

SUBJECT NO-CY60003, SUBJECT NAME- Organic Photochemistry and Pericyclic
Reactions

LTP- 3-0-0,CRD- 3

SYLLABUS :-

Prerequisite : Nil
Photochemistry: Principles of photochemical reactions; Excited states and their properties; experimental set up for photochemical reactions; Several useful photochemical reactions and their applications in organic synthesis (isomerization, Paterno-Buchi reaction, Norrish type I and II reaction, Photoreduction, Rearrangements: di- π -methane, oxa di- π - and aza di- π -methane rearrangements, Photocycloaddition, Photochemical aromatic substitution reaction, Reactions with singlet oxygen, Photochemical methods for protection and deprotection). Photochemistry of biological systems (photosensitized reactions of DNA/RNA, DNA damage and repair). Pericyclic reactions: Conservation of molecular orbital symmetry, Symmetry properties of molecular orbitals, Transition state aromaticity, Aromaticity and anti aromaticity (Huckel and Mobius ring), Correlation diagrams and FMO method, Allowed and forbidden reactions, Electrocyclic reactions, Cycloaddition reactions (2 2; 4 2; 6 4; 3 2; 4 3 and related reactions, Cheletropic addition and elimination), Sigmatropic rearrangement, Group transfer reactions (ene reactions).
Books: Advanced Organic Chemistry: Structure and Mechanisms (Part A). By Frances A Carey and Richard J Sundberg. Springer; CRC Handbook of Photochemistry and Photobiology. Eds by. William M. Horspool and Pill-Soon Song, CRC Press; Organic Photochemistry (Vol 4) by Albert Padwa (Ed.). Merce Dekker. Pericyclic reactions by Ian Fleming. Oxford University Press. Cycloaddition reactions in organic synthesis by W. Carruthers. Pergamon.