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WT—126—2024

FACULTY OF SCIENCE & TECHNOLOGY

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

NOVEMBER/DECEMBER, 2024

ORGANIC CHEMISTRY

Paper-XXI (OCH-522)

(Advanced Organic Chemistry)

(Friday, 13-12-2024)

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

Time—3 Hours

Maximum Marks—75

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

(ii) Figures to the right indicate full marks.

1. Solve any *three* : 15
- (a) Explain Acyloin condensation with example.
 - (b) What is enzyme specificity ? Explain the factors responsible for it.
 - (c) Discuss the chemical structure of co-enzyme PLP.
 - (d) Explain Asymmetric hydrogenation including BINAP.
 - (e) Give the synthesis and applications of organomagnesium compounds.

P.T.O.

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

- (a) Give the properties of enzymes.
- (b) How will you compare enzyme with non-biological catalyst ?
- (c) Give the introduction, generation and stability of free radicals.
- (d) Give synthesis and applications of organotitanium compounds.
- (e) What are co-enzymes ? Give structure, chemistry and properties of T.P.P.

3. (a) Explain induct-fit mechanism for enzyme action. 7

Or

Explain Fischer key and lock theory.

(b) Explain any *two* examples of Prolin catalysed asymmetric reaction.

8

Or

Explain Michaelis-Menten's equation.

4. (a) Explain lock and key theory with machanism. 7

Or

Explain in detail the classification and nomenclature of enzymes.

(b) Explain the following : 8

(1) Hunsdicker reaction

(2) McMurray reaction.

5. (a) Select the correct alternative for multiple choice questions : 5

(i) EC stands for :

(a) Enzyme commission

(b) Enzyme catalyst

(c) Enzyme constant

(d) Equilibrium constant

(ii) PLP is group carrier.

(a) Amino

(b) Acyl

(c) Carboxyl

(d) Hydroxyl

(iii) free radicals are most active.

(a) Tertiary

(b) Secondary

(c) Primary

(d) All of the above

P.T.O.

(iv) TPP is group transfer.

- (a) Acyl
- (b) Amino
- (c) Carboxyl
- (d) Hydroxyl

(v) CBC is derived from.

- (a) Biotin
- (b) Prolin
- (c) NADH
- (d) None of the above

(b) Write short notes on :

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- (a) Biotin (CO₂ carrier)
- (b) BINAP
- (c) Organometallic compounds.