

COURSE-VI BSCCH 202 ORGANIC CHEMISTRY- II

Block 1 Derivatives of Hydrocarbons-I

Unit -1 Alcohols

1.1 Objectives

1.2 Introduction

1.3 Classification and nomenclature.

1.4 Monohydric alcohols

1.4.1 Nomenclature

1.4.2 Method of formation

1.4.3 Reduction of aldehydes, ketones, carboxylic acids and esters

1.4.4 Acidic nature

1.4.5 Physical properties

Chemical reactions of alcohols

1.5 Dihydric alcohols

1.5.1 Nomenclature,

1.5.2 Methods of formation,

1.5.3 Physical properties

1.5.4 Chemical reactions of vicinal glycols

1.6 Trihydric alcohol-

1.6.1 Nomenclature

1.6.2 Methods of formation,

1.6.3 Chemical reactions of glycerol

1.7 Summary

1.8 Terminal Question

1.9 Answers

Unit -2 Phenols

2.1 Objectives

2.2 Introduction

2.3 Nomenclature

2.4 Structure and bonding

2.5 Preparation of phenols

- 2.6 Physical properties
 - 2.6.1 Acidic character
- 2.7 Comparative acidic character of alcohols and phenols
- 2.8 Chemical reactions of phenols
 - 2.8.1 Electrophilic aromatic substitution
 - 2.8.2 Acylation and carboxylation
 - 2.8.3 Mechanism of Fries rearrangement
 - 2.8.4 Claisen rearrangement
 - 2.8.5 Gatterman synthesis
 - 2.8.6 Houben-Hoesch reaction
 - 2.8.7 Lederer- manasse reaction
 - 2.8.8 Reimer-Tiemann reaction
- 2.9 Summary
- 2.10 Terminal Question
- 2.11 Answers

Unit -3 Ethers and epoxides

- 3.1 Objectives
- 3.2 Introduction
- 3.3 Nomenclature of ethers
- 3.4 Methods of formation
- 3.5 Physical properties
- 3.6 Chemical properties
- 3.7 Synthesis of epoxides
- 3.8 Acid and base catalysed ring opening of epoxides
- 3.9 Orientation of epoxide ring opening
- 3.10 Summary
- 3.11 Terminal Question
- 3.12 Answers

Block 2 Derivatives of Hydrocarbons-II

Unit -4 Aldehydes

- 4.1 Objectives

- 4.2 Introduction
- 4.3 Nomenclature and structure of the carbonyl group
- 4.4 Synthesis of aldehydes with particular reference
- 4.5 Synthesis of aldehyde from acid chloride
- 4.6 Synthesis of aldehyde using 1, 3-dithianes
- 4.7 Physical properties.
- 4.8 Mechanism of nucleophilic addition to carbonyl group with particular emphasis on-
- 4.9 Benzoin, aldol, perkin and Knoevenagel condensation
 - 4.9.1 Condensation with ammonia and its derivatives.
 - 4.9.2 Wittig reaction
 - 4.9.3 Mannich reaction
 - 4.9.4 Oxidation of aldehydes
 - 4.9.5 Baeyer- Cannizzaro reaction
 - 4.9.6 MPV reaction
 - 4.9.7 Clemmensen reaction
- 4.10 Summary
- 4.11 Terminal Question
- 4.12 Answers

Unit -5 Ketons

- 5.1 Objectives
- 5.2 Introduction
- 5.3 Nomenclature and structure of ketones
- 5.4 Synthesis of ketones
- 5.5 Synthesis of ketone from nitriles and carboxylic acid
- 5.6 Physical properties
- 5.7 Chemical reactions of ketone
 - 5.7.1 Villiger oxidation of ketone
 - 5.7.2 Wolff-Kishner reaction
 - 5.7.3 Halogenation of enolizable ketone
- 5.8 Summary
- 5.9 Terminal Question

5.10 Answers

Unit -6 Carboxylic acids

6.1 Objectives

6.2 Introduction

6.3 Nomenclature,

6.4 Structure and bonding

6.5 Physical properties

6.6 Acidity of carboxylic acids effect of substituents on acid strength

6.7 Preparation of carboxylic acids

6.8 Reactions of carboxylic acids

6.9 Hell-volhard-Zelinsky reaction

6.10 Synthesis of acid chlorides, esters and amides

6.11 Reduction of carboxylic acids

6.12 Mechanism of decarboxylation

6.13 Methods of formation and chemical reactions of halo acids

6.14 Hydroxy acids: malic, tartaric and citric acids

6.15 Summary

6.16 Terminal Question

6.17 Answers

Unit -7 Functional Derivatives of Monocarboxylic Acids

7.1 Objectives

7.2 Introduction

7.3 Structure and nomenclature of acid chlorides, esters, amides and acidhydrides

7.4 Relative stability of acyl derivative

7.5 Physical properties

7.6 Preparation of carboxylic acid derivatives

7.7 Chemical reactions

7.8 Mechanism of esterification and hydrolysis (acidic and basic)

7.9 Summary

7.10 Terminal Question

7.11 Answers

Block 3

Unit -8 Organic Compounds of Nitrogen (Nitro compounds)

8.1 Objectives

8.2 Introduction

8.3 Troarenes

8.4 Chemical reactions of nitroalkanes

8.5 Mechanism of nucleophilic substitution in nitroarenes and their reduction in acidic

8.6 Neutral and alkaline media

8.7 Picric acid

8.8 Summary

8.9 Terminal Question

8.10 Answers

Unit 9 Amino Compounds

9.1 Introduction

9.2 Objectives

9.3 Structure and nomenclature of amines

9.4 physical properties

9.5 Stereochemistry of amines

9.6 Separation of a mixture of primary

9.7 secondary and tertiary amines

9.8 Structural features effecting basicity of amines

9.9 Preparation of alkyl and aryl amines

9.10 Reduction amination of aldehydic and ketonic compounds

9.11 Gabriel phthalimide synthesis

9.12 Hofmann bromination reaction

9.13 Summary

9.14 Terminal Question

9.15 Answers

Unit -10 Organosulphur and Organo Phosphorus Compounds

10.1 Objectives

10.2 Introduction

- 10.3 Introduction, thioether,
- 10.4 preparation of Thiols and Thioethers
- 10.5 Properties of Thiols and Thioethers
- 10.6 Summary
- 10.7 Terminal Question
- 10.8 Answers