

S V R K GOVERNMENT DEGREE COLLEGE :: NIDADAVOLE
TABLE - A - CURRICULAR PLAN - LECTURER WISE

NAME OF THE LECTURER : G.RAHUL
DEPARTMENT: CHEMISTRY

CLASS: IIB.SC (B7C)

YEAR: 2022-2023

SEMESTER: IV PAPER : V

MONTH & WEEK	HOURS AVAILABLE	SYLLABUS TOPIC	ADDITIONAL INPUT /VALUE ADDITION	CURRICULAR ACTIVITY				CO-CURRICULAR ACTIVITY				REMARKS
				ACTIVITY	HOURS ALLOTTED	WHETHER CONDUCTED	IF NOT, ALTERNATIVE DATE	ACTIVITY	HOURS ALLOTTED	WHETHER CONDUCTED	IF NOT, ALTERNATIVE DATE	
2	3	4	5	6	7	8	9	10	11	12	13	14
3rd week	4	UNIT I: INFORMATION CHEMISTRY Coordinator Chemistry: IUPAC nomenclature of coordination compounds, Structural and stereoisomerism in complexes with coordination numbers 4 and 6. Valence Bond Theory (VBT): Inner and outer orbital complexes. Limitations of VBT	Terminology, Double salts definition, EAN Rule.	Lecture	4							

4th week	4	Crystal field effect, octahedral symmetry, Crystal field stabilization energy (CFSE), Crystal field effects for weak and strong fields, Tetrahedral symmetry, Factors affecting the magnitude of crystal field splitting energy, Spectrochemical series,		Power point	3			Audio visual quiz	1				
1st week	4	Comparison of CFSE for Octahedral and Tetrahedral complexes, Tetragonal distortion of octahedral geometry, Jahn-Teller distortion, square planar coordination.		Power point	4								
2nd week	4	UNIT II:1. Inorganic Reaction Mechanism: Introduction to inorganic reaction mechanisms, Concept of reaction pathways, transition state, intermediate and activated complex, Labile and inert complexes, ligand substitution reactions -SN1 and SN2, Substitution reactions in square planar complexes, Trans-effect, theories of trans effect and its applications	Lablity and inertness of complexes and equilibrium based explanation of stability.	Digital class	3			Assigment	1				
3rd week	4	2. Stability of metal complexes: Thermodynamic stability and kinetic stability, factors affecting the stability of metal complexes, chelate effect, determination of composition of complex by Job's method and mole ratio method.		Demonstration	4								

4th week	4	Bioinorganic Chemistry: Metal ions present in biological systems, classification of elements according to their action in biological system. Geochemical effect on the distribution of metals, Sodium / K - pump, carbonic anhydrase and carboxypeptidase		Power point Mid1	3 1														
1st week	4	. Excess and deficiency of some trace metals. Toxicity of metal ions (Hg, Pb, Cd and As), reasons for toxicity, Use of chelating agents in medicine, Cis-platin as an anti-cancer drug. Iron and its application in bio-systems, Haemoglobin, Myoglobin. Storage and transfer of iron.		Lecture	4														
2nd week	4	UNIT-III: PHYSICAL CHEMISTRY 1. Phase rule: Concept of phase, components, degrees of freedom. Thermodynamic derivation of Gibbs phase rule. Phase diagram of one component system - water system.	Applications of phase rule	Lecture	3							Student seminar	1						
3rd week	4	Study of Phase diagrams of Simple eutectic systems i) Pb-Ag system, desilverisation of lead ii) NaCl-Water system. Congruent and incongruent melting point- Definition and examples for systems having congruent and incongruent melting point , freezing mixtures.		Power point	3							Assignment	1						

		UNIT IV: Electrochemistry: Specific conductance, equivalent conductance and molar conductance- Definition and effect of dilution. Cell constant. Strong and weak electrolytes, Kohlrausch's law and its applications,	Conductometric titrations.	Power point	4						
1st week	4	Definition of transport number, determination of transport number by Hittorf's method. Debye-Huckel-Onsager's equation for strong electrolytes (elementary treatment only), Application of conductivity measurements- conductometric titrations. Electrochemical Cells-		Lecture Mid2	3 1						
2nd week	4	Single electrode potential, Types of electrodes with examples: Metal- metal ion, Gas electrode, Inert electrode, Redox electrode, Metal-metal insoluble salt- salt anion. Determination of EMF of a cell, Nernst equation, Applications of EMF measurements - Potentiometric titrations. Fuel cells- Basic concepts, examples and applications		Demonstration	4						

Week		UNIT V: Chemical Kinetics : The concept of reaction rates. Effect of temperature, pressure, catalyst and other factors on reaction rates. Order and molecularity of a reaction, Derivation of integrated rate equations for zero, first and second order reactions (both for equal and unequal concentrations of reactants). Half-life of a reaction. General methods for determination of order of a reaction.	Third order rate equation	Power point	3			Student seminar					
4th week	4	Concept of activation energy and its calculation from Arrhenius equation. Theories of Reaction Rates: Collision theory and Activated Complex theory of bimolecular reactions. Comparison of the two theories (qualitative treatment only).		Demonstration	4								
1st week	4	Enzyme catalysis- Specificity, factors affecting enzyme catalysis, Inhibitors and Lock & key model. Michaelis- Menten equation- derivation, significance of Michaelis- Menten constant		Mind mapping	4								
2nd week	4	Revision		Lecture	2								

SIGNATURE OF THE INSTRUCTOR

SIGNATURE OF THE HEAD OF THE DEPARTMENT

SIGNATURE OF THE PRINCIPAL