



I Semester M.Sc. Degree Examination, May 2022
(CBCS)
INDUSTRIAL CHEMISTRY
Organic Chemistry – I

Time : 3 Hours

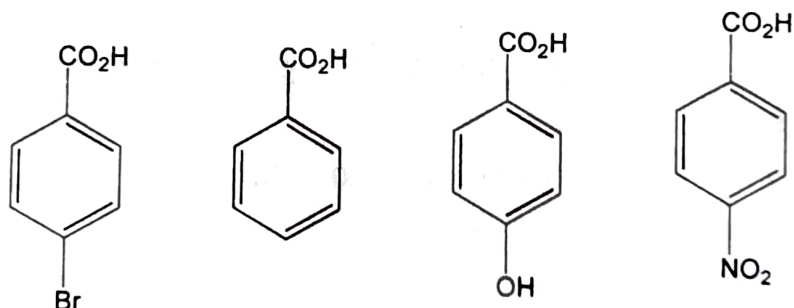
Max. Marks : 70

Instructions : i) Answer Part – A question **any five** and Part – B **any five**.
 ii) Figures to the **right** indicate marks.

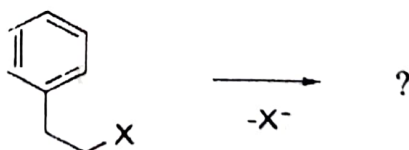
PART – A

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

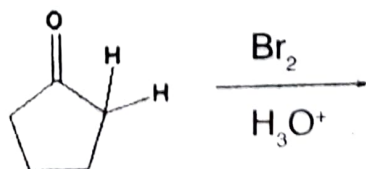
- a) What are Nitrenes ? Give any one method of generation.
- b) Arrange the increasing order of their acidity for the following aromatic acids and justify your answer.



c) Predict the product for the reaction with mechanism.

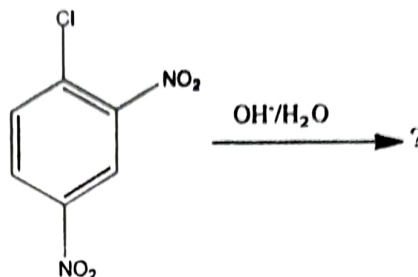


d) Complete the reaction with mechanism for the following reaction.





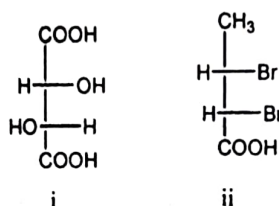
e) Complete the following reaction with mechanism.



f) What is Kolbe reaction ? Write complete reaction.

g) What is meant by Prelog's rule ? Give one example.

h) Assign R or S configuration for the following :



PART – B

Answer **any five** of the following.

(5×12=60)

2. a) Discuss any one method of generation and reactivity of carbocation.

b) Write a short note on :

i) Isotopic labelling for intermediate detection.

ii) Marcus theory.

c) Write a note on :

i) Hammett equation.

ii) Taft equation.

(4+4+4=12)

3. a) Explain the structure, generation and stability of phosphorous ylides.

b) Explain stereochemical evidence and cross-over experiments for reaction mechanism identification.

c) How steric effect influences strength of acids, explain with examples. (4+4+4=12)

4. a) Write a short note on **any two** of the following :

i) Ambident nucleophiles

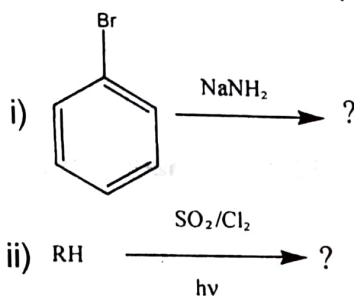
ii) Neighboring group participation

iii) Sigma and pi bond participation.

- b) Write a note on **any two** of the following :
- Meyers synthesis of carboxylic acids
 - S_E2 reaction
 - Haller-Bauer reaction.
- (6+6=12)
5. a) Discuss with suitable example of nucleophilic substitution reaction at vinylic and allylic carbon with mechanism.

- b) Write a note on **any two** of the following :
- Decarboxylation of carboxylic acids
 - Haloform reaction
 - Diazo transfer reaction
 - S_{Ei} reaction.
- (6+6=12)

6. a) Predict the product and propose suitable mechanism in the following reaction.



- b) Write a short note on **any two** of the following reaction with mechanism.

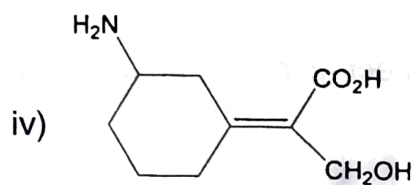
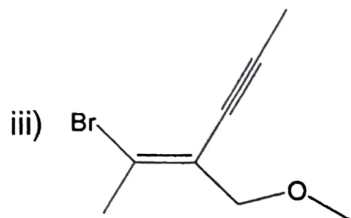
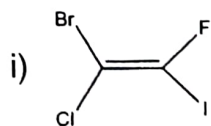
- Hydroboration on C-C double bond
 - Michael reaction
 - Wittig reaction.
- (6+6=12)

7. a) What is Hunsdiecker reaction ? Explain with mechanism.
- b) How do you use lead tetra acetate in the synthesis of cyclic ethers ?
- c) Outline the mechanism and applications of Prins reaction. (4+4+4=12)

8. a) Write a short note on :
- IPC_2BH
 - Oxazaborolidines.
- b) What is meant by resolution ? Explain chemical method of resolution with examples.
- c) Explain the role of chiral auxiliaries inorganic synthesis with suitable examples. (4+4+4=12)



9. a) Designate E, Z notation for the following :



b) Discuss the role of α -amino acids in the synthesis of benzodiazepines.

c) D-Mannose role in the synthesis of Timolol.

(4+4+4=12)