



जम्मू केंद्रीय विश्वविद्यालय
CENTRAL UNIVERSITY OF JAMMU

रसायन शास्त्र एवं रासयानिक बिज्ञान

DEPARTMENT OF CHEMISTRY AND CHEMICAL SCIENCES

राया-सूचानी (बागला), जिला सांबा-181143, जम्मू, जम्मू एवं कश्मीर

Rahya-Suchani (Bagla), District Samba-181143, Jammu, Jammu & Kashmir

**Integrated B.Sc.-M.Sc. Chemistry
Teaching Plan (August 2022-January 2023)**

Semester: Odd (Open Elective (UG/PG))
Course: Fundamentals of Organic Chemistry-I, 4 Credits, 4 h/w
Course Teacher: Dr. V. Sridharan

Week	Lecture No./Day	Topic to be Taught	No of Hours	Suggested Readings
1 st Week	I	Basics of organic chemistry: Classification and nomenclature of organic compounds	1	1,2,3,4
	II	Contd...	1	1,2,3,4
	III	Hybridization, Shapes of molecules	1	1,2,3,4
	IV	Influence of hybridization on bond lengths, bond angles and bond energy	1	1,2,3,4
2 nd Week	I	Contd...	1	1,2,3,4
	II	Inductive effect, Polar covalent bonds and dipole moment	1	1,2,3,4
	III	Delocalized bonds and resonance, Drawing resonance structures	1	1,2,3,4
	IV	Contd...	1	1,2,3,4
3 rd Week	I	Hyperconjugation	1	1,2,3,4
	II	Steric effect	1	1,2,3,4
	III	Hydrogen bonding, Inter- and intramolecular hydrogen bonding	1	1,2,3,4
	IV	Effect on boiling point and solubility	1	1,2,3,4
4 th Week	I	Introduction to organic reaction mechanism: Addition reactions	1	1,2,3,4
	II	Elimination reactions	1	1,2,3,4
	III	Substitution reactions	1	1,2,3,4
	IV	Rearrangement reactions	1	1,2,3,4
5 th Week	I	Homolytic and heterolytic C–C bond fission	1	1,2,3,4
	II	Electrophiles and nucleophiles	1	1,2,3,4
	III	Generation, structure and stability of reactive intermediates: carbocations	1	1,2,3,4
	IV	Carbanions	1	1,2,3,4
6 th Week	I	Free radicals	1	1,2,3,4
	II	Carbenes and nitrenes	1	1,2,3,4
	III	Acids and bases	1	1,2,3,4
	IV	Factors affecting acid and base strength	1	1,2,3,4
7 th Week	I	Aromaticity: Resonance in benzene, Huckel's rule	1	1,3,4
	II	Aromatic, non-aromatic and anti-aromatic compounds	1	1,3,4
	III	Contd...	1	1,3,4
	IV	Contd...	1	1,3,4



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8 th Week	I	Aromatic character of arenes	1	1,3,4
	II	Cyclic carbocations/carbanions and heterocyclic compounds	1	1,3,4
	III	Electrophilic substitution reactions in aromatic compounds	1	1,3,4
	IV	Contd...	1	1,3,4
9 th Week	I	General mechanisms of nitration, halogenation	1	1,3,4
	II	Sulphonation, Friedel-Craft's acylation and alkylation	1	1,3,4
	III	<i>ortho/para/meta</i> directive effect of substituents	1	1,3,4
	IV	Contd...	1	1,3,4
10 th Week	I	Stereochemistry-I: Concept of isomerism, Optical isomerism	1	1,4
	II	Chirality and elements of symmetry	1	1,4
	III	Classification of stereoisomers	1	1,4
	IV	Enantiomersim and diastereoisomerism involving one and two chiral centers	1	1,4
11 th Week	I	Contd...	1	1,4
	II	<i>Meso/dl</i> and <i>erythro/threo</i> isomers	1	1,4
	III	Contd...	1	1,4
	IV	Relative and absolute configurations	1	1,4
12 th Week	I	<i>D-L, R-S</i> systems of nomenclature	1	1,4
	II	Contd...	1	1,4
	III	Fischer, Newmann and Sawhorse projection formulae and their interconversion.	1	1,4
	IV	Contd...	1	1,4
13 th Week	I	Stereochemistry-II: Conformational analysis of ethane and <i>n</i> -butane	1	1,4
	II	Conformational analysis of cyclohexane	1	1,4
	III	Contd...	1	1,4
	IV	Preferred conformations of cyclic and acyclic compounds	1	1,4
14 th Week	I	Contd...	1	1,4
	II	Ring inversion of cyclohexane	1	1,4
	III	Contd...	1	1,4
	IV	Geometrical isomerism: <i>cis-trans, syn-anti, E-Z</i> notations	1	1,4
15 th Week	I	Contd...	1	1,4
	II	Contd...	1	1,4
	III	Geometrical isomerism in oximes	1	1,4
	IV	Geometrical isomerism in cumulenes and alicyclic compounds	1	1,4
16 th Week	I	Revision of Units I and II	1	
	II	Revision of Units III, IV and V	1	



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III	Discussion of model question papers	1	
IV	Discussion of model question papers	1	

REFERENCES

1. R. T. Morrison, R. N. Boyd and S. K. Bhattacharjee, *Organic Chemistry*, 7th Ed., 2011.
2. A. Bahl and B. S. Bahl, *A Text Book of Organic Chemistry*, 22nd Ed., 2016.
3. L.G. Wade Jr., *Organic Chemistry*, Prentice Hall, 8th Ed., 2016.
4. P. Y. Bruice, *Organic Chemistry*, 8th Ed., 2016.
5. F. A. Carey and R. M. Giuliano, *Organic Chemistry, McGraw Hill*, 10th Ed., 2016.