

BP202T. PHARMACEUTICAL ORGANIC CHEMISTRY –I (Theory)

UNIT-I

- **Classification, nomenclature and isomerism**

Classification of Organic Compounds

Common and IUPAC systems of nomenclature of organic compounds (up to 10 Carbons open chain and carbocyclic compounds)

Structural isomerisms in organic compounds

UNIT-II

- **Alkanes*, Alkenes* and Conjugated dienes***

SP³ hybridization in alkanes, Halogenation of alkanes, uses of paraffins.

Stabilities of alkenes, SP² hybridization in alkenes

E1 and E2 reactions – kinetics, order of reactivity of alkyl halides, rearrangement of

carbocations, Saytzeffs orientation and evidences. E1 verses E2 reactions, Factors affecting E1

and E2 reactions. Ozonolysis, electrophilic addition reactions of alkenes, Markownikoff's

orientation, free radical addition reactions of alkenes, Anti Markownikoff's orientation.

Stability of conjugated dienes, Diel-Alder, electrophilic addition, free radical addition

reactions of conjugated dienes, allylic rearrangement

UNIT-III

- **Alkyl halides***

SN¹ and SN² reactions - kinetics, order of reactivity of alkyl halides, stereochemistry and rearrangement of carbocations.

SN¹ versus SN² reactions, Factors affecting SN¹ and SN² reactions

Structure and uses of ethylchloride, Chloroform, trichloroethylene, tetrachloroethylene,

dichloromethane, tetrachloromethane and iodoform.

- **Alcohols***- Qualitative tests, Structure and uses of Ethyl alcohol, Methyl alcohol,

chlorobutanol, Cetosteryl alcohol, Benzyl alcohol, Glycerol, Propylene glycol

UNIT-IV

• Carbonyl compounds* (Aldehydes and ketones)

Nucleophilic addition, Electromeric effect, aldol condensation, Crossed Aldol condensation,

Cannizzaro reaction, Crossed Cannizzaro reaction, Benzoin condensation, Perkin

condensation, qualitative tests, Structure and uses of Formaldehyde, Paraldehyde, Acetone,

Chloral hydrate, Hexamine, Benzaldehyde, Vanilin, Cinnamaldehyde.

UNIT-V

• Carboxylic acids*

Acidity of carboxylic acids, effect of substituents on acidity, inductive effect and qualitative

tests for carboxylic acids ,amide and ester

Structure and Uses of Acetic acid, Lactic acid, Tartaric acid, Citric acid, Succinic acid. Oxalic

acid, Salicylic acid, Benzoic acid, Benzyl benzoate, Dimethyl phthalate, Methyl salicylate and

Acetyl salicylic acid

• Aliphatic amines* - Basicity, effect of substituent on Basicity. Qualitative test, Structure and

uses of Ethanolamine, Ethylenediamine, Amphetamine

BP208P. PHARMACEUTICAL ORGANIC CHEMISTRY -I (Practical

1. Systematic qualitative analysis of unknown organic compounds like

- Preliminary test: Color, odour, aliphatic/aromatic compounds, saturation and unsaturation, etc.
- Detection of elements like Nitrogen, Sulphur and Halogen by Lassaigne's test
- Solubility test
- Functional group test like Phenols, Amides/ Urea, Carbohydrates, Amines, Carboxylic acids, Aldehydes and Ketones, Alcohols, Esters, Aromatic and Halogenated Hydrocarbons, Nitro compounds and Anilides.
- Melting point/Boiling point of organic compounds

- Identification of the unknown compound from the literature using melting point/ boiling point.
- Preparation of the derivatives and confirmation of the unknown compound by melting point/ boiling point.
- Minimum 5 unknown organic compounds to be analysed systematically.

2. Preparation of suitable solid derivatives from organic compounds

3. Construction of molecular models