I – Academic Planner

Teacher's Name: Dr. Vandana Meena

Teaching Plan: 2020-21

Semester: Odd

Department: Chemistry

S. No.	UPC	Paper Name	Core/AECC/GE/SEC	Topic/Unit	Start Date	End Date
1	32173902	Basic Analytical Chemistry	SEC	Basic Analytical Chemistry Analysis of soil: Composition of soil, Concept of pH and pH measurement, Complexometric titrations, Chelation,	11.08.2020	03.09.2020

				Chelating agents, use of indicators Chromatography: Definition, general introduction on principles of chromatography, paper chromatography, TLC etc. Ion-exchange: Column, ion-exchange chromatography etc. Introduction: Introduction to Analytical Chemistry and its interdisciplinary nature. Concept of sampling. Importance of accuracy, precision and sources of error in analytical measurements. Presentation of experimental data and results, from the point of view of significant figures. Analysis of water: Definition of pure water, sources responsible for contaminating water, water sampling methods, water purification methods.	08.09.2020 01.10.2020 27.10.2020	29.09.2020 22.10.2020 05.11.2020

2	42177915/16	Analytical Biochemistry	DSE	Biochemistry of disease: A diagnostic approach by blood/ urine analysis. Blood: Composition and functions of blood, blood coagulation. Blood collection and preservation of samples. Anemia Urine: Collection and preservation of samples. Formation of urine. Composition and estimation of constituents of normal and pathological urine. Regulation, estimation and interpretation of data for blood sugar, urea, creatinine, cholesterol and bilirubin.	17.08.2020 12.10.2020	08.10.2020 09.11.2020
3	32171301	INORGANIC CHEMISTRY – II, s- and p-Block Elements	Core	Chemistry of *p* Block Elements: Electronic configuration, atomic and ionic size, metallic/non-metallic character, melting point, ionization enthalpy, electron gain enthalpy, electronegativity, Allotropy of C, P, S; inert pair effect, diagonal relationship between B and Si and anomalous behaviour of first member of each group. Structure, bonding and properties: acidic/basic nature, stability, ionic/covalent nature, oxidation/reduction, hydrolysis, action of heat of the following: • Hydrides: hydrides of Group 13 (only diborane), Group 14, Group 15 (EH_3 where E = N, P, As, Sb, Bi), Group 16 and Group	13.08.2020 08.102020	1.10.2020 13.11.2020

				17. • Oxides: oxides of phosphorus, sulphur and chlorine • Oxoacids: oxoacids of phosphorus and chlorine; peroxoacids of sulphur • Halides: halides of silicon and phosphorus		
5	32171301	INORGANIC CHEMISTRY – II, s- and p-Block Elements	Core	(Practical) (D) Iodo / Iodimetric Titrations 3. Estimation of Cu(II) and K2Cr2O7 using sodium thiosulphate solution (Iodometrically). 4. Estimation of antimony in tartar-emetic iodimetrically (E) Complexometric titrations using disodium salt of EDTA 3. Estimation of Mg2+, Zn2+ 4. Estimation of Ca2+ by substitution method (F) Inorganic preparations 4. Cuprous Chloride, Cu2Cl2 5. Manganese(III) phosphate, MnPO4.H2O 6. Aluminium potassium sulphate KAl(SO4)2.12H2O (Potash alum) or Chrome alum.	12.08.2020	03.12.2020
6	42171103	Atomic Structure, Bonding, General Organic Chemistry& Aliphatic hydrocarbon	Core	(Practical) Section A: Inorganic Chemistry - Volumetric Analysis 1. Estimation of oxalic acid by titrating it with KMnO4. 2. Estimation of Mohr's salt by titrating it with KMnO4. 3. Estimation of water of crystallization in Mohr's salt by titrating with KMnO4. 4. Estimation of Fe (II) ions by	20.11.2020	26.02.2021

				titrating it with K2Cr2O7 using internal indicator. 5. Estimation of Cu (II) ions iodometrically using Na2S2O3. Section B: Organic Chemistry 1. Purification of organic compound by crystallisation (from water and alcohol) and distillation. 2. Criteria of purity: Determination of M.P./B.P. 3. Separation of mixtures by chromatography: Measure the Rf value in each case (combination of two compounds to be given) a) Identify and separate the components of a given mixture of 2 amino acids (glycine, aspartic acid, glutamic acid, tyrosine or any other amino acid) by radial/ascending paper chromatography. b) Identify and separate the sugars present in the given mixture by radial/ascending paper chromatography.		
7	32175901	Atomic Structure, Bonding, General Organic Chemistry& Aliphatic hydrocarbon	GE	(Practical) Section A: Inrganic Chemistry 6. Estimation of sodium carbonate and sodium hydrogen carbonate present in a mixture. 7. Estimation of oxalic acid by titrating it with $KMnO_4$. 8. Estimation of water of crystallization in Mohr's salt	11.11.2020	12.02.2021

				by titrating with $KMnO_4$ 9. Estimation of Fe (II) ions by titrating it with $K_2Cr_2O_7$ using internal indicator. 10. Estimation of Cu (II) ions iodometrically using $Na_2S_2O_3$. Section B: Organic Chemistry 5. Purification of OC by crystallization (from water and alcohol) and distillation. 6. Criteria of purity: Determination of Mpt/Bp. 7. .Detection of extra elements (N, S, Cl, Br, I) in organic compound. 8. .Separation of mixtures by Chromatography: Measure the Rf value in each case (combination of two compounds to be given) (a) Identify and separate the components of a given mixture of 2 amino acids (glycine, aspartic acid, glutamic acid, tyrosine or any other amino acid) by paper chromatography (b) Identify and separate the sugars present in the given mixture by paper chromatography.		

FDP/Seminar/Workshops/Lectures to be attended and/or to be conducted by Teachers

Event Topic	Innovation in Scientific Research Methods
Type / Nature (FDP/Webinar/Workshop etc.)	FDP
Organizing In-charge	Dr. Reena Saxena

Details regarding invited Resource Person					
Nature of Participation (e.g. Invited Speaker, Participant etc.)		Participant			
Date/s	14th -18th Oct, 2020	**Timing/s**	3:00 PM – 7:00 PM	**Mode**	Online

Internal Assessment: House Exam (Test/Presentation etc.) & Assignment*

Course Code	Course Name	Unique Paper Code	Topic Name	Day and Date	Date/s of Exhibiting the Assessment Sheet to students, Discussing the marks, Returning/Retaining
SEC	B.Sc.(H) Chemistry II Year	32173902	Basic Analytical Chemistry	12.11.2020	17.11.2020
Core	B.Sc.(H) Chemistry II Year	32171301	INORGANIC CHEMISTRY – II, s- and p-Block Elements	19.11.2020	26.11.2020

***Marks of the Internal Assessment to be submitted to the College 15 days before the last working day of every semester**

Organization of Department/College Society Meetings by Staff Advisor/Convener

Department/Society	Meeting Date	Purpose

College Functions

College Function	Function Date	Role to be played

I – Academic Planner

Teacher's Name: Dr. Vandana Meena

Teaching Plan: 2020-21

Semester: Even

Department: Chemistry

S. No.	UPC	Paper Name	Core/AECC/GE/SEC	Topic/Unit	Start Date	End Date
1	32173902	Basic Analytical Chemistry	SEC	Basic Analytical Chemistry Introduction: Introduction to Analytical Chemistry and its interdisciplinary nature. Concept of sampling. Importance of accuracy, precision and sources of error in analytical measurements. Presentation of experimental data and results, from the point of view of significant figures. Analysis of soil: Composition of soil, Concept of pH and pH measurement, Complexometric titrations, Chelation, Chelating agents, use of indicators Analysis of water: Definition of pure water, sources responsible for contaminating water, water sampling methods, water purification methods. Chromatography: Definition, general	05.01.2021	20.04.2021

				introduction on principles of chromatography, paper chromatography, TLC etc. Ion-exchange: Column, ion-exchange chromatography etc		
2	42173923	Basic Analytical Chemistry	SEC	Basic Analytical Chemistry Introduction: Introduction to Analytical Chemistry and its interdisciplinary nature. Concept of sampling. Importance of accuracy, precision and sources of error in analytical measurements. Presentation of experimental data and results, from the point of view of significant figures. Analysis of soil: Composition of soil, Concept of pH and pH measurement, Complexometric titrations, Chelation, Chelating agents, use of indicators Analysis of water: Definition of pure water, sources responsible for contaminating water, water sampling methods, water purification methods. Chromatography: Definition, general introduction on principles of chromatography, paper chromatography, TLC etc. Ion-exchange: Column, ion-exchange chromatography etc	14.01.2021	15.04.2021
3	42173916	Pesticide Chemistry	SEC	Classification, synthesis, structure activity relationship (SAR), mode of action, uses and adverse effects of representative pesticides in the following classes: Organochlorines (DDT, Gammaxene); Quinones (Chloranil), Anilides (Alachlor and Butachlor).	09.01.2021	22.03.2021
5	32173902	Basic Analytical Chemistry	SEC	Basic Analytical Chemistry (Practical)	09.01.2021	20.03.2021

				g. Determination of pH of soil samples. h. Estimation of Calcium and Magnesium ions as Calcium carbonate by complexometric titration. i. Determination of pH, acidity and alkalinity of a water sample. j. Determination of dissolved oxygen (DO) of a water sample. k. Paper chromatographic separation of mixture of metal ion (Ni^{2+} and Co^{2+}). l. Determination of ion exchange capacity of anion / cation exchange resin (using batch procedure if use of column is not feasible).		
6	42177926	Organometallics, Bio-Inorganic Chemistry, Polynuclear Hydrocarbons, UV and IR	DSE	(Practical) Section A: Inorganic Chemistry Separation of mixtures by chromatography: Measure the Rf value in each case. (Combination of two ions to be given) Paper chromatographic separation of Fe3+, Al3+ and Cr3+ *or* Paper chromatographic separation of Ni2+, Co2+, Mn2+ and Zn2+ Preparation of any two of the following complexes and measurement of their conductivity: a. tetraamminecarbonatocobalt (III) nitrate b. tetraamminecopper (II) sulphate c. potassium trioxalatoferrate (III) trihydrate Compare the conductance of the complexes with that of M/1000	03.01.2021	24.03.2021

				solution of NaCl, MgCl2 and LiCl3. Section B: Organic Chemistry Systematic Qualitative Organic Analysis of Organic Compounds possessing monofunctional groups (-COOH, phenolic, aldehydic, ketonic, amide, nitro, 1o amines) and preparation of one derivative.		
7	42177926	Organometallics, Bio-Inorganic Chemistry, Polynuclear Hydrocarbons, UV and IR	DSE	(Practical) Section A: Inorganic Chemistry Separation of mixtures by chromatography: Measure the Rf value in each case. (Combination of two ions to be given) Paper chromatographic separation of Fe3+, Al3+ and Cr3+ *or* Paper chromatographic separation of Ni2+, Co2+, Mn2+ and Zn2+ Preparation of any two of the following complexes and measurement of their conductivity: a. tetraamminecarbonatocobalt (III) nitrate b. tetraamminecopper (II) sulphate c. potassium trioxalatoferrate (III) trihydrate Compare the conductance of the complexes with that of M/1000 solution of NaCl, MgCl2 and LiCl3. Section B: Organic Chemistry Systematic Qualitative Organic Analysis of Organic Compounds possessing monofunctional groups (-COOH, phenolic, aldehydic, ketonic, amide, nitro, 1o amines) and	04.01.2021	15.03.2021

				preparation of one derivative.		

FDP/Seminar/Workshops/Lectures to be attended and/or to be conducted by Teachers

Event Topic	Emerging Trends and Future Challenges in Chemical Sciences" (ETFC-2021)				
Type / Nature (FDP/Webinar/Workshop etc.)	Webinar				
Organizing In-charge	Dr. M. Ramananda Singh				
Details regarding invited Resource Person	1. Prof. Ramakrishna Ramaswamy, *IIT Delhi* 2. Dr. Ajay Kumar Srivastava, CSIR-CDRI, Lucknow 3. Dr. Jeetender Chugh, IISER, Pune 4. Prof. M. Thirumal, Department of Chemistry, *University of Delhi*				
Nature of Participation (e.g. Invited Speaker, Participant etc.)	Participant				
Date/s	4th -5th March, 2021	**Timing/s**	10:00 AM – 1:50 PM	**Mode**	Online

Internal Assessment: House Exam (Test/Presentation etc.) & Assignment*

Course Code	Course Name	Unique Paper Code	Topic Name	Day and Date	Date/s of Exhibiting the Assessment Sheet to students, Discussing the

					marks, Returning/Retaining
SEC	B.Sc.(H) Chemistry II Year	32173902	Basic Analytical Chemistry	17.04.2021	24.04.2021
SEC	B.Sc.(LS) II Year	42173923	Basic Analytical Chemistry	22.04.2021	29.04.2021
SEC	B.Sc.(AC) II Year	42173916	Pesticide Chemistry	12.04.2021	19.04.2021