Roll No.							

24-CH-22

M.Sc. II SEMESTER [MAIN/ATKT] EXAMINATION
JUNE - JULY 2024

CHEMISTRY
Paper - II
[Organic Chemistry - II]

[Max. Marks : 75] *[Time : 3:00 Hrs.]* *[Min. Marks : 26]*

Note : Candidate should write his/her Roll Number at the prescribed space on the question paper.
Student should not write anything on question paper.
Attempt five questions. Each question carries an internal choice.
Each question carries **15 marks.**

Q. 1 a) Describe the arenium ion mechanism in the context to electrophilic aromatic substitution. What are the key steps involved in this mechanism. **(7½ Marks)**

b) Discuss the detailed mechanism of diazonium coupling reaction. How does the diazonium ion react with an aromatic compound to form the azo compound ? **(7½ Marks)**

OR

Discuss the mechanism of following reactions -

i) The Von Richter Rearrangement. **(7½ Marks)**

ii) S_NAr mechanism. **(7½ Marks)**

Q. 2 a) Outline a general mechanism for a reaction which involve neighbouring group assistance. What are the key intermediates and transition states involved ? **(7½ Marks)**

b) What is Auto oxidation ? Describe the general process and the conditions under which auto oxidation occurs. **(7½ Marks)**

OR

a) Outline the step-by-step mechanism of Sandmeyer reaction. What are the key intermediates and transition states involved ? **(7½ Marks)**

b) What is the Hunsdiecker reaction ? Discuss it's mechanism with suitable example. **(7½ Marks)**

Q. 3 Write detailed note on the following -

i) Sharpless asymmetric epoxidation. **(7½ Marks)**

ii) Hydrogenation of aromatic rings. **(7½ Marks)**

P.T.O.

OR

a) Discuss the mechanistic and stereochemical aspects of addition reaction involving electrophiles. (7½ Marks)

b) What is regioselectivity in organic chemistry ? How does it differ from chemoselectivity. Provide examples to illustrate each concept. (7½ Marks)

Q. 4 a) Discuss the mechanism of metal hydride reaction of saturated carbonyl compounds. (7½ Marks)

b) Discuss the role of leaving group in pyrolytic elimination reactions. How does it differ from other mechanisms like $\in 1$ or $\in 2$. (7½ Marks)

OR

Explain the following and write their mechanism - (5 Marks each)

i) Hydrolysis of esters.

ii) Mannich reaction.

iii) Benzoin reaction.

Q. 5 a) Explain the difference between conrotatory and disrotatory processes in electrocyclic reactions. Provide examples of each type. (7½ Marks)

b) What are pericyclic reactions in organic chemistry ? Describe the general characteristics and classification of pericyclic reactions. (7½ Marks)

OR

Discuss the following - (5 Marks each)

i) Sigmatropic rearrangement.

ii) Frontier orbitals of ethylene and 1, 3-butadiene.

iii) Claisen rearrangement.

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