

SMSD Govt. College Nangal Chaudhary (Mahendergarh)
Lesson Plan- B.Sc. 4th Semester (Non Medical)
Inorganic/ Physical Chemistry-Session 2023-24

Date	Day	Topic
		Inorganic Chemistry
12-01-2024	Friday	Section-A Chemistry of f – block elements Lanthanides- Electronic structure, oxidation states and ionic radii
13-01-2024	Saturday	Section-A lanthanide contraction, complex formation
18-01-2024	Thursday	Section-A Occurrence and isolation of lanthanide and its compounds.
19-01-2024	Friday	Section-A Common features lanthanide and its compounds.
20-01-2024	Saturday	Section-B Chemistry of f – block elements Actinides General features and chemistry of actinides,
25-01-2024	Thursday	Section-B chemistry of separation of Np, Pu and Am from Uranium
26-01-2024	Friday	Republic Day- Holiday
27-01-2024	Saturday	Section-B Comparison of properties of Lanthanides and Actinides and with transition elements.
01-02-2024	Thursday	Section-B Common features lanthanide and its compounds.
02-02-2024	Friday	Physical Chemistry
03-02-2024	Saturday	Section-A- Thermodynamics-III Second law of thermodynamics, need for the law, different statements of the law
08-02-2024	Thursday	Section-A- Carnot's cycles and its efficiency, Carnot's theorem, Thermodynamics scale of temperature.
09-02-2024	Friday	Section-A Concept of entropy – entropy as a state function, entropy as a function of V & T,
10-02-2024	Saturday	Section-A Entropy as a function of P & T, entropy change in physical change, entropy as a criteria of spontaneity and equilibrium.
15-02-2024	Thursday	Section-A Entropy change in ideal gases and mixing of gases.
16-02-2024	Friday	Section-B Thermodynamics-IV Third law of thermodynamics: Nernst heat theorem,
17-02-2024	Saturday	Section-B Statement of concept of residual entropy, Evaluation of absolute entropy from heat capacity data.

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22-02-2024	Thursday	Section-B - Gibbs and Helmholtz functions; Gibbs function (G) and Helmholtz function (A) as thermodynamic quantities,
23-02-2024	Friday	Section-B A & G as criteria for thermodynamic equilibrium and spontaneity, their advantage over entropy change.
24-02-2024	Saturday	Guru Ravidas Jayanti- Holiday
26-02-2024	Monday	Section-B Variation of G and A with P, V and T. A & G as criteria for thermodynamic equilibrium and spontaneity, their advantage over entropy change.
27-02-2024	Tuesday	Section-B Variation of G and A with P, V and T.
28-02-2024	Wednesday	Section-C Electrochemistry-III- Electrolytic and Galvanic cells – reversible & Irreversible cells
04-03-2024	Monday	Section-C conventional representation of electrochemical cells. EMF of cell and its measurement,
05-03-2024	Tuesday	Section-C Wes ton standard cell, Activity and activity coefficients.
06-03-2024	Wednesday	Section-C Calculation of thermodynamic quantities of cell reaction (G, H & K).
11-03-2024	Monday	Section-C Types of reversible electrodes – metal metal ion gas electrode, metal – insoluble salt- anion and redox electrodes
12-03-2024	Tuesday	Section-C Electrode reactions, Nernst equations, ,
13-03-2024	Wednesday	Section-C Derivation of cell EMF and single electrode potential. Standard Hydrogen electrode,
18-03-2024	Monday	Section-C reference electrodes, standard electrodes potential, sign conventions Electrochemical series and its applications.
19-03-2024	Tuesday	Section-D Electrochemistry-IV- Concentration cells with transference
20-03-2024	Wednesday	Section-D Electrochemistry-IV- Concentration cells without transference,
23-03-2024 To 31-03-2024		Holi Festival Holidays
01-01-2024	Monday	Section-D liquid junction potential
02-04-2024	Tuesday	Section-D Application of EMF measurement i.e. valency of ions, solubility product activity coefficient,
03-04-2024	Wednesday	Section-D Potentiometric titration (acid- base and redox).

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08-04-2024	Monday	Section-D Determination of pH using Hydrogen electrode by potentiometric methods
09-04-2024	Tuesday	Section-D Quinhydrone electrode and glass electrode by potentiometric methods
10-04-2024	Wednesday	Section-D Quinhydrone electrode and glass electrode by potentiometric methods
15-04-2024	Monday	Conceptual and Exam related Important Questions
16-04-2024	Tuesday	Conceptual and Exam related Important Questions
17-04-2024	Wednesday	Conceptual and Exam related Important Questions
22-04-2024	Monday	Conceptual and Exam related Important Questions
23-04-2024	Tuesday	Conceptual and Exam related Important Questions
24-04-2024	Wednesday	Term End Semester Exam Starts

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DATE		CURICULUM (BSc IV SEM)	session 2023-24
12-01-24 27-01-24	to	Inorganic chemistry Section-C Theory of Qualitative and Quantitative Inorganic Analysis-I Chemistry of analysis of various acidic radicals, Chemistry of identification of acid radicals in typical combinations,	
29-01-24 03-02-24	to	Chemistry of interference of acid radicals including their removal in the analysis of basic radicals.	
05-02-24 10-02-24	to	Section-D Theory of Qualitative and Quantitative Inorganic Analysis-II Chemistry of analysis of various groups of basic radicals,	
12-02-24 17-02-24	to	Theory of precipitation, co-precipitation, Post- precipitation, purification of precipitates.	
19-02-24 24-02-24	to	Organic Chemistry Section-A Infrared (IR) absorption spectroscopy Molecular vibrations, Hooke's law, selection rules, intensity and position of IR bands, measurement of IR spectrum,	
26-02-24 02-03-24	to	Fingerprint region, characteristic absorptions of various functional groups and interpretation of IR spectra of simple organic compounds.Applications of IR spectroscopy in structure elucidation of simple organic compounds.	
04-03-24 09-03-24	to	Diazonium Salts Mechanism of diazotisation, structure of benzene diazonium chloride, 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. Section-B Amines Structure and nomenclature of amines, physical properties. Separation of a mixture of primary, secondary and tertiary amines.Structural features affecting basicity of amines.	
18-03-24 22-03-24	to	Preparation of alkyl and aryl amines (reduction of nitro compounds, nitriles, reductive amination of aldehydic and ketonic compounds). Gabrielpthalimide reaction, Hofmann bromamide reaction. electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid.	

01-04-24 06-04-24	to	Section-C Nitro Compounds Preparation of nitro alkanes and nitro arenes and their chemical reactions. Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium.
		Section-D Aldehydes and Ketones Nomenclature and structure of the carbonyl group. Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides.
08-04-24 13-04-24	to	Advantage of oxidation of alcohols with chromium trioxide (Sarett reagent) pyridinium chlorochromate (PCC) and pyridinium dichromate.
		Physical properties. Comparison of reactivities of aldehydes and ketones.
15-04-24 20-04-24	to	Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol, Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives. Wittig reaction.
		Mannich reaction. Oxidation of aldehydes, Baeyer–Villiger oxidation of ketones, Cannizzaro reaction. MPV, Clemmensen, Wolff-Kishner, LiAlH_4 and NaBH_4 reductions.
21/04/24 onward		Revision