

PHARMACEUTICAL CHEMISTRY –II (Organic chemistry-I)

PH. 2.10 THEORY

3 hours/week

UNIT-I

Bohr' atomic structure, Atomic and Molecular orbital concepts, Quantum numbers, Chemical bonding: Ionic bond, Covalent bonds, Coordinate covalent bonds, Type of covalent bonds, Tetravalency of carbon, Hybridization: sp^3 , sp^2 , sp . Bond energy, Bond length, Bond angle, Electronegativity, Polarity in Covalent bonds, Hydrogen bonding.

I.U.P.A.C. Nomenclature of Organic compounds.

UNIT-II

Organic Reactions and their Mechanisms:

Reaction mechanism, Electron Displacement Effects: Inductive Effect, Mesomeric Effect, Electromeric Effect, Hyperconjugative Effect. Homolytic bond fission, Heterolytic bond fission. Structure and Stability of: Carbonium ions, Carbanion ions and Free radicals. Attacking Reagents: Electrophilic reagents, Nucleophilic reagents.

Brief Concept of Organic reactions: Substitution reactions, Addition reactions, Elimination reaction and Rearrangement reactions.

UNIT-III

Alkanes: Nomenclature, General methods of preparation, physical properties, combustion, Free radical substitution reactions (Chain reaction: halogenation.)

Cycloalkanes: Nomenclature, General methods of preparation, Chemical reactions, Relative stabilities: Bayer strain theory, Sachse-Mohr concept of strainless rings.

Conformational analysis of cyclohexane.

Alkenes: Nomenclature, general methods of preparation, Electrophilic addition reactions, Markovnikov rule, Antimarkovnikov rule, Catalytic hydrogenation, Oxidation, Combustion.

Brief introduction to alkadienes, Diel's Alder reaction.

Alkynes: Nomenclature, general methods of preparation, Electronegativity of sp -hybridized carbon and acidity of acetylene, Substitution and Addition reactions.

UNIT-IV

Haloalkanes: Nomenclature general methods of preparation, Nucleophilic Substitution reactions: SN^1 & SN^2 reactions.

Alcohols: Nomenclature, General methods of preparation, Physical properties (Hydrogen bonding) Nucleophilic substitution reactions and Elimination reaction, Saytzeff rule.

Ethers: Nomenclature, General methods of preparation, Physical and Chemical properties.

Amines: Nomenclature, General methods of preparation, Physical and Chemical properties, Basicity.