

**G-3/350/22**

Roll No. ....

**III Semester Examination, January 2022**

**M.Sc.**

**BIOCHEMISTRY**

Paper IV  
(Enzymology)

Time : 3 Hours ]

[ Max. Marks : 80

**Note :** *All questions are compulsory. Question Paper comprises of 3 Sections. Section A is objective type/multiple choice questions with no internal choice. Section B is short answer type with internal choice. Section C is long answer type with internal choice.*

**SECTION A**

**1×8=8**

**(Objective Type/Multiple Choice Questions)**

*Choose the correct answer :*

1. The rate determining step of Michaelis-Menten kinetics is :
  - (a) The complex dissociation step to produce products
  - (b) The complex formation step
  - (c) The product formation step
  - (d) None of the mentioned

P.T.O.

[ 2 ]

2. When the velocity of enzyme activity is plotted against substrate concentration, which of the following is obtained ?
- (a) Hyperbolic curve
  - (b) Parabola
  - (c) Straight line with positive sloped
  - (d) Straight line with negative slope
3. The active site of chymotrypsin consists of a catalytic triad of which of the following amino acid residues ?
- (a) Serine, histidine and aspartate
  - (b) Serine, histidine and glutamate
  - (c) Threonine, histidine and aspartate
  - (d) Methionine, histidine and aspartate
4. Which of the following is false about chymotrypsin ?
- (a) Hydrolytic cleavage of a peptide bond by chymotrypsin has two phases
  - (b) It is activated in the presence of trypsin
  - (c) It is synthesized in the thyroid gland
  - (d) Polypeptide chains in chymotrypsin are linked by S-S bonds

G-3/350/22

[ 3 ]

5. .... is used in dishwashing and destarching.
- (a) Maxatase
  - (b)  $\alpha$ -amylase
  - (c) Proteased
  - (d) Alcalase
6. Which of the enzyme is used in the detergent industry as water softeners ?
- (a) Alcalase
  - (b) Serine protease
  - (c) Cellulased
  - (d) Savinase
7. Cellulase is used in which type of industry ?
- (a) Food industry
  - (b) Paper industry
  - (c) Biofuel industry
  - (d) Chemical industry
8. Which is the inducer of enzyme invertase ?
- (a) Starch
  - (b) Sucrose
  - (c) Galactosidases
  - (d) Fatty acids

## SECTION B

6×4=24

### (Short Answer Type Questions)

*Note : Answer the following questions in 250 words.*

### Unit-I

1. Bi-Substrate reaction.

*Or*

Briggs-Heldane Relationship.

G-3/350/22

P.T.O.

[ 4 ]

### Unit-II

2. Co-operativity phenomenon.

*Or*

Hill and Scatchard plot.

### Unit-III

3. Water soluble enzymes.

*Or*

Metalloenzymes.

### Unit-IV

4. Use of Amylase.

*Or*

Use of Cellulase.

### SECTION C

12×4=48

(Long Answer Type Questions)

**Note :** Answer the following questions in 500 words.

### Unit-I

1. Explain different methods to examine enzyme substrate complex.

*Or*

Explain divergent and convergent evolution concept of enzymes.

[ 5 ]

### Unit-II

2. What are multienzyme complex ? Explain structure and mechanism of catalysis of fatty acid synthase complex.

*Or*

Explain mechanism of action of chymotrypsin.

### Unit-III

3. Explain kinetics and significance of Allosteric enzymes.

*Or*

Describe different methods of enzyme immobilization and application.

### Unit-IV

4. Explain use of enzymes in leather industry.

*Or*

Explain use of enzymes in breweries industries.

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