Reg. No. | | | | | | | | | |

ICH 503

III Semester M.Sc. Degree Examination,
November/December 2019

INDUSTRIAL CHEMISTRY

Synthetic Heterocyclic And Medicinal Chemistry

Time : 3 Hours] [Max. Marks : 70

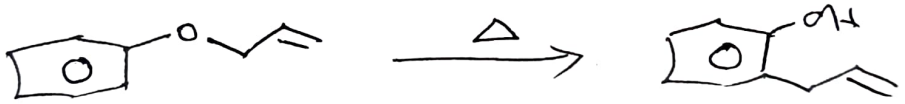
Instructions : *Answer Part A and any five questions from Part B.*

PART – A

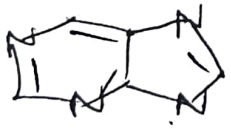
Answer **any five** questions : **(5 × 2 = 10)**

1. (a) What is C-0, 1 i-dix? Explain with an example.

(b) Propose a suitable mechanism for the following reaction :



(c) Name the following using Hantzch-Widman system.

(i) 

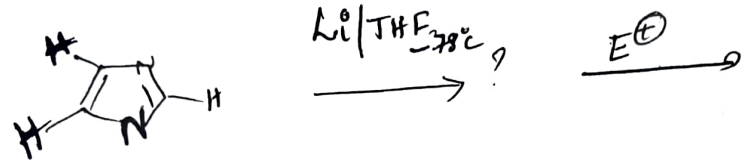
(ii) 

(d) What are prodrugs? Explain with examples.

(e) Suggest any two reagents used for protection and deprotection of the carbonyl group.

(f) Give the mechanism of synthesis of any one syndrome by a 1,3-dipolar cyclo addition.

(g) Predict the product and propose a mechanism :

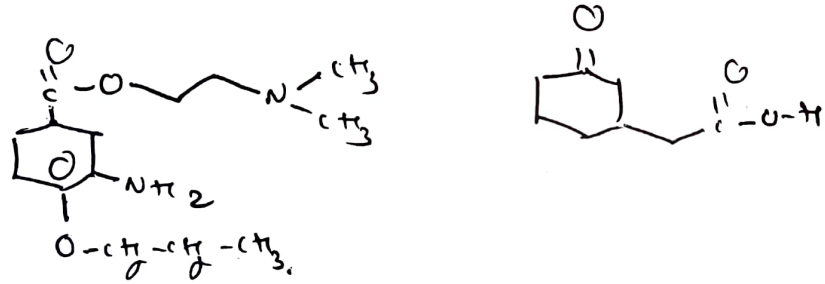


(h) Write briefly about the forces involved in the drug-receptor interactions.

PART – B

Answer **any five** full questions : **(5 × 12 = 60)**

2. (a) Suggest suitable reterosynthetic analysis and propose synthetic route for the following target molecule.

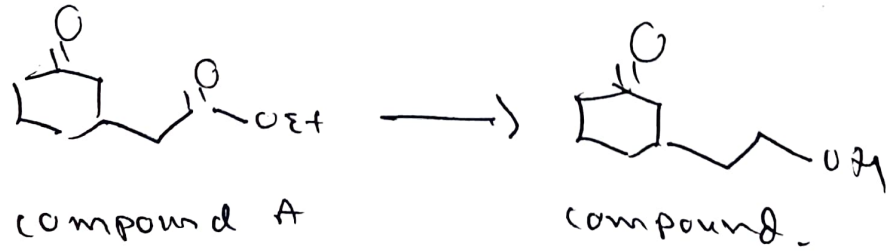


(b) Use C-C dix in the retrosynthetic analysis of the following target molecules and sketch their synthesis.

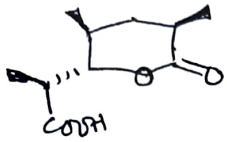
(i) (ii)

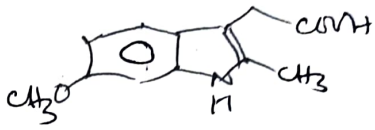
(6 + 6)

3. (a) How do you convert compound A into compound B by using any suitable protecting reagent in the following reaction :



(b) Sketch suitable retrosynthetic schemes and give the synthesis of the following :

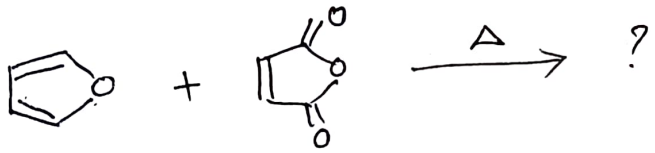
(i) 

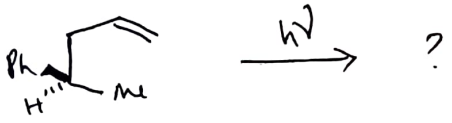
(ii) 

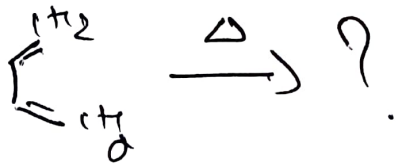
(4 + 8)

4. (a) Draw the FMO diagram of 1, 3, 5-hexatriene and indicate HOMO and LUMO.

(b) Predict the products and propose mechanisms.

(i) 

(ii) 

(iii) 

(3 + 9)

5. (a) Construct Woodward-Hoffman correlation diagram for [4u + 2]-cyclo-addition reactions and explain why thermal reaction is for used.

(b) What is aza-cups rearrangement? Discuss a suitable mechanism with an example.

(c) Give an account of use of 1,3-dipolar cycloaddition reactions in the synthesis of five memmbered heterocycles. **(4 + 4 + 4)**

6. (a) Outline a synthesis and give any two reactions of Pyrazole.

   (b) How are the following conversions brought about? Explain with mechanisms :

   (i) Isatin to quinoline

   (ii) Coumerin to benzofuran

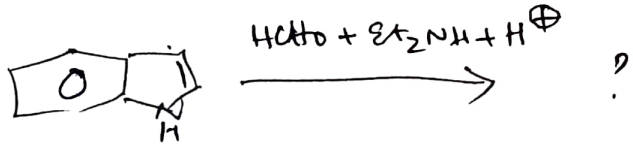
   (iii) Pyridine to pyrazole. **(3 + 9)**

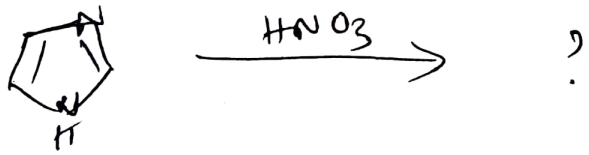
7. (a) Sketch any one synthesis and give any two reactions of

   (i) Thiazole

   (ii) Benzothiophene.

   (b) Predict the products and propose mechanisms.

   (i) 

   (ii) 

(6 + 6)

8. (a) Write briefly about the classification and nomenclature of drugs.

   (b) Give an account of factors governing the drug design through molecular disjunction and conjunction.

   (c) Give the synthesis of chloroquine phosphate. Explain its mode of action as antimalarial drug. **(4 + 4 + 4)**

9. (a) Give an comparative account of occupancy, rate and induced fit theories in drug action.

   (b) Outline the synthesis and give the mode of action of

   (i) Benzocaine

   (ii) 5-fluorouracil. **(6 + 6)**