LECTURE PLAN

Department: CHE   **Batch(s): 06**
Semester: 3rd   **Session:**
Paper Name: Chemistry-2   **Paper Code: CH(CHE)-302**
Allotted Hour(s): 40   **Actual Hour(s): 42**
Name of the Teacher: Dr. Gourisankar Roymahapatra

Sl. No.	Date	Topics	Hours	Remarks/Books
Module –I Colloid:				
1.		Introduction, Classification of colloids, Size and shape, Preparation of solutions	1	Physical Chemistry by P. C. Rakshit & S. Glasston & Atkins
2.		Origin of change of colloid particles; Sol, Preparation of sol, Stability of colloid,	1	
3.		Kinetic optical and electrical properties, Electro kinetic phenomena,	1	
4.		Electrical double layer, Ultracentrifuge Molecular weight determinations of macro-molecules, Problems solve.	1	
Module –I Viscosity:				
5.		Definition of viscosity of a liquid, determination of viscosity, Viscosity coefficient.	1	Physical Chemistry by P. C. Rakshit & Atkins & Unit Operations of Chemical Engineering by McCabe, W., Smith, J. and Harriott, P
6.		Shear viscosity, Intrinsic viscosity, viscosity measurement,	1	
7.		Determination of molecular weight from viscosity. Problems solve.	1	
Module –I Surface Tension:				
8.		Surface tension introduction, Origin of the surface tension, Surface energy.	1	Physical Chemistry by P. C. Rakshit & S. Glasston & Atkins
9.		Laplace and young Laplace equation, Capillary contact, Contact angle, Measurement of surface tension by capillary rise method.	1	
10.		Variation of Surface tension of a liquid with temperature and concentration	1	
Module –II Kinetic theory of gases:				
11.		Kinetic theory of gases, gas postulates, pressure expression, Ideal gas equation,	1	Physical Chemistry by P. C. Rakshit & Atkins
12.		Van der Waals equation of state for real gas, C_{RMS}, C_{MP}, C_{AV}.	1	
13.		Max Well distribution law, Explanation.	1	
14.		Vapour liquid equilibrium.	1	
15.		Colligative property. Problems solve.	1	

		Module –II Adsorption:		
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16.		Introduction; Gibbs adsorption equation;	1	Physical Chemistry by P. C. Rakshit & S. Glasston & Atkins
17.		Surface excess; Adsorption isotherm, Freundlich, Langmuir equations.	1	
18.		BET Adsorption equation.	1	
19.		Surface films; Langmuir Balance,	1	
20.		Two dimensional equation of state. Applications of adsorption, Problems solve	1	
		Module –III Quantum mechanics:		
21.		Introduction to quantum mechanics: Failure of classical mechanics, limitations of quantum mechanics (black body radiation. Photoelectric effect etc.)	1	Physical Chemistry by P. C. Rakshit & Atkins
22.		Introduction to quantum mechanics, plank's equation and concept of quanta	1	
23.		Breakdown of the classical equipartition principle. Basic postulates of quantum mechanics.	1	
24.		Hamiltonian function & Hamiltonian operator, important properties of Hamiltonian operator,	1	
25.		Heisenberg uncertainty principle.	1	
26.		Schrodinger equation and its solution for an electron in one dimensional box where potential energy is zero inside and infinity outside the box.		
27.		Wave function, Normalized and orthogonality of the wave function. Problems solve.	1	
		Module –III General Organic Chemistry:		
28.		General Organic Chemistry: Introduction, Common organic reactions i.e. Friedel-Crafts, Claisen Condensation	1	Organic Chemistry by I.L. Finar; Vol – I & II, & Morrison & Boyd & Loudon A guide Book to Mechanism in Organic Chemistry: Peter Sykes
29.		Organic reactions i.e., Cannizaro, Aldol condensation, Fischer-Tropsch	1	
30.		Preparation and synthetic application of Acetoacetic ester, Malonic ester	1	
31.		Preparation and synthetic application of Grignard's reagent. Problems solve.	1	
		Module - IV Aminoacids:		
32.		Aminoacids: Classification; General methods of preparation and properties of amino acids	1	Organic Chemistry by I.L. Finar; Vol – I & II, & Morrison & Boyd & Loudon
33.		Polypeptide synthesis.	1	
34.		General properties of proteins, colour tests, enzymes	1	
35.		Discuss about Lipids, fats.	1	

36.		Discuss about steroids.	1
37.		Nucleic acid, DNA & RNA - generation and structure.	1
38.		Cell nutrients- macronutrients, micronutrients	1
39.		Carbohydrate: Introduction, Classification.	1
40.		Glucose and fructose.	1
41.		Disaccharides: Sucrose, maltose.	1
42.		Cellobiose (introductory concept). Problems solve.	1
		Total	**42**	