

(i) Printed Pages : 3

Roll No. ....

(ii) Questions : 9

Sub. Code : 

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Exam. Code : 

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B.A./B.Sc. (General) 2<sup>nd</sup> Semester  
(2053)

**BIO-CHEMISTRY**

**Paper : B Enzymes and Bioenergetics**

**Time Allowed : Three Hours]**

**[Maximum Marks : 45**

**Note :—** Attempt *five* questions in total including Question No. I which is compulsory. Attempt *one* question from each of the Unit I to Unit IV.

I. Compulsory Question. Answer in 3-4 lines.

- (i) What is a prosthetic group ? Give a suitable example.
- (ii) What is the function of Co-A in biosynthetic pathways ?
- (iii) What is  $K_{cat}$  ?
- (iv) What is turnover number of an enzyme ?
- (v) Write chemical structure of FAD.
- (vi) What is  $K_m$  and its significance ?
- (vii) What are hydrolases ? Give suitable examples.
- (viii) What is end-product inhibition ?
- (ix) How CO (carbon monoxide) inhibits the mitochondrial-ETC ?

9×1=9



## UNIT—I

- II. (a) What are isozymes ? Describe their properties and important biological functions.
- (b) What are zymogens ? Explain their importance in clinical diagnostic studies.
- (c) What is an apoenzyme ? Explain with suitable example.

4,3,2

- III. (a) Describe IUB system of classification of enzymes by referring major biological functions of each class.
- (b) What are coenzymes ? Describe important functions of NAD and FAD in bioenergetics pathways.
- (c) What are dehydrogenases ? Describe their importance in glycolytic pathway.

4,3,2

## UNIT—II

- IV. (a) What are monomeric enzymes ? How their activities are influenced by dietary factors ?
- (b) What are multimeric enzymes ? Explain their properties and functions with suitable examples.
- (c) What is a non-specific protease ? Explain the mechanism of enzymatic action of chymotrypsin.

4,3,2

- V. (a) What are oligomeric enzymes ? Describe their important properties and major biological functions.

3



(b) Write short notes on any *two* of the following :—

(i) Theory of enzyme catalysis.

(ii) Acid-base catalysis

(iii) Alkaline proteases.

3×2=6

### UNIT—III

VI. (a) What is Michaelis-Menten equation and its limitations, if any ?

(b) What is a competitive enzyme inhibitor ? Explain with suitable examples.

(c) What is feedback inhibition ? How it can be overcome ?

4,3,2

VII. (a) What are metabolic inhibitors ? Describe their importance in medical sciences.

(b) What is  $K_i$  ? How it is determined ?

(c) What is  $V_{max}$  ? How it can be enhanced ?

4,3,2

### UNIT—IV

VIII. (a) What are redox agents ? Enlist any three of these and describe their functions.

5

(b) What are major biological functions of FAD/FADH in thermodynamic reactions ?

4

IX. (a) What are phosphate-rich compounds ? Describe their role in bioenergetics reactions.

3

(b) Write short notes on any *two* of the following :—

(i) Enthalpy

(ii) Oxidative phosphorylation

(iii) Exergonic reactions.

3×2=6