PHARMACEUTICAL CHEMISTRY-III

(Organic Chemistry-II)

PH.3.5 THEORY 3 hours/ week

UNIT –I

Stereochemistry:

Isomerism: Different types of isomerism, their nomenclature and associated physicochemical properties, Structural Isomerism: Chain isomerism, Positional isomerism, Functional isomerism and Metamerism, Keto-Enol tautomerism.

Conformational Isomerism: Conformations of Ethane and Butane.

Geometrical Isomerism: Cis-Trans Isomers and E-Z Isomers, Physical and Chemical properties, Stability of Cis and Trans Isomers.

Optical Isomerism:

Optical activity, Specific rotation, Asymmetric carbon, Chirality, Fischer projection, Enantiomerism, Diastereoisomerism.

Specification of configuration:

Absolute and Relative configuration (D, L system and R, S system).

External and Internal compensation, Racemic mixture and Resolution of racemic mixture, Racemization, Walden inversion.

UNIT – II

Aldehydes and Ketones: General methods of preparation, acidity of α-hydrogen Nucleophilic addition reactions, Aldol condensation reaction, Cannizzaro reaction, Clemmensen reduction.

Carboxylic acids: Acid halides and anhydrides: Nomenclature, general methods of preparation, physical and chemical properties, Effect of substituent on acidity.

Esters: Nomenclature, preparations with special emphasis on synthesis of Malonic and acetoacetic esters and their synthetic applications.

UNIT – III

Benzene and its homologues: Structure of benzene, Resonance, Aromatic character, Huckel Rule.

General methods of preparation, Physical properties, Chemical properties: Electrophilic substitution reactions, Friedel crafts reaction, Catalytic hydrogenation.

Orientation of aromatic substitution in mono-substituted benzene

Phenols:General methods of preparation, Acidity, Characteristic reactions

UNIT – IV

Nucleophilic aromatic substitution reactions, α,β–unsaturated carbonyl compounds, stereoselective and stereospecific reactions, organic reagents used in drug synthesis (e,g,(Aluminium tert-butoxide, Lithium Aluminium Hydride, Grignard reagent, N-Bromo-succinimide (NBS), Diazomethane)