

Lesson Plan (2021-22)

Name of the Assistant/ Associate Professor:-Dr. Yogita Yadav

Class and Section: B.Sc 4th Sem.

Subject: chemistry

Paper: inorganic and organic

Week1	Dates	Topics to be covered
	March 21- March 26	chemistry of f – block elements Lanthanides Electronic structure
		oxidation states and ionic radii and lanthanide contraction,
		complex formation
		occurrence and isolation,
		lanthanide compounds.
		Assignment and announcement of test
Week 2	March 28- April 2	chemistry of f – block elements Actinides General features and chemistry of actinides
		chemistry of separation of Np, Pu and Am from U
		Comparison of properties of Lanthanides and Actinides
		Comparison of properties of and with transition elements .
		Assignment and announcement of test
Week3	April 4- April 9	Theory of Qualitative and Quantitative Inorganic Analysis-I Chemistry of analysis of various acidic radicals
		Chemistry of identification of acid radicals in typical combinations
		Chemistry of interference of acid radicals including their removal in the analysis of basic radicals.
		Assignment and announcement of test
		Test of earlier unit
	April 11-	Theory of Qualitative and Quantitative Inorganic Analysis-II Chemistry of analysis of various groups of basic radicals, ,

Week 4	April 16	
		Theory of precipitation,
		co- precipitation
		Post- precipitation,
		purification of precipitates
		Assignment and announcement of test
Week 5	April 18- April 23	Infrared (IR) absorption spectroscopy Molecular vibrations
		Hooke's law, selection rules
		intensity and position of IR bands
		measurement of IR spectrum
		fingerprint region
		characteristic absorptions of various functional groups
Week 6	April 25- April 30	Applications of IR spectroscopy in structure elucidation of simple organic compounds.
		interpretation of IR spectra of simple organic compounds.
		Amines Structure and nomenclature of amines,.,
		physical properties
		Separation of a mixture of primary, secondary and tertiary amines.
		Structural features affecting basicity of amines.
Week 7	May 2- May 7	Preparation of alkyl and aryl amines (reduction of nitro compounds, nitriles,
		reductive amination of aldehydic and ketonic compounds
		. Gabrielphthalimide reaction
		Hofmann bromamide reaction
		electrophilic aromatic substitution in aryl amines
		reactions of amines with nitrous acid.
Week 8	May 9-May 14	1. Diazonium Salts Mechanism of diazotisation

		Replacement of diazo group by H, OH, F, Cl, Br, I, NO ₂ and CN groups,
		reduction of diazonium salts to hydrazines
		coupling reaction and its synthetic application.
		structure of benzene diazonium chloride
		Assignment and announcement of test
Week 9	May 16- May 21	1. Nitro Compounds Preparation of nitro alkanes and nitro arenes
		their chemical reactions.
		Mechanism of electrophilic substitution reactions in nitro arenes
		reductions in acidic, neutral and alkaline medium.
		Test of earlier unit
		Assignment and announcement of test
Week 10	May 23- May 28	Aldehydes and Ketones Nomenclature and structure of the carbonyl group.,.
		Synthesis of aldehydes and
		advantage of oxidation of alcohols with chromium trioxide (Sarett reagent)
		Physical properties
		Comparison of reactivities of aldehydes and ketones.
		Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin,
Week 11	May 30- June 4	Condensation with ammonia and its derivatives
		Wittig reaction.
		Mannich reaction.
		Oxidation of aldehydes,
		Baeyer–Villiger oxidation of ketones
		Cannizzaro reaction
	June 6-	.,. MPV,

Week 12	June 11	
		Clemmensen
		aldol, condensations
		Perkin condensations
		Wolff-Kishner reduction
		LiAlH ₄ and NaBH ₄ reductions
Week13	June 13- June 18	Knoevenagel reductions
		pyridinium chlorochromate (PCC) and pyridinium dichromate.,
		ketones with particular reference to the synthesis of aldehydes from acid chlorides
Week 14	June 20- June 25	revision
		test
		Assignments collection
Week 15	June 27- July2	revision
		test
		Assignments collection