Exam Code: 0431
Sub. Code: 25920

2125

M.Sc. (Applied Chemistry/Pharmaceutical)
First Semester
Paper – 101: Organic Chemistry – I

Time allowed: 3 Hours **Max. Marks: 60**

NOTE: Attempt five questions in all, including Question No. 9 (Unit-V) which is compulsory and selecting one question each from Unit I - IV.

x-x-x

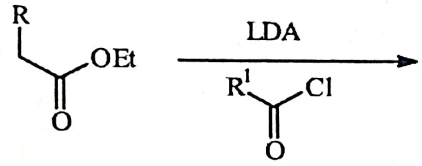
UNIT 1

1. With suitable example, explain the following with mechanism:
   (i) Diekmann reaction
   (ii) Arndt-Eistert synthesis (6, 6)

2. Discuss the following with mechanism:
   (i) Woodward and Prevost hydroxylation
   (ii) Stork-enamine reaction (6, 6)

UNIT 2

3. (a) How will you prepare Lithium diisopropyl-amide (LDA)? Write the product and outline the mechanism for the conversion:



   (b) With suitable examples, discuss the uses of the tri-*n*-butyltinhydride and 1,3-dithiane (Umpolung) in organic synthesis. (6, 6)

4. (a) Describe the mechanism for the conversion of phenols to quinones using oxidizing agent.
   (b) Osmium tetraoxide (OsO_4) undergoes cis-cycloaddition with olefins to give cis-1,2-diols. Explain with mechanism. (6, 6)

UNIT 3

5. (a) Describe the neighbouring group mechanism with suitable example.
   (b) Elaborate the reactivity effects of substrate structure, attacking nucleophile, leaving group and reaction medium in aliphatic nucleophilic substitution reactions. (4, 8)

6. (a) With suitable example, illustrate the SET mechanism.
   (b) Discuss the mechanistic route of nucleophilic substitution at allylic carbon. (6, 6)

P.T.O.

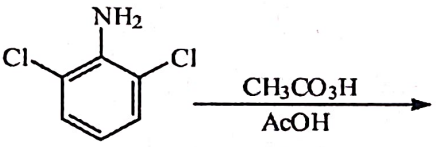
UNIT 4

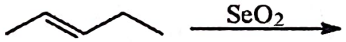
7. (a) Taking any appropriate example, describe the Arenium ion mechanism for aromatic electrophilic substitution reaction.
   (b) Explain the mechanism of Fries rearrangement. (6, 6)

8. (a) Discuss the mechanism of Smiles rearrangement.
   (b) Illustrate briefly the effect of leaving group and attacking nucleohile on aromatic nucleophilic substitution reactions. (6, 6)

UNIT - 5

9. (a) What is Robinson annulation?
   (b) Explain Sharpless asymmetric epoxidation.
   (c) Illustrate the use of DCC.
   (d) Predict the products of the following reactions:

(i) 

(ii) 

   (e) Distinguish between classical and non-classical cabocations.
   (f) Explain diazonium coupling. (2×6=12)

x-x-x