PG – 188

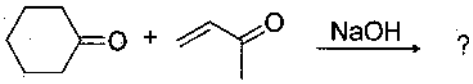
IV Semester M.Sc. Examination, June 2017
(CBCS) (Semester Scheme)
CHEMISTRY
C – 403 – OC : Organic Synthesis

Time : 3 Hours Max. Marks : 70

***Instruction** : Answer question No. **1** and **any five** of the remaining questions.*

1. Answer **any ten** of the following. **(10×2=20)**

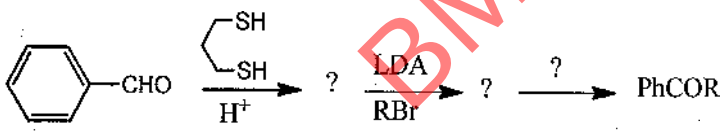
a) Predict the product and write mechanism.



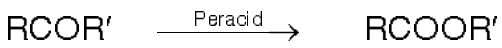
b) What is Mitsunobu reaction ? Give the mechanism with an example.

c) Write any two synthetic applications of Stork-enamine reactions and give the mechanism.

d) Complete the following with suitable reagents and conditions :



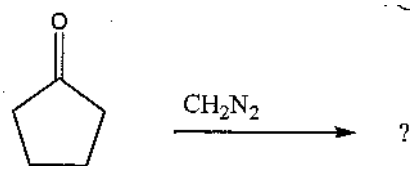
e) Write the reasonable mechanism for the following conversion :



f) Give an account of Birch reduction. Formulate the steps involved in the reduction of anisole.

g) Explain the Japp-Klingeman reaction with a mechanism.

h) Complete the following with a reasonable mechanism :

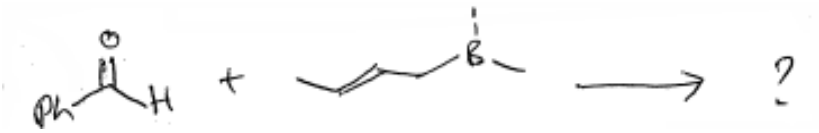


i) Explain double asymmetric induction with an example.

P.T.O.

j) What is asymmetric amplification ? Explain with an example.

k) Predict the product and propose a mechanism.



l) Give an example of 1, 4 – asymmetric induction. Propose a reasonable mechanism.

2. a) Discuss the synthetic applications and give a mechanism for Meyer synthesis.

b) What is Chichibabin reaction ? Give the mechanism with an example.

c) Write briefly on : Deckman cyclization and Hofmann-Martius reaction.

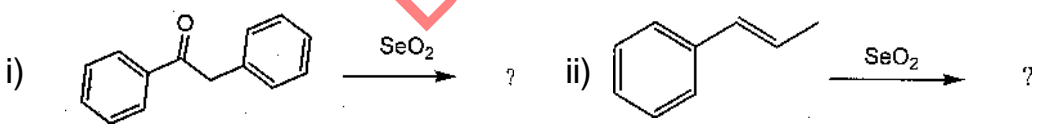
(3+3+4=10)

3. a) How Wilkinson's catalyst brings about the reduction of alkenes ? Explain with a mechanism.

b) Explain how alkenes are converted to alkanes by hydroboration reaction. Propose a mechanism.

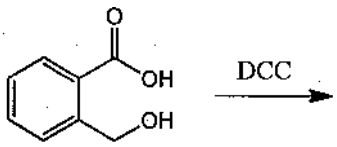
c) Predict the products and propose a mechanism for the second reaction.

(3+3+4=10)



4. a) What is DDQ ? Discuss its applications in organic synthesis.

b) Predict the product and propose a mechanism.



c) Discuss the mechanisms of Provost and Woodward hydroxylations with suitable examples.

(3+3+4=10)

5. a) Give the synthetic applications of Osmium tetraoxide and DMSO.
   b) What is Dess-Martin oxidation ? Explain with a mechanism.
   c) Explain the Wolf-Kishner reduction with a mechanism. **(4+3+3=10)**

6. a) Discuss the mechanism of Asymmetric Sharpless expoxidation with an example.
   b) Give the preparation of (S) BINAL–H and mention its uses.
   c) Write a note on asymmetric reduction by S,S-CHIRAPHOS/H_2.
   (4+3+3=10)

7. a) With a suitable example, give the mechanism of enatioselective Michael addition.
   b) Explain the asymmetric Aldol condensation with a mechanism.
   c) Briefly on the enantioselective alkylation with Chiral PTC.
   (3+4+3=10)

8. a) What is Prins reaction ? Explain with a suitable mechanism.
   b) What is Skaraup synthesis of quinoline ? Give the mechanism.
   c) Write a reasonable mechanism for the following conversion.
   (3+4+3=10)