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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 Pyridoxal Phosphate.(PLP)

P.T.O.

- (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

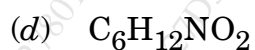
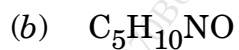
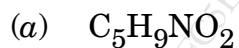
(b) Weak electrophile

(c) Strong nucleophile

(d) Weak nucleophile

P.T.O.

(v) Molecular formula of Proline is



(B) Write short notes on (any two)

10

(i) Organomagnesium reagent

(ii) Hunsdieker reaction

(iii) Transition State Theory.