry)</b> <b>1. p-block elements:</b> General characteristics of elements of groups 13, 14, 15, 16 and 17. Group-13: Synthesis and structure of diborane and higher boranes ( $B_4H_{10}$ and $B_5H_9$ ), boron-nitrogen compounds ( $B_3N_3H_6$ and BN) Group-14: Preparation and applications of silanes and silicones. Group-15: Preparation and reactions of hydrazine, hydroxylamine.		Assignment		yes					
	JUL	<b>2. p-block elements:</b> Group-16: Classifications of oxides based on (i) Chemical behaviour and (ii) Oxygen content. Group-17: Inter halogen compounds and pseudo halogens <b>3.Organometallic Chemistry:</b> Definition and classification of organometallic compounds, nomenclature, preparation, properties and applications of alkyls of Li and Mg metals.		BOS Assignment		yes					
	AUG	<b>(Organic Chemistry)</b> <b>1. Structural theory in Organic Chemistry:</b> Types of bond fission and organic reagents (Electrophilic, Nucleophilic, and free radical reagents including neutral		Assignment		yes		Seminar		yes	

	SEP	<p>molecules like <math>\text{H}_2\text{O}</math>, <math>\text{NH}_3</math> &amp; <math>\text{AlCl}_3</math> ). Bond polarization : Factors influencing the polarization of covalent bonds, electro negativity – inductive effect. Application of inductive effect (a) Basicity of amines (b) Acidity of carboxylic acids (c) Stability of carbonium ions. Resonance or Mesomeric effect, application to (a) acidity of phenol, and (b) acidity of carboxylic acids. Hyper conjugation and its application to stability of carbonium ions, Free radicals and alkenes, carbanions, carbenes and nitrenes.</p> <p>Types of Organic reactions : Addition – electrophilic, nucleophilic and free radical. Substitution – electrophilic, nucleophilic and free radical. Elimination-Examples (mechanism not required).</p> <p><b>2. Acyclic Hydrocarbons:</b> Alkenes-Preparation of alkenes. Addition of hydrogen-heat of hydrogenation and stability of alkenes. Addition of halogen and its mechanism. Addition of <math>\text{HX}</math>, Markonikov's rule, addition of <math>\text{H}_2\text{O}</math>, <math>\text{HOX}</math>, <math>\text{H}_2\text{SO}_4</math> with mechanism and addition of <math>\text{HBr}</math> in the presence of peroxide (anti-Markonikov's addition). Dienes-Types of dienes, reactions of conjugated dienes-1,2 and 1,4 addition of <math>\text{HBr}</math> to 1,3- butadiene and Diel's – Alder reaction. : Alkynes-Preparation by dehydrohalogenation of dihalides, dehalogenation of tetrahalides, Properties; Acidity of acetylenic hydrogen (formation of Metal acedtylides). Preperation of higher acetylenes, Metal ammonia reductions Physical properties. Chemical reactivity-electrophilic addition of <math>\text{X}_2</math>, <math>\text{HX}</math>, <math>\text{H}_2\text{O}</math> (Tautomerism), Oxidation with <math>\text{KMnO}_4</math>, <math>\text{OsO}_4</math>, reduction and Polymerisation reaction of acetylene.</p> <p><b>3. Alicyclic hydrocarbons (Cycloalkanes):</b> Nomenclature, Preparation by Freunds methods, heating</p>		Assign ment		yes		Seminar	yes		Swach bharat	yes	
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	OCT	dicarboxylic metal salts. Properties – reactivity of cyclopropane and cyclobutane by comparing with alkanes, Stability of cycloalkanes-Baeyer's strain theory, Sachse and Mohr predictions and Pitzer's strain theory. Conformational structures of cyclobutane, cyclopentane, cyclohexane.		Assign ment	yes					
	NOV	<p><b>4. Benzene and its reactivity:</b> Concept of resonance, resonance energy. Heat of hydrogenation, heat of combustion of Benzene, mention of C-C bond lengths and orbital picture of Benzene. Concept of aromaticity-aromaticity (definition), Huckel's rule-application to Benzenoid (Benzene, Napthalene) and Non-Benzenoid compounds (cyclopropenyl cation, cyclopentadienyl anion and tropylium cation). Reactions-General mechanism of electrophilic substitution, mechanism of nitration. Friedel Craft's alkylation and acylation. Orientation of aromatic substitution – Definition of ortho, para and meta directing groups. Ring activating and deactivating groups with examples (Electronic interpretation of various groups like NO<sub>2</sub> and Phenolic). Orientation of (i). Amino, methoxy and methyl groups (ii). Carboxy, nitro, nitrile, carbonyl and Sulfonic acid groups. (iii). Halogens (Explanation by taking minimum of one example from each type).</p> <p><b><u>(Physical Chemistry)</u></b></p> <p><b>Gaseous state:</b> Compression factors, deviation of real gases from ideal behavior. Vander Waal's equation of state. P-V Isotherms of real gases, Andrew's isotherms of carbon dioxide, continuity of state. Critical phenomena. The vander Waal's equation and the critical state. Law of corresponding states. Relationship between critical constants and vander Waal's constants. Joule Thomson effect, Liquefaction of gases (i) Linde's method (ii)</p>		Assign ment	yes					

	DEC	<p>Claude's method</p> <p><b>Liquid state:</b> Structural differences between solids, liquids and gases. Liquid crystals, the mesomorphic state. Classification of liquid crystals into Smectic and Nematic. Differences between liquid crystal and solid/liquid. Application of liquid crystals as LCD devices.</p> <p><b>Solid state:</b> Symmetry in crystals. Law of constancy of interfacial angles. The law of rationality of indices. The law of symmetry. Definition of lattice point, space lattice, unit cell. Bravais lattices and crystal systems. X-ray diffraction and crystal structure. Bragg's law. Determination of crystal structure by Bragg's method. Indexing of planes and structure of NaCl and KCl crystals. Defects in crystals. Stoichiometric and non-stoichiometric defects.</p>								
	JAN	<p><b>Solutions:</b> Liquid-liquid - ideal solutions, Raoult's law. Ideally dilute solutions, Henry's law. Non-ideal solutions. Vapour pressure - composition and vapour pressure- temperature curves. Azeotropes-HCl-H<sub>2</sub>O, ethanol-water systems and fractional distillation. Partially miscible liquids-phenol-water, trimethylamine-water, nicotine-water systems. Effect of impurity on consolute temperature. Immiscible liquids and steam distillation. Nernst distribution law. Calculation of the partition coefficient. Applications of distribution law.</p> <p><u><b>(General Chemistry)</b></u></p>						Seminar		yes
	FEB	<p><b>Surface chemistry:</b> liquids (sols), preparation, purification, properties - kinetic, optical, electrical. Stability of colloids, Hardy-Schulze law, protective colloid.</p> <p>Liquids in liquids (emulsions) preparation, properties, uses. Liquids in solids (gels) preparation, uses.</p>		Assign ment		yes		Work shop		yes

	MAR	<p>Adsorption: Physical adsorption, chemisorption. Freundlich, Langmuir adsorption isotherms. Applications of adsorption</p> <p><b>Chemical Bonding:</b> Valence bond theory, hybridization, VB theory as applied to <math>\text{ClF}_3</math>, <math>\text{Ni}(\text{CO})_4</math>, Molecular orbital theory-LCAO method, construction of M.O. diagrams for homo-nuclear and hetero-nuclear diatomic molecules (<math>\text{N}_2</math>, <math>\text{O}_2</math>, <math>\text{CO}</math> and <math>\text{NO}</math>).</p> <p><b>Stereochemistry of carbon compounds:</b> Molecular representations- Wedge, Fischer, Newman and Saw-Horse formulae. Optical isomerism: Optical activity-wave nature of light, plane polarised light, optical rotation and specific rotation.</p> <p>Chiral molecules- definition and criteria(Symmetry elements)- Definition of enantiomers and diastereomers – Explanation of optical isomerism with examples Glyceraldehyde, Lactic acid, Alanine, Tartaric acid, 2,3-dibromopentane.</p> <p>D,L and R,S configuration methods and E,Z-configuration with examples.</p>						Field trip		yes	
								Quiz		yes	

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Name of the Lecturer: <b>Ch.RVR Prasad , Ch Udaya Bhaskara Rao</b>				<b>Paper - III</b>		Class: <b>II B.Sc</b>					
S. No	Month	Syllabus-Topic	Additional inputs Value Addition	Curricular activity				Co-curricular activity			
				Activity	Hours allotted	Whether Conducted	If not alternate days	Activity	Hours allotted	Whether Conducted	If not alternate days
.	JUN	<b><u>Inorganic Chemistry</u></b> <b>Chemistry of d-block elements:</b> Characteristics of d-block elements with special reference to electronic configuration, variable valence, magnetic properties, catalytic properties and ability to form complexes. Stability of various oxidation states. Comparative treatment of second and third transition series with their 3d analogues. <b>Chemistry of f-block elements:</b> Chemistry of lanthanides-electronic structure, oxidation states, lanthanide contraction, consequences of lanthanide contraction, magnetic properties. Chemistry of actinides – electronic configuration, oxidation states, actinide contraction, comparison of lanthanides with actinides.	Machanism of Baeyer Villiger oxidation	BOS		Yes					
	JUL	<b>Theories of bonding in metals:</b> Metallic properties and its limitations, Valence bond theory, Free electron theory, Explanation of thermal and electrical conductivity of metals, limitations, Band theory, formation of bands, explanation of conductors, semiconductors and insulators. <b>Metal carbonyls and related compounds</b> – EAN rule, classification of metal carbonyls, structures and shapes of metal carbonyls of V, Cr, Mn, Fe, Co and Ni.		Assignment		Yes					
	AUG	<b><u>(Organic Chemistry)</u></b> <b>Halogen compounds:</b> Nomenclature and classification of alkyl (into primary, secondary, tertiary), aryl, aralkyl, allyl, vinyl, benzyl halides. Chemical Reactivity, formation of RMgX Nucleophilic aliphatic substitution reaction- classification into S <sub>N</sub> 1 and S <sub>N</sub> 2. Energy profile diagram of S <sub>N</sub> 1 and S <sub>N</sub> 2 reactions. Stereochemistry of S <sub>N</sub> 2 (Walden Inversion) S <sub>N</sub> 1 (Racemisation). Explanation of both by taking the example of optically active alkyl halide – 2bromobutane. Ease of hydrolysis – comparison of alkyl, benzyl, alkyl, vinyl and aryl halides. <b>Hydroxy compounds:</b> Nomenclature and classification of hydroxy compounds. Alcohols: Preparation with hydroboration reaction, Grignard synthesis of alcohols. Phenols: Preparation i) from diazonium salt, ii) from aryl sulphonates, iii) from cumene. Physical properties- Hydrogen bonding (intermolecular and intramolecular).		Guest lecture		Yes					

	SEP	<p>Effect of hydrogen bonding on boiling point and solubility in water. Chemical properties: acidic nature of phenols. formation of alkoxides/phenoxides and their reaction with RX. replacement of OH by X using PCl<sub>5</sub>, PCl<sub>3</sub>, PBr<sub>3</sub>, SOCl<sub>2</sub> and with HX/ZnCl<sub>2</sub>. esterification by acids ( mechanism). dehydration of alcohols. oxidation of alcohols by CrO<sub>3</sub>, KMnO<sub>4</sub>. special reaction of phenols: Bromination, Kolb-Schmidt reaction, Riemer-Tiemann reaction, Fries rearrangement, azocoupling. Identification of alcohols by oxidation with KMnO<sub>4</sub>, ceric ammonium nitrate, lucas reagent and phenols by reaction with FeCl<sub>3</sub>. Polyhydroxy compounds: Pinacol-Pinacolone rearrangement.</p> <p><b>Carbonyl compounds:</b> Nomenclature of aliphatic and aromatic carbonyl compounds, structure of the carbonyl group. Synthesis of aldehydes from acid chlorides, synthesis of aldehydes and ketones using 1,3-dithianes, synthesis of ketones from nitriles and from carboxylic acids. Physical properties: absence of hydrogen bonding, keto-enol tautomerism, reactivity of carbonyl group in aldehydes and ketones.</p> <p>Nucleophilic addition reaction with a) NaHSO<sub>3</sub>, b) HCN, c) RMgX, d) NH<sub>2</sub>OH, e) PhNHNH<sub>2</sub>, f) 2,4 DNPH, g) Alcohols-formation of hemiacetal and acetal. Halogenation using PCl<sub>5</sub> with mechanism. Base catalysed reactions: a) Aldol, b) Cannizzaro reaction, c) Perkin reaction, d) Benzoin condensation, e) Haloform reaction, f) Knoevenagel reaction. Oxidation of aldehydes- Baeyer-Villiger oxidation of ketones. Reduction: Clemmensen reduction, Wolf-Kishner reduction, MPV reduction, reduction with LiAlH<sub>4</sub> and NaBH<sub>4</sub>. Analysis of aldehydes and ketones with a) 2,4-DNT test, b) Tollen's test, c) Fehling test, d) Schiff test, e) Haloform test (with equation).</p> <p><b>Carboxylic acids and derivatives:</b> Nomenclature, classification and structure of carboxylic acids. Methods of preparation by a) hydrolysis of nitriles, amides and esters. b) carbonation of Grignard reagents. Special methods of preparation of aromatic acids by a) oxidation of side chain. b) hydrolysis by benzotrichlorides. c) Kolbe reaction. Physical properties: Hydrogen bonding, dimeric association, acidity- strength of acids with examples of trimethyl acetic acid and trichloroacetic acid. Relative differences in the acidities of aromatic and aliphatic acids. Chemical properties: Reactions involving H, OH and COOH groups- salt formation, anhydride formation, acid chloride formation, amide formation and esterification (mechanism). Degradation of carboxylic acids by Huns-Diecker reaction, decarboxylation by Schmidt reaction, Arndt-Eistert synthesis, halogenation by Hell-Volhard- Zelinsky reaction.</p>	Crossed Aldol condensation	Mid sem		Yes					
				Assign ment		Yes		Ozone day		Yes	
	OCT			Assign ment		Yes					

		<b>Active methylene compounds:</b> Acetoacetic esters: preparation by Claisen condensation, keto-enol tautomerism. Acid hydrolysis and ketonic hydrolysis. Preparation of a) monocarboxylic acids b) dicarboxylic acids. Reaction with urea Malonic ester: preparation from acetic acid. Synthetic applications: Preparation of a) monocarboxylic acids (propionic acid and n-butyric acid). b) dicarboxylic acids (succinic acid and adipic acid). c) $\alpha,\beta$ -unsaturated carboxylic acids (crotonic acid). Reaction with urea.		Mid sem		Yes		Swach bharat		Yes	
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Name of the Lecturer: Dr. PSNH Ramachandra Rao , Ch. Udaya Bhaskar Rao , M. Sri Rama Devi					Paper – IV				Class: II B.Sc		
S. No	Month	Syllabus-Topic	Additional inputs Value Addition	Curricular activity				Co-curricular activity			
				Activity	Hours allotted	Whether Conducted	If not alternate days	Activity	Hours allotted	Whether Conducted	If not alternate days
.	NOV	<b><u>PHYSICAL CHEMISTRY</u></b> <b>Dilute solutions:</b> Colligative properties. Raoult's law, relative lowering of vapour pressure, its relation to molecular weight of non-volatile solute. Elevation of boiling point and depression of freezing point. Derivation of relation between molecular weight and elevation in boiling point and depression in freezing point. Experimental methods of determination. Osmosis, osmotic pressure, experimental determination. Theory of dilute solutions. Determination of molecular weight of non-volatile solute from osmotic pressure. Abnormal Colligative properties- Van't Hoff factor.		Assign ment		Yes					
	DEC	<b>2. Electrochemistry-I:</b> Specific conductance, equivalent conductance. Variation of equivalent conductance with dilution. Migration of ions, Kohlrausch's law. Arrhenius theory of electrolyte dissociation and its limitations. Ostwald's dilution law. Debye-Huckel-Onsagar's equation for strong electrolytes (elementary treatment only). Definition of transport number, determination by Hittorfs method. Application of conductivity measurements- conductometric titrations.						Enviro nment al awarn ess		yes	
	JAN	<b>3. Electrochemistry-II:</b> Single electrode potential, sign convention, Reversible and irreversible cells Nernst Equation- Reference electrode, Standard Hydrogen electrode, calomel electrode, Indicator electrode, metal – metal ion electrode, Inert electrode, Determination of EMF of cell, Applications of EMF measurements - Potentiometric titrations. <b>4. Phase rule :</b> Concept of phase, components, degrees of freedom. Thermodynamic Derivation of Gibbs phase rule. Phase equilibrium of one component system - water system. Phase equilibrium of two- component system, solid-liquid equilibrium. Simple eutectic diagram of Pb-Ag system, simple eutectic diagram, desilverisation of lead., NaCl-Water system, Freezing mixtures.		Mid sem-I		Yes					
		<b><u>SPECTROSCOPY</u></b>									

	FEB	<p><b>Spectrophotometry:</b> General features of absorption - Beer-Lambert's law and its limitations, transmittance, Absorbance, and molar absorptivity. Single and double beam spectrophotometers. Application of Beer-Lambert law for quantitative analysis of 1. Chromium in <math>K_2Cr_2O_7</math> 2. Manganese in Manganous sulphate</p> <p><b>Electronic spectroscopy:</b> Interaction of electromagnetic radiation with molecules and types of molecular spectra. Energy levels of molecular orbitals (<math>\sigma</math>, <math>\pi</math>, <math>n</math>). Selection rules for electronic spectra. Types of electronic transitions in molecules effect of conjugation. Concept of chromophore and auxochrome.</p> <p><b>Infra red spectroscopy:</b> Different Regions in Infrared radiations. Modes of vibrations in diatomic and polyatomic molecules. Characteristic absorption bands of various functional groups. Interpretation of spectra-Alkanes, Aromatic, Alcohols carbonyls, and amines with one example to each.</p> <p><b>Proton magnetic resonance spectroscopy (<math>^1H</math>-NMR):</b> Principles of nuclear magnetic resonance, equivalent and non-equivalent protons, position of signals. Chemical shift, NMR splitting of signals - spin-spin coupling, coupling constants. Applications of NMR with suitable examples - ethyl bromide, ethanol, acetaldehyde, 1,1,2-tribromo ethane, ethyl acetate, toluene and acetophenone.</p>	C13 NMR	Assign ment		Yes		Field trip		Yes	
	MAR			Assign ment		yes		Work shop		Yes	
								Quiz		yes	

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Name of the Lecturer: Dr. PSNH Ramachandra Rao, Dr. S.B Ronald , M. Sri Rama Devi				Paper - V	Class: III B.Sc						
S. No	Month	Syllabus-Topic	Additional inputs Value Addition	Curricular activity				Co-curricular activity			
				Activity	Hours allotted	Whether Conducted	If not alternate days	Activity	Hours allotted	Whether Conducted	If not alternate days
.	JUN	<b><u>(Inorganic Chemistry)</u></b> <b>Coordination Chemistry:</b> IUPAC nomenclature, bonding theories – review of Werner’s theory and Sidgwick’s concept of coordination, Valence bond theory, geometries of coordination numbers 4-tetrahedral and square planar and 6-octahedral and its limitations, crystal filed theory, splitting of d-orbitals in octahedral, tetrahedral and square-planar complexes – low spin and high spin complexes – factors affecting crystal-field splitting energy, merits and demerits of crystal-field theory. Isomerism in coordination compounds – structural isomerism and stereo isomerism, stereochemistry of complexes with 4 and 6 coordination numbers.	John Teller Distortion	Assign ment		Yes					
	JUL	<b>Spectral and magnetic properties of metal complexes:</b> Electronic absorption spectrum of [Ti(H <sub>2</sub> O) <sub>6</sub> ] <sup>3+</sup> ion. Types of magnetic behavior, spin-only formula, calculation of magnetic moments, experimental determination of magnetic susceptibility – Gouy method. <b>Stability of metal complexes:</b> Thermodynamic stability and kinetic stability, factors affecting the stability of metal complexes, chelate effect, determination of composition of complex by Job’s method and mole ratio method.		BOS		Yes					
		<b>(Organic Chemistry)</b> <b>Nitrogen compounds: Nitro alkanes:</b> Nomenclature and classification-nitro hydrocarbons, structure -Tautomerism of nitroalkanes leading to aci and keto form, Preparation of Nitroalkanes, reactivity -halogenation, reaction with HONO (Nitrous acid), Nef reaction and Mannich reaction leading to Micheal addition and reduction.		Assign ment		Yes					
	AUG	<b><u>Amines:</u></b> (aliphatic and aromatic)- Nomenclature, Classification into 1°, 2°, 3° Amines and Quarternary ammonium compounds. Preparative methods 1. Ammonolysis of alkyl halides 2. Gabriel synthesis 3. Hoffman's bromamide reaction (mechanism). Reduction of Amides and Schmidt reaction. Physical properties and basic character - Comparative basic strength of Ammonia, methyl amine, dimethyl		Guest lecture		Yes					
				Assign ment		Yes					

	SEP	<p>amine, trimethyl amine and aniline - comparative basic strength of aniline, N-methylaniline and N,N-dimethyl aniline (in aqueous and non-aqueous medium), steric effects and substituent effects. Chemical properties: a) Alkylation b) Acylation c) Carbylamine reaction d) Hinsberg separation e) Reaction with Nitrous acid of 1°, 2°, 3° (Aliphatic and aromatic amines). Electrophilic substitution of Aromatic amines – Bromination and Nitration. Oxidation of aryl and Tertiary amines, Diazotization.</p> <p><b><u>Cyanides and Isocyanides:</u></b></p> <p>Nomenclature (aliphatic and aromatic) Structure. Preparation of Cyanides from: a) Alkyl halides b) from amides c) from aldoximes. Preparation of Isocyanides from: Alkyl halides and Amines. Chemical properties of Cyanides and Isocyanides: a) hydrolysis b) addition of Grignard reagent c) reduction d) oxidation.</p>	Nomenc lature of Hetero cycles ring systems	Study project	Yes						
				Assign ment	Yes						
	OCT	<p><b><u>(Physical chemistry)</u></b></p> <p><b>Thermodynamics:</b> The first law of thermodynamics-statement, definition of internal energy and enthalpy. Heat capacities and their relationship. Joule-Thomson effect-coefficient. Calculation of w, for the expansion of perfect gas under isothermal and adiabatic conditions for reversible processes. State function. Temperature dependence of enthalpy of formation-Kirchoff s equation. Second law of thermodynamics. Different Statements of the law. Carnot cycle and its efficiency. Carnot theorem. Concept of entropy, entropy as a state function, entropy changes in reversible and irreversible processes. Entropy changes in spontaneous and equilibrium processes.</p>		Assign ment	Yes						
				Mid-1	Yes						

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Name of the Lecturer: <b>M. Sri RamaDevi</b>				<b>Paper - VI</b>				Class: <b>III B.Sc</b>			
S. No	Month	Syllabus-Topic	Additional inputs Value Addition	Curricular activity				Co-curricular activity			
				Activity	Hours allotted	Whether Conducted	If not alternate days	Activity	Hours allotted	Whether Conducted	If not alternate days
.	AUG	<b><u>(Inorganic Chemistry)</u></b> <b>Reactivity of metal complexes:</b> Labile and inert complexes, ligand substitution reactions – SN <sub>1</sub> and SN <sub>2</sub> , substitution reactions of square planar complexes – Trans effect and applications of trans effect. <b><u>(Organic Chemistry)</u></b> <b>Heterocyclic Compounds:</b> Introduction and definition: Simple five membered ring compounds with one hetero atom Ex. Furan. Thiophene and pyrrole - Aromatic character – Preparation from 1,4,- dicarbonyl compounds, Paul-Knorr synthesis. Properties : Acidic character of pyrrole - electrophilic substitution at 2 or 5 position, Halogenation, Nitration and Sulphonation under mild conditions - Diels Alder reaction in furan. Pyridine – Structure - Basicity - Aromaticity - Comparison with pyrrole - one method of preparation and properties - Reactivity towards Nucleophilic substitution reaction. <b>Carbohydrates:</b> Monosaccharides: (+) Glucose (aldo hexose) - Evidence for cyclic structure of glucose (some negative aldehydes tests and mutarotation) - Proof for the ring size (methylation, hydrolysis and oxidation reactions) - Pyranose structure (Haworth formula and chair conformational formula). (-) Fructose (ketohexose) - Evidence of 2 - ketohexose structure (formation of pentaacetate, formation of cyanohydrin its hydrolysis and reduction by HI). Cyclic structure for fructose (Furanose structure and Haworth formula) - osazone formation from glucose and fructose – Definition of anomers with examples. Interconversion of Monosaccharides: Aldopentose to Aldohexose (Arabinose to D-Glucose, D-Mannose) (Kiliani - Fischer method). Epimers, Epimerisation - Lobry de bruyn van Ekenstein rearrangement. Aldohexose to Aldopentose (D-Glucose to D-Arabinose) by Ruff degradation. Aldohexose to Ketohexose [(+) Glucose to (-) Fructose] and Ketohexose to Aldohexose (Fructose to Glucose) <b>Amino acids and proteins:</b> Introduction: Definition of Amino acids, classification of		Guest lecture		Yes					
				Study project		Yes					
				Mid-1		Yes					
	SEP			Assign ment		Yes					
				Assign ment		Yes					

	OCT	<p>Amino acids into alpha, beta, and gamma amino acids. Natural and essential amino acids - definition and examples, classification of alpha amino acids into acidic, basic and neutral amino acids with examples. Methods of synthesis: General methods of synthesis of alpha amino acids (specific examples - Glycine, Alanine, valine and leucine) by following methods: a) from halogenated carboxylic acid b) Malonic ester synthesis c) strecker's synthesis.</p> <p>Physical properties: Zwitter ion structure - salt like character - solubility, melting points, amphoteric character, definition of isoelectric point.</p> <p>Chemical properties: General reactions due to amino and carboxyl groups - lactams from gamma and delta amino acids by heating peptide bond (amide linkage). Structure and nomenclature of peptides and proteins.</p>		Mid-2		yes						
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S. No	Month	Syllabus-Topic	Additional inputs Value Addition	Curricular activity				Co-curricular activity			
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.	Dec-2017	<b>UNIT-I :</b> <b>Introduction:</b> Concept of Environmental chemistry-Scope and importance of environment in now a days-Nomenclature of environmental chemistry- Segments of environment-Natural resources- Renewable Resources-Solar and biomass energy and Nonrenewable resources-Thermal power and atomic energy-Reactions of atmospheric oxygen and Hydrological cycle. <b>UNIT-II :</b> <b>Air Pollution:</b> Definition-Sources of air pollution-Classification of air pollution-Acid rain-Photochemical smog-Green house effect- Formation and depletion of ozone-Bhopal gas disaster-Controlling methods of air pollution. <b>UNIT-III :</b> <b>Water pollution:</b> Unique physical and chemical properties of water-water quality and criteria for finding of water quality-Dissolved oxygen-BOD, COD, Suspended solids, total dissolved solids, alkalinity-Hardness of water-Methods to convert temporary hard water into soft water-Methods to convert permanent hard water into soft water-eutrophication and its effects-principal wastage treatment-Industrial waste water treatment. <b>UNIT-IV :</b> <b>Chemical Toxicology</b> Toxic chemicals in the environment-effects of toxic chemicals-cyanide and its toxic effects-pesticides and its biochemical effects-toxicity of lead, mercury, arsenic and cadmium. <b>UNIT-V :</b> <b>Ecosystem and biodiversity Ecosystem:</b> Concepts-structure-Functions and types of ecosystem-Abiotic and biotic components-Energy flow and Energy dynamics of ecosystem-Food chains-Food web-Tropic levels-Biogeochemical cycles (carbon, nitrogen and phosphorus) <b>Biodiversity:</b> Definition-level and types of biodiversity-concept- significance-	Terpenoids	Student seminar		Yes					
				Assign ment		Yes					
	Jan-2018			Assign ment		Yes					
	Feb			Assign ment		Yes		Field Trip		yes	
	Mar			Quiz		yes					

		magnitude and distribution of biodiversity-trends-biogeographical classification of India-biodiversity at national, global and regional level.										
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S. No	Month	Syllabus-Topic	Additional inputs Value Addition	Curricular activity				Co-curricular activity				
				Activity	Hours allotted	Whether Conducted	If not alternate days	Activity	Hours allotted	Whether Conducted	If not alternate days	
	Nov	<b>UNIT –I :</b> Review of energy sources (renewable and non-renewable) – classification of fuels and their calorific value. Coal: Uses of Coal (fuel and non fuel) in various industries, its composition, carbonization of coal - coal gas, producer gas and water gas – composition and uses – fractionation of coal tar – uses of coal tar based chemicals, requisites of a good metallurgical coke, coal gasification (Hydro gasification and catalytic gasification) coal liquefaction and solvent refining. <b>UNIT-II:</b> <b>Petroleum and petrol chemical industry:</b> Composition of crude petroleum, refining and different types of petroleum products and their applications. <b>UNIT-III:</b> Fractional distillation (principle and process), cracking(Thermal and catalytic cracking). Reforming petroleum and non petroleum fuels (LPG, CNG, LNG, bio-gas), fuels derived from biomass, fuel from waste, synthetic fuels (gaseous and liquids), clear fuels, petro chemicals: vinyl acetate, propylene oxide, isoprene, butadiene, toluene and its derivative xylene. <b>UNIT-IV: Lubricants:</b> Classification of lubricants, lubricating oils (conducting and non-conducting), solid and semi solid lubricants, synthetic lubricants. Properties of lubricants (viscosity index, cloud point, pore point) and their determination. Applications of lubricants. <b>UNIT-V</b> <b>Batteries:</b> Primary and secondary batteries, battery components and their role, Characteristics of Battery. Working of following batteries: Pb acid, Li-Battery, Solid state electrolyte battery. Fuel cells, Solar cell and polymer cell										
	Dec			Assignment		Yes						
				Seminar		Yes						
	Jan			Assignment		Yes						
	Feb			Assignment		Yes			Work shop		Yes	
	Mar		Seminar		Yes			Quiz		yes		

SRI Y.N.COLLEGE (Autonomous) NARSAPUR-534275											
ANNUAL CURRICULAR PLAN-YEAR 2017-2018											
Name of the Lecturer: <b>Ch. Udayabhaskara Rao</b>				<b>CE-2</b>				Class: <b>III B.Sc</b>			
S. No	Month	Syllabus-Topic	Additional inputs Value Addition	Curricular activity				Co-curricular activity			
				Activity	Hours allotted	Whether Conducted	If not alternate days	Activity	Hours allotted	Whether Conducted	If not alternate days
.	Nov	<b><u>UNIT - I</u></b> <b>Recapitulation of <i>s</i>- and <i>p</i>-Block Elements</b> Periodicity in <i>s</i> - and <i>p</i> -block elements with respect to electronic configuration, atomic and ionic size, ionization enthalpy, electronegativity (Pauling, Mulliken and Alfred – Rochow scales). Allotropy in C, S, and P. Oxidation states with reference to elements in unusual and rare oxidation states like carbides and nitrides), inert pair effect, diagonal relationship and anomalous behaviour of first member of each group.									
	Dec	<b><u>UNIT – II</u></b> <b>Silicate Industries</b> <b>Glass:</b> Glassy state and its properties, classification(silicate and non-silicate glasses). Manufacture and processing of glass. Composition and properties of the following types of glasses: Soda lime glass, lead glass, armoured glass, safety glass, borosilicate glass, fluorosilicate, coloured glass, photosensitive glass.		Assign ment		Yes					
	Jan	<b>Ceramics:</b> Important clays and feldspar, ceramic, their types and manufacture. High technology ceramics and their applications, superconducting and semiconducting oxides, fullerenes, carbon nanotubes and carbon fibre. <b>Cements:</b> Classification of cement, ingredients and their role, Manufacture of cement and the setting process, quick setting cements.		Seminar		Yes					
		<b><u>UNIT – III</u></b> <b>Fertilizers:</b> Different types of fertilizers. Manufacture of the following fertilizers: Urea, ammonium nitrate, calcium ammonium nitrate, ammonium phosphate, polyphosphate, superphosphate, compound and mixed fertilizers, potassium chloride, potassium sulphate.		Assign ment		Yes					

	Feb	<b><u>UNIT – IV</u></b> <b>Surface Coatings:</b> Objectives of coatings surfaces, preliminary treatment of surface, classification of surface coatings. Paints and pigments-formulation, composition and related properties. Oil paint, Vehicle, modified oils, Pigments, toners and lakes pigments, Fillers, Thinners, Enamels, emulsifying agents. Special paints (Heat retardant, Fire retardant, Eco-friendly paint, Plastic paint), Dyes, methods of dying, classification of dyes, Wax polishing, Water and Oil paints, additives, Metallic coatings (electrolytic and electrolysis), metal spraying and anodizing.		Assign ment		Yes		Work shop		Yes	
	Mar			Seminar		Yes		Quiz		Yes	

ANNUAL CURRICULAR PLAN-YEAR 2017-2018											
Name of the Lecturer: <b>Ch.RVR Prasad</b>				<b>CE-3</b>				Class: <b>III B.Sc</b>			
S. No	Month	Syllabus-Topic	Additional inputs Value Addition	Curricular activity				Co-curricular activity			
				Activity	Hours allotted	Whether Conducted	If not alternate days	Activity	Hours allotted	Whether Conducted	If not alternate days
	NOV	<b>UNIT-I:</b> Analysis of soaps: moisture and volatile matter, combined alkali, total fatty matter, free alkali, total fatty acid, sodium silicate and chlorides. Analysis of paints : Vehicle and pigments, Barium Sulphate, total lead, lead chromate, iron pigments, zinc chromate.									
	DEC	<b>UNIT- II</b> Analysis of oils: saponification value, iodine value, acid value, ester value, bromine value, acetyl value. Analysis of industrial solvents like benzene, acetone, methanol and acetic acid, Determination of methoxyl and N-methyl groups.		Assignment		Yes					
		<b>UNIT-III</b> Analysis of fertilizers: urea, NPK fertilizer, super phosphate. Analysis of DDT, BHC, endrin, endosulfone, malathion, parathion.		Seminar		Yes					
	JAN	<b>UNIT -IV</b> Analysis of starch, sugars, cellulose and paper. Gas analysis: carbon dioxide, carbon monoxide, oxygen, hydrogen, saturated hydro carbons, unsaturated hydrocarbons, nitrogen, octane number, cetane number. Analysis of Fuel gases like: water gas, producer gas, kerosene (oil) gas. Ultimate analysis :carbon, hydrogen, nitrogen, oxygen, phosphorus and sulfur.		Assignment		Yes		Work shop		Yes	
	FEB	<b>UNIT - V</b> Analysis of Complex materials: <b>Analysis of cement-</b> loss on ignition, insoluble residue, total silica, sesqui oxides, lime, magnesia, ferric oxide, sulphuric anhydride.		Assignment		Yes		Tour		Yes	
	MAR	<b>Analysis of glasses -</b> Determinaiton of silica, sulphur, barium, arsenic, antimony, total R <sub>2</sub> O <sub>3</sub> , calcium, magnesium, total alkalies, aluminium, chloride, fluoride.		Seminar		Yes		Quiz		Yes	

