## **LECTURE PLAN**

**Department: CHE Semester: 3<sup>rd</sup> Batch(s): 06 Session:** 

Paper Code: CH(CHE)-302

Paper Name: Chemistry-2 Allotted Hour(s): 40 **Actual Hour(s): 42** 

Name of the Teacher: Dr. Gourisankar Roymahapatra

Module -1 Colloid:   Introduction, Classification of colloids, Size   1 and shape, Preparation of solutions   2 by P. C. Rakshit & S. Glasston & Atkins   2 by P. C. Rakshit & S. Glasston & Atkins   2 by P. C. Rakshit & S. Glasston & Atkins   2 by P. C. Rakshit & S. Glasston & Atkins   2 by P. C. Rakshit & S. Glasston & Atkins   2 by P. C. Rakshit & S. Glasston & Atkins   2 by P. C. Rakshit & S. Glasston & Atkins   2 by P. C. Rakshit & Atkins & Unit Operations of viscosity, Viscosity coefficient.   3 by P. C. Rakshit & Atkins & Unit Operations of	Sl. No.	Date	Topics	Hours	Remarks/Books
and shape, Preparation of solutions  2. Origin of change of colloid particles; Sol, 1 Preparation of sol, Stability of colloid,  3. Kinetic optical and electrical properties, Electro kinetic phenomena,  4. Electrical double layer, Ultracentrifuge Molecular weight determinations of macromolecules, Problems solve.  Module –I Viscosity:  5. Definition of viscosity of a liquid, determination of viscosity, Viscosity viscosity, Viscosity viscosity, Viscosity of viscosity, Viscosity, viscosity in emasurement,  7. Determination of molecular weight from viscosity. Problems solve.  Module –I Surface Tension:  8. Surface tension introduction, Origin of the surface tension, Surface energy.  9. Laplace and young Laplace equation, Capillary contact, Contact angle, Measurement of surface tension by capillary rise method.  10. Variation of Surface tension of a liquid with temperature and concentration  Module –II Kinetic theory of gases:  11. Kinetic theory of gases, gas postulates, pressure expression, Ideal gas equation, Capillary of Capillary by P. C. Rakshit & Atkins  12. Van der Waals equation of state for real gas, Cams. CMP, CAV.  13. Max Well distribution law, Explanation.  14. Vapour liquid equilibrium.	Module	-I Colloid	d:		
2.   Origin of change of colloid particles; Sol, Preparation of sol, Stability of colloid,   3.   Kinetic optical and electrical properties, Electro kinetic phenomena,   Line     4.   Electrical double layer, Ultracentrifuge   Molecular weight determinations of macromolecules, Problems solve.   Definition of viscosity of a liquid, determination of viscosity, Viscosity coefficient.   Definition of viscosity, Viscosity coefficient.   Definition of of viscosity, Viscosity coefficient.   Determination of viscosity, Viscosity viscosity   1	1.		· · · · · · · · · · · · · · · · · · ·	1	Physical Chemistry
Preparation of sol, Stability of colloid,   Atkins					by P. C. Rakshit &
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Rinetic phenomena,   Clectrical double layer, Ultracentrifuge   Molecular weight determinations of macromolecules, Problems solve.    Module -I Viscosity:   Definition of viscosity of a liquid, determination of viscosity, Viscosity viscosity, viscosity of viscosity, Viscosity of viscosity, Viscosity of viscosity, Viscosity of viscosity, Viscosity operations of viscosity. Problems solve.   Determination of molecular weight from viscosity. Problems solve.   Viscosity operations of Viscosity. Problems solve.   Determination of molecular weight from viscosity. Problems solve.   Viscosity operations of Viscosity. Problems solve.   Viscosity operations of Viscosity. Problems solve.   Viscosity operations of Viscosity. Problems solve.   Viscosity. Problems solve.   Viscosity. Problems solve.   Viscosity. Problems solve.   Viscosity. Viscosity operations of Viscosity. Viscosity operat					
Electrical double layer, Ultracentrifuge Molecular weight determinations of macromolecules, Problems solve.    Module -I Viscosity:   Definition of viscosity of a liquid, determination of viscosity, Viscosity coefficient.   Definition of viscosity, Viscosity, viscosity of a liquid, determination of viscosity, Viscosity by P. C. Rakshit & Atkins & Unit Operations of Chemical Engineering by McCabe, W., Smith, J. and Harriott, P    Module -I Surface Tension:   Surface tension introduction, Origin of the surface tension, Surface energy.   Department of Surface tension by capillary rise method.   Surface tension of Surface tension of a liquid with temperature and concentration   Department of Surface tension of Surface tension of a liquid with temperature and concentration   Department of Surface tension of Surface tension of a liquid with temperature and concentration   Department of Surface tension of Surface tension of a liquid with temperature and concentration   Department of Surface tension of Surface tension of a liquid with temperature and concentration   Department of Surface tension of Surface tension of a liquid with temperature and concentration   Department of Surface tension of Surface tension of a liquid with temperature and concentration   Department of Surface tension of Surface tension of a liquid with temperature and concentration   Department of Surface tension	3.			1	
Molecular weight determinations of macromolecules, Problems solve.					
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5. Definition of viscosity of a liquid, determination of viscosity, Viscosity coefficient.  6. Shear viscosity, Intrinsic viscosity, viscosity measurement,  7. Determination of molecular weight from viscosity. Problems solve.  Module –I Surface Tension:  8. Surface tension introduction, Origin of the surface tension, Surface energy.  9. Laplace and young Laplace equation, Capillary contact, Contact angle, Measurement of surface tension by capillary rise method.  10. Variation of Surface tension of a liquid with temperature and concentration  Module –II Kinetic theory of gases:  11. Kinetic theory of gases, gas postulates, pressure expression, Ideal gas equation, Capillary contact, Contact and gas equation, Capillary contact, Contact and concentration  Module –II Kinetic theory of gases, gas postulates, pressure expression, Ideal gas equation, Capillary contact conta			,		
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7. Determination of molecular weight from viscosity. Problems solve.    Determination of molecular weight from viscosity. Problems solve.   Chemical Engineering by McCabe, W., Smith, J. and Harriott, P	6.			1	
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13.Max Well distribution law, Explanation.114.Vapour liquid equilibrium.1	12.		Van der Waals equation of state for real gas,	1	Atkins
13.Max Well distribution law, Explanation.114.Vapour liquid equilibrium.1			$C_{RMS}, C_{MP}, C_{AV}.$		
	13.		Max Well distribution law, Explanation.	1	
15. Colligative property. Problems solve.	14.		Vapour liquid equilibrium.	1	
	15.		Colligative property. Problems solve.	1	

Module –II	Adsorption:		
16.	Introduction; Gibbs adsorption equation;	1	Physical Chemistry
17.	Surface excess; Adsorption isotherm, Freundlich,	1	by P. C. Rakshit &
	Langmuir equations.		S. Glasston &
18.	BET Adsorption equation.	1	Atkins
19.	Surface films; Langmuir Balance,	1	
20.	Two dimensional equation of state. Applications	1	
	of adsorption, Problems solve		
Module –II	I Quantum mechanics:	I	
21.	Introduction to quantum mechanics: Failure of	1	Physical Chemistry by P. C. Rakshit &
	classical mechanics, limitations of quantum		
	mechanics (black body radiation. Photoelectric		Atkins
	effect etc.)		
22.	Introduction to quantum mechanics, plank's	1	
	equation and concept of quanta		
23.	Breakdown of the classical equipartition	1	
	principle. Basic postulates of quantum mechanics.		
24.	Hamiltonian function & Hamiltonian operator,	1	
	important properties of Hamiltonian operator,		
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	1	
	the wave function. Problems solve.		
Module –II	I General Organic Chemistry:		
28.	General Organic Chemistry: Introduction,	1	Organic Chemistry
	Common organic reactions i.e. Friedel-Crafts,		by I.L. Finar; Vol –
	Claisen Condensation		I & II, & Morrison
29.	Organic reactions i.e., Cannizaro, Aldol	1	& Boyd & Loudon
	condensation, Fischer-Tropsch		A guide Book to
30.	Preparation and synthetic application of	1	Mechanism in
	Acetoacetic ester, Malonic ester		Organic Chemistry:
31.	Preparation and synthetic application of	1	Peter Sykes
	Grignard's reagent. Problems solve.		
Module - IV A			
32.	Aminoacids: Classification; General methods of	1	Organic Chemistry
	preparation and properties of amino acids		by I.L. Finar; Vol –
33.	Polypeptide synthesis.	1	I & II, & Morrison & Boyd & Loudon
34.	General properties of proteins, colour tests,	1	
	enzymes		
35.	Discuss about Lipids, fats.	1	
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36.	Discuss about steroids.	1
37.	Nucleic acid, DNA & RNA - generation and	1
	structure.	
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	1
	solve.	
	Total	42