LESSON PLAN (ODD SEMESTER 2025-26)

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B.Sc. 1st Year (SEC-Chemistry)

Month/Week	First week	Second week	Third week	Fourth week
August	Composition of soil, concept of pH and pH measurement of soil,	Complexometric titrations, chelation, chelating agents,	Use of indicators, estimation of calcium and magnesium ions in soil.	Pure water, sources responsible for contaminating water, water sampling methods,
September	Water purification methods, determination of dissolved oxygen of a water sample.	A general study including preparation and uses of the following: Hair dye, soap, shampoo	A general study including preparation and uses of the following: suntan lotions, face powder	A general study including preparation and uses of the following: lipsticks, talcum powder, nail enamel.
October	General introduction to pesticides (natural and synthetic), benefits and adverse effects, changing concepts of pesticides,	Synthesis and technical manufacture and uses of representative pesticides in the following classes: organochlorines (gammexene), organophosphates (malathion).	Revision	Basic principle of pH metric, potentiometric and conductometric titrations,
November	Applications of conductivity measurements: determination of degree of dissociation, determination of Ka of acids and base,	Buffer solution, buffer action, Henderson–Hazel equation, buffer mechanism of buffer action.	Revision	Revision

B.Sc. II Year (SEC-Chemistry)

Month/Week	First week	Second week	Third week	Fourth week
August	General introduction, designing to eliminate potential safety problems, battery safeguards when using discrete batteries, battery construction,	Design of rechargeable batteries, factors affecting battery performance.	General characteristics and applications of primary batteries,	Types and characteristics of primary batteries,
September	Comparison of the performance characteristics of primary battery systems, recharging primary batteries.	Zinc-Carbon Batteries (Leclanche´ and Zinc Chloride Cell Systems)	General characteristics, cell chemistry, types of cells and batteries, construction, cell components.	Magnesium and Aluminum Batteries:
October	Mg/MnO2 batteries, other types of magnesium primary batteries.	General characteristics and applications of secondary batteries, types and characteristics of secondary batteries,	Revision	Comparison of performance characteristics for secondary battery systems and introduction, chemistry, construction, performance characteristics,
November	Leadbatteries, Lithium ionbatteries, Iron electrode batteries,	Nickel-Cadmium, Nickel-Metal hydride, Nickel-Zinc batteries.	Revision	Revision

B.Sc. III Year (Inorganic Chemistry)

Month/Week	First week	Second week	Third week	Fourth week
August	Limitations of valence bond theory, an elementary idea of crystal-f ield theory,	crystal field split ting in octahedral	crystal field split ting in tetrahedral and square planar complexes	factors affecting the crystal-f ield parameters.
September	A brief outline of thermodynamic stability of metal complexes and factors affec ting the s tab ility,	substitution reac tions of square planar complexes of Pt(II).	Types of magnetic behaviour, methods of determining magnetic susceptibility, spin-only formula.	L-S coupling, correlation of s and eff values, orbital contribution to magnetic moments,
October	application of magnetic moment data for 3dmetal complexes.	Types of electronic transitions, selection rules for d-d transitions, spectroscopic ground states, spectrochemical series.	Revision	discussion of the electronic spectrum of [Ti(H2O)6]3+ complex ion.
November	Orgel-energy level diagram for d1 and d9 states	Revision	Revision	Revision

B.Sc. III Year (Organic Chemistry)

Month/Week	First week	Second week	Third week	Fourth week
August	Principle of nuclear magnetic resonance, the PMR spectrum,number of signals, peak areas,	equivalent and nonequivalent protons positions of signals and chemical shift,shielding and deshielding of protons,	proton counting,splitting of signals and coupling constants, magnetic equivalence of protons.	Discuss ion of PMR spectra of the molecules
September	Classification and nomenclature. Monosaccharides, mechanism of osazone formation, inte rconversion of glucose and fructose, chain lengthening and chain shortening of aldoses.	Configuration of monosaccharides. Erythro and threo diastereomers. Conversion of glucose in to mannose.	Formation of glycos ides, ethers and esters. Determination of ring size of glucose and fructose. Open chain and cyclic structure of D(+)-glucose & D(-) fructose.	Mechanism ofmutarotation. Structures of ribose and deoxyribose.
October	An introduc tion to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination.	Organomagnesium compounds: the Grignard reagents-formation, structure and chemical reactions. O	Revision	Organolithium compounds: formation and chemical reactions.
November	Organozinc compounds: formation and chemical reactions.	Revision	Revision	Revision