PARUL UNIVERSITY

PARUL INSTITUTE OF APPLIED SCIENCES

MID SEMESTER INTERNAL EXAMINATION, APRIL 2017

M. Sc. Semester II

Subject: Biochemistry/Biotechnology

Paper Code: **Title of the paper: Enzyme Technology**

Date: 31 /03/2017 **Time: 10:00 a.m to 11:30 a.m.**

Maximum Marks: 40

Instructions:

1. **All questions are compulsory and options are given in first and second question only.**
2. **Numbers to the right of question indicate the marks of respective question.**

Q. 1 Attempt any one question of the following. **(08)**

(i) Describe various factors affecting the enzyme activity.

(ii) Derive Michaelis-Menten equation for single substrate enzyme catalyzed reactions.

Q. 2 Attempt any three questions of the following. **(12)**

(i) Write short note on Ribozyme.

(ii) Describe Koshland's Model.

(iii) Write down Remarkable properties of an enzyme (Any Four).

(iv) What is [S] when the velocity of the reaction is 20% of Vmax?

(v) Describe the types of enzyme inhibition with the help of diagram.

Q. 3 Do as directed. Attempt all five questions. **(05)**

(i) What is Holo Enzyme?

(ii) What is Metallo Enzyme?

(iii) Define Active Site.

(iv) Write the mathematical expression that describes the rate of formation of product when all of the enzyme is substrate bound?

(v) Define catalytic efficiency.

Q. 4 Write correct option in your answer sheet for following 15 multiple choice questions. **(15)**

MCQ 1	The term apoenzyme is applicable to			
	(A)	Simple enzyme	(B)	Protein part of enzyme
	(C)	Organic cofactor	(D)	Inorganic cofactor
MCQ 2	Fischer's theory of an enzyme action is known as _____			
	(A)	Induced Fit	(B)	Lock and Key
	(C)	Both (A) and (B)	(D)	None of these
MCQ 3	Catalytic region in which is small portion of molecules are involved in catalysis is called			
	(A)	Duplication	(B)	Absorption site
	(C)	Active site	(D)	Inactive site
MCQ 4	Specific temp. at which enzyme works at maximum rate is classified as			
	(A)	Solute temperature	(B)	Optimum
	(C)	Natural	(D)	Solvent

MCQ 5	Substrate bind at the active site by			
	(A)	Non covalent bond	(B)	Covalent bond
	(C)	Both (a) and (b)	(D)	None of these
MCQ 6	Zymogens are			
	(A)	Inactive form	(B)	Active form
	(C)	Solvent of enzyme	(D)	Enzyme inhibitor
MCQ 7	Inorganic Cofactor is known as			
	(A)	Coenzyme	(B)	Activator
	(C)	Isoenzyme	(D)	Ribozyme
MCQ 8	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 slope	(D)	Straight line with negative slope
MCQ 9	Which of the following statements is true about competitive inhibitors?			
	(A)	It is a common type of irreversible inhibition	(B)	In the presence of a competitive inhibitor, the Michaelis-Menten equation becomes $V_0 = \frac{V_{max}[S]}{\alpha K_m + [S]}$
	(C)	The apparent Km decreases in the presence of inhibitor by a factor α	(D)	The maximum velocity for the reaction decreases in the presence of a competitive inhibitor
MCQ 10	The rate determining step of Michaelis-Menten kinetics is			
	(A)	ES complex dissociation step to produce products	(B)	ES complex formation step
	(C)	The product formation step	(D)	None of the above
MCQ 11	The molecule which acts directly on an enzyme to lower its catalytic rate is			
	(A)	Repressor	(B)	Modulator
	(C)	Inhibitor	(D)	Regulator
MCQ 12	Choose the correct option for uncompetitive inhibition in enzymatic reactions?			
	(A)	Vmax changes	(B)	Km changes
	(C)	Vmax and Km both change	(D)	Vmax and Km do not change
MCQ 13	The catalytic efficiency of two distinct enzymes can be compared based on which of the following factor?			
	(A)	pH of optimum value	(B)	Size of the enzymes
	(C)	Product formation	(D)	Km
MCQ 14	What is the general mechanism of an enzyme?			
	(A)	It acts by decreasing the pH	(B)	It acts by increasing the pH
	(C)	It acts by increasing the activation energy	(D)	It acts by reducing the activation energy
MCQ 15	Which of the following is an example of reversible inhibitor?			
	(A)	Penicillin	(B)	Iodoacetamide
	(C)	Protease inhibitors	(D)	DIPF

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