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

ICH 503

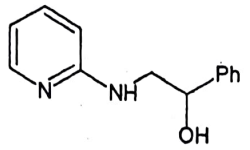
III Semester M.Sc. Degree Examination, December 2018
INDUSTRIAL CHEMISTRY
Synthetic, Heterocyclic and Medicinal Chemistry

Time : 3 Hours Max. Marks : 70

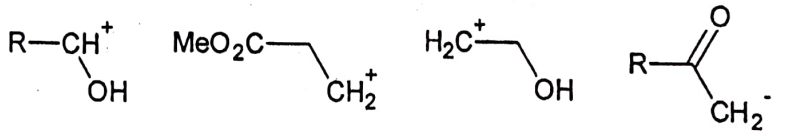
PART – A

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

a) Perform retrosynthetic analysis for the following compound.



b) Suggest suitable reagents for the following synthons.



c) Write any one synthetic method for sydnones using 1,3-dipolar cycloaddition reaction.

d) Will thermal 1,3-migration of carbon occur with retention or inversion of configuration ? Justify your answer.

e) Predict the most preferred site for the aromatic electrophilic substitution reaction in benzo[b]thiophene. Justify your answer.

f) Give reasons : pyridine is basic in nature but not pyrrole.

g) What are local anesthetics ? Give an example.

h) What are prodrugs ? Explain with an example.

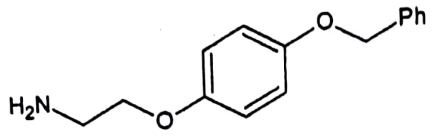
P.T.O.

PART – B

(5×12=60)

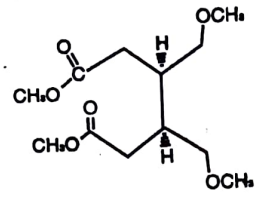
Answer **any five full** questions.

2. a) Write the possible disconnections for the following molecule and suggest a feasible synthetic route.



b) Explain protection and deprotection reactions of any two amino group protecting reagents.

c) Peform retrosynthetic analysis of the following : **[4+4+4]**



3. a) With suitable examples, explain the utility of two group C-C disconnections in the synthesis of 1,3 and 1,4-difunctionalised compounds.

b) Discuss the solid phase synthesis of polypeptides.

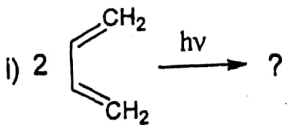
c) Perform retrosynthetic analysis of 2-methyl-6-methoxy-indole-3-acetic acid. **[5+4+3]**

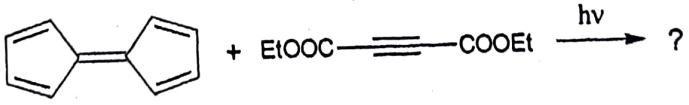
4. a) Explain the electrocyclic reaction of (2E,4Z,6E) octatriene.

b) Illustrate the suprafacial and antarafacial modes in cycloaddition reactions.

c) Explain the Aza-Cope rearrangement. **[5+4+3]**

5. a) Predict the products in the following and justify your answer.

i) 

ii) 

b) Discuss [3, 3] sigmatropic rearrangement with examples.

c) Illustrate the synthesis of five membered heterocyclic systems using 1,3-dipolar cycloaddition reactions. [4+4+4]

6. a) Compare the general reactivity of pyrazole and imidazole.

b) Give two synthetic methods each for thiazole and benzofuran derivatives.

c) Briefly explain the nomenclature system for the systematic naming of fused heterocycles. [4+4+4]

7. a) Compare and differentiate between indole and pyridine in terms of their general, reactivity and reactions.

b) Illustrate the conversion of furans into nonheterocycles.

c) Give a brief account of following transformations.
   i) Coumarin to benzofuran.
   ii) Indole to Quinoline. [4+4+4]

8. a) With suitable examples, explain the molecular disjunction and conjunction approaches of drug design.

b) Write a note on important types of drug-receptor interactions.

c) Give the synthesis of Cincophen. Explain its mode of action as an antipyretic analgesic. [4+4+4]

9. a) Explain the Occupancy theory and the Rate theory of drug action.

b) Explain the synthesis and mode of action of following drugs.
   i) Chloroquine as antimalarial agent
   ii) Diazoxide as cardiovascular drug.
   iii) Fluorouracil as antineoplastic agent. [4+8]
