

9. (i) What is Cooperativity ? Explain key features of concerted model of cooperativity. Also discuss the limitations of concerted model in explaining cooperativity.
- (ii) Discuss the covalent modification of enzymes as mode of regulation of enzyme activity. 9,7

Roll No.

Total Pages : 040

LMDE/M-24

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ENZYMولوجY

BCH-203

(w.e.f. 2023-24)

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all. Question No. 1 is compulsory. Attempt *four* more questions, selecting *one* question from each Unit. All questions carry equal marks. Marks are indicated against the question.

(Compulsory Question)

1. Explain the following terms : **8×2=16**
- (i) Enzyme Specificity
 - (ii) IU of enzyme activity
 - (iii) Optimum pH
 - (iv) K_m and V_{max}
 - (v) Reversible enzyme inhibitors
 - (vi) Flash photolysis
 - (vii) Pseudo enzymes
 - (viii) Homotropic positive cooperativity.

Unit I

2. (i) What is reaction co-ordinate ? Compare the reaction co-ordinate diagram of enzyme catalysed reaction with uncatalyzed reaction.
- (ii) Discuss lock and key theory of enzyme specificity.
- (iii) Classify enzymes according to IUB system of classification. Explain class II of enzymes with suitable example. **8,4,4**
3. (i) Define Cofactors. Describe the role of metal ions as cofactor and prosthetic group.
- (ii) Enlist key features of active site.
- (iii) What is turnover number ? **7,5,4**

Unit II

4. (i) How change in temperature affects the rate of enzyme catalysed reaction ? Also discuss Arrhenius plot and its significance.
- (ii) Discuss linear transformation of Michaelis-Menten equation for determination of kinetic parameters of enzyme catalysed reaction. **8,8**
5. (i) Discuss types of bisubstrate reaction and their mechanism. Write equation for initial velocity determination of each type of reaction. Draw the pattern of steady-state kinetics of each type.

- (ii) How steady-state kinetics and partial reaction studies help to distinguish the mechanism of bisubstrate reactions. **8,8**

Unit III

6. (i) What are enzyme inhibitors ? Distinguish between reversible and irreversible enzyme inhibitors. Discuss different types of irreversible enzyme inhibitors and their characteristic features.
- (ii) What are affinity labels ? How they differ from reversible, irreversible enzyme inhibitors and denaturants with respect to mechanism and specificity ? **10,6**
7. Write notes on the following : **8,8**
- (i) Principle, instrumentation and working of stopped-flow method
- (ii) Trapping enzyme-substrate complex for investigating active site.

Unit IV

8. Write notes on the following : **4,7,5**
- (i) Isoenzymes
- (ii) Inducible system of enzyme regulation
- (iii) Scatchard plot.