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NY—126—2023

FACULTY OF SCIENCE

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

ORGANIC CHEMISTRY

Paper-XXI

(Advanced Organic Chemistry)

(Friday, 8-12-2023)

Time : 2.00 p.m. to 5.00 p.m.

Time—3 Hours

Maximum Marks—75

N.B. :— (i) All questions are compulsory.

(ii) All questions carry equal marks.

1. Answer the following questions (any *five*) : 15

- (a) Discuss factors responsible for enzyme specificity.
- (b) Give structure and applications of α -chymotrypsin.
- (c) Explain concept of chiral auxillary.
- (d) What are free radicals ? Explain rearrangement reaction involving free radical.
- (e) Explain with example Asymmetric hydrogenation including BINAP.
- (f) Give methods of synthesis of organotitanium reagent.
- (g) Explain concept of Acid-Base catalysis.

2. Answer the following (any *five*) : 15

- (a) Explain concept of Multifunctional catalysis.
- (b) Discuss chemical structure of Pyrodixal Phosphate.(PLP)

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- (c) Explain with example Acyloin condensation.
- (d) Explain with examples Addition reaction involving free radicals.
- (e) Write a note on McMurry reaction.
- (f) Give structure of Biotin (CO₂ carrier).
- (g) Give *two* applications of organomagnesium reagent.
3. (A) Explain generation, stability and stereochemical properties of free radicals. 7

Or

Discuss proline catalyzed assymmetric reaction.

- (B) Write notes on : 8
- (i) Three point attachment theory.
- (ii) Substitution reaction involving enzymes.
4. (A) Give introduction, classification and nomenclature of enzymes 7

Or

What is enzyme inhibition ? Explain concept of Reversible and irreversible enzyme inhibition.

- (B) Write notes on 8
- (i) Homolysis and free radical displacement.
- (ii) Induced fit mechanism.

5. (A) Select correct alternative and complete the sentence : 5

(i) The molecules upon which enzymes act are called

- (a) Reagent
- (b) Substrate
- (c) Catalyst
- (d) All of the above

(ii) Key and Lock mechanism was given by

- (a) Emil Fischer
- (b) Koshland
- (c) Darwin
- (d) Mendel

(iii) Group of enzymes help digest fats in gut is

- (a) Amylase
- (b) Lipases
- (c) Maltase
- (d) Trypsin

(iv) Organometallic reagents are

- (a) Strong electrophile
- (b) Weak eletrophile
- (c) Strong nucleophile
- (d) Weak nucleophile

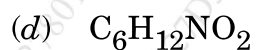
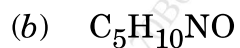
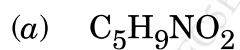
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(v) Molecular formula of Proline is



(B) Write short notes on (any *two*)

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(i) Organomagnesium reagent

(ii) Hunsdieker reaction

(iii) Transition State Theory.

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