SS 801 ADVANCED ORGANIC CHEMISTRY 3-1-0-4

Functional Group Inter-conversions: Introduction to various functional group transformations – concepts and strategies. Protection and deprotection of hydroxyl, carbonyl, amines, carboxylic acids and alkynes.

Retrosynthesis: Introduction to retrosynthetic analysis and designing of the synthesis. Disconnection approach, synthons, synthetic equivalents. Selective organic transformations – chemoselectivity, regioselectivity, stereoselectivity, enantioselectivity. Illustrative examples to explain disconnection approach.

Photochemistry: Introduction to basic law of photochemistry, electronic excitation, unimolecular and bimolecular processes. Thermal vs. photochemical reactions. Norrish type I and II reactions, Stern-Volmer equation, Paterno-Büchi reactions, photochemistry of arenes.

Pericyclic reactions: Introduction, conservation of orbital symmetry, selection rules, electrocyclic reactions, cycloadditions, cheletropic reactions. Sigmatropic rearrangements – Sommelet, Haüser Cope and Claisen rearrangement. Examples of various [4+2] cycloadditon reactions.

Naming reactions and rearrangements: Reactions and illustrative examples of Arndt-Eistert Synthesis, Baeyer-Villegar oxidation, Barnford-Stevens reaction, Dess-Martin oxidation, Heck reaction, Jacobsen epoxidation, Lossen rearrangement, Mannish reaction, McMurry reaction, Ullmann reaction, Wittig reaction.

TEXT BOOKS/REFERENCES:

1. Jerry March, "*Advanced Organic chemistry: Reactions, Mechanisms, and Structure*", Fourth Edition, Wiley Interscience Publication, 1999.
2. Stuart Warren, "*Organic Synthesis – The Disconnection Approach*", Oxford University Press, 2001.
3. R.T. Morrison and R. N. Boyd, "*Organic Chemistry*", Sixth Edition, Dorling Kindersley Pvt. Ltd., 2009
4. I. L. Finar, "*Organic Chemistry, Vol. I and II*", Sixth Edition, ELBS, 1995