Exam. Code: 0431
Sub. Code: 3441

1127

M.Sc. (Applied Chemistry/Pharmaceutical)

1st Semester

Paper-101: Organic Chemistry-I

Time allowed: 3 Hours | Max. Marks: 60

***NOTE**: Attempt five questions in all, including Question No. 1X (Unit-V) which is compulsory and selecting one question each from Unit I-IV.*

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UNIT – I

I. Explain the following reactions with mechanism:
   (a) Dieckmann reaction
   (b) Michael Addition Reaction
   (c) Aldol Condensation (4+4+4)

II. Discuss the following reactions with mechanism:
   (a) Mannich reaction
   (b) Wittig reaction
   (c) Stork examine reaction (4+4+4)

UNIT – II

III. Discuss (taking appropriate examples) the important use of the following reagents in organic synthesis and functional group transformations: -
   (a) Merrifield resin
   (b) Wilkinson Catalyst
   (c) Selenium dioxide
   (d) Crown Ethers
   (e) Lithium Diisopropyl Amide (LDA)
   (f) Dicyclohexyl-carbodiimide (6×2)

IV. (a) What is dipole inversion? Elaborate the synthesis of propinaldehyde using formaldehyde and 1,3-dithiane.
   (b) Write short notes on: -
      (i) Phase transfer catalysts
      (ii) Peterson's synthesis (6+6)

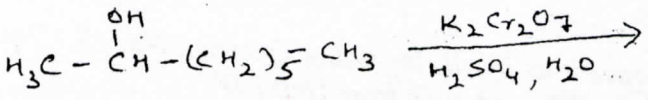
UNIT – III

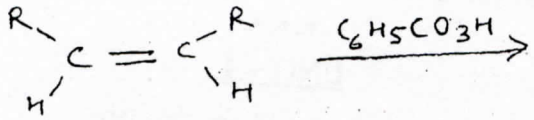
V. Write short notes on: -
   (a) Birch reduction
   (b) Reduction of carbonyls with Lithium Aluminium Hydride
   (c) Catalytic Hydrogenation of Hydrocarbons (4+4+4)

P.T.O.

VI. Complete the following reactions and discuss the mechanism: -

(a) 

(b) 

(c) 

(4+4+4)

UNIT – IV

VII. (a) What are carbenes? Discuss the structure and stability of carbenes.

(b) Write a short note on Wolff rearrangement.

(c) Discuss the thermodynamic and kinetic control of enolate formation from 2-methylcyclohexanone with base. (4+4+4)

VIII. (a) What are enamines? How can these be prepared and discus the mechanism of formation of enamines?

(b) What are enolate anions? How are they formed and justify the statement that enolate anions are ambient nucleophiles?

(c) Write a note on addition reactions of carbine. (4+4+4)

UNIT-V

IX. (a) Define chemoselectivity with example.

(b) What is swern oxidation?

(c) Give the composition of Jone's reagent and Collin's reagent.

(d) What is Grignard's reagent and how is it prepared?

(e) Give use of Osmium tetraoxide.

(f) What is fries rearrangement? (6×2)

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