

Konkan Education Society's
Anandibai Pradhan Science College, Nagothane
Department of Chemistry

TEACHING PLAN 2020-21

T.Y.B.Sc. Chemistry (Sem. VI) COURSE CODE: USCH603
Chemistry Paper III: - Organic Chemistry

Sr. No.	Month & Week	Topics to be covered	Practical's
		Theory	
1.	January I	Unit-I 1.1 Stereochemistry II (10 L) 1.1.1 Stereoselectivity and stereospecificity: Idea of enantioselectivity (ee) and diastereoselectivity (de), Topicity : enantiotopic and diasterotopic atoms, groups and faces	----
	January III	1.1.2 Stereochemistry of - i) Substitution reactions : SNi (reaction of alcohol with thionyl chloride) ii) Elimination reactions: E2-Base induced dehydrohalogenation of 1-bromo-1,2-diphenylpropane	---
	January III	iii) Addition reactions to olefins: a) bromination (electrophilic anti addition) b) syn hydroxylation with OsO ₄ and KMnO ₄ c) epoxidation followed by hydrolysis..	---
	January I	1.2 Amino acids & Proteins(5 L) 1.2.1 α -Amino acids: General Structure, configuration, and classification based on structure and nutrition. Properties: pH dependency of ionic structure, isoelectric point and zwitter ion. Methods of preparations: Strecker synthesis, Gabriel phthalamide synthesis.	--
	January IV	1.2.2 Polypeptides and Proteins: nature of peptide bond. Nomenclature and representation of polypeptides (di-and tri-peptides) with examples Merrifield solid phase polypeptide synthesis. Proteins: general idea of primary, secondary, tertiary & quaternary structure.	--
	July V	Unit-II 2.1 Molecular Rearrangements Mechanism of the following rearrangements with examples and stereochemistry wherever applicable. 2.1.1 Migration to the electron deficient carbon: Pinacol-pinacolone rearrangement. 2.1.2 Migration to the electron deficient nitrogen: Beckmann rearrangement.	--
	Feb. I	2.1.3 Migration involving a carbanion : Favorski rearrangement. 2.1.4 Name reactions: Michael addition, Wittig reaction.	--
	Feb. II	2.2 Carbohydrates 10L) 2.2.1 Introduction: classification, reducing and non-reducing sugars, DL notation 2.2.2 Structures of monosaccharides: Fischer projection (4-6 carbon monosaccharides) and Haworth formula (furanose and pyranose forms of pentoses and hexoses)	--
	Feb. III	Interconversion: open chain and Haworth forms of monosaccharides with 5 and 6 carbons. Chair conformation with stereochemistry of D-glucose,	--



	Stability of chair form of D-glucose	
Feb. IV	2.2.3 Stereoisomers of D-glucose: enantiomer, diastereomers, anomers, epimers. 2.2.4 Mutarotation in D-glucose with mechanism 2.2.5 Chain lengthening & shortening reactions: Modified Kiliani-Fischer synthesis (D-arabinose to D-glucose and D-mannose), Wohl method (D-glucose to D-arabinose)	--
Feb.	2.2.6 Reactions of D-glucose and D-fructose: (a) Osazone formation (b) reduction: Hg/Ni, NaBH4 (c) oxidation: bromine water, HNO3, HIO4 (d) acetylation (e) methylation:(d) and (e) with cyclic pyranose forms 2.2.7 Glycosides: general structure.	---
March I	Unit III 3.1 Spectroscopy II(10 L) 3.1.1 IR Spectroscopy: Basic theory, nature of IR spectrum, selection rule, fingerprint region. 3.1.2 PMR Spectroscopy: Basic theory of PMR, nature of PMR spectrum,	-----
March II	Chemical shift (δ unit), standard for PMR, solvents used. Factors affecting chemical shift: (1) Inductive effect (2) anisotropic effect (with reference to C=C, C≡C, C=O and benzene ring). Spin- spin coupling and coupling constant. Application of deuterium exchange technique. Application of PMR in structure determination Introduction to Gravimetry, Types of Gravimetric methods.	-----
March III	3.1.3 Spectral characteristics of following classes of organic compounds, including benzene and monosubstituted benzenes, with respect to IR and PMR: (1) alkanes (2) alkenes (3) alkynes (4) haloalkanes (5) alcohols (6) carbonyl compounds (7) ethers (8) amines (broad regions characteristic of different groups are expected).	-----
March IV	Problems of structure elucidation of simple organic compounds using individual or combined use of UV-Vis, IR, Mass and NMR spectroscopic technique are expected. (Index of hydrogen deficiency should be the first step in solving the problems)..	-----
March V	3.2 Nucleic Acids (5 L) Controlled hydrolysis of nucleic acids. sugars and bases in nucleic acids. Structures of nucleosides and nucleotides in DNA and RNA.	-----
April I	Structures of nucleic acids (DNA and RNA) including base pairing.	---
April II	Unit IV 4.1 Polymer (8 L) 4.1.1 Introduction: terms monomer, polymer, homopolymer, copolymer, thermo plastics and thermosets. 4.1.2 Addition polymers: polyethylene, polypropylene, teflon, polystyrene, PVC, Uses	-----



	April III	4.1.3 Condensation polymers: polyesters, polyamides, polyurethanes, polycarbonates, phenol formaldehyde resins. Uses 4.1.4 Stereochemistry of polymers: Tacticity, mechanism of stereochemical control of polymerization using Ziegler Natta catalysts.	----
	April IV	4.1.5 Natural and synthetic rubbers: Polymerisation of isoprene: 1,2 and 1,4 addition (cis and trans), Styrene butadiene copolymer. 4.1.6 Additives to polymers: Plasticisers, stabilizers and fillers.	----
	April V	4.1.7 Biodegradable polymers: Classification and uses. polylactic acid structure, properties and use for packaging and medical purposes.	----
	May I	Revision	Practical Session -1
	May I		Sharing videos for demo
	May II		Practical Session -1
	May III		Practical Session -1
	May IV	Theory Exam	
	May V	Theory Exam	


 Name and Signature of Teacher
 Dr. Dinesh Vasant Bhagat

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Kokan Education Society's
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 Department of Chemistry
 TEACHING PLAN 2020-21 (FIRST TERM)

Sr. No.	Class & Semester	Month & Week	Subject & Paper	Unit	Topics to be covered
					Theory
1	T.Y.B.Sc. Sem - V	June II	Chemistry I	IV	Adsorption: Physical and Chemical Adsorption, types of adsorption Isotherms
		June III	Chemistry I	IV	Langmuir's adsorption isotherm (Postulates and derivation expected). B.E.T. equation for multilayer adsorption, (derivation not expected)
		June IV	Chemistry I	IV	Determination of surface area of an adsorbent using B.E.T. equation.
		July I	Chemistry I	IV	Introduction to colloids - Emulsions, Gels and Sols Electrical Properties : Origin of charges on colloidal particles
		July II	Chemistry I	IV	Concept of electrical double layer, zeta potential, Helmholtz and Stern model. Electro-kinetic phenomena - Electrophoresis
		July III	Chemistry I	IV	Electro-osmosis, Streaming potential, Sedimentation potential
		July IV	Chemistry I	IV	Donnan Membrane Equilibrium. Colloidal electrolytes : Introduction, micelle formation
		August I	Chemistry I	IV	Surfactants: Classification and applications of surfactants in detergents and food industry
		August II	Chemistry I	III	Introduction: Basic terms-radioactive constants (decay constant, half life and average life) and units of radioactivity
		August III	Chemistry I	III	Detection and Measurement of Radioactivity: Types and characteristics of nuclear radiations, behaviour of ion pairs in electric field
		August IV	Chemistry I	III	Application of use of radioisotopes as Tracers : chemical reaction mechanism, age determination - dating by C14
		Sept I	Chemistry I	III	Nuclear reactions: nuclear transmutation (one example for each projectile), artificial radioactivity, Q - value of nuclear reaction, threshold energy.
		September II	Chemistry I	III	Fission Process : Fissile and fertile material, nuclear fission, chain reaction, factor controlling fission process. multiplication factor and critical size or mass of fissionable material
		September III	Chemistry I	III	nuclear power reactor and breeder reactor
		September IV	Chemistry I	III	Fusion Process : Thermonuclear reactions occurring on stellar bodies and earth.
		October I	Chemistry I	III	detection and measurement of nuclear radiations using G. M. Counter and Scintillation Counter
		October II	-	-	Revision of Syllabus & Discussion of Question Paper Pattern
		October III	-	-	Theory & Practical exam
		October IV	-	-	Theory & Practical exam



Sr. No.	Class & Semester	Month & Week	Subject & Paper	Unit	Topics to be covered
					Theory
1	F.Y.B.Sc. Sem - I	July II	Chemistry I	III	-
		July III	Chemistry I	III	Review of basic rules of IUPAC nomenclature
		July IV	Chemistry I	III	Nomenclature of alkanes, alkenes, alkynes
		August I	Chemistry I	III	Nomenclature of carboxylic acids, carboxylic acid derivatives (acid halides, esters, anhydrides, amides)
		August II	Chemistry I	III	Nomenclature of haloalkanes, alcohols, ethers, aldehydes, ketones
		August III	Chemistry I	III	Nomenclature of nitro compounds, nitriles and amines
		August IV	Chemistry I	III	Nomenclature of their cyclic analogues and bi-functional compounds
		Sept I	Chemistry II	III	Introduction to stereochemistry, Classification of isomerism
		Sept II	Chemistry II	III	Fischer Projection, Newman and Sawhorse Projection formulae (of erythro, threo isomers of tartaric acid and 2,3 dichlorobutane) and their interconversions
		Sept III	Chemistry II	III	Geometrical isomerism in alkene and cycloalkanes: cis-trans and syn-anti isomerism E/Z notations with C.I.P rules, Optical Isomerism: Optical Activity, Specific Rotation, Chirality/Asymmetry, Enantiomers
		Sept IV	Chemistry II	III	Molecules with two similar and dissimilar chiral centres, Distereoisomers, meso structures, racemic mixture and resolution (methods of resolution not expected)
		October I	Chemistry II	III	Relative and absolute configuration: D/L and R/S designations
		October II	Chemistry II	III	Conformation analysis of alkanes (ethane, propane and n-butane); Relative stability with energy diagrams
		October III	Chemistry I	III	Electronic Effects: Inductive, electromeric, resonance and mesomeric effects, hyperconjugation and their applications; Dipole moment; Organic acids and bases; their relative strengths
		October IV	Chemistry I	III	Bond fission: Homolytic and Heterolytic fission with suitable examples. Electrophiles and Nucleophiles; Nucleophilicity and basicity;
		November I	Chemistry I	III	Types (primary, secondary, tertiary, allyl, benzyl), shape and their relative stability of reactive intermediates, Shapes of Carbocations, Carbanions and Free radicals
		November II	Chemistry I	III	Relative stabilities of Carbocations, Carbanions and Free radicals; Introduction to types of organic reactions: Addition, Elimination and Substitution reaction. (With one example of each)
		November III	Chemistry I	III	Hybridization: sp^3 , sp^2 , sp hybridization of carbon and nitrogen; sp^3 and sp^2 hybridizations of oxygen in Organic compounds (alcohol, ether, aldehyde, ketone, carboxylic acid, ester, cyanide, amine and amide)
		November IV	Chemistry I	III	Overlap of atomic orbitals: Overlaps of atomic orbitals to form sigma and pi bonds, shapes of organic molecules. Shapes of molecules; Influence of hybridization on bond properties (as applicable to ethane, ethene, ethyne)
		December I	Chemistry I & II	III	Revision of Syllabus & Discussion of Question Paper Pattern
		December II	-	III	Theory & Practical exam
		December III	-	III	Theory & Practical exam
		December IV	-	III	Theory & Practical exam



Sr. No.	Class & Semester	Month & Week	Subject & Paper	Topics to be covered
				Practical
1	T.Y.B.Sc. Sem - V	June II	Chemistry I	-
		June III	Chemistry I	-
		June IV	Chemistry I	-
		July I	Chemistry I	Colligative properties: To determine the molecular weight of compound by Rast Method
		July II	Chemistry I	Chemical Kinetics: To determine the order between K ₂ S ₂ O ₈ and KI by fractional change method
		July III	Chemistry I	Surface phenomena: To investigate the adsorption of acetic acid on activated charcoal and test the validity of Freundlich adsorption isotherm
		July IV	Chemistry I	Potentiometry: To determine the solubility product and solubility of AgCl potentiometrically using chemical cell
		August I	Chemistry I	Conductometry: To determine the velocity constant of alkaline hydrolysis of ethyl acetate by conductometric method
		August II	Chemistry I	pH-metry: To determine acidic and basic dissociation constants of amino acid and hence to calculate isoelectric point
		August III	Chemistry I	Preparation of Viva Voce questions of Non-instrumental Experiments
		August IV	Chemistry I	Preparation of Viva Voce questions of Instrumental Experiments



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 TEACHING PLAN 2020-21 (SECOND TERM)

Sr. No.	Class & Semester	Month & Week	Subject & Paper	Unit	Topics to be covered
					Theory
1	T.Y.B.Sc. Sem - VI	November III	Chemistry I	I	Polarization: concentration polarization and it's elimination
		November IV	Chemistry I	I	Decomposition Potential and Overvoltage : Introduction, experimental determination of decomposition potential, factors affecting decomposition potential.
		December I	Chemistry I	I	Tafel's equation for hydrogen overvoltage, experimental determination of over -voltage
		December II	Chemistry I	II	Basic terms : macromolecule, monomer, repeat unit, degree of polymerization, Classification of polymers based on source
		December III	Chemistry I	II	Classification of polymers based on source, structure, thermal response and physical properties
		December IV	Chemistry I	II	Molar masses of polymers: Number average, Weight average, Viscosity average molar mass, Monodispersity and Polydispersity
		January I	Chemistry I	II	Method of determining molar masses of polymers : Viscosity method using Ostwald Viscometer. (derivation expected)
		January II	Chemistry I	II	Light Emitting Polymers : Introduction, Characteristics, Method of preparation and applications.
		January III	Chemistry I	II	Antioxidants and Stabilizers : Antioxidants , Ultraviolet stabilizers, Colourants, Antistatic agents and Curing agents.
		January IV	Chemistry I	III	Renewable energy resources : Introduction. Solar energy: Solar cells, Photovoltaic effect, Differences between conductors, semiconductors ,insulators and its band gap, Semiconductors as solar energy converters, Silicon solar cell
		February I	Chemistry I	III	Hydrogen : Fuel of the future, production of hydrogen by direct electrolysis of water, advantages of hydrogen as a universal energy medium
		February II	Chemistry I	IV	Principle : Nuclear spin, magnetic moment, nuclear 'g' factor
		February III	Chemistry I	III	Energy levels, Larmor precession
		February IV	Chemistry I	III	Relaxation processes in NMR (spin -spin relaxation and spin - lattice relaxation). Instrumentation: NMR Spectrometer
		March I	Chemistry I	III	Principle: fundamental equation, g-value - dimensionless constant or electron g-factor, hyperfine splitting
		March II	Chemistry I	III	Instrumentation: ESR spectrometer, ESR spectrum of hydrogen and deuterium
		March III	-	-	Revision of Syllabus & Discussion of Question Paper Pattern
		March IV	-	-	Theory & Practical exam
		April I	-	-	Theory & Practical exam



Sr. No.	Class & Semester	Month & Week	Subject & Paper	Unit	Topics to be covered
					Theory
1	F.Y.B.Sc. Sem - II	January I	Chemistry I	III	Chemistry of alkanes: Formation of alkanes, Wurtz Reaction, Wurtz-Fittig Reactions
		January II	Chemistry I	III	Free radical substitutions: Halogenation -relative reactivity and selectivity Formation of alkenes by elimination reactions
		January III	Chemistry I	III	Mechanism of E ₁ , E ₂ , E _{1,2} reactions
		January IV	Chemistry I	III	Saytzeff and Hofmann eliminations, Electrophilic additions their mechanisms (Markownikoff / Anti Markownikoff addition)
		February I	Chemistry I	III	Mechanism of oxymercuration-demercuration, hydroboration-oxidation, ozonolysis
		February II	Chemistry I	III	Reduction (catalytic and chemical), syn and anti-hydroxylation (oxidation). 1, 2-and 1, 4-addition reactions in conjugated dienes
		February III	Chemistry I	III	Diels-Alder reaction; Allylic and benzylic bromination using N-bromosuccinimide and mechanism
		February IV	Chemistry I	III	Formation of alkynes by elimination reactions, Reactions of alkynes: Acidity, Electrophilic and Nucleophilic additions. Hydration to form carbonyl compounds, Alkylation of terminal alkynes
		March I	Chemistry II	III	Types of cycloalkanes and their relative stability, Baeyer strain theory
		March II	Chemistry II	III	Conformation analysis of cyclohexane: Chair, Boat and Twist boat forms; Relative stability with energy
		March III	Chemistry II		Hückel's rule, anti-aromaticity, aromatic character of arenes
		March IV	Chemistry II	III	Cyclic carbocations/carbonanions and heterocyclic compounds with suitable examples.
		April I	Chemistry II	III	Electrophilic aromatic substitution: halogenation, nitration, sulphonation with Mechanism
		April II	Chemistry II	III	Geometrical isomerism in alkene and cycloalkanes: cis-trans and syn-anti isomerism E/Z notations with C.I.P rules, Optical Isomerism: Optical Activity, Specific Rotation, Chirality/Asymmetry, Enantiomers
		April III	Chemistry II	III	Friedel-Craft alkylation/acylation with their mechanism., Hammond's postulate, Directing effects of the groups
		April IV	Chemistry I & II	III	Revision of Syllabus & Discussion of Question Paper Pattern
		May I	-	-	Theory & Practical exam
		May II	-	-	Theory & Practical exam



Sr. No.	Class & Semester	Month & Week	Subject & Paper	Topics to be covered
				Practical
1	T.Y.B.Sc. Sem - VI	January I	Chemistry I	-
		January II	Chemistry I	-
		January III	Chemistry I	Introduction to Semester VI Experiments
		January IV	Chemistry I	Chemical Kinetics: To interpret the order of reaction graphically from the given experimental data and calculate the specific rate constant. (No fractional order)
		February I	Chemistry I	Viscosity: To determine the molecular weight of high polymer polyvinyl alcohol (PVA) by viscosity measurement.
		February II	Chemistry I	Potentiometry: To determine the amount of iodide, bromide and chloride in the mixture by potentiometric titration with silver nitrate
		February III	Chemistry I	Potentiometry: To determine the number of electrons in the redox reaction between ferrous ammonium sulphate and ceric sulphate potentiometrically
		February IV	Chemistry I	Conductometry: To titrate a mixture of weak acid and strong acid against strong base and estimate the amount of each acid in the mixture conductometrically
		March I	Chemistry I	Colorimetry: To estimate the amount of Fe(III) in the complex formation with salicylic acid by Static Method.
		March II	Chemistry I	Preparation of Viva Voce questions of Non-instrumental Experiments
		March III	Chemistry I	Preparation of Viva Voce questions of Instrumental Experiments



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TEACHING PLAN 2020-21

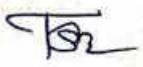
Sr. No.	Class	Month & week	Subject & Paper	Topics to be covered	
				Theory	Practical's
1	S.Y. B.Sc. SEM-IV	June II	Chem.-I	3.1. reaction & reactivity of halogenated hydrocarbon. 3.1.1. Alkyl halides	Paper I 1) To verify Ostwald's Dilution Law for weak acid
			Chem.-II	3.1 Carbonyl Compounds Nomenclature of aldehydes & Ketones	To determine dissociation constant of weak acid
		June III	Chem. I	3.1. reaction & reactivity of halogenated hydrocarbon. 3.1.1. Alkyl halides	To determine critical solution temperature
			Chem.-II	Structure & Reactivity of Carbonyl Compounds	To investigate reaction between K ₂ S ₂ O ₈ and KI
		June IV	Chem.-I	3.1.2. Aryl Halides	To determine solubility of sparingly soluble salt
			Chem.-II	3.1 Carbonyl Compounds Nomenclature of aldehydes & Ketones	Paper 2
		July -I	Chem.-I	3.1.3. Organo magnesium and Organo lithium Compounds	Estimation of total hardness
			Chem.-II	Methods of preparation of Aldehydes & ketones:	Investigation of the reaction between Copper Sulphate and Sodium Hydroxide
2		July -II	Chem.-I	3.1.3. Organo magnesium and Organo lithium Compounds	Preparation of cyclohexanone oxime
			Chem.-II	Methods of preparation of Aldehydes & ketones:	Preparation of tri bromoaniline
		July -III	Chem.-I	3.2.1. Alcohols: nomenclature, Preparation Properties, Reaction	Preparation of m-dinitrobenzene
			Chem.-II		Preparation of phthalic anhydride
		July -IV	Chem.-I	3.2.1. Alcohols: nomenclature, Preparation Properties, Reaction	Preparation of para bromo acetanilide
			Chem.-II	3.3. Reaction of Aldehydes & Ketones	Preparation of iodoform from acetone
3		August -I	Chem.-I	3.2.1. Alcohols: nomenclature, Preparation Properties, Reaction	Tools of analytical chemistry I:
			Chem.-II	3.3. Reaction of Aldehydes & Ketones	Tools of analytical chemistry I:
		August -II	Chem.-I	3.2.1. Alcohols: nomenclature, Preparation Properties, Reaction .	Tools of analytical

		Chem.-II	Chem.-II	Tools of analytical chemistry I:
4	August - III	Chem.-I	3.2.1. Alcohols: nomenclature, Preparation Properties, Reaction .	Grammatic estimation of nickel
		Chem.-II	3.3. Reaction of Aldehydes & Ketones	Colorimetric determination of copper ions
	August - IV	Chem.-I	3.2.2. Phenols: Preparation, acidic character, resonance stabilization of pentoxide ion. Reactions of phenols	Estimation of aspirin
		Chem.-II	3.4 Mechanism of Reactions Benzoin Condensation	Grammatic estimation of barium ions
	Sept. - I	Chem.-I	3.2.2. Phenols: Preparation, acidic character, resonance stabilization of phenoxide ion. Reactions of phenols	
		Chem.-II	3.4 Mechanism of Reactions (ii) Knoevenagel Reaction	Journal Checking
	Sept. - II	Chem.-I	3.2.2. Phenols: Preparation, acidic character, resonance stabilization of phenoxide ion. Reactions of phenols	Journal Checking
		Chem.-II	3.4 Mechanism of Reactions (iii) Claisen Schmidt Reaction:	
	Sept. - III	Chem.-I	3.2.2. Phenols: Preparation, acidic character, resonance stabilization of pentoxide ion. Reactions of phenols	
		Chem.-II	3.4 Mechanism of Reactions iv Cannizzaro's Reaction:	
5	Sept. - IV	Chem.-I	3.2.2. Phenols: Preparation, acidic character, resonance stabilization of pentoxide ion. Reactions of phenols	
		Chem.-II	v. Crossed Cannizzaro's Reaction	
	October I	Chem.-I	3.2.3. Epoxides: Nomenclature, methods Preparation, Ring opening reactions by nucleophiles.	
		Chem.-II	3.6 Active Methylene Compounds	
	October II	Chem.-I	3.2.3. Epoxides: Nomenclature, methods Preparation, Ring opening reactions by nucleophiles	
		Chem.-II	3.6 Active Methylene Compounds	
	October III	Chem.-I	3.2.3. Epoxides: Nomenclature, methods Preparation, Ring opening reactions by nucleophiles.	
		Chem.-II	Preparation of Active Methylene Compounds	
6	October IV	Chem.-I	Revision	
		Chem.-II	Revision	
	Nov- I	Chem.-I	Revision	
		Chem.-II	Revision	
	Nov-II	Chem.-I	Diwali Vacation	
		Chem.-II	Diwali Vacation	
	Nov-III	Chem.-I	Examination	
		Chem.-II	Examination	
	Nov-IV		Examination	
SEM-IV	Dec I	Chem.-I	3.1 Carboxylic acid & their Derivatives Nomenclature, Classification	TO determine standard EMF and standard free



		Chem.-II	3.1 aliphatic and aromatic amines 3.1.1 Classification:	energy To determine amount of HCl
	Dec II	Chem.-I	3.1 Carboxylic acid & their Derivatives	Compare the strength of HCl and H ₂ SO ₄
		Chem.-II	Chem.-II	
	Dec III	Chem.-I	3.1 Carboxylic acid & their Derivatives	To prepare Nickel DMG using microscales method
		Chem.-II	3.1 aliphatic and aromatic amines 3.1.1 Classification	To prepare complex cations
	Dec IV	Chem.-I	Vacation	Qualitative analysis of bifunctional organic compounds: 1) Salicylic acid
		Chem.-II	Vacation	2) Sulphanilic acid
	Jan- 21 I	Chem.-I	3.1 Carboxylic acid & their Derivatives	3) Paranitrophenol
		Chem.-II	3.1 aliphatic and aromatic amines 3.1.1 Classification	4) Paranitroniline
	Jan- 21 II	Chem.-I	3.1 Carboxylic acid & their Derivatives	5) m-Nitroaniline
		Chem.-II	Nomenclature:	6) p-nitroacetanilide
	Jan- 21 III	Chem.-I	3.1 Carboxylic acid & their Derivatives	7) diphenyl amines
		Chem.-II	Nomenclature:	8) Anthracide
	Jan- 21 IV	Chem.-I	3.1 Carboxylic acid & their Derivatives	
		Chem.-II	Nature of amines	
	Feb I	Chem.-I	3.1 Carboxylic acid & their Derivatives	
		Chem.-II	Effect of substituents on the Basicity of Aniline:	Tools of analytical chemistry II:
	Feb II	Chem.-I	3.1 Carboxylic acid & their Derivatives	
		Chem.-II	Effect of substituents on the Basicity of Aniline:	Tools of analytical chemistry II:
	Feb III	Chem.-I	3.1 Carboxylic acid & their Derivatives	
		Chem.-II	Methods of Preparation of Amines:	Tools of analytical chemistry II:
	Feb IV	Chem.-I	3.2 Sulphonic Acids	
		Chem.-II	UNIT 3.3 Heterocyclic Chemistry	Tools of analytical chemistry II:
	Mar I	Chem.-I	3.2 Sulphonic Acids	
		Chem.-II	(B) Reaction of Amines:	Conductometric titration
	Mar II	Chem.-I	3.2 Sulphonic Acids	
		Chem.-II	UNIT 3.3 Heterocyclic Chemistry	Estimation of Fe(II) in the given solution
	Mar III	Chem.-I	3.2 Sulphonic Acids	Grametric estimation of sulphate as Barium Sulphate
		Chem.-II	(B) Reaction of Amines:	
	Mar IV	Chem.-I	3.2 Sulphonic Acids	
		Chem.-II	UNIT 3.3	

		Heterocyclic Chemistry	
April I	Chem.-II	UNIT 3.3	Journal Checking
	Chem.-II	Heterocyclic Chemistry	Journal Checking
April II	Chem.-II	UNIT 3.3	Journal Checking
	Chem.-II	Heterocyclic Chemistry	
April III	Chem.-II	Revision	
	Chem.-II	Revision	
April IV	Chem.-I	Revision	


 Dr. S. D. Tupare
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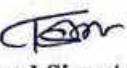
Class: T.Y.B. Sc. Sem. V

Subject: - (USACDD 601) Chemistry Paper V: - Chemistry (Applied Component)
 Name of Faculty: Prof. Dr. S. D. Tupare

Second term (01st January 2021- 31th May 2021)

Sr. No.	Class	Month/ Week	Subject	Topic to be covered	
	T Y B Sc. Paper V		D/D	Theory	Practical's
1		August II week	VII	3.1 Introduction to the Dye Stuff Industry 3.1.1 Definition, Requirement, Definition of fastness, Nomenclature, Naming of dyes, Limitations	Drugs and Dyes Practical Introduction
		August III week	VII	3.1.1 Definition, Requirement, Definition of fastness, Nomenclature, Naming of dyes, Limitations	Expt.1
		August IV week	VII	3.1.1 Definition, Requirement, Definition of fastness, Nomenclature, Naming of dyes, Limitations	Expt.2
		August V week	VII	3.1.2 Natural and synthetic dyes.	Expt.3
		Sept. I week	VII	3.2 Substrates for Dyes Types of fibres 3.2.1 Natural: cellulosic and proteins fibers, examples- wool, silk. And cotton structures and name of dyes applied on each of them,	Expt.4
		Sept. II week	VII	3.2.2 Semi synthetic: definition and examples 3.2.3 Synthetic: nylon, Polyesters structures. 3.2.4 Blended fibres of dyes on substrates: Ionic, Covalent linkage, hydrogen bonding, Vander s wall force.	
		Sept. III week	VII	3.3 Classification based on application and dyeing methods. 3.3.1 Dyeing methods Basic operations involved in dying process.	
		Sept. IV week	VII	3.3 Classification based on application and dyeing methods. 3.3.1 Dyeing methods Basic operations involved in dying process.	
		Sept. V week	VII	4.1 Colour and Chemical Constitution of dyes 4.1.1 Absorption of visible	Journal Checking

				light colour wave length	
	Oct. I week	VIII	4.1.2 Relation between colour and chemical constitution. Arm strong theory, Witt's theory, Valance bond theory, Molecular orbital theory.		
	Oct. II week	VIII	4.2 Unit Process and dye intermediates 4.2.1 A brief idea of unit processes.	Journal Checking	
	Oct. III week	VIII	4.2.2 Preparation of the following Intermediates. Benzene derivatives		
	Oct. IV week	VIII	Benzene derivatives		
	Oct. V week	VIII	Naphthalene derivatives		
	Nov. I week	VIII	Naphthalene derivatives.		
	Nov. II week	VIII	Anthracene derivatives.	Journal Checking	
	Nov. III week	VIII	Dipawali Vacation		
	Nov. IV week	VIII			Examination
	Dec. I week		Revision		


 Name and Signature of Faculty
 Dr. S. D. Taware
 Associate Professor




 Signature of HOD
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Class: T.Y.B. Sc. Sem. VI

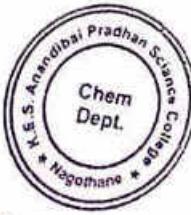
Subject: - (USACDD 601) Chemistry Paper V: - Chemistry (Applied Component)
 Name of Faculty: Prof. Dr. S. D. Tupare

Second term (01st January 2021- 31th May 2021)

Sr. No.	Class	Month/ Week	Subject	Topic to be covered	
	T Y B Sc. Paper VI	D/D	Theory	Practical's	
1		January I week	VII	Classification of Dyes based on Chemical Constitution and synthesis of selected Dyes. Nitro dyes Nitro so dyes. Azo dyes	Drugs and Dyes Practical Introduction
		January II week	VII	Azo dyes, 1. Synthesis of Orange IV 2. Synthesis of Eriochrome back T	Expt.1
		January III week	VII	Azo dyes, 3.Congo red 4. Direct deep black F	Expt.2
		January IV week	VII	Diphenyl methane dyes Synthesis of auramine	
		January V week	VII	Triphenyl methane dyes Synthesis of Malachite green, Synthesis of Roaniine	Expt3
		Feb. I week	VII	Heterocyclic dyes Synthesis of Acridine Synthesis of Safranin.	Expt.4
		Feb. II week	VII	Quinoline dyes Indigoid dyes phthalocynine dyes.	
		Feb. III week	VII	7.1 Health and Environmental Hazards of synthetic dyes and their Remediation Processes.	
		Feb. IV week	VII	7.1 Health and Environmental Hazards of synthetic dyes and their Remediation Processes.	Journal Checking
		Mar. I week	VIII	7.1 Health and Environmental Hazards of synthetic dyes and their Remediation Processes.	
		Mar. II week	VIII	Non-textile uses of dyes. Biomedical uses of dyes. Biological staining agents DNA markers.	Journal Checking
		Mar. III week	VIII	Dyes used & food and cosmetic Paper and leather dyes: structural features of leather and papers.	
		Mar. IV week	VIII	Miscellaneous dyes.	

		Mar. V week	VIII	8.2 Pigments Definition of pigments, examples of pigments, difference between pigment and dyes. Definition of lakes and Toners.	
		April I week	VIII	Dyestuff Industry Growth and development of the Indian Dyestuff Industry.	
		April II week	VIII	Strengths, weakness Opportunities and Challenges of Dyestuff industry in India.	Journal Checking
		April III week	VIII	Strengths, weakness Opportunities and Challenges of Dyestuff industry in India.	Examination
		April IV week	VIII	Revision	


 Name and Signature of Faculty
 Dr. S.D. Tupare
 Associate Professor.




 Signature of HOD
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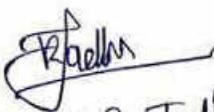
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Department of Chemistry



TEACHING PLAN 2020-21

Sr.No.	Class	Month & Week	Subject & Paper	Topics to be covered	
				Theory	Practical's
1.	S.Y. B.Sc. SEM- III	June II	Chem. III	Unit-I Language of Analytical chemistry: Important terms and their significance in analytical chemistry	-----
		June III	Chem. III	Language of Analytical chemistry: Important terms and their significance in analytical chemistry	---
		June IV	Chem. III	Purpose of Chemical Analysis: Analysis based on the nature of information required.	---
		July I	Chem. III	Purpose of Chemical Analysis: Analysis based on the size of sample used	---
		July II	Chem. III	Classical and Non classical methods of analysis:-Their types and importance.	Introduction
		July III	Chem. III	Unit-II 1.Titrimetric Methods:- Terms involved, Comparing Volumetry and Titrimetry, Conditions suitable for Titrimetry	Paper-I Phy.Chem.Expt.1 Standardization and Expt.2 Chem. Kinetics
		July IV	Chem. III	Types of Titrimetry and Indicators used	Expt.3 Enthalpy determination
		August I	Chem. III	Tools of Titrimetry- Graduated glassware's and calibrations	Inorg.Chem Expt.4 Analysis of mineral acid
		August II	Chem. III	Standard Solutions and Calculations in titrimetry	Expt.5 Analysis of Organic acid
		August III	Chem. III	2.Neutralisation Titrations:- Concept of neutralization and its importance in neutralization titrations, End point and Equivalence point.	Expt.6 Analysis of salt of WA & SB
		August IV	Chem. III	Determination of End point by using indicators causing color change, Change in potential and Change in conductance.	Expt.7 Titration using double indicator
		Sept I	Chem. III	Construction of Titration Curve of a titration of Strong Acid-Weak Base and Strong Base-Weak Acid.	Paper-II Expt.7,8 Gravimetry
		Sept II	Chem. III	3.Gravimetric Analysis:- General Introduction to Gravimetry, Types of Gravimetric methods.	Organic Chem Expt.9,10 Crystallization
		Sept III	Chem. III	Precipitation Gravimetry:- Steps involved , Conditions for precipitation.	Expt.11,12 Chromatography
		Sept IV	Chem. III	Completion of precipitation, Role of digestion, Washing, Drying and Ignition of ppt.	Journal verification
		October I	Chem. III	Applications of Gravimetric analysis:-Det of S in organic compounds,Est of Ni in Cu-Ni alloy using DMG and Determination of Al by covering it to its oxide.	Pract.Exam.
		October II		Theory exam	
		October III			
		October IV			

2.	T.Y. B.Sc. Sem. V	June II	Applied Component-I Drugs	Gen.Intro.to drug-Def. classification, ideal requirement	----
		June III	Applied Component-I Drugs	Nomenclature of drugs	-----
		June IV	Applied Component-I Drugs	Imp. Medicinal terms	Instruction
		July I	Applied Component-I Drugs	Imp. Medicinal term	Introduction
		July II	Applied Component-I Drugs	Imp. Medicinal terms	Drugs& Dyes Expt-1
		July III	Applied Component-I Drugs	Routes of drug administration and dosage forms	Drugs& Dyes Expt-2
		July IV	Applied Component-I Drugs	Hypnotics and sedatives	Drugs& Dyes Expt-3
		August I	Applied Component-I Drugs	Analgesic and antipyretics	Drugs& Dyes Expt-4
		August II	Applied Component-I Drugs	Antiinflammatory drugs	Drugs& Dyes Expt-5
		August III	Applied Component-I Drugs	Antihistamines	
		August IV	Applied Component-I Drugs	Cardiovascular drugs	
		Sept I	Applied Component-I Drugs	Antidiabetic drugs	Journal checking
		Sept II	Applied Component-I Drugs	Antiparkinsonism	Journal checking
		Sept III	Applied Component-I Drugs	Drugs for respiratory system	Journal certification
		Sept IV	Applied Component-I Drugs	Mode of action of some drugs.	
		October I			Practical exam
		October II			
		October III			
		October IV			


Dr. V.R. Jadhavarr



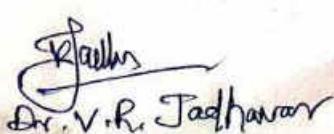

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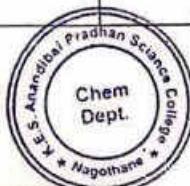


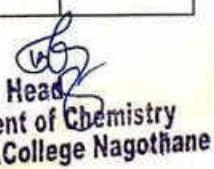
TEACHING PLAN 2020-21

Sr. No.	Class	Month & week	Subject & Paper	Topics to be covered	
				Theory	Practical's
1.	S.Y. B.Sc. SEM-IV	November III	Chem. III	Unit-II Instrumental Methods-II Introduction 2.1 Potentiometry:- Introduction, Principle, Role of Reference and Indicator Electrode	Paper-II Organic Spotting- Expt-1 and 2,
		November IV	Chem. III	Applications in Neutralization reactions with ref to titration of SA-SB using Quinhydrone electrode.	Organic Spotting Expt.3 and 4
		December I	Chem. III	Graphical methods for detection of end point in potentiometry	Expt.5 Redox titration
		December II	Chem. III	2.2 pHmetry:-Introduction, Principle, Types of pHmetry, Principle, Construction, Working and Care of Combined glass electrode.	Paper-I Physical Expt-6 Chemical Kinetics
		December III	Chem. III	Applications in Titrimetry (SA-SB), biological and Environmental analysis.	Expt.7 pHmetry
		December III	Chem. III	2.3 Conductometry:- Introduction, Principle, Conductivity cell- its working and care	Expt.8 Colorimetry
		December IV	Chem. III	Applications in Neutralisation Titrimetry with ref to SA-SB, SA-WB.	-----
		January I	Chem. III	Applications in Neutralisation Titrimetry with ref to SB-WA and WA-WB.	Expt.9 Analysis of HCl Using Borax
		January II	Chem. III	Unit -III Statistical Treatment of Analytical Data-II:- Introduction	Inorganic Expt.10 SIQA
		January III	Chem. III	3.4 Criteria for rejection of doubtful result	Expt.11 SIQA
		January IV	Chem. III	3.5 Test of significance	Expt.12 & 13 SIQA
		February I	Chem. III	3.6 Graphical representation of data & Obtaining best fitting line.	Journal Checking
		February II	Chem. III	Numerical	Journal Certification.
		February III	Chem. III.	Numerical	
		February IV	Chem. III	Revision and Question bank	
		March I		Theory Examination	
		March II			
		March III			
		March IV			

Sr. No.	Class	Month & week	Subject & Paper	Topics to be covered	
				Theory	Practical's
2.	T.Y. B.Sc. Sem-VI	November III	Applied Component-I Drugs	<u>Unit-V</u> Drug discovery, design and development	---
		November IV	Applied Component-I Drugs	Drug discovery, design and development	Drugs and Dyes Practical Introduction
		December I	Applied Component-I Drugs	Drug metabolism and Water Analysis Course Theory & Practical online mode	Expt.1
		December II	Applied Component-I Drugs	Drug metabolism and Water Analysis Course Theory & Practical online mode	Expt.2
		December III	Applied Component-I Drugs	Antibiotics & Antivirals and Water Analysis Course Theory & Practical online mode	-----
		December IV	Applied Component-I Drugs	-----	-----
		January I	Applied Component-I Drugs	Antibiotics & Antivirals, Antimalarials and Anthelmintics & Antifungal agents and Water Analysis Course Theory & Practical online mode.	Expt.3
		January II	Applied Component-I Drugs	<u>Unit -VI</u> Antiamoebic drugs, Antitubercular & Antileprotic drugs And Water Analysis Course Theory & Practical online mode	Expt.4
		January III	Applied Component-I Drugs	Antineoplastic drugs and AntiHIV drugs	Expt.5
		January IV	Applied Component-I Drugs	Drug intermediates : Synthesis and use	Journal Checking
		February I	Applied Component-I Drugs	Nanoparticles in Medicinal Chemistry	Journal Checking
		February II	Applied Component-I Drugs	Nanoparticles in Medicinal Chemistry	Journal Certification
		February III	Applied Component-I Drugs	Drugs and Environmental Aspects	Practical Exam
		February IV	Applied Component-I Drugs	Drugs and Environmental Aspects	
		March I		Theory examination	
		March II			
		March III			
		March IV			


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Teaching Planning for the first term 2020-21

Class: S.Y.B. Sc. Sem. III

Subject: -(USPH301) Chemistry Paper I&II : -Physical Chemistry

Name of Faculty: Prof. S.V. Choudhari

First Term (07 August 2020 – 31 December 2020)

Class: S.Y.B. Sc. Sem. III Subject: -(USPH301) Chemistry Paper I&II : - Physical Chemistry		
Month - August		
2020		
Week	Unit	Topic
2 nd week	I	PAPER -I USH301 Unit - I 1.1.-Chemical Thermodynamics 1.1.1-Free energy functions,Helmholtz free energy, Gibbs free energy
3 rd week	I	1.1.2- Gibb's Helmholtz equation, Vant Hoff's reaction isotherm and Vant Hoff reaction
4 th week	I	1.1.3 Thermodynamics of open system ; Partial Molal properties,Chemical potential ,Gibb's Dehum equation
5 th week	I	1.1.4 Concept of fugacity & Activity
Month - September 2020		
1 st week	I	1.2-Electrochemistry 1.2.1 Conductivity, equivalent and molar conductivity and their variation with dilution for weak and strong electrolyte
2 nd week	I	1.2.2 Kohrlach's Law of independent migration of ions
3 rd week	I	1.2.3 Applications of conductance measurements ;determination of degree of ionization and its constant of weak electrolyte ,solubility and solubility products, ionic product
4 th week	I	1.2.4 Transference No, factors affecting it , and it' determination
5 th week	I	Revision
Month - October 2020		
1 st week	I	Chemistry Paper II USCH302 1.1-Chemical Kinetics 1.2.1- Types of complex chemical reaction
2 nd week	I	1.2.2- Effect of temperature on rate of reaction, Arhenius equation, Concept of activation of energy.
3 rd week	I	1.1.3Theories of reaction rates ; collision theories , and activated complex theory of bimolecular reactions.
4 th week	III	Comparison between two theories
5 th week	III	Numerical and revision
Month - November 2020		
1 st week	I	1.2 Solutions- 1.2.1 Thermodynamics of ideal solution; Ideal solution and Roult's Law, derivations from Raoult's law – non ideal solutions
2 nd week	I	1.2.2.-Vapour Pressure- composition and temperature – composition curve of ideal and nonideal solutions. Distillation solutions, Lever Rule, Azeotropes.
3 rd week	Diwali Vacation :- 12November 2020 - 18 November 2020	

4 th week	I	1.2.3-Partial miscibility of liquids ; Critical solution temperature ,effect of impurity on partial miscibility of liquids with respect to phenol water system.,Triethanolamine-water and Nicotine –Water system
5 th week	I	1.2.4- Immiscibility of liquids-Principle of steam distillation 1.2.5-Nernst distribution law and its application , solvent extraction

Month - December 2020

1 st week	Revision
2 nd week	Practical Session
3 rd week	Practical Examination
4 th week	Theory Examination
5 th week	Winter Break:- 25 December 2020 - 1 January 2021

Class:T.Y.B. Sc. Sem. V Subject: - (USPH501) Chemistry Paper I: -Physical Chemistry

Month - August

2020

Week	Unit	Topic
2 nd week	I	Physical Chemistry –Paper I USCH-501 <u>Unit – I</u> Molecular Spectroscopy 1.5. Rotational spectrum- Introduction to dipole moment, Polarization of a bond, Bond moment, molecular structure, moment of inertia, conditions of obtaining pure rotational spectra , selection rule, nature of spectrum determination, isotopic shift.
3 rd week	I	1.6. Vibrational spectrum- vibrational motion, degrees of freedom , mode of vibration, energy level, zero dipole moment, conditions for obtaining vibrational spectra selection of rule, nature of spectrum
4 th week	I	1.7. Vibrational –Rotational spectrum Energy levels, selection rule, nature of spectrum, P and R branching, Anharmonic oscillator, Applications of vibrational – rotational spectrum in determination of force constant. and its significance, IR spectra of H ₂ O and CO ₂
5 th week	I	1.8. 1 Raman spectroscopy

Month - September 2020

1 st week	II	UNIT 2-Chemical Thermodynamics 2.1.1 Colligative properties- Vapor pressure,
2 nd week	I	Lowering of vapor pressure, its measurement –Static and
3 rd week	I	Lowering of vapor pressure, its measurement –Dynamic method
4 th week	I	2.1.2 Solution of solid in liquids
5 th week	I	2.1.2.1 elevation of Boiling Point , thermodynamic derivation, its applications

Month - October 2020

1 st week	I	2.1.2.1 thermodynamic derivation, its application
2 nd week	I	1.2.2.2. Depression in freezing point, thermodynamics, its application
3 rd week	I	Osmotic Pressure- Introduction, Measurement,
4 th week	III	thermodynamics, Vant Hoff's factor, Measurement- Berkeley and Hartley method,
5 th week	III	Reverse Method.

Month - November 2020

1 st week	I	2.2. Chemical kinetics- 2.2.1 Collision theory, its application 1. Unimolecular reaction Lindeman's theory
2 nd week	I	2. bimolecular reaction.



3rd week	Diwali Vacation :- 12 November 2020 - 18 November 2020	
4th week	I	1.1.3Theories of reaction rates; collision theories, and activated complex theory of bimolecular reactions.
5th week	I	Numerical and revision
Month - December 2020		
1st week	Revision	
2nd week	Practical Session	
3rd week	Practical Examination	
4th week	Theory Examination	
5th week	Winter Break:- 25 December 2020 - 1 January 2021	

Deshmukh Jay
Name and Signature of Faculty



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Signature of HOD
Head
Department of Chemistry
K.E.S.A.P.Sc. College Nagethane

Teaching Planning for the second term 2020-21

Class: S.Y.B. Sc. Sem. IV

Subject: -(USCH301) Chemistry Paper I & II PHYSICAL CHEMISTRY

Name of Faculty: Prof. S.V. Choudhari

**Second term (01st January 2021- 31st May 2021)**

Class: S.Y.B. Sc. Sem. IV Subject: - (USCH301) Chemistry Paper I & II PHYSICAL CHEMISTRY Month - January 2021		
Week	Unit	Topic
1 st week	I	PAPER -III USH401 - Unit-I - 1.1 Electro chemistry 1.1.1 Galvanic cell, conventions, reversible and irreversible cells,
2 nd week	I	1.1.2-Nernst equation for the emf of a cell, sums, Types of electrodes, Application of electrochemical series
3 rd week	I	1.1.3- Determination of thermodynamic parameters.
4 th week	I	1.1.4- Equilibrium constant from emf measurement
5 th week	I	1.1.5- Chemical and Concentration cell A. Electrode concentration cells B. electrolytic concentration.
Month - February 2021		
1 st week	I	1.1.6- Liquid Junction potential, origin, Elimination of liquid junction potential, sa bridge, application
2 nd week	II	1.3. Phase equilibria 1.2.1 Gibb's phase rule-No of components, degrees of freedom
3 rd week	II	1.2.2 Claperyon equation
4 th week	II	.1.2.3 Application to one component system
Month - March 2021		
1 st week	II	1.2.4 Application to two component system
2 nd week	II	Zinc- Magnesium system, Sodium Potassium system
3 rd week	II	Paper III.USCH 402 1Solid state 1.1.1- Laws of crystallography
4 th week	III	1.1.2- Characteristics of cube system
5 th week	III	1.1.3- Bragg's equation
Month - April 2021		
1 st week	III	1.1.4- Application of Avogadro no.,, Determination of KCl structure
2 nd week	III	1.3 Catalysis 1.2.1 Charcteristics of catalyst
3 rd week	III	1.2.2. Types of catalyst
4 th week	III	1.2.3 Theories of catalysis
5 th week	III	1.2.4 Mechanism and kinetics of acid- base catalyzed reactions
Month - May 2021		
1 st week	Practical Session	
2 nd week	Practical Examination	
3 rd week	Theory Examination	
4 th week	-	

Week	Unit	Topic
1 st week	I	<u>Physical Chemistry Unit – I</u> <u>1.2 Electrochemistry</u> 1.1.1 Activity and activity coefficient –Lewis concept, ionic strength, Mean ionic activity coefficient of an electrolyte,
2 nd week	I	expression for the activities of electrolytes, Debye Huckle limiting law
3 rd week	I	1.1.2 Classification of cell- Chemical and Concentration cells
4 th week	I	Chemical transference cells with transference, without transference,
5 th week	I	Emf Electrode concentration cells, reversible cation

Month - February 2021

1 st week	I	Emf Electrode concentration cells, reversible cation
2 nd week	II	Electrolytic concentration cell reversible to anion
3 rd week	II	Liquid potential emf derivation, Elimination of liquid junction potential
4 th week	II	<u>Unit –III 3.Basics of Quantum chemistry</u> 3.1.1- Classical mechanism- Introduction Compton effect

Month - March 2021

1 st week	II	3.1.2- Quantum mechanics -Introduction, Plank's theory of quantization,
2 nd week	II	wave particle dualism, Heisenberg's principle,
3 rd week	II	de Broglie equation, limitations of classical method, Black body radiation, ,
4 th week	III	Photo electric effect
5 th week	III	3.1.3- Progressive and Standing waves -Introduction, boundary conditions,

Month - April 2021

1 st week	III	Schrödinger's equation
2 nd week	III	3.1.4-Quantum mechanism- State function, its significance
3 rd week	III	operator its functions, commutative and noncumulative functions,
4 th week	III	Hamiltonian operator, Eigen Value.
5 th week	Numerical	

Month - May 2021

1 st week	Practical Session
2 nd week	Practical Examination
3 rd week	Theory Examination
4 th week	-

Name and Signature of Faculty



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 Head
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 Department of Chemistry
Teaching Planning for the first term 2020-21

Class: F.Y.B. Sc. Sem. I
 Subject: - (USCH101 and USCH102) Chemistry Paper I and II: - Unit II
 Name of Faculty: Dr. (Mrs.) Smita T. Morbale

First Term (07 August 2020 – 31 December 2020)

Month – August 2020		
Week	Unit	Topic
2 nd week	Paper 1 Unit 2	Historical perspectives of the atomic structure; Rutherford's Atomic Model, Bohr's theory, its limitations Atomic spectrum of hydrogen atom.
3 rd week	Paper 1 Unit 2	Structure of hydrogen atom, Hydrogenic atom Simple principles of quantum mechanics; Atomic orbital, Hydrogenic energy levels Shells, sub shells and orbital's Electron spin.
4 th week	Paper 1 Unit 2	Radial shapes of orbitals, Radial distribution function, Angular shapes of orbitals.
5 th week	Paper 1 Unit 2	Many Electron Atoms, Penetration and shielding, Effective nuclear charge, Aufbau principle.
Month – September 2020		
1 st week	Paper 2 Unit 2	Comparative chemistry of Main Group Elements:
2 nd week	Paper 2 Unit 2	Metallic and non-metallic nature, oxidation states, electronegativity.
3 rd week	Paper 2 Unit 2	Anomalous behaviour of second period elements.
4 th week	Paper 2 Unit 2	Allotropy, catenation.
5 th week	Paper 2 Unit 2	Diagonal relationship.
Month – October 2020		
1 st week	Paper 1 Unit 2	Long form of Periodic Table; Classification for elements as main group, Introduction.



2 nd week	Paper 1 Unit 2	Transition and inner transition elements
3 rd week	Paper 1 Unit 2	Atomic and ionic size; electron gain enthalpy; ionization enthalpy.
4 th week	Paper 1 Unit 2	Effective nuclear charge (Slater's rule); Electronegativity.
5 th week	Paper 1 Unit 2	Pauling, Mulliken and AlredRochow electronegativities, Numerical Problems.
Month – November 2020		
1 st week	Paper 2 Unit 2	Comparative chemistry of carbides, nitrides, oxides and hydroxides of group I and group II elements.
2 nd week	Paper 2 Unit 2	Some important compounds- NaHCO ₃ , Na ₂ CO ₃ , NaCl, NaOH,
3 rd week	Diwali Vacation :- 12 November 2020 – 18 November 2020	
	Paper 2 Unit 2	CaO, CaCO ₃ ; oxides of carbon.
4 th week	Paper 2 Unit 2	Oxides and oxyacid's of Sulphur and nitrogen with respect to Environmental aspects.
5 th week	Revision	
Month – Dec 2020		
1 st week	Revision	
2 nd week	Practical Session	
3 rd week	Practical Examination	
4 th week	Theory Examination	
5 th week	Winter Break:- 25 December 2020 – 1 January 2021	

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Department of Chemistry

Teaching Planning for the second term 2020-21

Class: F.Y.B. Sc. Sem. II

Subject: -(USCH201 and USCH202) Chemistry Paper I and II: - Unit II

Name of Faculty: Dr. (Mrs.) Smita T. Morbale

Second term (01st January 2021- 31th May 2021)

Month – January 2021		
Week	Unit	Topic
1 st week	Paper 1 Unit 2	Concept of Qualitative Analysis: Introduction
2 nd week	Paper 1 Unit 2	Testing of Gaseous Evolutes, Role of Papers impregnated with Reagents in qualitative analysis
3 rd week	Paper 1 Unit 2	Starch iodide, potassium dichromate, lead acetate , dimethylglyoxime and oxine reagents
4 th week	Paper 1 Unit 2	Precipitation equilibria, effect of common ions, uncommon ions, oxidation states, buffer action
5 th week	Paper 1 Unit 2	Complexing agents on precipitation of ionic compounds.
Month – February 2021		
1 st week	Paper 2 Unit 2	Chemical Bond and Reactivity: Introduction
2 nd week	Paper 2 Unit 2	Types of chemical bond, comparison between ionic and covalent bonds, polarizability (Fajan's Rule)
3 rd week	Paper 2 Unit 2	Shapes of molecules, Lewis dot structure, Sidgwick Powell Theory
4 th week	Paper 2 Unit 2	VSEPR theory for AB _n type molecules with and without lone pair of electrons, isoelectronic principles, applications and limitations of VSEPR theory.
Month – March 2021		
1 st week	Paper 1 Unit 2	Acid Base Theories: Introduction
2 nd week	Paper 1 Unit 2	Arrhenius, Lowry- Bronsted, Lewis, Solvent –Solute concept of acids and bases
3 rd week	Paper 1 Unit 2	Hard and Soft acids and bases. Applications of HSAB



4 th week	Paper 1 Unit 2	Understanding organic reactions like Friedel Craft's (acylation/alkylation) Reaction
5 th week	Paper 1 Unit 2	Volumetric analysis with special reference to calculation of titration curve involving strong acid and strong base.
Month – April 2021		
1 st week	Paper 2 Unit 2	Oxidation Reduction Chemistry: Reduction potentials Applications of redox chemistry Extraction of elements: (example: isolation of copper by auto reduction)
2 nd week	Paper 2 Unit 2	Redox potentials: half reactions; balancing redox equations. Redox stability in water
3 rd week	Paper 2 Unit 2	Latimer and Frost Diagrams pH dependence of redox potentials.
4 th week	Paper 2 Unit 2	Redox reagents in Volumetric analysis: a) I ₂ ; b) KMnO ₄ iii) Titration curves:i) single electron systems (example Ce(IV) against Fe(II)); and
5th week	Paper 2 Unit 2	ii) Multi electron systems as in KMnO ₄ against Fe(II))

Month – May 2021

1 st week	Practical Session
2 nd week	Practical Examination
3 rd week	Theory Examination
4 th week	-

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Department of Chemistry**

SYLLABUS COMPLETION REPORT

To,
 The Head,
 Dept. of Chemistry
 Anandibai Pradhan Science College, Nagothane.

R/Sir,

I am Chaitrali S. Patil submitting herewith the report of the completion of my allotted syllabus of theory and practical's of the subject Chemistry for the academic year 2020-21.

Class	Theory	Total No of Lect. Allotted	Total No of Lect. for Completion
M.Sc.I SEM-I (Theory)	<u>Paper-I</u> <u>Unit-III: Chemical Dynamics-1</u> <u>Paper-III</u> <u>Unit-III: Nucleophilic Substitution Reactions</u> <u>Paper-IV</u> <u>Unit-I: Language of analytical chemistry</u>	15L 09L 15L	15L 09L 15L
M.Sc.II SEM-III (Theory)	<u>Paper-I</u> <u>Unit-I: Photochemistry</u> <u>Paper-II</u> <u>Unit-III: Enamines, Ylides and alpha-CH functionalization</u> <u>Paper-III</u> <u>Unit-II: Natural Products-II</u> <u>Paper-IV</u> <u>Unit-III: Biogenesis and biosynthesis of natural products</u>	15L 15L 15L	15L 15L 15L
M.Sc.I SEM-I (Practical)	<u>Paper-IV: Analytical Chemistry (Non Instrumental)</u> 08 Experiments	4 L/ Week	Demonstration of 3 expt. (online) due to covid pandemic
M.Sc.II SEM-III (Practical)	<u>Paper-III & IV: One step Organic Preparation and its purification</u> 08 Experiments	8 L/ Week	Demonstration of 3 expt. (online) due to covid pandemic

Signature of Teacher



Head
 Department of Chemistry
 K.E.S.A.P.Sc. College Nagothane

Konkan Education Society's
Anandibai Pradhan Science College, Nagothane
Department of Chemistry
REPORT OF COMPLETION OF SYLLABUS

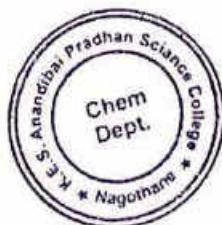
To,
The Head,
Dept. of Chemistry
Anandibai Pradhan Science College, Nagothane.

R/Sir,

I am Chaitrali S.Patil submitting herewith the report of the completion of my allotted syllabus of theory and practical's of the subject Chemistry for the academic year 2020-21.

Class	Theory	Total No of Lect. Allotted	Total No of Lect.C for Completion
M.Sc.I SEM-II (Theory)	<u>Paper-I</u> Unit-IV: Solid State Chemistry and Phase Equilibria <u>Paper-III</u> Unit-III: 3.2 Applications of UV and IR spectroscopy <u>Paper-IV</u> Unit-IV: Electroanalytical Methods	15 L 08 L 15 L	15 L 08 L 15 L
M.Sc.II Sem-VI (Theory)	<u>Paper-I</u> Unit-I: Physical Organic Chemistry <u>Paper-II</u> Unit-II: Designing Organic Synthesis-II <u>Paper-III</u> Unit-I: Natural Products-III Unit-II: Natural Products-IV	15 L 15 L 15 L 15 L	15 L 15 L 15 L 15 L
M.Sc.I SEM-II (Practical)	<u>Paper-IV</u> : Analytical Chemistry (Instrumental) 08 Experiments	4 L/ Week	Demonstration of 3 expt. (online) due to covid pandemic


Signature of Teacher




Head
Department of Chemistry
K.E.S.A.P.Sc. College Nagothane

Kokan Education Society's
 Anandibai Pradhan Science College, Nagothane
 Department of Chemistry

SYLLABUS COMPLETION REPORT

To,
 The Head,
 Dept. of Chemistry
 A.P.ScienceCollege,Nagothane.

R/Sir,

I am Mrs .Shraddha Ajay Salunke submitting here with the report of the completion of my allotted syllabus of theory and practical's of the subject chemistry for the academic year 2020-21.

Class	Theory	Total No of Lect.Allotted	Total No of Lect. for Completion
F.Y.B.Sc. Sem I	PAPER -I <u>Unit-I</u> -Chemical Thermodynamics 1Thermodynamic terms, 2 First law of thermodynamics Heat, work, .internal energy, enthalpy, 3 thermochemistry <u>Unit-II</u> Chemical Calculations Normality, Molarity, Formality, Molality, Mole fraction Weight Ratio , Volume ratio, ppm, ppb, millimoles Milliequivalent(numerical excepted)	10L 5L	10L 5L
F.Y.B.Sc. Sem-1	PAPER II <u>Unit – I</u> 1.1 CHEMICAL KINETICS Rate of reaction, Rate constant , Order and molecularity Of reaction, Integrated rate equation for first order and Second order reaction. Determination of order of reaction by: Integration Method,Graphical method , Ostwald's isolation Method , half time method 1.2 LIQUID STATE Surface tension : introduction, method of determination Viscosity : Introduction, coefficient of viscosity, specific Viscosity, reduced viscosity Refractive index: introduction , molar refraction, determination of refractive index Liquid crystal : introduction, nematic , smectic and Cholesterol phases, application of liquid crystal	8 L 7L	8L 7L

F.Y.B.Sc. Sem 1	Physical, Inorganic, Titration, Gravimetric, Organic, Chromatography etc. Total. Expt. 12	6 L/ Week	Demonstration of 3 expt. (online) due to covid pandemic
T.Y.B.Sc. Sem-V	Physical chemistry practical pH metry ,potentiometry, chemical kinetics, colligative Property , adsorption, conductometry(total 6 exp)	4L/ Week	Demonstration of 3 expt. (online) due to covid pandemic
S.Y.BSc Sem – III	Physical, Inorganic, Titration, Gravimetric, Organic Chemistry practicals	3L/ Week	Demonstration of 3 expt. (online) due to covid pandemic
Msc Sem I	Physical chemistry practicals Conductometry, potentiometry, heat of reaction, wave Function , solubility of $\text{Ca}(\text{OH})_2$,solubility of CaSO_4 PH metry, Chemical kinetics (total 9 expt)	4 L / week	Demonstration of 3 expt. (online) due to covid pandemic

S Baluna
Signature of Teacher



Head
Department of Chemistry
K.E.S.A.P.Sc.College Nagothane

Kokan Education Society's
Anandibai Pradhan Science College, Nagothane
Department of Chemistry
REPORT OF COMPLETION OF SYLLABUS

To,
The Head,
Dept. of Chemistry
A.P.Science College,Nagothane.

R/Sir,

I am submitting herewith the report of the completion of my allotted syllabus of theory and practical's of the subject chemistry for the academic year 2020-21.

Class	Theory	Total No of Lect.Allotted	Total No of Lect.C for Completion
F.Y.B.Sc. Sem-II	<p>PAPER -I</p> <p>- Unit-I -GASEOUS STATE Ideal gas law, kinetic theory of gases, Maxwell Boltzmann's Distributions of velocities, compressibility Factor, Boyle's Temperature, Deviation from Ideal gas Laws , Van der Waals equation of state joule-thomson effect</p> <p>1.2 : chemical equilibria and Thermodynamic Parameters Reversible and Irreversible reaction, Law of mass action Dynamic equilibria , relation between Kc and Kp,factors Affecting chemical equilibria Statement of second law of thermodynamics, concept Of entropy and free energy.</p>	8L	8L
F.Y.B.Sc. Sem-II	<p>PAPER II</p> <p>Unit – I IONIC EQUILIBRIA Strong and weak electrolyte, degree of ionization, ionic Product of water , ionization of weak acids and bases Ph scale , dissociation constant BUFFERS : introduction, types of buffer , Henderson Equation for acid and base, buffer capacity</p> <p>1.2 MOLECULAR SPECTROSCOPY Electromagnetic radiation, planck's equation, absorption Emission , scattering , fluorescence , vibrational and Rotational transition</p> <p>1.3 SOLID STATE CHEMISTRY Types of solid, crystal lattice , unit cell , space lattice And lattice plane laws of crystallography , law of Symmetry and law of rotational indices</p>	7L	7L
		4L	4L
		4L	4L

MSc I Sem II	CHEMICAL KINETIC AND MOLECULAR REACTION DYNAMIC Introduction, enzymes, types of enzyme, Enzyme inhibition , competitive inhibition ,non competitive Titiive inhibition , uncompetitive inhibition , lenivour Burk plot	10 L	10 L
F.Y.B.Sc. Sem-II	Physical, Inorganic, Organic etc. Total. Expt. 12	6 L/ Week	Demonstration of 3 expt. (online) due to covid pandemic
T.Y.B.Sc. Sem-VI	PHYSICAL CHEMISTRY PRACTICAL Viscosity , Chemical kinetic , ph mettry , conductometry Potentiometry , colorimetry(total 6 expt)	4 L/ Week	Demonstration of 3 expt. (online) due to covid pandemic
S.Y.BSc Sem IV	Physical, Inorganic, Organic practicals	4 L / week	Demonstration of 3 expt. (online) due to covid pandemic
MSc I Sem II	PHYSICAL CHEMISTRY PRACTICAL PH metry , conductometry , phase rule ,wave function Potentiometry, chemical kinetics(total 6 expt)	4L / week	Demonstration of 3 expt. (online) due to covid pandemic

Msalma
Signature of Teacher



Head
Department of Chemistry
K.E.S.A.P.Sc. College Nagothlane

Kokan Education Society's
Anandibai Pradhan Science College, Nagothane
Department of Chemistry

SYLLABUS COMPLETION REPORT



To,
The Head,
Dept. of Chemistry
A.P.Science College, Nagothane.

R/Sir,

I am submitting herewith the report of the completion of my allotted syllabus of theory and practical's of the subject chemistry for the academic year 2020-21.

Class	Theory	Total No of Lect. Allotted	Total No of Lect. for Completion
S.Y.B.Sc. Sem-III	<p>PAPER -III USH303</p> <p>1 Unit-I –Role Analytical Chemistry- 1.2 Significance of sampling- Terms involved in sampling, Types of sampling, Sampling Techniques</p> <p>Unit -III Classical Methods of Analysis-terms involved, Conditions Suitable, Types, Tools and Standard Solu1. Basic concepts- Relation between analyte, stimulus, and measurements of change in the observable property, Block diagram of an analytical instrument, Types of analytical instrument.</p> <p>2. Spectrometry, Interaction of matter with EMR, Basic terms involved, Statement of Beer-Lamberts law, Block diagrams of colorimeter and spectrophotometer, Applications of UV-visible spectroscopy, Photometric titrations & Calculations</p>	09L 15L	09L 15L
T.Y.B.Sc. Sem-V	<p>Analytical Chemistry USACDD504</p> <p>Unit – II</p> <p>2.1 Redox Titrations (Numerical problems) Construction of titration curves, Calculations of system in- 1. One electron system 2. Multi electron system, Theory of redox indicators and Its selection criteria, Use of Diphenyl amine and ferroin indicator.</p> <p>2.2 Complexometric Titrations- Introduction of titration curves, Use of EDTA as a titrant, Absolute and conditional stability constant, Selectivity of EDTA as a titrant, factors affecting selectivity of EDTA, Types of EDTA, Metallochromic indicators, theory and applications.</p>	15L	15L

	Unit-III 3.1 Optical Methods- Atomic spectroscopy: Flame Emission and Atomic Absorption Spectroscopy. Introduction, Energy level diagram, atomic spectra. Absorption and emission spectra, Flame photometry Principle, instrumentation, Quantification methods, calibration curve methods, standard addition and internal standard method, applications, advantages and disadvantages. 3.2 Molecular Fluorescence and Phosphorescence spectroscopy- Introduction and principle, Relationship between fluorescence intensity with concentration, Instrumentation and applications, Comparison between Fluorimetry and Phosphorimetry, Comparison with absorption methods. Unit-IV- Solvent Extraction- Factors affecting solvent extraction, Graph of percentage extraction versus pH, Concept of pH _{1/2} , its significance, Craig counter current extraction, solid phase extraction- Principle, apparatus and application, comparison between solid phase extraction and solvent extraction.	7L	7L
		4L	4L
		6L	6L



Dr.M.D. Shirsath




Head
Department of Chemistry
K.E.S.A.P.Sc. College Nagothane

**Kokan Education Society's
 Anandibai Pradhan Science College, Nagothane
 Department of Chemistry
 REPORT OF COMPLETION OF SYLLABUS**



To,
 The Head,
 Dept. of Chemistry
 A. P. Science College, Nagothane.

R/Sir,

I am submitting herewith the report of the completion of my allotted syllabus of theory and practical's of the subject chemistry for the academic year 2020-21.

Class	Theory	Total No of Lect. Allotted	Total No of Lect.C for Completion
S.Y.B.Sc. Sem-IV	<p>PAPER -III USH403</p> <p>Unit-I Analytical separations</p> <p>1.1 Introduction to analytical separations and its importance in analytical chemistry. 1.2 Estimation of analyte without effecting separation 1.3 Types of separation methods. 1.4 Electrophoresis 1.5 Solvent Extraction- Introduction, Nernst distribution law, distribution coefficient, conditions of solvent extraction, Single and multistep extraction, percentage extraction, Batch and continuous extraction 1.6 Chromatography- Introduction, classification, paper chromatography, Thin layer chromatography</p> <p>Unit-III Statistical Treatment of Analytic Data-II</p> <p>3. Nature of indeterminate errors, 3.1 Measures of central tendencies 3.2 Measure of dispersing tendencies 3.3 Distribution of random errors, Gaussian distribution curve 3.4 Confidence limit and confidence interval.</p>	3L 5L	3L 5L


 Dr. M.D. Shirsath




 Head
 Department of Chemistry
 K.E.S.A.P.Sc. College Nagothane

K.E.S. Anandibai Pradhan Science College, Nagothane
 Department of Physics
Teaching Planning for the first term 2020-21

Class: S.Y.B. Sc. Sem. III
 Subject: - (USPH301) Physics Paper I: - Mechanics and thermodynamics
 Name of Faculty: Prof. Y. Y. Mhatre

First Term (07 August 2020 – 31 December 2020)

Month – August 2020		
Week	Unit	Topic
2 nd week	I	Compound pendulum Expression for period, maximum and minimum time period, centres of suspension and oscillations, reversible compound pendulum. Kater's reversible pendulum, compound pendulum and simple pendulum- a relative study.
3 rd week	I	Center of Mass :- Motion of the Center of Mass , Linear momentum of a Particle Linear momentum of a System of Particles , Linear momentum w. r. t. CM coordinate (shift of origin from Lab to CM), Conservation of Linear Momentum , Some Applications of the Momentum Principle.
4 th week	I	System of Variable Mass, Torque Acting on a Particle, Angular Momentum of a Particle, Angular Momentum of System of Particles , Total angular momentum w.r.t. CM coordinate. Conservation of Angular Momentum
5 th week	I	Oscillations, The Simple Harmonic Oscillator , Relation between Simple Harmonic Motion and Uniform Circular Motion , Two Body Oscillations.
Month – September 2020		
1 st week	I	Damped Harmonic Motion ,Forced Oscillations and Resonance
2 nd week	II	Conversion of heat into work, heat engine Carnot's cycle: its efficiency.
3 rd week	II	Second law of thermodynamics, Statements, Equivalence of Kelvin and Plank statement.
4 th week	II	Carnot's theorem, Reversible and irreversible process, Absolute scale of temperature.
5 th week	II	Clausius theorem, Entropy, Entropy of a cyclic process, Reversible process, Entropy change.
Month – October 2020		
1 st week	II	Reversible heat transfer, Principle of increase in entropy, generalized form of first and second law.
2 nd week	II	Entropy change of an ideal gas, entropy of steam, entropy and unavailable energy, entropy and disorder, absolute entropy.



3 rd week	III	Third law of thermodynamics, Nernst heat theorem, Consequences of the third law.
4 th week	III	Maxwell's thermodynamic relations, Clausius – Clapeyron equation, Thermal Expansion.
5 th week	III	Steam engine, Rankine cycle, Otto engine.

Month – November 2020

1 st week	III	Efficiency of Otto cycle, Diesel cycle, Efficiency of Diesel cycle, Otto and diesel comparison.
2 nd week	III	Low temp Physics: Different methods of liquefaction of gases.
3 rd week	Diwali Vacation :- 12 November 2020 – 18 November 2020	
4 th week	III	Methods of freezing, Cooling by evaporation, cooling by adiabatic expansion.
5 th week	III	Joule - Thompson effect, JT effect of Vander Waal's gas, Liquefaction of helium, properties and uses of liquid Helium.

Month – December 2020

1 st week	Revision
2 nd week	Practical Session
3 rd week	Practical Examination
4 th week	Theory Examination
5 th week	Winter Break:- 25 December 2020 – 1 January 2021

Name and Signature of Faculty



Signature of HOD
PRINCIPAL
K.E.S.A.P. Science College
Nagothane, Dist. Raigad (M.S.)

Teaching Planning for the second term 2020-21

Class: S.Y.B. Sc. Sem. IV

Subject: - (USPH401) Physics Paper I: Optics and Digital Electronics

Name of Faculty: Prof. Y. Y. Mhatre

Second term (01st January 2021- 31th May 2021)

Month – January 2021		
Week	Unit	Topic
1 st week	I	Fresnel's Diffraction: Fresnel's assumptions, Rectilinear propagation (Half period zones) of light.
2 nd week	I	Diffraction pattern due to straight edge, Positions of maxima and minima In intensity.
3 rd week	I	Intensity at a point inside the geometrical shadow (straight edge), Diffraction due to a narrow slit, Diffraction due to a narrow wire.
4 th week	I	Fraunhofer Diffraction : Introduction, Fraunhofer diffraction at a single slit, Intensity distribution in diffraction pattern due to a single slit
5 th week	I	Fraunhofer diffraction at a double slit, Distinction between single slit and double slit diffraction pattern and missing orders
Month – February 2021		
1 st week	I	Plane diffraction Grating, Theory of plane transmission grating, Width of principal maxima.
2 nd week	II	Polarization: Types of polarization, Plane polarized light, Circularly polarized light, Elliptically polarized light, Partially polarized light.
3 rd week	II	Production of Plane polarized light, Polarization by reflection from dielectric surface, Polarization by refraction –pile of plates, Polarization by scattering, Polarization by selective Absorption.
4 th week	II	Polarization by double refraction, Polarizer and Analyzer, Malus' Law, Anisotropic crystal, Calcite crystal, Optic Axis.
Month – March 2021		
1 st week	II	Double refraction in calcite crystal, Huygens' explanation of double refraction, Ordinary and Extra ordinary rays, Positive and Negative crystals, Superposition of waves linearly polarized at right angles, Superposition of e-Ray and o-Ray, Retarders.
2 nd week	II	Quarter wave plate, Half wave plate, Production of linearly polarized light, Production of elliptically polarized light, Production of circularly polarized light.



3 rd week	II	Analysis of polarized light, Applications of polarized light.
4 th week	III	Binary number system , Arithmetic building blocks , Types of registers Digital IC signal levels, Binary to Decimal ,Decimal to binary , Hexadecimal number, Hexadecimal to decimal Conversion, Decimal to hexadecimal conversion, Hexadecimal to binary conversion, Binary to hexadecimal conversion.
5 th week	III	Binary addition, Unsigned binary numbers, Sign magnitude numbers , 1's complement , 2's complement , Converting to and from 2's complement representation , 2's complement arithmetic, The adder-subtractor (ignore IC specific diagrams)

Month – April 2021

1 st week	III	RS Flip-Flops (only NOR gate latch, NAND gate latch) , Gated Flip-Flops, Edge-Triggered RS Flip-Flop, Edge- Triggered D Flip-Flop, Edge-Triggered J-K Flip-Flop, JK Master- Slave Flip-Flops, Bounce elimination switch.
2 nd week	III	Types of registers: SISO, SIPO, PISO, PIPO
3 rd week	III	Asynchronous counter -3 bit Synchronous counter (mod 8)
4 th week	III	Decade Counters (Mod 5 and Mod 10)
5 th week	Revision	

Month – May 2021

1 st week	Practical Session
2 nd week	Practical Examination
3 rd week	Theory Examination
4 th week	-

Name and Signature of Faculty



Signature of HOD
PRINCIPAL
K.E.S.A. P. Science College
Nagothane, Dist. Raigad (M.S.)

Teaching Planning for the first term 2020-21

Class: S.Y.B. Sc. Sem. III

Subject: - (USPH302) Physics Paper II: - Vector calculus, Analog Electronics

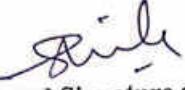
Name of Faculty: - Prof. V. S. Shinde

First Term (07 August 2020 – 31 December 2020)

Month – August 2020		
Week	Unit	Topic
2 nd week	I	Line, Surface and Volume Integrals
3 rd week	I	Problems
4 th week	I	The Fundamental Theorem of Calculus, The Fundamental Theorem of Gradient.
5 th week	I	Problems
Month – September 2020		
1 st week	I	The Fundamental Theorem of Divergence, The Fundamental Theorem of Curl
2 nd week	I	Problems
3 rd week	I	Curvilinear Coordinates: Cylindrical Coordinates, Spherical Coordinates
4 th week	II	Transistor Biasing, Inherent Variations of Transistor Parameters, Stabilization, Essentials of a Transistor Biasing Circuit, Stability Factor,
5 th week	II	Methods of Transistor Biasing, Base Resistor Method, Emitter Bias Circuit, Circuit analysis of Emitter Bias,
Month – October 2020		
1 st week	II	Biasing with Collector Feedback Resistor, Voltage Divider Bias Method, Stability factor for Potential Divider Bias
2 nd week	II	Problems
3 rd week	II	General amplifier characteristics: Concept of amplification, amplifier notations, current gain, Voltage gain, power gain, input resistance, output resistance
4 th week	II	General theory of feedback, reasons for negative feedback, loop gain.
5 th week	II	Practical circuit of transistor amplifier, phase reversal, frequency response, Decibel gain and Band width.
Month – November 2020		
1 st week	III	Oscillators: Introduction, effect of positive feedback. Requirements for oscillations, phase shift oscillator.



2 nd week	III	Wien Bridge Oscillator, Colpitt's oscillator, Hartley oscillator
3 rd week	Diwali Vacation :- 12 November 2020 – 18 November 2020	
4 th week	III	Operational Amplifiers: Introduction, Schematic symbol of OPAMP, Output voltage from OPAMP, AC analysis, Bandwidth of an OPAMP, Slew rate, Frequency Response of an OPAMP, OPAMP with Negative feedback.
5 th week	III	Inverting Amplifier, Non-Inverting Amplifier, Voltage Follower, Summing Amplifier, Applications of Summing amplifier, OPAMP Integrator and Differentiator, Critical frequency of Integrator, Comparator.
Month – December 2020		
1 st week	Revision	
2 nd week	Online Practical Session	
3 rd week	Practical Examination	
4 th week	Theory Examination	
5 th week	Winter Break:- 25 December 2020 – 1 January 2021	


Name and Signature of Faculty




Signature of HOD
PRINCIPAL
K.E.S.A.P. Science College
Nagothane, Dist. Raigad (M.S.)

K.E.S. Anandibai Pradhan Science College, Nagothane
Department of Physics

Teaching Planning for the second term 2020-21

Class: S.Y.B. Sc. Sem. IV

Subject: - (USPH402) Physics Paper II: Quantum Physics

Name of Faculty: Prof. V. S. Shinde

Second term (01st January 2021- 31th May 2021)

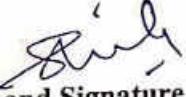
Month – January 2021		
Week	Unit	Topic
1 st week	I	Unit -I: The Schrodinger wave equation Concept of wave function, Born interpretation of wave function, Concepts of operator in quantum mechanics examples – position, momentum and energy operators, Eigenvalue equations, expectation values of operators.
2 nd week	I	Schrodinger time dependent equation. Postulates of Quantum Mechanics.
3 rd week	I	Time dependent Schrodinger equation, Stationary States
4 th week	I	Probability current density, Equation of continuity and its physical significance.
5 th week	I	Analogy between Wave equation and Schrodinger equation. Superposition principle.

Month – February 2021		
Week	Unit	Topics
1 st week	I	Problems
2 nd week	I	Problems
3 rd week	II	Unit-II: Applications of Schrodinger steady state equation Free particle.
4 th week	II	Particle in infinitely deep potential well (one - dimension).

Month – March 2021		
Week	Unit	Topics
1 st week	II	Particle in finitely deep potential well (one - dimension).
2 nd week	II	Step potential
3 rd week	II	Particle in three dimension rigid box, degeneracy of energy state.
4 th week	II	Problems



5 th week	III	Unit-III: Applications of Schrodinger steady state equation -II Potential barrier (Finite height and width)
Month – April 2021		
1 st week	III	Penetration and tunneling effect
2 nd week	III	Theory of alpha particle decay from radioactive nucleus.
3 rd week	III	Harmonic oscillator (one-dimension), correspondence principle.
4 th week	III	Problems
5 th week		Revision
Month – May 2021		
1 st week		Practical Session
2 nd week		Practical Examination
3 rd week		Theory Examination
4 th week	-	


Name and Signature of Faculty




Signature of HOD
PRINCIPAL
K.E.S.A.P. Science College
Nagothane, Dist. Raigad (M.S.)

K.E.S. Anandibai Pradhan Science College, Nagothane

Department of Physics

Teaching Planning for the first term 2020-21

Class: S.Y.B. Sc. Sem. III

Subject: - (USPH303) Physics Paper III (Applied Physics I)

Name of Faculty: Dr. S. S. Gurav

First Term (07 August 2020 – 31 December 2020)

Month – August 2020		
Week	Unit	Topic
2 nd week	II	Lattice points and space lattice The basis and crystal structure Unit Cells and lattice parameters
3 rd week	II	Crystal Systems Crystal Systems, Crystal Symmetry Bravais space lattices, Metallic crystal structures
4 th week	II	Relation between the density of crystal material and lattice constant in a cubic lattice, Directions, Planes
5 th week	II	Miller Indices, Important planes in simple cubic structure
Month – September 2020		
1 st week	II	separation between lattice planes in a cubic crystal, examples
2 nd week	I	Acoustics of Buildings: Reverberation, Explanation of Sabine's formula, & Importance of Sabine's Formula
3 rd week	I	Absorption Coefficient, Acoustics of Buildings, Factors Affecting Acoustics of Buildings, Sound Distribution in an Auditorium.
4 th week	I	Laser: Introduction, transition between Atomic energy states, Principle of Laser, Properties of Laser: Coherence Properties of LASER,
5 th week	I	Spatial Coherence Length, Directionality, Intensity, Helium–Neon Laser, Application of Laser, Holography
Month – October 2020		
1 st week	I	Fiber Optics: Light propagation through Fibres, Fibre Geometry, Internal reflection,
2 nd week	I	Numerical Aperture, Step-Index and Graded-Index Fibres, Applications of Optical Fibers.



3 rd week	III	Electrical properties: Review of energy band diagram for materials – conductors, semiconductors and insulators
4 th week	III	Electrical conductivity in metals, semiconductors and insulators (dielectrics), effect of temperature on conductivity
5 th week	III	Optical properties: Reflection, refraction

Month – November 2020

1 st week	III	Optical properties: Transmission of electromagnetic radiation in solids
2 nd week	III	Magnetic properties: Origin of magnetism in solids (basic idea), Types of magnetic order
3 rd week	Diwali Vacation :- 12 November 2020 – 18 November 2020	
4 th week	III	magnetic hysteresis, Applications: Dielectric materials: Piezoelectric, ferroelectric and pyroelectric materials Applications
5 th week	III	Applications

Month – December 2020

1 st week	Revision
2 nd week	Practical Session
3 rd week	Practical Examination
4 th week	Theory Examination
5 th week	Winter Break:- 25 December 2020 – 1 January 2021

Name and Signature of Faculty



Signature of HOD

K.E.S. Anandibai Pradhan Science College, Nagothane
 Department of Physics
Teaching Planning for the second term 2020-21

Class: S.Y.B. Sc. Sem. IV
 Subject: - (USPH403) Physics Paper III (Applied Physics II)
 Name of Faculty: Dr. S. S. Gurav

Second term (01st January 2021- 31th May 2021)

Month – January 2021		
Week	Unit	Topic
1 st week	I	Introduction to Geophysics its branches and relationship with other sciences, Earth and solar system: Meteorites and other extra-terrestrial materials, Age of Earth and various methods of determination.
2 nd week	I	Planetary evolution of the Earth and its internal structure: Elastic waves and variation of physical and chemical properties in the interior of Earth, Major tectonic features of the ocean oceanic and continental crust. Continental drift – geological and geophysical evidence: mechanisms, objections and present status, Gravity and magnetic anomalies at Mid-ocean ridges: deep sea trenches, continental shield areas and mountain chains
3 rd week	I	Geomagnetism, elements of Earth's magnetism: Internal, external fields and their causes, Palaeo magnetism, Polar wandering paths and reversals, Seafloor spreading and Plate tectonics, Seismic belts of the Earth: Seismicity and plate movements, Geodynamics of the Indian plate
4 th week	I	Utility of the different geophysical techniques (discussed above) in exploration for academic as well as for harnessing resources. Geophysical potential fields: Principles of Gravity and Magnetic methods. Instrumentation, field procedures used in geophysical studies, Case studies, Problems
5 th week	I	Environmental Magnetic Analysis relating to magnetic minerals and environmental systems, soil magnetism, mineral magnetic studies of lake and marine sediments and magnetic monitoring of air-, land- and water pollution, Geo-Environmental Studies relating to mining, urban, industrial, coastal and desert management, palaeo climate, palaeo environment, medical geology, climate change and studies related to their impact on ecosystem
Month – February 2021		
1 st week	I	Natural Hazard Investigations including scientific studies related to natural hazards such as earthquakes, landslides, floods and tsunamis, Impact Assessment of Anthropogenic Activities such as heavy metal



		pollution in Mumbai aquatic system with industries and thermal power plants, urbanization, disposal of industrial and radio-active waste, excessive withdrawal of ground water and use of fertilizers, Problems
2 nd week	II	Building Concept of Microprocessor Introduction, Study of Memory, Input Device , Output Device , Input/output Device Central Processing Unit.
3 rd week	II	8085 Microprocessor Introduction , Features of Inter 8085 , Pin Diagram of 8085 , 8085 CPU Architecture Arithmetic and Logical Group (ALU , Accumulator , Temporary Register , Flag Register (PSW)) , Register Group (Temporary Registers (W and Z) , General purpose registers , Special Purpose registers)
4 th week	II	Interrupt Control , Serial I/O Control Group , Instruction Register , Decoder and Control Group (Instruction Register , Instruction Decoder , Timing and Control)

Month – March 2021

1 st week	III	8085 Instruction Set Introduction , Flowchart , Classification of Instruction Set (Data Transfer Group)
2 nd week	III	Arithmetic Group , Logical Group , Branching Group , Stack and Machine Control Group), Notations used in Instructions and Opcode, Data Transfer Group.
3 rd week	III	Program Examples for Data Transfer Group , Arithmetic Operation Group, Branch Group, Logical Group, Addressing Modes, 8085 Programmers Model.
4 th week	III	Block diagram of communication system, types of communication system: simplex, duplex, analog and digital communication
5 th week	III	Electromagnetic spectrum, base band and broad band communication. Noise concept and types, signal to noise ratio, noise figure, noise temperature.

Month – April 2021

1 st week	III	Need of modulation, concept of modulation, AM waveform, mathematical expression of AM
2 nd week	III	Concept of sideband, demodulation principles. AM Receiver: TRF and super heterodyne receiver
3 rd week	III	Definition, mathematical representation, frequency spectrum, bandwidth and modulation index



4 th week	III	Concept of ASK, PSK, FSK, PAM, PWM, PPM, PCM
5 th week	III	Revision
Month - May 2021		
1 st week	Practical Session	
2 nd week	Practical Examination	
3 rd week	Theory Examination	
4 th week	-	

Name and Signature of Faculty




Signature of HOD
PRINCIPAL
K.E.S. A. P. Science College
Nagthane, Dist. Raigad (M.S.)



Teaching Planning for the first term 2020-21

K.E.S. Anandibai Pradhan Science College, Nagothane
 Department of BOTANY
 Class: F.Y.B. Sc. Sem. I
 Subject: BOTANY-I
 Name of Faculty: PRATIKSHA MHATRE
 First Term (August,2021 – November,2021)

MONTH	Unit	ALGAE
August	I	Structure , life cycle and systematic position of nostoc and spirogyra
		Economic importance of algae.
September	II	Fungi
		Structure life cycle and systematic position of Rhizopus and Aspergillus
		Economic importance of fungi
		Modes of nutrition in fungi (saprophytism and parasitism)
October	III	Bryophyta
		General characters of hepaticae
		Structure life cycle and systematic position of Riccia
EXMINATION		
November		Revision
		Practical Session
		Practical Examination
		Theory Examination

Name and Signature of Faculty

Signature of HOD



Teaching Planning for the first term 2020-21

K.E.S. Anandibai Pradhan Science College, Nagothane
Department of BOTANY
Class: F.Y.B. Sc. Sem. I
Subject: BOTANY-II
Name of Faculty: DR VIJAY CHAVAN
First Term (August, 2021 – November, 2021)

MONTH	Unit	CELL BIOLOGY
August	I	General structure of plant cell: cell wall Plasma membrane (bilayer lipid structure, fluid mosaic model)
		Ultra structure and functions of the following cell organelles: Endoplasmic reticulum and Chloroplast
September	I	Ultra structure and functions of the following cell organelles: Chloroplast
		ECOLOGY
	II	Energy pyramids, energy flow in an ecosystem.
October		Types of ecosystems: aquatic and terrestrial.
		GENETICS
	III	Phenotype/Genotype, Mendelian Genetics- monohybrid, dihybrid; test cross; back cross ratios.
November	III	Epistatic and non epistatic interactions; multiple alleles
		EXMINATION
		Revision
		Practical Session
		Practical Examination
		Theory Examination

Name and Signature of Faculty

Signature of HOD



Kokan Education Society's
 Anandibai Pradhan Science College, Nagothane
 Department of Botany

SYLLABUS COMPLETION REPORT

To,
 The Head,
 Dept.of Botany,
 A.P.Science College,Nagothane.



R/Sir,

I am submitting herewith the report of the completion of my allotted syllabus of theory and practical's of the subject Botany for the academic year 2020-21.

Class	Theory	Total No of Lect. Allotted	Total No of Lect. for Completion
F.Y.B.Sc. Sem-I	PAPER -I Unit-I :Algae	15L	12L
	Unit-II: Fungi	15L	11L
	Unit-III: Bryophytes.	15L	13L
	PAPER -II Unit-I: Cell Biology	15L	12L
	Unit-II: Ecology	15L	14L
	Unit-III: Ggenetics	15L	15L
F.Y.B.Sc. Sem-II	PAPER -I Unit-I : Pterodophytes.	15L	15L
	Unit-II: Gymnosperms	15L	15L
	Unit-III: Angiosprms	15L	15L
	PAPER -II Unit-I: Anatomy.	15L	15L
	Unit-II: Plant physiology	15L	15L
	Unit-III: Medicinal botany	15L	15L
	Online demonstration of Practical of Paper -I,II	6 L per paper due to covid-19 pandemic.	

Teaching Planning for the first term 2020-21

K.E.S. Anandibai Pradhan Science College, Nagothane

Department of BOTANY

Class: F.Y.B. Sc. Sem. II

Subject: BOTANY-I

Name of Faculty: PRATIKSHA MHATRE

Second Term (1st February, 2021 to 31st May, 2021)

MONTH	Unit	Pteridophyta
February	I	Structure life cycle systematic position and alternation of generation in nephrolepis.
March	I	Stelar evolution
Gymnosperms		
	II	Structure life cycle systematic position and alternation of generation in cycas
	II	Economic importance of Gymnosperms
April		Angiosperm
	III	Laaf : simple leaf, types of compound leaves incision of leaf , vexation, phyllotaxy, types of stimulus, leaf apex leaf margin, leaf base, leaf shapes . Modifications of leaf; spine, tendril, hooks, phylode, pitcher, Drosera or insectivorous plants.
April	III	Inflorescence Racemose: simple raceme, spike, Catkin, spadix, panicle. Cymose: monochasial, dichasial, polychasial. Compound: corymb, umbel, cyathium, , capitulum, verticillaster, hypanthodium.
		Study of following families: Malvaceae, Amaryllidaceae.
EXMINATION		
May		Revision
		Practical Session
		Practical Examination
		Theory Examination

(Signature)
Name and Signature of Faculty

(Signature)
Signature of HOD



Teaching Planning for the first term 2021-22

K.E.S. Anandibai Pradhan Science College, Nagothane
Department of BOTANY
Class: F.Y.B. Sc. Sem. II
Subject: BOTANY-II
Name of Faculty: DR VIJAY CHAVAN
Second Term (1st February,2022 to 31st May,2022)

MONTH	Unit	ANATOMY
February	I	Simple tissues, complex tissues.
		Primary structure of dicot and monocot root, stem and leaf.
March	I	Epidermal tissue system: types of hair, monocot and dicot stomata.
		PHYSIOLOGY
March	II	Photosynthesis: Light reactions.
	II	Photolysis of water, photophosphorylation (cyclic and non cyclic)
	II	Carbon fixation phase (C ₃ , C ₄ and CAM pathways).
April	MEDICINAL BOTANY	
	III	Concept of primary and secondary metabolites, difference between primary and secondary metabolites.
April	III	Grandma's pouch: Following plants have to be studies with respect to botanical source, part of the plant used, active constituents present and medicinal uses: Oscimum sanctum, Adathoda vasica, Zinziber officinale, Curcuma longa, Santalum album, Aloe vera
EXMINATION		
May	Revision	
	Practical Session	
	Practical Examination	
	Theory Examination	

Name and Signature of Faculty

Signature of HOD



K.E.S. Anandibai Pradhan Science College, Nagthane
 Department of BOTANY
Teaching Planning for the first term 2020-21
Class: S.Y.B. Sc. Sem. III Subject: BOTANY-I
Name of Faculty: DR VIJAY CHAVAN AND PRATIKSHA MHATRE
First Term (07 August 2020 – 31 December 2020)

MONTH	Unit	Topic
Thallophyta (Algae) And Bryophyta		
AUGUST	I	General characters of division phaeophyta distribution, cell structure, range of thallus , economic importance
		Structure , life cycle and systematic position of sargassum
		General account of class Anthocerotae and Musci
		Structure, life cycle and systematic position of Anthoceros and funaria
Angiosperm		
SEPTEMBER	II	Plant Nomenclature
	II	Taxonomy in relation to Anatomy, palynology, chemical constituents, Embryology, cytology , Ecology
	II	With the help of Bentham and Hooker's system of classification for flowering plant study the vegetative ,floral characters and economic importance of the following families; Leguminosae, Asterace, Amaranthaceae, Palmae
Modern techniques to study plant Diversity		
OCTOMBER	III	Preservation method: Dry and Wet method
	III	Microscopy principle and working of light and electron microscope
NOVEMBER	III	Chromatography principles and techniques in paper and thin layer Chromatography
	III	Principle and techniques of horizontal and vertical electrophoresis
EXMINATION		
DECEMBER	Revision	
	Practical Session	
	Practical Examination	
	Theory Examination	

(Signature)
Name and Signature of Faculty

(Signature)
Signature of HOD



Teaching Planning for the first term 2020-21

K.E.S. Anandibai Pradhan Science College, Nagothane
Department of BOTANY
Class: S.Y.B. Sc. Sem. III
Subject: BOTANY-II
Name of Faculty: DR VIJAY CHAVAN
First Term (07 August 2020 – 31 December 2020)

MONTH	Unit	Topic
AUGUST	I	Ultra Structure and functions of the following cell organelles: o Mitochondrion o Peroxisomes o Glyoxysomes o Ribosomes
		Cell Division and its significance o Cell Cycle o Mitosis & Meiosis o Differences between Mitosis and Meiosis
		Nucleic Acids: Types, structure and functions of o DNA o RNA
SEPTEMBER	I	Nucleic Acids: Types, structure and functions of o DNA o RNA
	II	Variation in Chromosome structure (Chromosomal Aberrations) Definition, Origin, Cytological and Genetic Effects of the following: Deletions, Duplications, Inversions and Translocations.
	II	Variation in Chromosome Number Origin and production, morphological and cytological features, applications in crop improvement and evolution of Aneuploids and Euploids(Monoploids, Autopolyploids and allopolyploids)
	II	Extranuclear Genetics Organelle heredity o Chloroplast determines heredity - Plastid transmission in plants, Streptomycin resistance in Chlamydomonas. o Mitochondrion determined heredity- petite colonies in yeast
OCTOBER	III	DNA replication : Replication(prokaryotic and eukaryotic)
	III	• Protein Synthesis: o Central dogma of Protein synthesis o Transcription: The transcription process in prokaryotes and eukaryotes
NOVEMBER	III	RNA synthesis, RNA processing, Adenylation& Capping
EXMINATION		
DECEMBER	Revision	
	Practical Session	
	Practical Examination	
	Theory Examination	

Name and Signature of Faculty

Signature of HOD



Teaching Planning for the first term 2020-21
K.E.S. Anandibai Pradhan Science College, Nagothane
Department of BOTANY
Class: S.Y.B. Sc. Sem. III Subject: BOTANY-III
Name of Faculty: PRATIKSHA MHATRE
Second term (01st January 2021- 31th May 2021)

MONTH	Unit	Topic
Pharamacognosy and phytochemistry		
AUGUST	I	Introduction to pharmacopeia
		Indian pharmacopeia Indian herbal pharmacopeia and Ayurvedic pharmacopeia
		Study of monograph from pharmacopeia
		Secondary metabolites : source , properties, uses and adulterants , regional and seasonal variations
		Adulterants ; saraca asoca, polyalthia longifolia; terminalia arjuna, terminalia tomentosa; Bacopa monnieri, , centella asiatica; Abrus, Glycyrrhiza; phyllanthud amarus
Forestry and economic botany		
SEPTEMBER	II	Forestry : outline of types of forest in india
	II	Forestry : Agro- forestry , urban forestry, organic farming, silviculture
	II	Economic botany:;types of fibers: jute and cotton, current trends in fiber industries, spices and condiments: saffron and cardamom, commercial market of spices
Industry based on plant products		
OCTOMBER	III	Aromatherapy introduction, uses with few examples jojoba, lemon, Jasmine
	III	Botanical and nutraceutical- spirulina , vanilla, Garcinia indica/ Garcinia cambogia , chlorella and kale
NOVEMBER	III	Enzymes industry: cellulases, paain, Bromelain
	III	Biofuels
EXMINATION		
DECEMBER	Revision	
	Practical Session	
	Practical Examination	
	Theory Examination	

Name and Signature of Faculty



Signature of HOD

Kokan Education Society's
Anandibai Pradhan Science College, Nagothane
Department of Botany

SYLLABUS COMPLETION REPORT

To,
The Head,
Dept.of Botany,
A.P.Science College,Nagothane.



R/Sir,

I am submitting herewith the report of the completion of my allotted syllabus of theory and practical's of the subject Botany for the academic year 2020-21.

Class	Theory	Total No of Lect. Allotted	Total No of Lect. for Completion
S.Y.B.Sc. Sem-III	PAPER -I Unit-I – Thallophyta (Algae) And Bryophyta	15L	12L
	Unit-II – Angiosperm.	15L	11L
	Unit-III - Modern Techniques To Study Plant Diversity	15L	13L
	PAPER -II Unit-I –Cell Biology	15L	12L
	Unit-II -Cytogenetic	15L	14L
	Unit-III -Molecular Biology	15L	15L
	PAPER -III Unit-I – Pharamacognosy and phytochemistry	15L	14L
	Unit-II- Forestry and economic botany	15L	14L
	Unit-III - Industry based on plant products	15L	12L
	Online demonstration of Practical of Paper -I,II and III	6 L/ Week	Demonstration of 3 expt. (online) due to covid pandemic

**Kokan Education Society's
Anandibai Pradhan Science College, Nagothane
Department of Botany**

SYLLABUS COMPLETION REPORT

To,
The Head,
Dept.of Botany,
A.P.Science College,Nagothane.



R/Sir,

I am submitting herewith the report of the completion of my allotted syllabus of theory and practical's of the subject Botany for the academic year 2020-21.

Class	Theory	Total No of Lect. Allotted	Total No of Lect. for Completion
S.Y.B.Sc. Sem-IV	PAPER -I Unit-I – Thallophyta: Fungi, Plant Pathology and Lichens	15L	12L
	Unit-II – Pteridophyta and Paleobotany	15L	11L
	Unit-III - Gymnosperms	15L	13L
	PAPER -II Unit-I – Anatomy	15L	12L
	Unit-II - Plant Physiology	15L	14L
	Unit-III – Environmental Biology	15L	15L
	PAPER -III Unit-I – Horticulture	15L	14L
	Unit-II- Biotechnology	15L	14L
	Unit-III - Biostatistics & Bioinformatics	15L	12L
Online demonstration of Practical of Paper -I,II and III		6 L/ Week	Demonstration of 3 expt. (online) due to covid pandemic

Teaching Planning for the first term 2020-21

K.E.S. Anandibai Pradhan Science College, Nagothane

Department of BOTANY

Class: S.Y.B. Sc. Sem. IV

Subject: BOTANY-I

Name of Faculty: DR VIJAY CHAVAN AND PRATIKSHA MHATRE

Second term (01st January 2021- 31th May 2021)

Sem. IV		
MONTH	Unit-I	Plant Diversity
JANUARY	I	General characters of Ascomycetes
	I	Structure ,life cycle and systematic position of Erysiphe and xylaria
	I	Plant pathology- symptoms, causative organism, disease cycle and control measures of a powdery mildew and late blight of potato
	I	Lichens – classification , structure, method of reproduction, economic importance and ecological significance of lichens.
Pteridophyta and paleobotany Pteridophyta		
FEBRUARY	II	Salient features and classification upto order (with example of each) Of psilophyta and lepidophyta (GM Smith-s system of classification to be followed
	II	. Structure, life cycle and systematic position of selaginella
	II	Paleobotany – the geological time scale ; formation and types of fossils ; structure and systematic position of form Genus Rhynia
Gymnosperms		
MARCH	III	Salient features classification up to orders (with examples of each) and economic importance of coniferophyta (chamberlain system of classification to be alloewd)
	III	Structure life cycle and systematic position of pinus
	III	Structure and systematic position of the form Genus cordaites
APRIL	Revision	
Month – May 2021		
MAY	Practical Session Practical Examination Theory Examination	

Dr. Vijay Chavhan
Name and Signature of Faculty



Dr. Pratiksha Mhatre
Signature of HOD

Teaching Planning for the first term 2020-21
K.E.S. Anandibai Pradhan Science College, Nagothane
Department of BOTANY
Class: S.Y.B. Sc. Sem. IV Subject: BOTANY-II
Name of Faculty: DR VIJAY CHAVAN
Second term (01st January 2021- 31th May 2021)

Sem. IV		
MONTH	Unit-I	Anatomy
JANUARY	I	Normal Secondary Growth in Dicotyledonous stem and root.
	I	• Secondary growth in Monocot stem – Dracaena.
	I	• Mechanical Tissue system o Tissues providing mechanical strength and support and their disposition o I-girders in aerial and underground organs
	I	• Conducting tissue system : o Xylem and its elements, o Phloem and its elements o
	I	Types of Vascular Bundles
Plant Physiology and Plant Biochemistry		
FEBRUARY	II	• Respiration: Aerobic: Glycolysis, TCA Cycle, ETS & Energetic of respiration; Anaerobic respiration
	II	• Photorespiration
	II	• Photoperiodism: Phytochrome Response and Vernalization with reference to flowering in higher plants
	II	Physico-chemical properties of phytochrome, Pr-Pf interconversion, role of phytochrome in flowering of SDPs and LDPs;
MARCH	II	• Vernalization mechanisms and applications.
Ecology and Environmental Botany		
MARCH	III	Biogeochemical Cycles- Carbon,
	III	Nitrogen and Water
	III	• Ecological factors: Concept of environmental factors.
	III	Soil as an edaphic factor, Soil composition, types of soil, soil formation, soil profile
	III	• Community ecology- Characters of community - Quantitative characters and qualitative characters
Revision		
APRIL	Month – May 2021	
MAY	Practical Session	
	Practical Examination	
	Theory Examination	

Name and Signature of Faculty



Signature of HOD

Teaching Planning for the first term 2020-21
K.E.S. Anandibai Pradhan Science College, Nagothane
Department of BOTANY
Class: S.Y.B. Sc. Sem. IV Subject: BOTANY-III
Name of Faculty: DR VIJAY CHAVAN
Second term (01st January 2021- 31th May 2021)

Sem. IV		
MONTH	Unit-I	Horticulture and gardening
JANUARY	I	Branch of Horticulture
	I	Location in the garden- edges , hedges, lawn Flower beds, avenue, water garden (With names of two plants for each category, focal point
	I	Types of garden ; formal and informal garden, national park : Sanjay Gandhi National Park, Botanical garden : veer Mata jijabai udyan
Biotechnology		
FEBRUARY	II	Introduction to plant tissue culture; laboratory organizations and techniques in plant tissue, culture, totipotency , organ genesis organ culture- root culture, meristem culture, anther and pollen culture, embryo culture
	II	R- DNA technology;; gene cloning, enzymes involved in gene cloning, vector used for gene cloning
Biostatistics and bioinformatics		
MARCH	III	Biostatistics ;the chi square test, correlation -- calculation of coefficient of correlation.
	III	Bioinformatics; information technology: history and tools of IT , internet and its uses, introduction to bioinformatics- goal, need, scope and limitation, aims of bioinformatics: data organization, tool of bioinformatics- tools for web search , data retrieval tools- Entrez, blast, bioinformatics programme in India.
APRIL	Revision	
Month - May 2021		
MAY	Practical Session	
	Practical Examination	
	Theory Examination	

Dr. M. M. Chavhan
Name and Signature of Faculty



Dr. M. M. Chavhan
Signature of HOD