

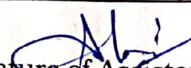
GOVERNMENT COLLEGE BIROHAR (JHAJJAR)

Summary of Lesson Plans of College Faculty for Academic Session 2025-26

Name of Assistant Professor: Dr. SHIVANI

Class & Sem.: BSc-L&PS Ist Sem. Subject: SEC-Role of Chemistry in Society.

Months	Topics/Chapters to be covered
July 2025 August 2025	<u>Analysis of Soil and H₂O</u> : Composition of soil, concept of pH & pH measurement of soil. Complexometric titrations, chelation, chelating agents, use of indicators, estimation of calcium and magnesium ions in soil. Definition of pure water. Sources responsible for contaminating water. Water sampling methods, water purification methods, determination of dissolved oxygen of a water sample.
September 2025	<u>Chemistry in cosmetics</u> : A general study including preparation and uses of the following: Hair dye, soap, shampoo, suntan lotions, face powder, lipsticks, talcum powder, nail enamel.
October 2025	<u>Pesticides</u> : General introduction to pesticides, natural and synthetic, benefits and adverse effects, Changing concepts of pesticides, brief introduction of structure activity relationship, synthesis and technical manufacture and uses of representative pesticides in following classes: organochlorines (gamma xene), organophosphates (malathion)
November 2025	<u>Experimental techniques</u> : Basic principle of pH metric, potentiometric and conductometric titrations, applications of conductivity measurements, determination of degree of dissociation, determination of K_a of acids and base. Buffer solution, buffer action, Henderson-Hassel equation, buffer mechanism of buffer action.


Signature of Assistant Professor

GOVERNMENT COLLEGE BIROHAR (JHAJJAR)

Summary of Lesson Plans of College Faculty for Academic Session 2025-26

Name of Assistant Professor: Dr. SHIVANI

Class & Sem.: B.Sc. 5th Sem. Subject: Organic Chemistry

Months	Topics/Chapters to be covered
July 2025 August 2025	<u>NMR - Spectroscopy - I</u> Principle of nuclear magnetic resonance, the PMR spectrum, number of signals, peak areas, equivalent and non-equivalent protons, position of signals and chemical shift, shielding and deshielding of protons, proton counting, splitting of signals and coupling constants, magnetic equivalence of protons.
September 2025	<u>NMR spectroscopy - II</u> : Discussion of PMR spectra of the molecules: ethyl bromide, n-propyl bromide, isopropyl bromide, 1,1-dibromoethane, 1,1,2-tribromoethane, ethanol, acetaldehyde, ethyl acetate, toluene, benzaldehyde and acetophenone. Simple problems on PMR spectroscopy for structure determination of organic compounds. <u>Carbohydrate - I</u> : Classification and nomenclature. Monosaccharides, mechanism of osazone formation, interconversion of glucose & fructose. Chain lengthening and chain shortening of aldoses. Configuration of monosaccharides. Fischer and Thorpe diastereomers. Conversion of glucose into mannose. Formation of glycosides, ethers and esters. Determination of ring size of glucose & fructose. Open chain and cyclic structure of D(+)-glucose and D(-) fructose. Mechanism of mutarotation.
October 2025	Structures of ribose and deoxyribose. <u>Carbohydrate - II</u> : - An introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch & cellulose) without involving structure determination.
November 2025	<u>Organometallic Compounds</u> : - Grignard reagents - formation, structure & chemical reactions. Organozinc compounds formation & chemical rxns Organolithium compounds formation & chemical rxns.

Shivani
Signature of Assistant Professor