Lesson Plan

Name of Faculty : Dr. Monica Khanna

Discipline : Biotechnology Department

Semester : 4th

Subject : Basics of Thermodynamics and Organic Chemistry (BS-202A)

Lesson Plan Duration : 15 Weeks (From April- August, 2021)

Work Load (Lecture/week (in hours): Lectures - 03

Week	Theory	
	Lecture Day	Topic (including Assignment/Test)
1st	1st	IUPAC Nomenclature (Rules)
	2nd	IUPAC Nomenclature (Rules)
	3rd	Systematic IUPAC nomenclature of alkenes,alkynes
2nd	1st	IUPAC nomenclature of cycloalkanes,aromatics
	2nd	IUPAC nomenclature of bicyclicorganic compounds.
	3rd	IUPAC nomenclature of polyfunctional organic compounds.
3rd	1st	Bond Line Notation.
	2nd	Introduction to Organic Reactions
	3rd	Substitution, Addition, Elimination reactions
4th	1st	Wanger-Meerwin Rearrangement reaction.
	2nd	Hyperconjugation:concept and consequences
	3rd	Mole Concept, Revision (Assignment of Nomenclature)
5th	1st	Hydrogen Bonding,its types.
	2nd	Its importance in Organic Compounds
	3rd	Concept of Tautomerism.
6th	1st	Ring-Chain Tautomerism,Ring-Chain Isomerism.
	2nd	Properties and reactions of Ketoenol Tautomerism.
	3rd	Concept of Stereo Chemistry, Classification of Stereomers,
7th	1st	Classification of Diastereomers,Seperation of Enantiomers.
	2nd	Absolute configuration, (R & S), Projection Formulae.
	3rd	Stereochemistry of compounds containing two asymmetric C-atoms, Stereochemistry of biphenyls.

8th	1st	Concept of Geometrical Isomerism, E & Z Nomenclature.
	2nd	Aldol Condensation
	3rd	Revision
9th	1st	internal energy, enthalpy;their relationship and their significance.
	2nd	First law of thermodynamics.
	3rd	Kirchoff's Equation
10th	1st	Heat capacity at constant pressure and volume and their relationship.
	2nd	Concepts of Entropy
	3rd	Revision and Test
11th	1st	Second law of thermodynamics
	2nd	Entropy changes for reversible and irreversible processes
	3rd	Entropy of mixing.
12th	1st	Revision and Test
	2nd	Third Law of Thermodynamics.
	3rd	Numerical problems on Laws of Thermodynamics.
13th	1st	Basic concept of Equilibrium and steady state conditions,
	2nd	Free energy and its relation with equilibrium constant
	3rd	Chemical potential,
14th	1st	Gibbs-Duhem equation and their application,
	2nd	Standard biochemical state and standard free energy changes.
	3rd	Thermodynamic basis of Biochemical reactions,
15th	1st	solvent extraction for purification of compounds.
	2nd	Binding – Non-cooperative binding,
	3rd	Co-operative binding and its biological significance

Dr. Monica Khanna

Associate Professor

APS Department

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