



**III Semester M.Sc. Degree Examination, April/May 2022**  
**INDUSTRIAL CHEMISTRY**  
**Synthetic, Heterocyclic and Medicinal Chemistry**

Time : 3 Hours

Max. Marks : 70

- Note :** 1) Answer **any five** from Part – A and **any full five** questions from Part – B.  
2) Figures to the **right** indicate marks.

## PART – A

1. Answer any five questions.

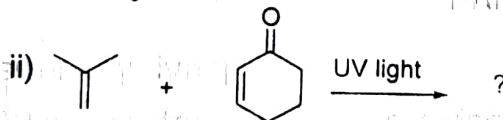
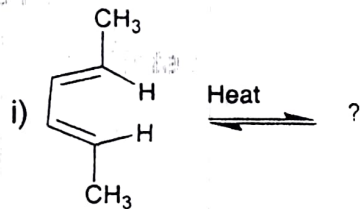
(5×2=10)

a) Write the structure of the following compounds :

- i) Longiflone
- ii) Prelog-Djerassi Lactone.

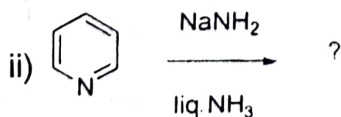
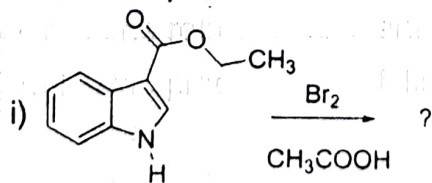
b) Outline the retrosynthetic analysis of ethyl p-amino benzoate.

c) Predict the product in the following reactions.



d) What is oxy-cope rearrangement reaction ?

e) Predict the products in the following reactions.

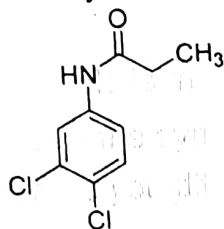




- f) Imidazole is more acidic than Pyrrole, why ?  
 g) Outline the synthesis and mode of action of 5-Fluorouracil.  
 h) How do you differentiate analogues and prod rug ? Give one example each.

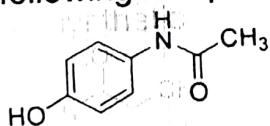
## PART - B

2. a) Why do you need to protect carbonyl group in organic synthesis ? Explain with example.  
 b) Write a short note on two group C-X disconnection approach used in Retrosynthetic analytical techniques.  
 c) How would you make the following compound ? Explain through retrosynthetic analytical technique.



(4+4+4)

3. a) Sketch suitable retrosynthetic scheme and give synthetic method of following compound :  
 Juvabione.  
 b) Write a short note on solid phase synthesis of polypeptides.  
 c) Suggest suitable retrosynthetic analysis and propose synthetic scheme for following compound :



(5+4+3)

4. a) Give classification of pericyclic reactions with one example each.  
 b) How do you prepare five membered heterocyclic compounds using 1, 3 dipolar cycloaddition reactions.  
 c) Explain by FMO method Diels-Alder reaction is thermally allowed. (4+4+4)
5. a) What are cycloaddition reactions ? Explain  $(4n + 2)$  addition reaction by FMO method.  
 b) Discuss the Suprafacial and Anthrafacial shifts of hydrogen and (Three, Three) sigmatropic rearrangement reactions.  
 c) Write a short note on con rotator and dis rotator process used in electrocyclic reactions. (4+4+4)



6. a) Write a short note on Skraup Quinoline Synthesis.  
b) Discuss Hantzsch-Widman system for naming fused heterocycles with examples.  
c) Discuss steps involved in the preparation of quinoline from Indole/Isatin. **(4+4+4)**
  
7. a) Explain the synthesis and reactions of the following compound :  
Thiazole.  
b) 2-bromopyridine gives two isomeric products on treatment with  $\text{NaNH}_2$  in liq. ammonia but with sodium methoxide it gives single product, why ?  
c) Discuss synthesis and reactions of Benzofurane. **(4+4+4)**
  
8. a) Give the synthesis of methotrexate and explain its mode of actions as a antinoplastic agent.  
b) What is drug ? Classify the drugs on the basis of therapeutic action.  
c) Write a short note on factors governing the drug design ADME. **(4+4+4)**
  
9. a) Write a short note on synthesis and mode of action of Cincophene.  
b) What are drug receptors ? Discuss drug receptor interaction.  
c) Give the different theories of drug activity and discuss only one theory in detail. **(4+4+4)**