

Master of Science (M.Sc.) (Microbiology) Semester—I (C.B.C.S.) Examination  
ENZYMOLGY AND TECHNIQUES (E.T.)

Paper—2  
Paper—II

Time : Three Hours]

[Maximum Marks : 80

N.B. :— All questions are compulsory and carry equal marks.

6 1. ✓ How do you determine  $K_m$ ,  $V_{max}$  values of an enzyme ? 16

OR

(A) Give the classification of Enzymes with specific examples. 8

(B) Discuss the kinetics of competitive inhibition with suitable examples. 8

4 2. ✓ Explain the catalytic mechanism of Lysozyme in detail. 16

OR

(A) Explain the acid-base catalysis mechanism for Enzyme action. 8

(B) Explain the Metal-ion catalysis mechanism for Enzyme action. 8

3. What is Allosterism ? Discuss the Kinetic analysis of Allosteric enzymes. 16

OR

3 ✓(A) Explain the membrane bound enzymes. 8

3 ✓(B) Explain the Isoenzyme with any two examples. 8

4. What are Enzyme Biosensors ? Discuss the glucose biosensor in detail. 16

OR

✓(A) Explain the sequential model of ligand binding. 8

3 ✓(B) Give the industrial applications of Enzymes. 8

5. Write notes on :—

(A) Non-competitive Inhibition. 4

1 ✓(B) Proximity and Orientation Effect. 4

1 ✓(C) Marker Enzymes. 4

1 ✓(D) Protein Engineering. 4

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**Note :—** (1) All questions are compulsory and carry equal marks.

(2) Draw diagrams wherever necessary.

1. Derive Michaelis-Menton equation. Write note on its transformation. 16

**OR**

Discuss multistep reaction and kinetics of enzyme inhibition. 16

2. Discuss determination of active site and mechanism of serine protease. 16

**OR**

Write on proximity and orientation effects. 16

3. Discuss covalent modification and feed-back inhibition. 16

**OR**

Explain membrane bound enzymes and isoenzymes. 16

4. Discuss industrial applications of enzymes and write a note on protein engineering. 16

**OR**

Discuss concerted model and sequential model. 16

5. Write brief notes on :—

(a) Classification of enzymes. 4

(b) Metal ion co-factors. 4

(c) Marker enzymes 4

(d) Glucose biosensor. 4

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Master of Science (M.Sc.) Semester-I (C.B.C.S.) (Microbiology) Examination  
ENZYMOLGY AND TECHNIQUES (E.T.)

Paper-2

Paper-II

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) ALL questions are compulsory and carry equal marks.

(2) Draw diagram and give example wherever necessary.

1. Derive the M-M equation and give its modification. 16  
OR  
Explain the kinetics of bisubstrate reactions. 16
2. Discuss mechanism of lysozyme action and add a note on determination of its active site. 16  
OR  
Write a descriptive note on acid-base catalysis and covalent catalysis. 16
3. What are allosteric enzymes ? Give their kinetics. 16  
OR  
Explain feed-back inhibition and its role in regulation of enzyme activity. 16
4. Discuss Co-operative ligand binding in detail. 16  
OR  
What is enzyme biosensor ? Give various industrial applications of enzymes. 16
5. Write notes on :
  - (A) Competitive Enzyme inhibition kinetics 4
  - (B) Preferential binding 4
  - (C) Isoenzymes 4
  - (D) Protein engineering. 4

S.S.E.S. Amt's Science College, Congress Nagar, Nagpur  
Terminal Examination  
M.Sc.I (Microbiology)  
Semester I (Winter 2019)  
Paper II- Enzymology and Techniques (ET)

Time: 3hrs

Marks: 100

Note: All the questions are compulsory and carry equal marks.  
Draw diagrams wherever necessary.

- Q.1. Describe the Michaelis Menten equation and write about its transformation in details. 16  
OR  
a) Write the classification of enzymes. 8  
b) Explain the kinetics of non-competitive inhibition. 8
- Q.2) Explain Allosterism as a mechanism of regulation of enzymes. 16  
OR  
Write short notes on:  
a) Constitutive and inducible enzymes 8  
b) Describe Isozymes and their importance in enzymology. 8
- Q.3) What are enzyme Biosensors? Discuss the glucose biosensor in detail. 16  
OR  
A) Explain the sequential model of Ligand binding. 8  
B) Give the industrial applications of enzymes. 8
- Q.4) Explain the catalytic mechanism of Lysozyme in detail. 16  
OR  
Write notes on:  
A) Explain the acid-base catalysis mechanism for enzyme action. 8  
B) Explain the metal ion catalysis mechanism for enzyme action. 8
- Q.5) Write notes on: 4  
1. Protein engineering 4  
2. Proximity and orientation effect 4  
3. Preferential binding 4  
4. Marker enzyme 4

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## Master of Science (M.Sc.) First Semester (CBCS) (Microbiology) Examination

## ENZYMOLGY AND TECHNIQUES (E.T.)

Paper-2

Paper-II

Time : Three Hours]

[Maximum Marks : 80

N.B. : All questions are compulsory and carry equal marks.

1. Discuss the kinetics of enzyme inhibition. 16
- OR
- Discuss the classification of enzymes and add a note on EC number. 16
2. Discuss acid-base and covalent catalysis. 16
- OR
- Discuss the methods for active-site determination of enzymes. 16
3. Give a detailed account of membrane bound enzymes and discuss their significance in metabolism. 16
- OR
- Discuss the allosteric regulation of enzyme action. 16
4. Explain in detail co-operative ligand binding. 16
- OR
- Discuss in detail different types of glucose sensors. 16
5. Write notes on :
- (A) Michaelis-Menten Constant 4
- (B) Metal ion cofactors 4
- (C) Isoenzymes 4
- (D) Protein engineering. 4

SSES Amaravati's Science College, Nagpur

PRELIMINARY EXAMINATION

WINTER 2023

M.Sc. Semester -I

MICROBIOLOGY

Paper-II (Enzymology and Techniques)

Time:- Three Hours.

Marks- 80

Note:-

- 1) All questions are compulsory and carry marks as indicated.
- 2) Draw diagram wherever necessary.

Q.1 Explain the mechanism of enzyme action. 16

OR

Explain the mechanism of action of lysozyme. 16

Q.2 Derive the Michaelis Menten equation, explain the transformation and add a note on its significance. 16

OR

Explain the kinetics of enzyme inhibition. 16

Q.3 Explain the techniques for isolation and purification of enzymes. 16

OR

- a) Give the industrial applications of enzymes. 8
- b) Protein engineering. 8

Q.4 Explain the immobilization techniques for enzymes. 16

OR

- a) Immobilized bioreactor. 8
- b) Immobilization techniques for cells. 8

Q.5 Write a short note on following. 4×4

- a) Enzyme specificity
- b) Covalent modification
- c) Methods for enzyme assay
- d) Applications of immobilized enzyme