SRI ADICHUNCHANAGIRI FIRST GRADE COLLEGE
CHANNARAYAPATNA
DEPARTMENT OF CHEMISTRY

LESSON PLAN FOR THE ACADEMIC YEAR 2023-24
SECOND SEMESTER

Name of the Faculty : **Dr. B. N. Chandrashekar**
Title of the Paper : CHEMISTRY – II
Subject code : CHEDSC201
Lesson Plan Duration : 14 weeks
Total teaching period : 14 HourS
Workload per week : 01 Hour Theory and 04 HourS Practical

Week	Theory
1	Titrimetric analysis: Basic principle of titrimetric analysis. Classification, Preparation and dilution of reagents/solutions
2	Normality, Molarity and Mole fraction. Use of $N_1V_1 = N_2V_2$ formula, Preparation of ppm level solutions from source materials (salts)
3	Conversion factors. Acid-base titrimetry: Titration curves for strong acid vs strong base, weak acid vs strong base and weak base vs strong acid titrations.
4	Titration curves, Quantitative applications – Selecting and standardizing a titrant, inorganic analysis - alkalinity, acidity
5	Complexometric titrimetry: Indicators for EDTA titrations - theory of metal ion indicators,
6	Titration methods employing EDTA - direct, back, displacement and indirect determinations
7	Application determination of hardness of water
8	Redox titrimetry: Balancing redox equations, calculation of the equilibrium constant of redox reactions
9	Titration curves, Theory of redox indicators, calculation of standard potentials using Nernst equation. Applications.
10	Precipitation titrimetry: Titration curves, titrants and standards, indicators for precipitation titrations involving silver nitrate
11	Volhard's and Mohr's methods and their differences.
12	Gravimetric Analysis: Requisites of precipitation, mechanism of precipitation, Factors influencing precipitation,

13	Co-precipitation, post-precipitation, Advantages of organic reagents over inorganic reagents
14	Reagents used in gravimetry (8-hydroxy quinoline (oxine), Dimethylglyoxime (DMG).
15	Unit test

Practical	
Practical Day	**Topic**
1	Determination of density using specific gravity bottle and viscosity of liquids using Ostwald's viscometer (Ethyl acetate, Toluene, Chloroform, Chlorobenzene or any other nonhazardous liquids)
2	Determination of the density using specific gravity bottle and surface tension of liquids using Stalagmometer (Ethyl acetate, Toluene, Chlorobenzene, any other non-hazardous liquids.
3	Demonstration-Determination of the composition of liquid mixture by refractometry. (Toluene & Alcohol, Water & Sucrose)
4	Determination of partition/distribution coefficient - i) Acetic acid in water and cyclohexane. ii) Acetic acid in Water and Butanol. iii) Benzoic acid in water and toluene.
5	Determination of rate constant of decomposition of H_2O_2 catalyzed by $FeCl_3$
6	Determination of percentage composition of NaCl solution by determining miscibility temperature of phenol-water system.
7	Revision
8	Practical Test - 2
9	Determination of alkali present in soaps/detergents using standard HCl
10	Determination of iron(II) using potassium dichromate
11	Determination of iron(II) using potassium dichromate
12	Determination of hardness of water Standardized EDTA solution
13	Determination of alkali content in antacids using standard HCl solution.
14	Determination of chlorine in bleaching powder by iodometry (standard solution to be given)
15	Practical Test - 2

Name of the Faculty : **Dr.N.Shankaresh**
Title of the Paper : Inorganic Chemistry
Workload per week : 02 Hours Theory + 04 Hours Practicals

Week	Theory	
	Lecture Day	**Topic including Assignment/Test**
1	1	s, p, d and f-block elements, the long form of periodic table
	2	Liquid Crystals Explanation, Classification with examples-Smetic, nematic, cholesteric, disc shaped and polymeric
2	3	Detailed discussion of the following properties of the elements, with reference to s and p-block elements
	4	Structures of nematic and cholesteric phases-molecular arrangements in nematic and cholesteric liquid crystals.
3	5	(a) Atomic radii (vander Waals)
	6	Applications of liquid crystals in LCDs and thermal sensing
4	7	(b) Ionic and crystal radii
	8	Solids Forms of solids: Unit cell and space lattice, anisotropy of crystals, size and shape of crystals
5	9	(c) Covalent radii
	10	Laws of Crystallography: Law of constancy of interfacial angles, Law of rational indices, Law of symmetry (Symmetry elements)
6	11	(d) Ionization enthalpy
	12	Crystal systems, Bravais lattice types and identification of lattice planes.
7	13	successive ionization enthalpies and factors affecting ionization energy.
	14	Miller indices and its calculation,
8	15	Applications of ionization enthalpy
	16	X–Ray diffraction by crystals: Bragg's law and derivation of Bragg's equation
9	17	(e) Electron gain enthalpy, trends of electron gain enthalpy
	18	Single crystal and powder diffraction methods.
10	19	(f) Electronegativity, Pauling's/ Mulliken's/ Allred Rachow's/ and Mulliken-Jaffé's
	20	Defects in crystals, glasses and liquid crystals. Numerical problems
11	21	Electronegativity scales.
	22	Distribution Law Nernst Distribution Law - Statement and its derivation.Distribution constant, factors affecting distribution constant,

12	23	Variation of electronegativity with bond order,
	24	validity of Distribution Law, Modification of distribution law when molecules undergo a) Association
13	25	Partial charge, hybridization, group electronegativity
	26	b) Dissociation. Application of Distribution Law in Solvent extraction. Derivation for simple and multiple extraction
14	27	Trends in the chemistry of the compounds of groups 13 to 17 (hydrides, carbides, oxides and halides) are to be discussed
	28	Principles of distribution law in Parkes Process of desilverisation of lead. Numerical Problems
15	29	Revision of syllabus.
	30	Revision of syllabus.

Name of the Faculty : Nagendra C S
Title of the Paper : Inorganic Chemistry
Workload per week : 01 Hour Theory

Week	Theory
1	Nucleophilic substitution at saturated carbon
2	Mechanism of SN_1 and SN_2 reactions with suitable examples.
3	Energy profile diagrams,
4	Stereochemistry
5	Factors affecting SN_1 and SN_2 reactions
6	Aromatic Electrophilic substitution reactionsMechanisms
7	σ and π complexes, Halogenation,
8	Nitration, Sulphonation
9	Friedel Crafts alkylation
10	Acylation with their mechanism
11	Activating and deactivating groups
12	Orientation influence
13	Ortho-para ratio
14	Aromatic nucleophilic substitution reaction
15	SNAr and Benzyne mechanism with suitable examples

SRI ADICHUNCHANAGIRI FIRST GRADE COLLEGE
CHANNARAYAPATNA
DEPARTMENT OF CHEMISTRY

LESSON PLAN FOR THE ACADEMIC YEAR 2023-24
FOURTH SEMESTER

Name of the Faculty : **Dr. B.N. Chandrashekar**
Title of the Paper : CHEMISTRY – IV (Analytical Chemistry)
Subject code : CHEDSC401
Lesson Plan Duration : 14 weeks
Total Teaching Period : 14 Hours
Workload per week : 1 Hour Theory + 04 Hours Practical

Week	Theory
1	Quantitative analysis-Instrumental methods: Electromagnetic spectrum.
2	Absorption of electromagnetic radiation,
3	Definition and units of frequency, wavelength, wave number Beer's law, Beer-Lambert law derivation
4	Definition and units of frequency, wavelength, wave number Beer's law, Beer-Lambert law derivation
5	Deviations from Beer's law, limitations
6	Construction of calibration graph (Plot of absorbance versus concentration)
7	Evaluation, Procedures- standard addition
8	Internal standard addition,validation parameters-detection limits, sensitivity, dynamic/linearity range
9	Instrumentation, single beam and double beam spectrophotometers,
10	Quantitative applications of colorimetry (determination of Fe, Mo, Cu, Ti and PO43-) and numerical problems on application of Beer's law.
11	Nephelometry and Turbidimetry: Introduction, principle
12	Instrumentations of nephelometry and turbidimetry
13	Effects of concentration, particle size and wavelength on scattering;
14	Choice between Nephelometry, applications of Nephelometry & Turbidimetry (determination of $S0_4^{2-}$ and PO_4^{3-}).
15	Revision of syllabus.

Week	Practical Topic
1	Qualitative analysis of mono Organic compounds: Urea
2	Qualitative analysis of mono and bifunctional Organic compounds: Benzoic acid
3	Qualitative analysis of mono Organic compounds: Salycilic acid,aniline
4	Qualitative analysis of bifunctional Organic compounds Salicylaldehyde
5	Qualitative analysis of mono organic compounds: acetanilide
6	Demonstration: Qualitative analysis of bifunctional Organic compounds Dichlorobenzene
Practical Test: Part - 1	
7	Qualitative analysis bifunctional Organic compounds : p-Nitro toluene
9	Qualitative analysis bifunctional Organic compounds : o-Cresol
10	Colorimetric determination of (i) copper using ammonia solution. (ii) Iron using thiocyanate solution.
11	Colorimetric determination of nickel using DMG solution.
Practical Test: Part - 2	
12	Repetition of experiments
13	Repetition of experiments
14	Repetition of experiments

Name of the Faculty : **Dr.N.Shankaresh**
Title of the Paper : Inorganic Chemistry and Physical Chemistry
Workload per week : 02 Hours Theory + 04 Hours Practical

Week	Theory	
	Lecture Day	**Topic including Assignment/Test**
1	1	Structure and Bonding -II: Concept of resonance, resonance energy
	2	First Law of Thermodynamics: Introduction, system, surroundings, types of systems. Thermodynamic Processes (isothermal, adiabatic, isochoric, isobaric and cyclic),
2	3	Hybridization, types of hybridization, sp, sp2, sp3, dsp2, dsp3, d2sp3, sp3d2 with one example each
	4	Nature of Heat and Work, Internal Energy, First Law of thermodynamics, Enthalpy of a System
3	5	Energetics of hybridization. Bent's rule, Limitations of Valence Bond Theory. Molecular Orbital theory: LCAO concept: s-s, s-p, p-p, p-d and d-d combinations of orbitals, bonding

	6	Work done in isothermal and adiabatic expansion of an ideal gas, Numerical problems
4	7	Nonbonding and antibonding molecular orbitals
	8	Joule -Thomson Expansion, Relation between Joule-Thomson coefficient and other thermodynamic parameters.
5	9	Non-bonding combinations of orbitals, Rules for linear combination of atomic orbitals
	10	Second law of Thermodynamics: Limitations of first law of thermodynamics. Reversible and Irreversible Processes,
6	11	Examples of molecular orbital treatment for homonuclear diatomic molecules: H2, molecule, H2+ molecule ion,
	12	Concept of entropy, thermodynamic scale of temperature,Statements of the Second Law of Thermodynamics,
7	13	He_2 molecule, He^{2+} molecule ion, Li_2 molecule, Be_2 molecule, B_2 molecule, C_2 molecule, N_2 molecule, N^{2+} molecule ion, O_2 molecule, O^{2-} and O_2^{2-} molecule ions.
	14	Molecular and statistical interpretation of entropy, Calculation of entropy change for reversible and irreversible processes
8	15	M.O. Energy diagrams of heteronuclear diatomic molecules with examples (NO, NO^+, CO and HCl)
	16	Free Energy Functions: Gibbs and Helmholtz energy
9	17	Calculation of bond order, relationship between bond order, bond energy
	18	Variation of S, G, A with T, V and P, Numerical problems, Free energy change and spontaneity, Gibbs-Helmholtz equation.
10	19	Bond length, magnetic properties based on MOT.
	20	Third Law of Thermodynamics: Statement of third law, concept of residual entropy,calculation of absolute entropy of molecules.
11	21	Metallic Bonding: General properties of metals-conductivity, luster, malleability and cohesive force.
	22	Surface Chemistry Adsorption: Introduction, types of adsorptions with examples. Types of adsorption isotherms. Freundlich adsorption isotherm (only equation),
12	23	Crystal structures of metals and Bond lengths.Theories of bonding in metals:
	24	Limitations. Langmuir adsorption isotherm (derivation to be done) and BET equation (derivation not included).

13	25	Free electron theory, valence bond theory, molecular orbital or band theory of solids. Prediction of conducting properties of conductors,
	26	Catalysis: Types of Catalysis positive, negative, auto and induced), characteristics of catalysis, and theories with examples (intermediate compound theory and adsorption theory), Theory of acid base catalysis, Michaelis-Menten mechanism.
14	27	Insulators and semiconductors, extrinsic and intrinsic semiconductors using M.O. theory.
	28	Heterogeneous catalysis: surface reactions, unimolecular, bimolecular surface reactions. Autocatalysis with examples. Applications: Design process to removal of toxic compounds from industrial wastewater and treatment of portable water requirements.
15	29	Revision of syllabus.
	30	Revision of syllabus.

Name of the Faculty : Nagendra C S
Title of the Paper : CHEMISTRY –IV (Organic Chemistry)
Workload per week : 01 Hour Theory

Week	Theory
1	Structure and Stereochemistry of Organic Compounds: Concept of isomerism, types of isomerism. Projection formulae of chiral molecules-Fischer (glyceric acid),
2	Newman (2,3-dibromobutane), Sawhorse (2,3-dibromobutane) and Fly-wedge (glyceric acid) projection formulae. Interconversion of projection formulae:
3	Conversion of; Fisher into Sawhorse projection (tartaric acid), Sawhorse intoFisher projection (2,3-dibromobutane), Sawhorse to Newman to Fisher projection (3-amino-3-bromo-2-chlorobutan-2-ol),
4	Fisher to Newman to Sawhorse (3-chloro-2,4-dihydroxybutanal), Fisher into Fly-wedge formula and vice- versa (2-bromo propanoic acid),
5	Geometrical isomerism: Cause of geometrical isomerism. Cis-trans isomerism(cinnamic acid, but-2-enedioic acid) and syn-anti isomerism (benzaldoxime, ethyl methylketoxime),
6	E/Z notations with examples following C.I.P rules.
7	Optical Isomerism: Optical activity, conditions for optical activity-Elements of symmetry (plane, center, C2-axis, rotation-reflection with examples).
8	Specific rotation, Chirality/Asymmetry, Enantiomers-definition with examples,

9	Properties, Molecules with two or more chiral centers,
10	Diastereoisomers - definition with examples (threo and erythoisomers),
11	Properties. Meso compounds- definition with examples.
12	Optical isomerism in tartaric acid, biphenyls.
13	Asymmetric synthesis, Walden inversion. Racemic modification- Definition with examples.
14	Resolution-definition with examples, chemical and biochemical methods of resolution, Relative and absolute configuration, D/L convention,limitations, and R/S designations-CIP rules with examples.
15	Revision of syllabus

SRI ADICHUNCHANAGIRI FIRST GRADE COLLEGE
CHANNARAYAPATNA
DEPARTMENT OF CHEMISTRY

LESSON PLAN FOR THE ACADEMIC YEAR 2023-24
SIXTH SEMESTER - PAPER -7

Name of the Faculty : **Dr. B.N. Chandrashekar**
Title of the Paper : Chemistry-VII (Spectroscopy and Physical Chemistry)
Subject code : CHEDSC601
Lesson Plan Duration : 15 weeks
Total teaching period : 15 Hours + 15 Hours = 30 Hour
Workload Per Week : 02 Hours Theory and 04 Hours Practical

Week	Theory	
	Lecture Day	**Topic including Assignment/Test**
1	1	Ionic equilibria: Ionic equilibria in aqueous solutions, strong and weak electrolytes definition and examples
	2	Introduction, principle, modes of vibrations,
2	3	Ostwald's dilution law (to be derived) and its limitations. DebyeHuckel theory of strong electrolytes
	4	Vibrational frequency. Factors influencing vibration frequencies
3	5	Relaxation time, electrophoretic effect and viscous effect). Activity and activity coefficient–definition and their relation.
	6	Coupled vibration, electronic effects, and bond angles). Fingerprint region and its significance.
4	7	Hydrolysis of saltsDerivation of hydrolysis constant and degree of hydrolysis of the salt of weak acid and weak base (ammonium acetate as an example)
	8	Effects of H-bonding, conjugation, resonance, and ring size on IR absorptions.
5	9	Effect of temperature on degree of hydrolysis. (Numerical problems)
	10	IR absorption frequency positions in Hydrocarbons (alkanes)

6	11	Electrochemistry-II: Electrolytic and Electrochemical cells (galvanic cells)-Daniel cell (construction, working and cell reaction).
	12	IR absorption frequency positions inHydrocarbons (alkenes, alkynes, cycloalkanes, aromatic),
7	13	Reversible and irreversible cells, rules for representation of a cell, single electrode potential, Standard electrode potential
	14	halogen compounds, alcohols and phenols
8	15	Sign convention for electrode potential, Nernst equation for single electrode potential (Derivation)
	16	Ethers, aldehydes and ketones (aliphatic, alicyclic,& aromatic)
9	17	Reference electrodes: Calomel electrode, Ag-AgCl electrode. Weston standard cell Page | 8 (Construction, working, reaction and standard emf).
	18	Esters and lactones, carboxylic acids, acid halides, acid anhydrides, amides, lactams, amines, amino acids, nitro compounds, anilides
10	19	Equilibrium constant and free energy of a cell reaction, Concentration cell with transport (example) concentration cell without transport, EMF of concentration cell (derivation)
	20	Nitriles, thiols, thiophenols, sulphonic acids, sulphonamides, and hetero aromatic compounds.
11	21	Liquid junction potential. Salt bridge. Application of concentration cell: Valency of ions and solubility product of sparingly soluble salt.
	22	Coordination compounds: Changes in infrared spectra of donor molecules upon coordination
12	23	Applications of EMF measurements
	24	N,N-dimethylacetamide, urea
13	25	(a) Determination of pH of a solution using - (i) quinhydrone electrode,
	26	DMSO, pyridine N-oxide, ammine, cyano, cyanato and thiocyanato complexes
14	27	(ii) Glass electrode. (b) Potentiometric titration-principle and location of end point in
	28	mono and multinuclear carbonyl complexes
15	29	(i) Oxidation - reduction reaction, (ii) Precipitation reaction, iii) acid-base reaction
	30	nitrosyls, and phosphine complexes
16	31	Revision of syllabus.
	32	Revision of syllabus.

Practical	
Week	**Topic**
1	Gravimetric determination of Fe in iron ore as Fe_2O_3
2	Gravimetric estimation of calcium as calcium oxide.
3	Gravimetric estimation of aluminum as aluminum oxide
4	Gravimetric estimation of magnesium as magnesium 8-hydroxy oxinate.
5	Gravimetric estimation of lead as lead chromate Volumetric estimation of Ca and Mg in dolomite solution
6	Gravimetric determination of Ni using DMG in Cu and Ni solution Volumetric estimation of Fe in Cu and Fe solution.
7	Practical Test: Part - 1
8	Gravimetric determination of Fe using NH_4OH in Fe and Cr solution. Volumetric estimation of Zn in Cu and Zn solution
9	Gravimetric estimation of Cu using NH_4SCN in Cu and Zn solution Volumetric estimation of Ni in Ni and Zn solution
10	Preparation of hexammine nickel(III) chloride
11	Preparation of chloropentaminecobalt(III)chloride.
12	Preparation of tris(oxalato)ferrate(III) and estimate the iron.
13	Preparation of hexamminecobalt(III)chloride(demonstration). Preparation of mercury tetrathiocyantocobaltate(II) (demonstration).
14	Practical Test: Part - 2
15	Repetition of experiments.

Name of the Faculty : **Mr.C. S. Nagendra**
Title of the Paper : Organic Chemistry
Workload Per Week : 01 Hour Theory

Week	Theory
1	Aromatic Electrophilic Substitution Reactions: Quantitative treatment of reactivity in substrates and electrophiles
2	Amination, sulfonylation, diazonium coupling, Vilsmeier-Haack reaction
3	Gatterman reaction, Gatterman-Koch reaction and Hoesch reaction
4	Aromatic Nucleophilic substitution reactions
5	The Goldberg reaction,
6	Bucherer reaction, Schiemann reaction,
7	von Richter reaction, and Sommelet-Hauser reactions

8	AdditionReactions: Addition reactions of cyclopropane ring
9	Addition reactions of carbonheteroatom multiple bonds
10	Mechanism of metal hydride reduction (NaH, LiH, LiAlH4, NaBH4),
11	Grignard reagent (CH3MgBr) and organolithium (CH3Li) saturated and unsaturated carbonyl compounds
12	Hydrolysis of nitriles with mechanism. Wittig, Mannich and Stobbe reactions.
13	Elimination Reactions: Effects of substrate structure
14	Attacking base, the leaving group
15	The medium on elimination reactions. Chugaev reaction.

Name of the Faculty : Dr. N. Shankaresh
Title of the Paper : Inorganic Chemistry
Workload Per Week : 01 Hour Theory

Week	**Theory**
1	Metal-ligand bonding: Valence bond theory: Salient features, formation and magnetic properties of octahedral complexes
2	$[Fe(CN)_6]^{4-}$, $[Fe(CN_6)]^{3-}$, $[Co(CN)_6]^{3-}$, $[CoF_6]^{3-}$ $[Cr(H_2O)_6]^{3+}$ and $[Fe(H_2O)_6]^{2+}$.
3	Formation and magnetic properties of tetrahedral & square planar complexes
4	$[Ni(CO)_4]$, $[Cu(NH_3)_4]^{2+}$ $[Ni(CN)_4]^{2-}$ and $[Pt(Cl_4)]^{2-}$, limitations of VBT
5	Crystal field theory: Salient features, splitting of d-orbitals in octahedral, tetrahedral, and square planar geometry
6	Applications - colors of transition metal complexes, magnetic properties of octahedral complex, CFSE and their uses
7	Factors affecting CFSE: Geometry of complexes
8	Nature of the central metal ion, nature of ligand
9	Spectrochemical series. Limitations of CFT.
10	Experimental evidence for metal-ligand covalent bonding in complexes
11	Nephelauxetic effect.
12	MO theory:tetrahedral and octahedral complexes (including p-bonding
13	Magnetic properties of coordination compounds: Introduction
14	Magnetic susceptibility and its determination- Gouy and Faraday method
15	The effects of temperature on μeff, ferromagnetism, anti-ferromagnetism and ferrimagnetism.

SRI ADICHUNCHANAGIRI FIRST GRADE COLLEGE
CHANNARAYAPATNA
DEPARTMENT OF CHEMISTRY

LESSON PLAN FOR THE ACADEMIC YEAR 2023-24
SIXTH SEMESTER - PAPER -8

Name of the Faculty : **Dr. B.N. Chandrashekar**
Title of the Paper : Chemistry-VII (Physical Chemistry and Nuclear Magnetic Resonance Spectroscopy)
Subject code : CHEDSC602
Lesson Plan Duration : 15 weeks
Total teaching period : 15 Hours +15 Hours = 30 Hours
Workload Per Week : 02 Hours Theory + 04 Hours Practical

Week	Theory	
	Lecture Day	**Topic including Assignment/Test**
1	1	Chemical Dynamics: Arrhenius equation-characteristics, Significance of energy of activation,
	2	^{1}H NMR spectroscopy: Introduction (including magnetic properties of nuclei, spin population),
2	3	Temperature coefficient and its evaluation. Thermodynamical formulation of reaction rates (Thermodynamic parameters).
	4	relaxation process (spin-spin, spin-lattice, quadrupole
3	5	Reaction between ions in solutions - Influence of ionic strength on reaction rates
	6	number of signals. Instrumentation, chemical shifts, internal standards, shielding and deshielding effects.
4	7	Primary and secondary salt effects, Effect of dielectric constant (single sphere model).
	8	Factors affecting chemical shift (inductive, Van der Waals, anisotropic, H-bonding). Solvents used. Peak area and proton counting, splitting of the signals,
5	9	Complex reactions: Kinetics of parallel reactions, consecutive reaction
	10	Spin-spin coupling, equivalent and non-equivalent protons
6	11	Reversible reactions (qualitative treatment).

	12	Chemical exchange (proton exchange reactions). Calculation of atoms ratio from the height of signals
7	13	Kinetics of homogeneous catalysis- kinetics of acid-base catalyzed reactions-specific acid and specific base catalysis
	14	coupling constant (geminal, vicinal, long-range coupling). Restricted rotation. Double resonance (spin decoupling), nuclear overhauser effect.
8	15	general acid base catalysis. Enzyme catalyzed reactions, Mechanism (Lock and Key theory),
	16	Structure determinations/interpretation of spectra of; ethane, propane
9	17	Kinetics of enzyme catalyzed reactions - HenriMichaelis-Menten mechanism,
	18	1-bromopropane, 2- bromopropane, ethylene, propene, acetylene, propionamide
10	19	Significance of Michaelis-Menten constant, Lineweaver- Burk plot
	20	methylamine, dimethylamine, trimethylamine, ethyl acetate
11	21	Effects of enzyme concentration, pH, Temperature, catalysts and Inhibitors on enzyme activity.
	22	methyl cyanide, ethylbenzene, o-cresol, p-cresol
12	23	Kinetics of fast reactions: Introduction, Study of reactions by relaxation method (Temperature and pressure jump)
	24	benzoic acid, anisole, benzaldehyde,
13	25	flow method (continuous flow and stopped flow method)
	26	acetaldehyde, benzophenone,
14	27	Flash photolysis and Shock tube method
	28	acetophenone, thiophenol
15	29	Revision of syllabus.
	30	Revision of syllabus.
	31	Revision of syllabus.
	32	Revision of syllabus.

Name of the Faculty : **Dr Shankaresh.N**
Title of the Paper : Inorganic Chemistry
Workload Per Week : 01 Hour Theory

Week	Theory
1	**Paints:** Constituents and their functions, manufacture of lithopone and titanium dioxide.
2	**Propellants:** Definition, characteristics, classification and applications.
3	**Abrasives:** Definition, classification with examples, hardness, manufacture and applications of carborundum, alundum and tungsten carbide.
4	Applications of carborundum, alundum and tungsten carbide. **Refractories:** Definition, properties, classification with examples
5	Different steps involved in the manufacture of refractories. Applications of refractories.
6	**Ceramics:** Introduction, types, manufacturing process, applications.
7	**Explosives:** Origin of explosive and classification.
8	Preparation and explosive properties of leadazide, PETN, cyclonite (RDX).
9	**Fertilizers:** Economic importance and synthesis of nitrogenous fertilizers- CAN, ammonium sulfate,
10	Ammonium nitrate and urea. Phosphate fertilizers- calcium dihydrogen phosphate, super phosphate.
11	**Silicates:** Structure, classification - silicates with discrete anions, silicates containing chainanion
12	Silicates with layer structure, silicones with three dimensional net-work and applications.
13	**Nanotechnology:** Definition, uses and nature of nanotechnology. Nanomaterials: Definition, properties and applications.
14	Carbon nanotubes: Definition, types, methods of preparation (mention), properties and industrial applications of carbon nanotubes,
15	Nanowires: Definition, types, production of crystalline nanowires by vapour-liquid-solid synthesis method, application of nanowires.

Name of the Faculty : **Mr. Nagendra C S**
Title of the Paper : Inorganic Chemistry
Workload Per Week : 01 Hour Theory and 04s Hour Practical

Week	Theory
1	Rearrangements: Reaction and mechanism of Wagner-Meerwein
2	Rearrangements: Reaction and mechanism of Fries, Beckmann
3	Rearrangements: Reaction and mechanism of Hofmann, Benzil-benzilic acid
4	Rearrangements: Reaction and mechanism of Favorskii, Dienone-phenol
5	Rearrangements: Reaction and mechanism of Benzidine rearrangement
6	Rearrangements: Reaction and mechanism of Baeyer-Villiger oxidation
7	Rearrangements: Reaction and mechanism of Arndt-Eistert reaction
8	Amino acids and Peptides: Amino acids: Synthesis (from α-halogen acids, Gabriel phthalimide, malonic ester)
9	Reactions (alkyl halides, nitrous acid, acid halide, NH3, LiAlH4).
10	Classification and nomenclature of peptides. Sanger and Edman methods of sequencing.
11	Cleavage of peptide bonds by chemical and enzymatic methods.
12	Peptide synthesis- Protection of amino group (Boc-) and carboxyl group as alkyl esters.
13	Use of DCC, and HOBt in peptide bond formation reactions.
14	Deprotection and racemization in peptide synthesis. Solution and solid phase techniques.
15	Synthesis of oxytocin. Introduction to peptidomimetics.

Practical	
Practical Day	**Topic**
1	**PART-A:** Hydrolysis of methyl acetate in presence of two different concentrations of HCl and determination of the relative strength.
2	Determination of energy of activation for the reaction between $K_2S_2O_8$ versusKI(first order) in two different temperatures.
3	Determination of rate constant for the reaction between chloramine-T and indigocaramine dye in pH 10 buffer medium spectrophotometrically.
4	Conductometric determination of strength of HCl, CH_3COOH and $CuSO_4$ versus NaOH. Conductometric titration of sodium sulphate versus $BaCl_2$.
5	Conductometric determination second order rate constant for the saponification of ethyl acetate.
6	Determination of partial molar volume of NaCl-H_2O system by apparent molar volume method.
7	Potentiometric titration of acid mixture (CH_3COOH and $ClCH_2COOH$) versus NaOH
	Practical Test: Part - 1
8	**PART-B: Organic Preparations:** Cannizarro reaction of benzaldehyde.
9	Friedel-Crafts reaction of benzene and acetyl chloride.
10	Oxidation of cyclohexanol. Preparation of p-iodonitrobenzene
11	Preparation of N-phenyl-2,4-dinitroaniline. Preparation of 2,4,6-tribromoaniline.
12	Preparation of 2,4-dichlorophenoxyacetic acid.
13	Practical Test: Part - 2
14	Repetition of experiments.
15	Repetition of experiments.