E.M. GOPALAKRISHNA KONE YADAVA WOMEN'S COLLEGE

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LESSON PLAN
2022-2023

DEPARTMENT OF **CHEMISTRY**

(UG –Odd & Even Semester)

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LESSON PLAN
2022-2023

Class : I BSc Chemistry
Sem : I
Sub. Code :22OUCH11
Title of the Paper : General Chemistry-I
Total Hours : 60hrs

Month	Unit	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
AUG	I	Classification of organic compounds-differences between organic and inorganic compounds- IUPAC system of nomenclature of common organic compounds (upto C-10)- alkanes, alkenes, alkynes, cycloalkanes and aromatic compounds	I BSc Che	3	Chalk and Talk, PPT	P. Bhuvaneshwari
		Naming of organic compounds with one functional group- halogen compounds, alcohols, phenol, aldehydes, ketones, carboxylic acids and its derivatives, cyano compounds, amines, nitro compounds (Both aliphatic and aromatic) -Naming of compounds with two functional groups - Naming of heterocyclic compounds containing one hetero atoms present in five/six membered rings.	I BSc Che	4	Chalk and Talk, PPT	
		Calculation of empirical and molecular formulae- Hybridization and geometry of molecules (methane, ethylene and acetylene) -bond angle, bond length, bond strength of C-H and C-C bonds.	I BSc Che	3	Chalk and Talk, PPT	
SEP	II	Vander Waal's interactions-hydrogen bonds- inter & intra molecular forces and their effects on physical properties - electronic effects -inductive effect, resonance effect -drawing of resonance structures -conditions for resonance - stability of resonance structures, hyper conjugation, electromeric effect, steric effect-	I BSc Che	5	Chalk and Talk, PPT	
		Dissociation of bonds -homolysis and heterolysis –preparation and properties of radicals, carbocations and carbanions-stability of radicals, carbocations and carbanions-attacking reagents – nucleophiles and electrophiles-Types of organic reactions- electrophilic, nucleophilic addition, substitution and elimination reactions (elementary idea with examples).	I BSc Che	7	Chalk and Talk, PPT, group discussion	
OCT	III	Introduction to atomic structure-Rutherford concept and its draw backs-Planck's quantum theory -Bohr's model of hydrogen atom (no derivation)-atomic orbitals-shapes		7	Chalk and Talk, PPT	

		of s, p and d- orbitals- Quantum numbers- Principal, Azimuthal, Magnetic and Spin quantum numbers and their significance - Pauli's exclusion principle – Hund's rule- Aufbau Principle, (n+l) rule-Stability of half-filled and completely filled orbitals- inert pair effect				
		Periodic properties: Classification of elements as s, p, d and f-block elements- Periodic table anomalies and variations in atomic radius, ionic radius, electronic configuration, electron affinity and electro negativity, ionization energy and metallic character of elements along the group and periods and their influences on stability, colour, coordination number, geometry, physical and chemical properties- Factors affecting the electron affinity and ionization energy.	**I BSc Che**	7	Chalk and Talk, PPT,	
NOV	IV	Ionic bond-general properties of ionic compounds - Lattice energy-Born-Haber Cycle-Polarizing power and Polarizability- Covalent character of ionic compounds - Fajan's rules -Covalent bond -structure and bonding of homo and heteronuclear molecules	**I BSc Che**	4	Chalk and Talk, PPT and Seminar	P. Bhuvaneshwari
		Valence bond theory- orbital overlap- hybridization- sp^3, sp^2, sp -sigma and pi bonds- VSEPR Theory -postulates - Shapes of simple inorganic molecules ($BeCl_2$, BF_3, PCl_5, SF_6, H_2O, NH_3)	**I BSc Che**	6	Chalk and Talk, PPT and Virtual Lab.	
		MO Theory-Bonding and anti-bonding orbital's-Applications of MO theory H_2, He_2, N_2, O_2, HF and CO molecules- Comparison of VB and MO Theories.	**I BSc Che**	4	Chalk and Talk, PPT and Virtual Lab	
NOV-DEC	V	Postulates of Kinetic theory of gases - gas laws (derivation not required) – Maxwell distribution of molecular velocities- equation-graphical representation (derivation not required)- Temperature dependence of these distributions.	**I BSc Che**	4	Chalk and Talk, PPT	
		Definition of Most probable velocity, Average velocity, RMS velocity - collision diameter, collision number, collision frequency, Mean free path of molecules- reason for deviation of real gases from ideal behavior – compressibility factor- Van der Waals equation of state for real gases –. Boyle temperature-Law of corresponding states and reduced equation of state.	**I BSc Che**	6	Chalk and Talk, PPT	

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LESSON PLAN
2022-2023

Class : I BSc Chemistry
Sem :I
Sub. Code :22OUCHSE12
Title of the Paper : Pharmaceutical Chemistry
Total Hours : 30hrs

Month	Unit	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
AUG	I	**Basic Pharmaceutical Chemistry** Definition of the following terms: drug, pharmachophore, pharmacology, Pharmacopeia, bacteria, virus and vaccine.	I BSc Che	2	Chalk and Talk, PPT	
		Causes, symptoms and drug for anemia, jaundice, cholera, alaria and filarial.	I BSc Che	1	Chalk and Talk, PPT	
		Indian Medicinal plants and uses – Tulasi, Neem, Kizhanelli, Mango, Semparuthi, Adadodai and Thoothvelai.	I BSc Che	2	Chalk and Talk, PPT	
SEP	II	**Antibacterials** Sulpha drugs-examples and actions-prontosil, sulphathiazole, sulphafurazole. Antibiotics-definition and action of penicillin, streptomycin, chloramphenicol,	I BSc Che	3	Chalk and Talk, PPT	
		Antiseptics and disinfectans – definition and distinction – phenolic compounds, chlorocompounds and cationic surfactant.	I BSc Che	2	Chalk and Talk, PPT	
OCT	III	**Analgesics and CNS stimulants** Analgesics: Definition and Actions – narcotic and non narcotic – morphine and its derivatives,	I BSc Che	2	Chalk and Talk, PPT	
		pethidine and methodone – disadvantages and uses. Antipyretic analgesics - salicylic derivative, paracetamol, ibuprofen.	I BSc Che	2	Chalk and Talk, PPT	
		Drugs affecting CNS – Definition, distinctionand examples for tranquilisers, sedatives, hypnotics, psychedelic drugs – LSD, Hashish – their effects.	I BSc Che	2	Chalk and Talk, PPT	

NOV	IV	**Anasthetics and Drugs for Chronic diseases** Anaesthetics - definition – local and general – volatile nitrous oxide, ether, Chloroform, cyclo propane – uses and disadvantages- non – volatile intravenous – thiopental sodium, methohexitone, propanidid.	**I BSc Che**	3	Chalk and Talk, PPT	
		Causes, medicines and their mode of action for the treatment of cancer – antineoplastics, diabetes – hypoglycemic agents AIDS – AZT, DDC.	**I BSc Che**	2	Chalk and Talk, PPT	
		Blood: Grouping, composition, Rh factor, blood pressure, hyper tension and hypotension.	**I BSc Che**	2	Chalk and Talk, PPT	
NOV-DEC	V	**Vitamins, Harmones and Enzymes** Vitamins – fat soluble vitamins – (i) vitamin A; (ii) vitamin D; (iii) vitamin B complex; (iv) vitamin C; (V) vitamin E; (vi) vitamin K; (vii) vitamin P.	**I BSc Che**	3	Chalk and Talk, PPT	
		Hormones – Introduction, properties and function of hormones, chemical nature of hormones. Physiological function of some harmones: Adrenaline, thyroxin, oxytoxin, insulin, the sex harmones.	**I BSc Che**	2	Chalk and Talk, PPT	
		Enzymes – Chemical nature of enzymes, classification of enzymes, properties of enzymes, mechanism of enzyme action. Action of Co-enzymes.		2	Chalk and Talk, PPT	

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LESSON PLAN
2022-2023

Class : I BSc Chemistry
Sem :I
Sub. Code :22OUCHSE11
Title of the Paper : Good Laboratory Practices
Total Hours : 30hrs

Month	Unit	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
AUG	I	Common calculations in chemistry laboratories. Understanding the details on the label of reagent bottles. Preparation of solutions. Molarity and normality of common acids and bases. Dilutions. Percentage solutions	I BSc Che	3	Chalk and Talk, PPT	P. Bhuvaneswari
		Molar, molal and normal solutions. Technique of handling micropipettes; Knowledge about common toxic chemicals and safety measures in their handling.		2	Chalk and Talk, PPT	
SEP	II	Use of micropipette, analytical balances, pH meter, conductivity meter, rotary evaporator, potentiometer. Use of purified water in lab experiments, Cleaning and drying of glassware's, Preparation of crystals from given salt	I BSc Che	3	Chalk and Talk, PPT	P. Bhuvaneswari
		Preparation of Dyes, Demonstration of preparation of material using Sol-gel procedure.		2	Chalk and Talk, PPT	
OCT	III	Introduction- contamination of precipitates-Co-precipitation-types, post precipitation-differences between Co precipitation and post precipitation	I BSc Che	3	Chalk and Talk, PPT	P. Bhuvaneswari
		precipitation from homogeneous solution-theory of precipitation-properties of a precipitate		3	Chalk and Talk, PPT	
NOV	IV	General rules of precipitation-specific and selective precipitants-choice of precipitants.	I BSc Che	3	Chalk and Talk, PPT	

		Purification of solid organic compounds- recrystallisation, use of miscible solvents, use of drying agents and their properties, sublimation.		3	Chalk and Talk, PPT	P. Bhuvaneswari
NOV-DEC	V	Purification of liquids. Experimental techniques of distillation, fractional distillation, distillation under reduced pressure.	I BSc Che	2	Chalk and Talk, PPT	P. Bhuvaneswari
		Composition and functions of blood, blood coagulation. Anaemia, Regulation,		3	Chalk and Talk, PPT	P. Bhuvaneswari

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LESSON PLAN
2022-2023

Class : I BSc
Sem : I
Sub. Code : 2OUCHID1
Title of the Paper : Chemistry in Everyday Life
Total Hours : 30hrs

Month	Unit	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
AUG	I	Introduction-detergent action-types of detergent- raw materials...Washing powder: Introduction- raw materials - method of manufacturing. Enzymes used in commercial detergents. **Soaps:** Introduction - raw materials - Manufacturing methods- Features in the preparation of toilet soaps.	I BSc Che	6	Chalk and Talk	
SEP	II	Need for vitamins in body, types of vitamins- water soluble and fat soluble vitamins, sources and deficiency diseases of vitamins A , B complex, C, D, E and K- Role of minerals in body, iodine deficiency and remedy	I BSc Che	6	Chalk and Talk	
OCT	III	Introduction – classification – bathing oils, face creams, skin products, hair dye, and shampoo- general formulation of each type - toxicology of cosmetics. Plastic in everyday life - uses of PET, PVC – recycling of plastics – biodegradable of plastics – Environmental hazards of plastics.	I BSc Che	6	Chalk and Talk	
NOV	IV	**Phenoils:** Introduction- raw materials - methods of preparation and uses. Incense stick: Introduction- raw materials- method of manufacturing and uses.	I BSc Che	6	Chalk and Talk	

		Sambrani: Introduction- raw materials- methods of manufacturing and uses. Naphthalene Balls: Introduction- raw materials- methods of manufacturing and uses.			Chalk and Talk	
DEC	**V**	**Plaster of Paris:** Introduction- Method of manufacturing and uses. Gum: Introduction- Method of manufacturing and uses. Shoe polish: Introduction- raw materials-Method of manufacturing and uses.	I BSc Che	6		

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LESSON PLAN
2022-2023

Class : II BSc Chemistry
Sem :III
Sub. Code :21K31
Title of the Paper : Organic and Inorganic Chemistry
Total Hours : 60hrs

Month	Unit	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
AUG	I	**ORGANO HALOGEN COMPOUNDS:** a) Alkyl halides:methods of formation from alcohols, alkanes, alkenes –general properties – nucleophilic substitution reactions -mechanisms of nucleophilic substitution reactions-SN^2 and SN^1 reactions with energy profile diagrams - mechanisms of elimination reactions. Fluorocarbons: Westron and Freon - and elementary idea and their impact on environment. b) Aryl halides: Preparation by halogenation, Sandmayer and Hunsdiecker reactions – general properties c) Aralkyl halides: Benzyl chloride – preparations and properties – comparison between aryl halide and aralkyl halide.	II BSc Che	12	Chalk and Talk	
SEP	II	**Stereochemistry:** a) Geometrical isomerism- Definition- Determination of configuration of geometrical isomers - geometrical isomerism of maleic and fumaric acids –aldoximes and ketoximes- E-Z notations. b)Optical isomerism: Optical activity - definition - condition for optical activity – optical isomerism of lactic and tartaric acids – relative and absolute configuration - R and S system - racemization –resolution of racemic mixture- determination of purity of the racemic mixture-Walden inversion - asymmetric synthesis. Optical activity of compounds without asymmetric carbon atoms: allenes, spiranes and biphenyl compounds.	II BSc Che	12	Chalk and Talk	

OCT	III	**HYDROGEN, GROUP I & II ELEMENTS:** a) Hydrogen:Position of hydrogen in the periodic table- Ortho and para hydrogen- Hydrides: Ionic or salt like hydrides- covalent hydrides, metallic or interstitial hydrides. b) Group I elements: Alkali metal - electronic structure – properties– carbonates-bicarbonates-nitrates-halides-Preparation, properties and uses of the following compounds: Sodium nitrite and Lithium aluminium hydride-Anomalous behavior of Lithium.c) Group II elements: Alkaline earth metals-electronic structure- similarities in physical and chemical properties and gradation in them- Anomalous behavior of Be- Diagonal relationship between Be and Al-Occurrence (Important minerals) of alkaline earth metals-Study of following compounds: Plaster of parisand Gypsum	II BSc Che	12	Chalk and Talk	
NOV	IV	**GROUP III & IV ELEMENTS:** a) General characteristics of group III elements - Reactions of elements with acids, alkalis and dioxygen. Compounds of boron- borates, borax and diborane and its structure-qualitative analysis of aluminium. b) General characteristics of group IV elements - Compounds of carbon-Carbides, water gas, producer gas and coal gas - Oxides of silicon-silicates, silicones and their applications.	II BSc Che	12	Chalk and Talk	
DEC	V	**GROUP V & VI ELEMENTS:** Group-V: Electronic structure and oxidation states- metallic and non-metallic character- difference between nitrogen and other elements- Group V elements: oxides, oxy acids of nitrogen and phosphorus-Sodium bismuthate and tartar emetic. Group-VI : Group discussion of VI group elements: Sulphur: preparation, properties and uses of persulphides, halides and thionyl chloride– structure – preparation, properties, uses and structure of H_2SO_4 and peracids – preparation, properties, structure and uses of chlorosulphonic acid.	II BSc Che	12	Chalk and Talk	

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LESSON PLAN
2022-2023

Class : **III BSc Chemistry**
Sem :**V**
Sub. Code :**17K52**
Title of the Paper : **Physical Chemistry-I**
Total Hours : **60hrs**

Month	Unit	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
AUG	I	**THERMODYNAMICS-I:** a) Importance of thermodynamics-concepts of a system, surroundings, energy-state variables-extensive intensive properties-different types of processes-isothermal, adiabatic, isobaric, isochoric, reversible, irreversible processes and cyclic. First law of thermodynamics-definition-mathematical expression-enthalpy and energy as thermodynamic properties - heat capacity at constant P and V-Relation between C_p and C_v-work done in reversible isothermal expansion and compression –maximum work - work done in irreversible isothermal expansion and adiabatic expansion. The Joule-Thomson effect, Joule Thomson coefficient for real and ideal gas. b) Zeroth law of thermodynamics and its significance.	III BSc Che	12	Chalk and Talk	
SEP	II	**UNIT : II THERMODYNAMICS-II:** a) Second law of thermodynamics:Need for second law-different ways of stating II law-Carnot cycle-Carnot's theorem-entropy as a thermodynamic property-Clausius inequality-calculation of entropy change of an ideal gas with change in P,V and T – Entropy changes of an ideal gas in different process – Physical significance of entropy – Work and free energy functions – Variation of free energy change with temperature & pressure – Maxwell's relationships – The Gibbs- Helmholtz equation– The Clapeyron- Clausis equation and its applications. Van't Hoff isotherm- Van't Hoff isochore.b) Third law of thermodynamics:Nernst heat theorem – Statement of Third law of Thermodynamics, determination of absolute entropy of solid, liquid and gas.	III BSc Che	12	Chalk and Talk	P. Bhuvaneswari

OCT	III	**PHASE RULE AND SOLUTIONS:** a) Statement and significance of the terms involved. Derivation of phase rule from thermodynamic derivation-application of phase rule to one-component system (water, sulphur system only). b) Two component systems-simple eutectic system (lead-silver system only)-compound formation-congruent melting point (Zn-Mg system only), salt hydrates ($FeCl_3$-H_2O system only).-incongruent melting point (KI-H_2O system only). c) Thermodynamics of ideal solutions-Henry's law, Raoult's law-binary liquid system-partially miscible (phenol-water system), completely miscible and completely immiscible system-theory of fractional distillation and steam distillation.	III BSc Che	12	Chalk and Talk	
NOV	IV	**COLLIGATIVE PROPERTIES:** Colligative properties –lowering of vapour pressure – osmosis and osmotic pressure –elevation of boiling point – depression in freezing point – experimental determination of lowering of vapour pressure and osmotic pressure – Van't Hoff factor – degree of association – degree of dissociation.	III BSc Che	12	Chalk and Talk	
DEC	V	**UNIT:V GROUP THEORY:** Introduction-symmetry elements and symmetry operations- rules of a group, order of a group - classes and similarity transformation- point group classification (C_1,C_2,C_3,C_{nv},D_{nh},T_d,O_h) – matrix representation of symmetry	III BSc Che	12	Chalk and Talk	P. Bhuvaneswari

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LESSON PLAN
2022-2022

Class : III BSc Chemistry
Sem :V
Sub. Code :17SEK51
Title of the Paper : Chemistry of Biomolecules
Total Hours : 30hrs

Month	Unit	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
AUG	I	**AMINO ACIDS AND PROTEINS:**a) Amino acids: Definition- classification- synthesis of α-amino acid (Gabriel synthesis, Koop synthesis)- properties of amino acids (isoelectric point, action of heat, peptide formation).b) Proteins: Definition- classification (simple and conjugated proteins)- structure of proteins (primary, secondary, tertiary and quaternary)- properties of proteins (colloidal nature, isoelectric point, denaturation, hydrolysis)- colour tests for proteins (biuret test, ninhydrin test).	III BSc Che	6	Chalk and Talk	
SEP	II	**NUCLEIC ACIDS:**Definition- nucleosides- nucleotides- function of nucleotides- nucleotide as energy carriers- types of nucleic acids- structure of DNA- replication of DNA- functions of DNA-structure and functions of RNA.	III BSc Che	6	Chalk and Talk	
OCT	III	a) Vitamins: Definition- classification- source- function and deficiency disease of vitamins A, B complex, C, D, E and K. b)Hormones: Definition- classification- main functions of following hormones- Adrenaline, Cortisone, Testosterone, Estrone, Insulin, pituitary hormones, and thyroxin. Differences between hormones and vitamins.	III BSc Che	6	Chalk and Talk	

NOV	IV	**ENZYMES:** Definition – classification- coenzyme-mechanism of enzyme action-factors influencing enzyme activity- enzyme inhibition (competitive inhibitor, non-competitive inhibitor and end product inhibition)- role of enzymes in the digestion of food.	III BSc Che	6	Chalk and Talk	
DEC	V	**OIL:** Introduction-classification-composition of oils - extraction and refining of oils-properties (saponification, hydrogenation, rancidity) - analysis of oils and (saponification value, acid value, iodine value, Reichert-Meissel value) - uses of oils. .	III BSc Che	6	Chalk and Talk	

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LESSON PLAN
2021-2022

Class : **II BSc N&D**
Sem :**III**
Sub. Code :**21AKN3**
Title of the Paper : **General Chemistry-i**
Total Hours : **60hrs**

Month	Unit	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
AUG	I	**Periodic Table:**Mendeleef's Periodic table -characteristics of Mendeleef's periodic table - merits and demerits - Modern periodic law -Periodic variations in properties –Atomic radius - Ionisation potential- metallic and non metallic characters	II BSc N&D	12	Chalk and Talk	
SEP	II	**Metallurgy:** Minerals and Ores – definition, examples, differences – various terms used in metallurgy: Flux, Gangue, Slag –Various steps involved in metal extraction: Grinding , pulverising , ore dressing, calcinations , roasting , smelting –Refining Methods: Van Arkel method, zone refining – Platinum: Extraction- Various forms of Platinum - preparation and uses.	II BSc N&D	12	Chalk and Talk	
OCT	III	**Dyes:** Definition- theory of colour and constitution-chromophore – auxochrome theory - classification: Based on chemical structure, based on their mode of application – preparation and uses: Methyl orange ,bismark brown, malachite green.	II BSc N&D	12	Chalk and Talk	
NOV	IV	**Catalysis And Photo Chemistry** **Catalysis:** Definition, Types of catalysts : Positive catalyst, negative catalyst, auto catalyst-examples–types of catalysis: Homogenous-acid-base catalysis, heterogenous catalysis – promoter -catalytic poison.	II BSc N&D	12	Chalk and Talk	

		Photo Chemistry: Definition, comparison of thermal and photo chemical reaction – laws of photo chemistry – Grotthus - draper law and Einstein's law - quantum efficiency (problems are not expected).				
DEC	**V**	**V Colloids:** Definition - size of colloidal particles – classification- differences between lyophilic sols and lyophobic sols - preparation of sols-dispersion Method :Bredig's arc method, peptization –properties: Optical property-tyndall effect , kinectic property-brownian movement ,electrical property-electrical double layer-application of colloids - colloidal medicines, sewage disposal, purification of water, artificial rain.	II BSc N&D	12	Chalk and Talk	

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LESSON PLAN
2022-2023

Class : III BSc Chemistry
Sem :V
Sub. Code :17K51
Title of the Paper : Organic chemistry
Total Hours : 60hrs

Month	Unit	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
AUG	I	**AROMATIC SUBSTITUTION**: Isomerism and orientation of benzene derivatives-determination of orientation-rules of orientation-electronic interpretation of directive effects mechanism of aromatic electrophilic substitution – halogenation, nitration and sulphonation, Friedel –Craft's reaction(alkylation, acylation) -influence of substituents – activating and deactivating groups-aromatic nucleophilic substitution–unimolecular, bimolecular substitution and benzyne mechanism.	III BSc Che	12	Chalk and Talk	P. Bhuvaneswari
SEP	II	**AROMATIC ALDEHYDES , KETONES AND CARBOXYLIC ACIDS:** a) Preparation and properties of benzaldehyde, and acetophenone-Organic naming reactions: Reimer-Tiemann reaction, benzoin condensation, claisen condensation, knoevenagel reaction, cannizzaro reaction, crossed cannizzaro reaction, claisen-Schmidt reaction, perkin reaction -α, β - Unsaturated carbonyl compounds: Preparation and properties of crotonaldehyde and cinnamaldehyde.b) Carboxylic acids: Preparation and properties of benzoic, malonic, succinic and o-phthalic acids.	III BSc Che	12	Chalk and Talk	P. Bhuvaneswari
OCT	III	**ORGANIC NITROGEN COMPOUNDS :** a)Aromatic amines: Inroduction- classification-methods of preparation of primary amines- reduction of nitro compounds and ammonolysis of aryl halides -methods of preparation of secondary and tertiary amines from aniline, acetanilide-properties: basicity of amines, salt formation, acylation,	III BSc Che	12	Chalk and Talk	

		alkylation and arylation, carbylamine reaction, reaction with aldehyde, CS_2, Grignard reagent, bromination, nitration and sulphonation. b) Aromatic nitro compounds: Preparation, properties of nitrobenzene,conversion of nitrobenzene to ortho, meta, para-dinitrobenzene and its properties. c) Cyanides & Isocyanides:Preparation ,properties of alkyl cyanides & alkyl isocyanides. Differences between alkyl cyanides & alkyl isocyanides.				
NOV	IV	**HETEROCYCLIC COMPOUNDS:** Preparation, and properties of pyrrole, furan, thiophene ,pyridine ,indole, quinoline and isoquinoline.	III BSc Che	12	Chalk and Talk	
DEC	V	**UNIT: V CARBOHYDRATES:** Definition and classification-detailed study of monosaccharides-glucose and fructose-mutarotation-epimerisation-structure and configuration of glucose and fructose-comparison between glucose and fructose-methods of ascending and descending in the sugar series-interconversion between glucose and fructose-disaccharides-sucrose-preparation, properties and structural elucidation.	III BSc Che	12	Chalk and Talk	

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LESSON PLAN
2022-2023

Class : II BSc Che
Sem : V
Sub. Code :17KE5A
Title of the Paper :Inorganic and Analytical Chemistry
Total Hours : 60hrs

Month	Unit	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
AUG	I	**HALOGEN COMPOUNDS** a) Halogen compounds: Electronic configuration, diatomic nature, oxidizing property, electronegativity and electron affinity –Difficulties in the discovery and isolation of fluorine – peculiarities of fluorine – electropositive character of Iodine b) Interhalogen Compounds: Interhalogen compounds: preparation, properties of ClF, ICl, ClF_3, BrF_3, ICl_3, ClF_5, BrF_5 ,IF_5, IF_7 – structure of ICl, ClF_3, IF_5, IF_7- poly halides and pseudo halogens.	III BSc CHE	12	Chalk and Talk	
SEP	II	**TRANSITION ELEMENTS:** a) Transition elements –position in the periodic table –general characteristics of d-block elements. b) Occurrence, extraction, properties and uses of titanium, vanadium, molybdenum and tungsten. c) Chemistry of titanium dioxide,titanium tetrachloride ,vanadium pentoxide-ammonium vanadate,ammonium molybdate,molybdenum blue,tungsten oxide,tungsten bronze,zirconium halide.	III BSc CHE	12	Chalk and Talk	
OCT	III	**LANTHANIDES AND ACTINIDES:**Position of lanthanides ,actinides in the periodic table –general characteristics of lanthanides and actinides – lanthanide contraction-actinide contraction.occurence and general methods of extraction of lanthanides by reducing the trihalides ,ion exchange and valence exchange methods.Isolation of thorium from monazite –preparation ,properties and uses of oxides ,sulphates and halides of lanthanum and uranium .Applications of lanthanides and actinides.	III BSc CHE	12	Chalk and Talk	

NOV	IV	**NON-AQUEOUS SOLVENTS& INORGANIC POLYMERS** a)Non-aqeous solvents:Classification of solvents-general properties of ionizing solvents-chemical reactions-liquid ammonia as solvents-liquid sulphur dioxide as solvents-liquid hydrogen fluoride as solvents. b) Inorganic polymers: Introduction-general properties of inorganic polymers - silicon based polymers-polysilaxane gums and silicon rubber.	III BSc CHE	12	Chalk and Talk	
DEC	V	**DATA ANALYSIS ANDTHERMOANALYTICAL METHODS:** a)Data analysis:Introduction-mean – median-precision-accuracy-confidence limits- definition – determinate errors- indeterminate errors-rules for types improving accuracy of data-significant figure-method of least squares.b)Thermoanalytical methods:Introduction-Thermogravimetric analysis (TGA) –principle –thermal analysis of silver nitrate-derivative thermogravimetry(DGA)-factors which influence the thermogram-application of thermogravimetry	III BSc CHE	12	Chalk and Talk	

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LESSON PLAN
2022-2023

Class : Ii BSc Physics
Sem : III
Sub. Code :21AKP3
Title of the Paper : Physical Chemistry
Total Hours : 60hrs

Month	Unit	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
AUG	I	**GASEOUS STATE:** a) Ideal gases: Kinetic theory of ideal gases - gas laws - ideal gas equation -Definition of most probable velocity - Mean velocity - RMS velocity - Collision diameter -collision cross section - collision frequency -Mean free path.b) Real gases: Deviation from ideal behaviour - Derivation of Vander waal's equation - Methods of liquefaction of gases - Joule Thomson effect - Inversion temperature.	II BSc Phy	12	Chalk and Talk	
SEP	II	**STRUCTURE OF SOLIDS:** Introduction to solids – Crystalline and amorphous. Unit cell, Bravais lattices and X-ray structure determination (NaCl and KCl only) – powder and single crystal methods. Radius ratio rules – coordination number. Packing arrangement – different structure types in solids – rock salts, zinc blende, wurtzite, spinel and invers spinel and perovskite structures.	II BSc Phy	12	Chalk and Talk	
OCT	III	**PHASE RULE** i) Statement and significance of the terms involved. Derivation of phase rule from thermodynamic derivation-application of phase rule to one-component system (water, sulphur system only).	II BSc Phy	12	Chalk and Talk	
NOV	IV	ii) Two component systems-simple eutectic system (lead-silver, magnesium –zinc system only)	II BSc Phy	12	Chalk and Talk	

NOV-DEC	V	**CHEMICAL KINETICS:** Chemical kinetics:Rate of the reaction- rate law- rate constant- order and molecularityof reaction- differences between order and molecularity- derivation of rate constant and half life period for first order-examples for second order, third order reaction. Effect of temperature on reaction rate (Arrhenius theory of reaction rate)	II BSc Phy	12	Chalk and Talk	

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LESSON PLAN
2022-2023

Class : III BSc N&D
Sem : V
Sub. Code :17AKN5
Title of the Paper : Applied Chemistry
Total Hours : 60hrs

Month	Unit	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
AUG	I	**WATER TREATMENT:** Chemical and Physical Analysis of water quality parameters – Standard prescribed for water quality by WHO and other Indian Standards – Sea Water as a source of drinking water – Electro dialysis method and Reverse osmosis method for purification of water.	III BSc N&D	12	Chalk and Talk	
SEP	II	**POLYMER CHEMISTRY:** a) Rubber: Natural and Synthetic rubbers – Composition of natural rubber, Neoprene, Styrene – Butadiene rubber (SBR).b) Polymer chemistry: Addition and Condensation polymerization –Copolymer – Homopolymer – Definition of natural and synthetic fibres – natural and synthetic resins – Bakelite and Nylon-66.	III BSc N&D	12	Chalk and Talk	
OCT	III	**INDUSTRIAL CHEMISTRY-I:** a)Match Industry : Pyrotechnics and explosives – Raw material needed for match industry – Manufacturing process – pyrotechniques – Colored smokes. b)Silicate Industry: Cement and Glass, Raw materials and manufacture of cement and Glass.	III BSc N&D	12	Chalk and Talk	

NOV	IV	**INDUSTRIAL CHEMISTRY-II:** a) Petrochemicals : Elementary study –Definition-Origin-Composition-Chemicals from natural gas, Petroleum, Light Naphtha and Kerosene. b) Paints and Iacquers: Pigments-Paints-Ingredients in Paints-Manufacture-Lacquers-Varnishes.	III BSc N&D	12	Chalk and Talk	
DEC	V	**AGRICULTURAL CHEMISTRY**: Fertilizers: Definition-nutrients for plants-role of various elements in plants Growth-natural and chemical fertilizers-classification of chemical fertilizers-Urea and potassium nitrate-Mixed fertilizer.	III BSc N&D	12	Chalk and Talk	

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LESSON PLAN
2022-2023

Class : **III BSc Phy**
Sem : **V**
Sub. Code : **17AKP5**
Title of the Paper : **Inorganic, Physical and Medicinal Chemistry**
Total Hours : **60hrs**

Month	Unit	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
AUG	I	**Periodic Table & Periodic Properties: a)** Long form of periodic table-classification of elements in to s, p, d and f blocks. B) Atomic radii, ionicradii, ionization potential, electron affinity, electronegativity and their periodic variation-interpretation of these variations based upon their electronic configuration.	III BSc Phy	12	Chalk and Talk	V.gas
SEP	II	Chemical Bonding: Covalent bond-Ionic bond- difference between covalent and ionic bonds-Fajan's rule-coordinate covalent bond-VSEPR theory-VBT-molecules with regular geometry-hybridization-sp (BeCl2), sp2 (BF3) and sp3 (CH4). MOT: Bonding and antibonding molecular orbitals. MO diagram or molecules like H2, He2, O2, N2, CO. Comparison between VBT and MOT.	III BSc Phy	12	Chalk and Talk	V.gas
OCT	III	Cooloidal State: Introduction-Phases of colloids-classification of colloidal solutions-preparation, purification properties-optical property-Tyndal effect, kinetic property-Brownian movement: Electrical properties-electrical double layer and electrophoresis. Applications of colloids: colloidal medicine, smoke precipitation, artificial kidney machine, sewage disposal,	III BSc Phy	12	Chalk and Talk	

		purification of water, artificial rain.				
NOV	IV	Petroleum and Petrochemicals: a)Petroleum: Introduction-Occurrence-sources of petroleum in india-composition of petroleum- origin of petroleum-carbide theory-refining of petroleum-cracking-knocking and antiknocking-octane number fash point-synthetic petrol-Fischer Tropsch process. B)Petrochemicals: Definition-different types of petrochemicals.	III BSc Phy	12	Chalk and Talk	
DEC	V	Medicinal Chemistry: Chemotheraphy: Introduction-a)Aneathetics: Definition – Classification with examples. B) Analgesics: Definition-classification with examples. C)Antibiotics: Definition-uses of penicillin, streptomycin, tetracycline and chlorompinacol .d) Antimalarial Drugs:Definition-mode of action-examples	III BSc Phy	12	Chalk and Talk	

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