



ARSD College, University of Delhi

Lesson Plan

Course Name : B.Sc. (APS) Industrial Chemistry						
Semester	Course Code	Course Title	Lecture (L)	Tutorial (T)	Practical (P)	Credit (C)
VI	CHEMISTRY DSE-II	Organometallics, Bioinorganic Chemistry, Polynuclear Hydrocarbons and UV, IR Spectroscopy	0	0	4	2
Teacher/Instructor(s)		Dr. Anjali Verma, Mr. Bachan Meena				
Session		2021-22				

Course Description:

The purpose of the course is to introduce students to some important 3d metals and their compounds which they are likely to come across. Students learn about organometallic compounds and bioinorganic chemistry which are currently frontier areas of chemistry providing an interface between organic chemistry, inorganic Chemistry and biology. The functional group approach to organic chemistry introduced in the previous courses is reinforced through the study of the chemistry of carboxylic acids and their derivatives, Amines and diazonium salts, active methylene compounds. The students will also be introduced to the chemistry and applications of polynuclear hydrocarbons and heterocyclic compounds. The learners are introduced to spectroscopy, an important analytical tool which allows identification of organic compounds by correlating their spectra to structure.

List of Experiments:

Section A: Inorganic Chemistry

1. Separation of mixtures of two ions by paper chromatography and measurement of R_f value in each case: (Fe³⁺, Al³⁺ and Cr³⁺) or (Ni²⁺, Co²⁺, Mn²⁺ and Zn²⁺)
2. Preparation of any two of the following complexes and measurement of their conductivity: (i) tetraamminecopper (II) sulphate (ii) potassium trioxalatoferate (III) trihydrate. Compare the conductance of the complexes with that of M/1000 solution of NaCl, MgCl₂ and LiCl₃.

Section B: Organic Chemistry

1. Detection of extra elements
2. Systematic qualitative analysis of organic compounds possessing monofunctional groups: amide, amines, halo-hydrocarbons and carbohydrates (Including Derivative preparation)
3. Identification of simple organic compounds containing the above functional groups by IR spectroscopy through examination of spectra (spectra to be provided).

Details of the Lab Course		
Session	Name of Experiment	Contact Hours
1	Issue of apparatus	4
2	Detection of extra elements	8
3	Systematic qualitative analysis of functional group of given organic compounds	4
4	Systematic qualitative analysis of organic compounds possessing monofunctional groups: amide, amines, halo-hydrocarbons and carbohydrates (Including Derivative preparation)	12
5	Identification of simple organic compounds containing the above functional groups by IR spectroscopy through examination of spectra (spectra to be provided).	8
6	Separation of mixtures of two ions by paper chromatography and measurement of Rf value of Fe ³⁺ , Al ³⁺	4
7	Separation of mixtures of two ions by paper chromatography and measurement of Rf value of Ni ²⁺ , Co ²⁺	4
8	Preparation of tetraamminecopper (II) sulphate complex and measurement of its conductivity	8
9	Preparation of potassium trioxalatoferrate (III) trihydrate. complex and measurement of its conductivity	4
10.	Mock Test	4
Total		60
Suggested Books:		
Sl. No.	Name of Authors/Books/Publishers	Year of Publication/Reprint
1.	Ahluwalia, V.K.; Dhingra, S.; Gulati, A. College Practical Chemistry, University Press (India) Ltd.	2005
2.	Ahluwalia, V.K.; Dhingra, S., Comprehensive Practical Organic Chemistry: Qualitative Analysis, University Press.	2004
3.	Vogel, A.I., Textbook of Practical Organic Chemistry, Prentice Hall	1972
4.	Svehla, G., Vogel's Qualitative Inorganic Analysis, Prentice Hall.	1996

Evaluation Scheme:

No.	Component	Duration	Marks
1.	Internal Assessment		25
	• Quiz/Viva		
	• Observation & Record		
	• Attendance		
2.	• Model Exam	6 hrs	25
	End Semester Examination		