



HCL-003-001529

Seat No. _____

B. Sc. (Sem. V) (CBCS) Examination

October - 2017

Biochemistry : Paper - 501

(Enzymology)

Faculty Code : 003

Subject Code : 001529

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

1 Answer in one sentence only : 1×20=20

- (1) Give example of Hydrolase enzyme.
- (2) State full form of IUB.
- (3) In E.C. 4.1.2.2; the digits 4.1 indicates what ?
- (4) Hexokinase is an example of which class of the enzyme ?
- (5) Give full form of TPP.
- (6) Give role of Substrate analog.
- (7) Define electrophile.
- (8) Name coenzyme involved in hydrogen transfer.
- (9) Why is pH changed in affinity chromatography for elution ?
- (10) In which method of separation, mixture of ampholyte containing polyamino acid is used ?
- (11) Define dielectric constant.
- (12) Give aim of purification procedure.
- (13) Define zymogen.
- (14) What are Abzymes ?
- (15) Where does uncompetitive inhibitor bind ?

- (16) What is ordered double displacement reaction also called as ?
- (17) Immobilization of the enzyme increases its half life maximum for how many days ?
- (18) Starting material used in brewing is ?
- (19) Name the enzyme used in diagnosis of liver diseases.
- (20) Which disease was first treated by the use of gene therapy ?

2 Answer the following questions :

(a) Give answers to any **three** questions : **2×3=6**

- (1) Define isoenzyme
- (2) Define cofactors.
- (3) What is the role of dialysis in enzyme purification ?
- (4) Define Positive Hiotropic effect.
- (5) Enlist different techniques of enzyme immobilization.
- (6) Why Enzymes are not widely used in industries ?
How can we overcome these drawbacks ?

(b) Give answers to any **three** questions : **3×3=9**

- (1) Write a brief note on colloidal nature of enzyme.
- (2) Write a note on metal ion catalysis.
- (3) What is the difference between isoelectric focusing and chromatofocusing ?
- (4) Give principle of affinity elution technique and advantages of it over affinity chromatography.
- (5) Giving example explain random single displacement reaction.
- (6) Discuss the clinical importance enzyme used in diagnosis of deficiency of enzyme.

(c) Give answers to any **two** questions : **2×5=10**

- (1) Explain classification of enzyme based on substance hydrolyzed and group involved.
- (2) Write a note on coenzymes and their roles in biochemical reactions.
- (3) Write a note on different methods used for separation of enzyme on basis of solubility.
- (4) Use of enzymes for disease diagnosis.
- (5) Discuss covalent modification of enzyme glycogen phosphorylase.

3 Answer the following questions :

(a) Give answers to any **three** questions : **2×3=6**

- (1) Define Katal.
- (2) Write examples of inorganic cofactors and their significance.
- (3) State the problems and remedies which arise during homogenization of plant tissues.
- (4) Draw lineweaver plot and label it properly. Give significance of the plot.
- (5) State two assumptions made to derive MM equation.
- (6) Give a brief account on 1st, 2nd and 3rd generation biosensors.

(b) Give answers to any **three** questions : **3×3=9**

- (1) Write a brief note on multienzyme complex and its significance.
- (2) Write a brief note on acid base catalysis.
- (3) Compare biocatalyst with chemical catalyst.
- (4) Write in brief about dye-ligand chromatography.

- (5) Define competitive, noncompetitive and mixed inhibition and discuss how will you identify it from each other.
- (6) State different factors which lead to increase use of enzymes in industries.

(c) Give answers to any **two** questions : **2×5=10**

- (1) Explain locate dehydrogenase as an example of isoenzyme.
 - (2) Explain catalysis by proximity orientation and by preferential binding to transition state.
 - (3) Ion-exchange chromatography.
 - (4) Give industrial uses of isolated enzymes in bread and cheese making.
 - (5) An enzyme catalyzes a reaction at a velocity of $20 \mu\text{mol}/\text{min}$ when the concentration of substrate (S) is 0.01 M . The K_m for this substrate is $1 \times 10^{-5} \text{ M}$. Assuming that Michaelis-Menten kinetics are followed, what will the reaction velocity be when the concentration of S is (a) $1 \times 10^{-5} \text{ M}$ and (b) $1 \times 10^{-6} \text{ M}$?
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