

# Vijaya College, RV Road, Bengaluru-560004

## Department of Chemistry and Bio-Chemistry

NAAC criteria-1: CURRICULAR ASPECTS for the academic years 2022-23

### 1. Academic Planner with unitisation of the entire syllabus (on hourly basis)

Name of the Department	Chemistry	Subject Title	Chemistry
Semester	I DC	Paper	I
Week/Month & Date (Preferably)	Day	Portions Planned for 1 hour	Teacher
3 <sup>rd</sup> week of September 2022	1	Classification and nomenclature of organic compounds, hybridization,	MS
	2	s, p, d and f-block elements, the long form of periodic table	RR
	3	Basic laboratory practices, calibration of glassware (pipette, burette and volumetric flask), Sampling (solids and liquids), weighing, drying, dissolving,	LYC
	4	Wave mechanics: de Broglie equation, Heisenberg's Uncertainty Principle	JP
4 <sup>th</sup> week of September 2022	1	shapes of organic molecules, influence of hybridization on bond properties.	MS
	2	Detailed discussion of the following properties of the elements, with reference to s and p-block elements:	RR
	3	Acid treatment, Rules of work in analytical laboratory, General rule for performing quantitative determinations (volumetric and gravimetric),	LYC
	4	Its significance. Quantum Mechanics-. Schrödinger's wave equation,	JP
1 <sup>st</sup> week of October 2022	1	Formation of covalent bond, types of chemical bonding,( Notations used to represent electron movements and directions of reactions- curly arrows, formal charges ).	MS
	2	Detailed discussion of the following properties of the elements, with reference to s and p-block elements:	RR
	3	Safety in Chemical laboratory, Rules of fire prevention and accidents, First aid.	LYC
	4	derivation (time independent) significance of $\psi$ and $\psi^2$ .	JP
2 <sup>nd</sup> week of October 2022	1	localized and delocalized, conjugation and cross conjugation, with examples. Concept of resonance	MS
	2	(a) Atomic radii (van der Waals) (b) Ionic and crystal radii	RR
	3	Precautions to be taken while handling toxic chemicals, concentrated/fuming acids and organic solvents.	LYC
	4	Eigen values and functions Applications of Schrödinger's wave equation	JP

3 <sup>rd</sup> week of October 2022	1	Electronic displacements: Inductive effect, electrometric effect, resonance	MS
	2	(c) Covalent radii (d) Ionization enthalpy,	RR
	3	Definitions of analysis, determination, measurement, techniques and methods. Significant figures,	LYC
	4	Particals in one-dimension box	JP
4 <sup>th</sup> week of October 2022	1	hyper conjugation, aromaticity, Huckel rule, anti-aromaticity explanation with examples.	MS
	2	successive ionization enthalpies	RR
	3	Classification of analytical techniques. Choice of an analytical method	LYC
	4	Quantum numbers and their significance.	JP
1 <sup>st</sup> week of November 2022	1	Strengths of organic acid and bases: Comparative study with emphasis on factors effecting pKa values. Relative strength of aliphatic and aromatic carboxylic acids-	MS
	2	factors affecting ionization energy.	RR
	3	Errors and treatment of analytical data: Limitations of analytical methods	LYC
	4	Quantum mechanical operators- (i) Hamiltonian operator;	JP
2 <sup>nd</sup> week of November 2022	1	acetic acid and chloroacetic acid, acetic acid and propionic acid, acetic acid and benzoic acid. Steric effectrelative stability of trans and cis-2-butene.	MS
	2	Applications of ionization enthalpy (e) Electron gain enthalpy;	RR
	3	Titrimetric analysis: Basic principle of titrimetric analysis. Classification, preparation and dilution of reagents/solutions. Equivalent masses of compounds Normality,	LYC
	4	Laplaceanoperator Normalized and orthogonal wave functions. Sign of wave functions. Postulates of quantum mechanics Radial and angular wave functions for hydrogen atom	JP
3 <sup>rd</sup> week of November 2022		<b>INTERNAL TEST</b>	
4 <sup>th</sup> week of November 2022	1	Types of bond cleavages- homolytic and heterolytic cleavages	MS
	2	trends of electron gain enthalpy. (f) Electronegativity, Pauling's/	RR
	3	Applications of ionization enthalpy (e) Electron gain enthalpy;	LYC
	4	Titrimetric analysis: Basic principle of titrimetric analysis. Classification, preparation and dilution of reagents/solutions. Equivalent masses of compounds Normality,	JP
1 <sup>st</sup> week of December 2022	1	Types of reagentselectrophiles, nucleophiles, nucleophilicity and basicity Types of organic reactions substitution, addition, elimination, and rearrangement explanation with examples..	MS
	2	Mulliken's/ Allred Rachow's/ and Mulliken-Jaffé's	RR
	3	Errors: Determinate and indeterminate errors, some important	LYC

		terms replicate, outlier,	
	4	Radial and angular distribution curves. Shapes of s, p, d and f orbitals. Contour boundary and probability diagrams.	JP
2 <sup>nd</sup> week of December 2022	1	electronegativity scales. Variation of electronegativity with bond order,	MS
	2		RR
	3	, Accuracy, precision, ways of expressing accuracy, absolute error, relative error	LYC
	4	Pauli's Exclusion Principle, Hund's rule of maximum multiplicity	JP
3 <sup>rd</sup> week of December 2022	1	Formation of alkanes: Wurtz reaction, free radical substitution, halogenation Carbon-carbon pi bonds: Formation of alkenes and alkynes by elimination reaction. Mechanism of E1, E2, reactions. Saytzeff and Hofmann eliminations.	MS
	2	partial charge, hybridization, group electronegativity.	RR
	3	minimization of errors. Statistical treatment of random errors, mean, median, range, standard deviation and variance. External standard calibration. Numerical problems.	LYC
	4	Aufbau's principle and its limitations- Electronic configurations of the elements (Z=1-30),	JP
4 <sup>th</sup> week of December 2022	1	Addition of HBr to propene, free radical addition of HBr to propene. Addition of halogens to alkenescarbocation and halonium ion mechanism. Ozonolysis - ozonolysis of propene,hydrogenation, hydration,	MS
	2	Trends in the chemistry of the compounds of groups 13 to 17 (hydrides, carbides, oxides and halides) are to be discussed.	RR
	3	Molarity and Mole fraction. Use of $N_1V_1 = N_2V_2$ formula, preparation of ppm level solutions from source materials (salts), conversion factors. Numerical problems.	LYC
	4	effective nuclear charge, shielding/screening effect,	JP
1 <sup>st</sup> week of January 2023	1	hydroxylation and epoxidation of alkenes, explanation with examples, addition of hydrogen halides to alkynes. Conjugated Dienes- 1,2 and 1,4- addition reactions in conjugated dienes. Diels-Alder reaction.	MS
	2	Trends in the chemistry of the compounds of groups 13 to 17 (hydrides, carbides, oxides and halides) are to be discussed.	RR
	3	Acid-basetitrimetry: Titration curves for strong acid vs. strong base, weak acid vs. strong base and weak base vs. strong acid titrations. Titration curves, quantitative applications – selecting and standardizing a titrant, inorganic analysis - alkalinity, acidity.	LYC

	4	Slater's rules , Variation of effective nuclear charge in Periodic Table.	JP
2 <sup>nd</sup> week of January 2023	<b>PRACTICAL EXAMINATIONS</b>		

## Vijaya College, RV Road, Bengaluru-560004

### Department of Chemistry and Bio-Chemistry

**NAAC criteria-1: CURRICULAR ASPECTS** for the academic years 2022-23

#### 1. Academic Planner with unitisation of the entire syllabus (on hourly basis)

Name of the Department	Chemistry	Subject Title	Chemistry
Semester	I OE	Paper	I
Week/Month & Date (Preferably)	Day	Portions Planned for 1 hour	Teacher
2 <sup>nd</sup> week of November 2022	1	Composition of milk and milk products.	RR
	2	Classification and nomenclature of vitamins	AM
	3	Chemical and renewable energy sources-introduction	LYC
3 <sup>rd</sup> week of November 2022	1	Analysis of fat content, minerals in milk and butter.	RR
	2	Sources, deficiency diseases	AM
	3	principles and applications of primary batteries	LYC
4 <sup>th</sup> week of November 2022	1	Estimation of added water in milk. Beverages	RR
	2	and structures of vitamin A1,	AM
	3	secondary batteries	LYC
1 <sup>st</sup> week of December 2022	1	Analysis of caffeine in coffee and tea,	RR
	2	vitamin B1,	AM
	3	fuel cells.	LYC
2 <sup>nd</sup> week of December 2022	1	detection of chicory in coffee, chloral hydrate in toddy,	RR
	2	vitamin C, vitamin D,	AM
	3	Basics of solar energy,	LYC
3 <sup>rd</sup> week of December 2022	1	Determination of methyl alcohol in alcoholic beverages.	RR
	2	Vitamin E & vitamin K1.	AM
	3	future energy store	LYC

4 <sup>th</sup> week of December 2022	1	Food preservatives like benzoates,	RR
	2	Composition of edible oils	AM
	3	Polymers:	LYC
1 <sup>st</sup> week of January 2023	1	propionates, sorbates, and disulphites.	RR
	2	detection of purity,	AM
	3	basic concept of polymers,	LYC
2 <sup>nd</sup> week of January 2023	1	Artificial sweeteners: aspartame, saccharin rancidity of fats and oil. classification and characteristics of polymers.	RR
	2		AM
	3		LYC
Extra classes	1	dulcin, sucralose, and sodium cyclamate	RR
	2	Tests for adulterants like argemone oil and mineral oils.	AM
	3	Applications of polymers as plastics in electronic,	LYC
Extra classes	1	Flavors: vanillin, alkyl esters (fruit flavours), and monosodium glutamate.	RR
	2	Halphen test. Definition, classification of soaps,	AM
	3	automobile components, medical fields, and aerospace materials.	LYC
Extra classes	1	Coal tar dyes and non-permitted colours and metallic salts.	RR
	2	manufacturing of soaps and detergents,	AM
	3	Problems of plastic waste management.	LYC
Extra classes	1	Analysis of pesticide residues in food.	RR
	2	Composition and uses of soaps.	AM
	3	Strategies for the development of environment-friendly polymers.	LYC

## Vijaya College, RV Road, Bengaluru-560004

### Department of Chemistry and Bio-Chemistry

**NAAC criteria-1: CURRICULAR ASPECTS for the academic years 2022-23**

#### 1. Academic Planner with unitisation of the entire syllabus (on hourly basis)

Name of the Department	Chemistry	Subject Title	Chemistry
Semester	III DC	Paper	III
Week/Month &	Day	Portions Planned for 1 hour	Teacher

Date (Preferably)			
1 <sup>st</sup> week nov 2022	1	Electromagnetic spectrum, absorption of electromagnetic radiation,	JP
	2	Reaction Intermediates: Generation,	AM
	3	Fischer projection, Newmann and Sawhorse projection formulae	RR
	4	Solvent Extraction: Definition of solvent extraction, Types- batch, continuous, efficiency, selectivity,	MS
2 <sup>nd</sup> week nov 2022	1	Definition and units of frequency, wavelength, wave number,	JP
	2	Stability and Reactions of, i) Carbocations:	AM
	3	Fischer projection, Newmann and Sawhorse projection formulae	RR
	4	Nernst distribution law, derivation, distribution coefficient, factors affecting the partition,	MS
3 <sup>rd</sup> week nov 2022	1	Beer's law, Beer-Lambert law derivation,	JP
	2	Dienone-phenol; and Pinacol-Pinacolone Rearrangement detection	AM
	3	interconversions.	RR
	4	relationship between % extraction and volume fraction, Numerical problems on solvent extraction.	MS
4 <sup>th</sup> week nov 2022	1	deviations from Beer's law, limitations,	JP
	2	. ii) Carbanions : Perkin Reaction, Aldol condensation,	AM
	3	interconversions	RR
	4	Solvent extraction of iron and copper.	MS
1 <sup>st</sup> week Dec 2022	1	construction of calibration graph (Plot of absorbance versus concentration),	JP
	2	Claisen-Schmitt condensation. iii) Free Radicals:	AM
	3	Geometrical isomerism: Cis-trans isomerism.	RR
	4	Fundamentals of chromatography: General description, definition, terms and parameters used in chromatography,	MS
2 <sup>nd</sup> week Dec 2022	1	Evaluation Procedures- standard addition,	JP
	2	Sandmeyer Reaction iv) Carbenes and Nitrenes:	AM
	3	Geometrical isomerism: Cis-trans isomerism.	RR
	4	classification of chromatographic methods, criteria for selection of stationary and mobile phase and nature of adsorbents. Principles of paper, thin layer, column chromatography.	MS
3 <sup>rd</sup> week Dec 2022	1	Internal standard addition, validation parameters-detection limits,	JP
	2	Singlet and Triplet states, their relative stability	AM

	3	syn-anti isomerism, E/Z notations with C.I.P rules. Optical Isomerism:	RR
	4	Column efficiency, factors affecting the column efficiency, van Deemter's equation and its modern version.	MS
4 <sup>th</sup> week Dec 2022	1	sensitivity, dynamic/linearity range, Instrumentation,	JP
	2	reactions of Arynes: Formation and detection	AM
	3	Optical activity, Specific rotation,	RR
	4	Paper chromatography: Theory and applications	MS
1 <sup>st</sup> week Jan 2023	1	single beam and double beam spectrophotometers,	JP
	2	Methods for identifying reaction mechanism:	AM
	3	Chirality/Asymmetry,	RR
	4	. Thin layer chromatography (TLC): Mechanism, R <sub>f</sub> value, efficiency of TLC plates,	MS
2 <sup>nd</sup> week Jan 2023	1	quantitative applications of colorimetry (determination of Fe, Mo, Cu, Ti and PO <sub>4</sub> <sup>3-</sup> ) and	JP
	2	Product analysis, Isolation and Identification of Intermediates,	AM
	3	Enantiomers, Molecules with two or more chiral centres,	RR
	4	methodology–selection of stationary and mobile phases, development,	MS
3 <sup>rd</sup> week Jan 2023	1	numerical problems on application of Beer's law.	JP
	2	Product analysis, Isolation and Identification of Intermediates,	AM
	3	Diastereoisomers, meso structures,	RR
	4	spray reagents, identification and detection, qualitative applications	MS
4 <sup>th</sup> week Jan 2023	1	Nephelometry and Turbidimetry: Introduction, principle,	JP
	2	Stereochemical Evidences,	AM
	3	Racemic mixtures	RR
	4	Ion exchange chromatography: resins, types with examples- cation exchange and anion exchange resins,	MS
1 <sup>st</sup> week Feb 2023	1	instrumentations of nephelometry and turbidimetry; effects of concentration, particle size and wavelength on scattering;	JP
	2	Effect of Catalyst, crossover Experiments,	AM
	3	Resolution, Relative and absolute configuration,	RR
	4	mechanism of cation and anion exchange process and applications of ionexchange chromatography	MS
2 <sup>nd</sup> week Feb 2023	1	choice between nephelometry, applications of nephelometry and turbidimetry (determination of SO <sub>4</sub> <sup>2-</sup> and PO <sub>4</sub> <sup>3-</sup> )	JP
	2	Isotopic studies, Kinetic Studies	AM
	3	D/L and R/S designations	RR
	4	softening of hard water, separation of lanthanides, industrial applications	MS

# Vijaya College, RV Road, Bengaluru-560004

## Department of Chemistry and Bio-Chemistry

### NAAC criteria-1: CURRICULAR ASPECTS for the academic years 2022-23

#### 1. Academic Planner with unitisation of the entire syllabus (on hourly basis)

Name of the Department	Chemistry	Subject Title	Physical Chemistry
Semester	V	Paper	V
Week/Month & Date (Preferably)	Day	Portions Planned for 1 hour	Teacher
1 <sup>st</sup> week nov 2022	1	Characteristics of electromagnetic radiation, Lambert-Beer's law and its limitations,	JP
	2	Physical significance of absorption coefficients. Laws of photochemistry, quantum yield, actinometry,	JP
	3	Principles of NMR spectroscopy, Larmor precession, chemical shift and low resolution spectra,	SAS
2 <sup>nd</sup> week nov 2022	1	examples of low and high quantum yields, photochemical equilibrium and the differential rate of photochemical reactions,	JP
	2	photosensitized reactions, quenching. Role of photochemical reactions in biochemical processes, photo stationary states, chemiluminescence.	JP
	3	different scales, spin-spin coupling and high resolution spectra,	SAS
3 <sup>rd</sup> week nov 2022	1	Molecular Spectroscopy Interaction of electromagnetic radiation with molecules	JP
	2	various types of spectra; Born Oppenheimer approximation. Rotation spectroscopy:	JP
	3	interpretation of PMR spectra of organic molecules. Electron Spin Resonance	SAS
4 <sup>th</sup> week nov 2022	1	Selection rules, intensities of spectral lines,	JP
	2	determination of bond lengths of diatomic and linear triatomic molecules, isotopic substitution	JP
	3	(ESR) spectroscopy: Its principle, hyperfine structure,	SAS
1 <sup>st</sup> week Dec 2022	1	Classical equation of vibration, computation of force constant, amplitude of diatomic molecular vibrations,	JP
	2	anharmonicity, Morse potential, dissociation energies, fundamental frequencies, overtones,	JP
	3	ESR of simple radicals.	SAS
2 <sup>nd</sup> week Dec2022	1	hot bands, degrees of freedom for polyatomic molecules, modes of vibration, concept of group frequencies.	JP
	2	Vibration-rotation spectroscopy: diatomic vibrating rotator, P, Q, R branches	JP



	3	Separation techniques Solvent extraction: Classification, principle and efficiency of the technique.	SAS
3 <sup>rd</sup> week Dec 2022	1	Raman spectroscopy: Qualitative treatment of Rotational Raman effect; Effect of nuclear spin, Vibrational Raman spectra,	JP
	2	Stokes and anti-Stokes lines; their intensity difference, rule of mutual exclusion.	JP
	3	Mechanism of extraction: extraction by solvation and chelation. Technique of extraction: batch,	SAS
4 <sup>th</sup> week Dec 2022	1	Franck-Condon principle, electronic transitions, singlet and triplet states, fluorescence and phosphorescence,	JP
	2	dissociation and predissociation, calculation of electronic transitions of polyenes using free electron model.	JP
	3	continuous and counter current extractions. Qualitative and quantitative aspects of solvent extraction: extraction of metal ions from aqueous solution,	SAS
1 <sup>st</sup> week Jan2023	1	Sampling, evaluation of analytical data, errors, accuracy and precision, methods of their expression,	JP
	2	normal law of distribution of indeterminate errors, statistical test of data;	JP
	3	extraction of organic species from the aqueous and non-aqueous media. Chromatography: Classification,	SAS
2 <sup>nd</sup> week Jan 2023	1	F, Q and t test, rejection of data, and confidence intervals.	JP
	2	Theory of thermogravimetry (TG),	JP
	3	principle and efficiency of the technique. Mechanism of separation: adsorption, partition & ion exchange.	SAS
3 <sup>rd</sup> week Jan 2023	1	basic principle of instrumentation. Techniques for quantitative estimation of Ca and	JP
	2	Techniques for quantitative estimation of Mg from their mixture.	JP
	3	Development of chromatograms: frontal, elution and displacement methods.	SAS
4 <sup>th</sup> week Jan2023	1	Classification of electroanalytical methods, basic principle of pH metric	JP
	2	, potentiometric and conductometric titrations.	JP
	3	Qualitative and quantitative aspects of chromatographic methods of analysis:	SAS
1 <sup>st</sup> week Feb 2022	1	Techniques used for the determination of equivalence points. Techniques used for the determination of pKa values.	JP
	2	Techniques used for the determination of pKa values.	JP
	3	IC, GLC, GPC, TLC and HPLC	SAS
2 <sup>nd</sup> week Feb 2023	1	Revision	JP
	2	Revision	JP
	3	Revision	SAS

# Vijaya College, RV Road, Bengaluru-560004

## Department of Chemistry and Bio-Chemistry

### NAAC criteria-1: CURRICULAR ASPECTS for the academic years 2022-23

#### 1. Academic Planner with unitisation of the entire syllabus (on hourly basis)

Name of the Department	Chemistry	Subject Title	Organic Chemistry
Semester	V	Paper	VI
Week/Month & Date (Preferably)	Day	Portions Planned for 1 hour	Teacher
1 <sup>st</sup> week nov 2022	1	Contributions of Emil Fischer, Louis Pasteur, Embden, Mayerhof, Parnas, Hans Krebs, Michaelis and Menton, Watson and Crick, Chargaff, H.G. Khorana, Knoop, Pauling and Hopkins.	MS
	2	Components of nucleic acids- Nitrogen bases, sugars. Structure of nucleosides, nucleotides and polynucleotides (DNA and RNA),	RR
	3	Introduction and Classification of carbohydrates with examples. Derivatives of monosaccharides Amino sugars-Haworth structure and biological importance of $\beta$ -D-glucosamine,	AM
2 <sup>nd</sup> week nov 2022	1	Elemental and biochemical composition of living organisms. Role of water in biochemical systems (mention the properties dielectric constant, surface tension, heat of vaporization, MP and BP, specific heat)	MS
	2	Biological roles of DNA and RNA. Properties of nucleic acids with acids and bases, temperature stability of nucleic acids,	RR
	3	galactosamine and their N-acetylated forms: (NAMA, NANA). Sugar Acids- Haworth structure and biological importance of D-gluconic acid, D-glucuronic acid and D-glucaric acid. Sugar Phosphates-	AM
3 <sup>rd</sup> week nov 2022	1	Bioenergetics: Introduction – stages of energy transformation. Exergonic and endergonic reactions. Relationship between $\Delta G^\circ$ and Keq. High Energy Phosphates-	MS
	2	Nucleic acids as genetic materials. Protein-nucleic acid interaction- chromatin and viral nuclear capsids	RR
	3	Haworth structure and biological importance of D-Glucose-6-phosphate, D-Fructose-6-phosphate, DFructose-1,6-diphosphate, $\beta$ -D-ribose-5-phosphate and $\beta$ -D-deoxyribose-5-phosphate.	AM
4 <sup>th</sup> week nov 2022	1	Definition with examples; ATP, PEP, 1,3-diphosphoglycerate, creatine phosphate-structural features that makes them high energy compounds. Redox potentials of some biological important half reactions,	MS
	2	Central dogma of Molecular biology,	RR
	3	Haworth structure and biological importance of	AM

		oligosaccharides-Isomaltose, Cellobiose, Trehalose. Polysaccharides-partial structure and biological function of starch, glycogen, cellulose, chitin and inulin.	
1 <sup>st</sup> week Dec 2022	1	Calculation of energy yield from biological redox reaction (Oxidation of NADH and FADH <sub>2</sub> by oxygen, reduction of acetaldehyde by NADH).	MS
	2	Replication,	RR
	3	Glycolysis, fates of pyruvate,	AM
2 <sup>nd</sup> week Dec2022	1	Mitochondrial electron transport chain with brief explanation of P/O ratio and ATP Synthase complex. Oxidative Phosphorylation. Substrate Level Phosphorylation. Definition of anabolism and catabolism with suitable example	MS
	2	transcription and translation.	RR
	3	TCA cycle, Energetics. Gluconeogenesis –	AM
3 <sup>rd</sup> week Dec 2022	1	Introduction and Definition of vitamins, Classification of vitamins based on solubility, Sources,	MS
	2	Genetic code general features.	RR
	3	synthesis of glucose from lactate.	AM
4 <sup>th</sup> week Dec 2022	1	Biological significance and deficiency syndrome of each vitamin	MS
	2	Introduction, Classification- simple, complex and derived with examples. Solubility of lipids. Fatty acids- definition, classification –	RR
	3	α-amino acids: Introduction, structure, classification on the basis of polarity of R-groups, essential and Non-essential amino acids,	AM
1 <sup>st</sup> week Jan 2023	1	Introduction, Holo enzyme (apo-enzyme and co-enzyme). Active site and specificity, Classification of enzymes with examples. Enzyme substrate interaction-	MS
	2	saturated and unsaturated with examples and structure of lauric, myristic, palmitic, stearic, oleic, linoleic, linolenic and arachidonic acids. Essential fatty acids definition with examples. Triglycerides-	RR
	3	zwitter ion, reaction of amino acids with Nihydriin, Peptide Bond. Sanger,	AM
2 <sup>nd</sup> week Jan 2023	1	Fischer and Koshland models. Enzyme kinetics- factors affecting rate of enzymatic reactions- enzyme concentration, substrate concentration,	MS
	2	Structure and properties- acid and alkali hydrolysis, saponification number and its significance, Biological importance of triglycerides. Phosphoglycerides- General Structure of 3-Sn-phosphatidic acid, lipid bilayer, micelles,	RR
	3	Edman's reactions and their significance. Proteins-brief study of enzyme and muscle proteins, Levels of Organizations of Protein:	AM
3 <sup>rd</sup> week Jan 2023	1	pH and temperature, M.M equation with significance. Enzyme Inhibitor Competitive, non-competitive and uncompetitive, Allosteric inhibition with one example for each.	MS

	2	liposomes with applications, structure and biological importance of lecithin, cephalin, phosphatidylserine, phosphatidylinositol. Cholesterol- structure and biological significance	RR
	3	Primary, secondary, tertiary and quaternary structures with examples ( $\alpha$ - helix, $\beta$ -pleated sheet, triple helix and haemoglobin) Denaturation and renaturation:	AM
4 <sup>th</sup> week Jan2023	1	Definition. Classification-amino acid derivatives, peptide and polypeptide and Steroid hormones with functions. Tropic hormones (hormones released by adrenals and hypothalamus).	MS
	2	Activation of fatty acids,	RR
	3	Aufinsen's experiment, separation of proteins by PAGE. Transamination	AM
1 <sup>st</sup> week Feb 2023	1	Role of Insulin and Glucagon in glucose homeostasis. Feedback regulation, secondary messengers- $\text{Ca}^{2+}$ , cyclic AMP	MS
	2	role of carnitine, $\beta$ -oxidation and energetics	RR
	3	deamination and decarboxylation. Urea Cycle.	AM