



**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.

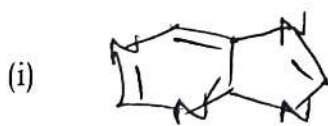
PART - A

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

1. (a) What is C-O, 1 i-dix? Explain with an example.
- (b) Propose a suitable mechanism for the following reaction :



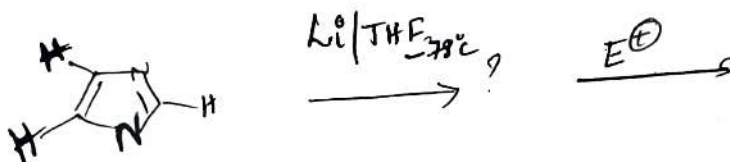
- (c) Name the following using Hantzsch-Widman system.



- (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 :



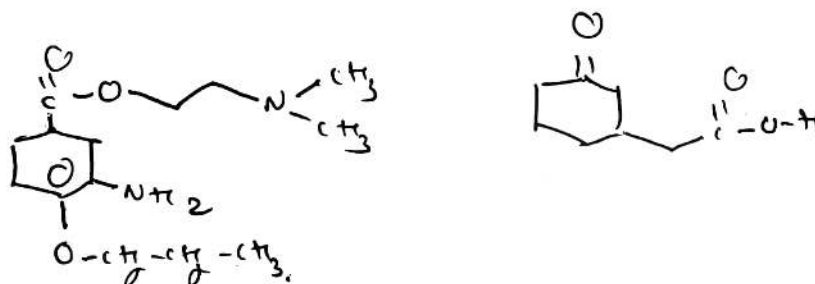
- (h) Write briefly about the forces involved in the drug-receptor interactions.

PART - B

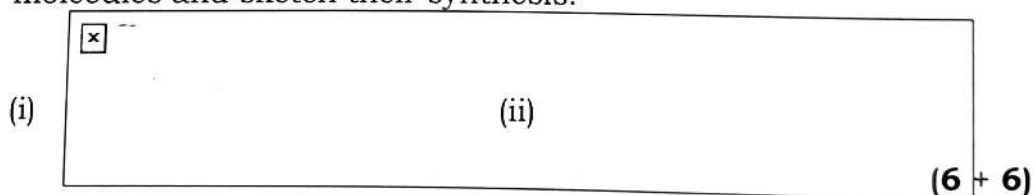
Answer **any five** full questions :

(5 × 12 = 60)

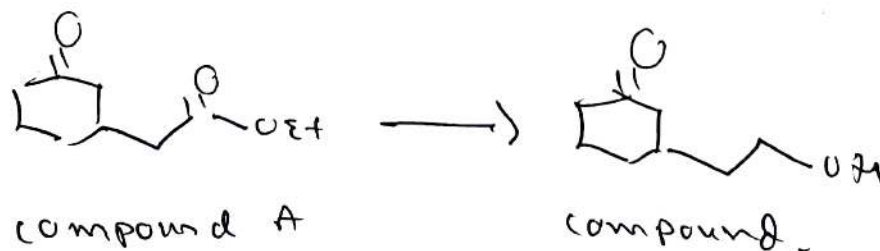
2. (a) Suggest suitable retrosynthetic analysis and propose synthetic route for the following target molecule.



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

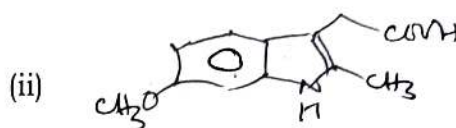


3. (a) How do you convert compound A into compound B by using any suitable protecting reagent in the following reaction :



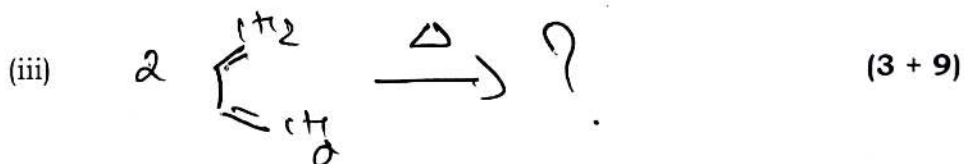
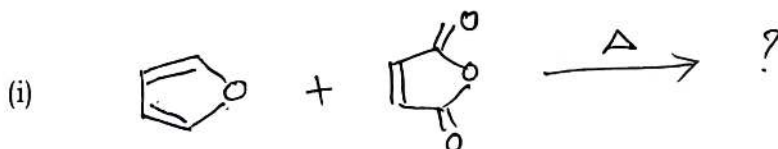


- (b) Sketch suitable retrosynthetic schemes and give the synthesis of the following :



(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.



(3 + 9)

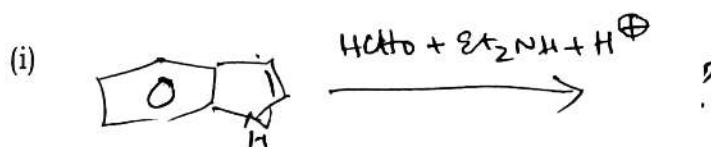
5. (a) Construct Woodward-Hoffman correlation diagram for [4u + 2]-cyclo-addition reactions and explain why thermal reaction is for used.
(b) What is aza-cups rearrangement? Discuss a suitable mechanism with an example.
(c) Give an account of use of 1,3-dipolar cycloaddition reactions in the synthesis 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.



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)