

M.Sc. (Previous)

5622

M.Sc. (Previous) EXAMINATION, 2025

Chemistry

Paper : Second CH-402

[Organic Chemistry]

Time Allowed : Three Hours

Maximum Marks: 100

समय : तीन घंटे

अधिकतम अंक : 100

Attempt any five question in all selecting one question from each unit. All question carry equal marks.

Note: In each question paper 10 questions will be set. Candidates have to answer 5 questions selecting at least one question from each unit.

No supplementary answer book will be given to any candidate. Hence the candidates should write the answer precisely in the main answer book only.

All the parts of one question should be answered at one place in the answer book. One complete question should not be answered at different places in the answer book.



Unit-I

- (i) Discuss the aromaticity of non-benzenoid aromatic compounds. [3]
- (ii) Resonance energy of benzene is much more higher than 1,3-butadiene. Why? [2]
- (iii) Explain why cyclopentadiene is much more acidic than 1,3-cyclohexadiene. [2]
- (iv) Discuss PMO approach for aromaticity. [3]

OR

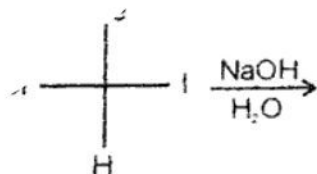
- (i) Label the hydrogen atoms in cis-1,2-dichlorocyclopropane as enantiotropic or diastereotropic. [2]
- (ii) Write a note on erythro and threo isomers. [4]
- (iii) Write a note on asymmetric synthesis. [4]

Unit-II

- (i) Show that Hammett equation represents a linear free energy relationship. [5]
- (ii) Write a note on Kinetically and thermodynamically controlled products. [5]

OR

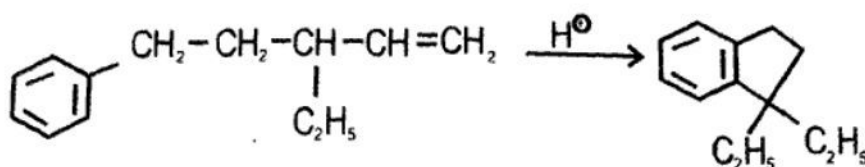
Predict the product/products of the following reaction.





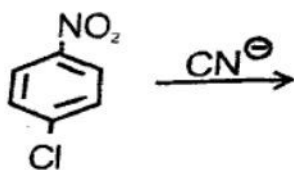
Unit-III

3. (i) Explain why $CHCl_3$ is more reactive than CHF_3 in SEI reaction? [2]
 (ii) Write a note on factors affecting reactivity of SE reaction. [4]
 (iii) Propose the mechanism of the following reaction: [4]



OR

- (i) The reaction of *o*-bromoanisole with $NaNH_2$ in liquid NH_3 gives only *m*-aninoanisole. Explain the regioselectivity in this reaction. [3]
 (ii) Predict the product of the following reaction and outline the mechanism. [4]



- ~~(iii)~~ Write a note on Hunsdiecker reaction. [3]

Unit-IV

4. Write detailed note on the followings.

- (i) Hydroboration
 (ii) Michael reaction
 (iii) Sharpless asymmetric synthesis [3+3+4]

OR

Explain the followings:

- ~~(i)~~ Aldol condensation



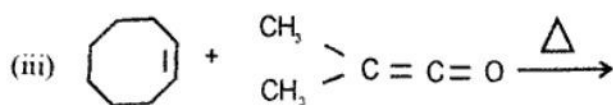
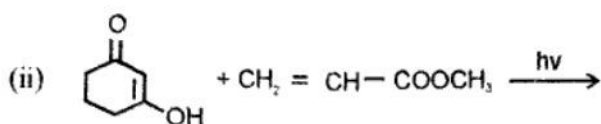
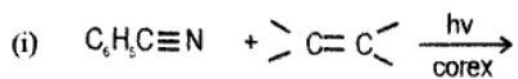
(ii) Perkin reaction

(iii) Mechanism and orientation of pyrolytic elimination.

[3+3]

Unit-V

5. Complete the following reactions



OR

Explain the followings:

~~(i)~~ Cope and aza-cope rearrangement

(ii) Fluxional Tautomerism.

