

Enzymes

I-MCQ:

Choose the correct answer:

1- All the following statements are true with regard to enzymes except:

- a) Enzymes lower activation energy.
- b) They alter equilibrium of the reaction.
- c) They accelerate the chemical reaction.
- d) Most of the enzymes are proteins in nature

2- In competitive inhibition:

- a) Inhibitor has structural similarity to substrate.
- b) K_m is decreased.
- c) V_{max} is decreased.
- d) Reaction rate is independent of substrate concentration.

3- In competitive enzyme activity inhibition

- a) The structure of inhibitor is similar to that of the substrate
- b) Inhibitor decreases apparent K_m
- c) K_m remains unaffected
- d) Inhibitor decreases V_{max} without affecting K_m

4- The optimum pH of most of the enzymes is

- a) Between 2 and 4
- b) Between 5 and 9
- c) Between 8 and 12
- d) Above 12

5- Enzymes, which are produced in inactive form in the living cells, are called

- a) Papain
- b) Lysozymes
- c) Apoenzymes
- d) Proenzymes

6- The isoenzymes LDH5 is elevated in

- a) Myocardial infarction
- b) Peptic ulcer
- c) Liver disease
- d) Infectious diseases

7- Activation or inactivation of certain enzymes is accomplished by covalent modification of the amino acid:

- a) Hydroxy lysine
 - b) Phenylalanine
 - c) Lysine
 - d) Serine
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8- These enzymes have different structure but the same catalytic function.

Frequently they are oligomers made from different polypeptide chains. These enzymes are called:

- a) Allosteric enzymes
- b) Isozymes
- c) Proenzymes
- d) Zymogens

9- In competitive enzyme activity inhibition, the inhibitor

- a) Increases V_{max}
- b) Decreases V_{max}
- c) Does not affect V_{max}
- d) Decreases V_{max} and K_m

10- What type of enzyme inhibitor would have the following effects: V_{max} unchanged K_m increased Higher $[S]$ needed to reach $V_{max}/2$

- a) Competitive reversible inhibition
- b) Allosteric inhibition
- c) Irreversible inhibition
- d) All of the above

11- Which of these enzymes is increased in myocardial infarction?

- a) Alkaline phosphatase
- b) Glutamate-oxaloacetate transaminase
- c) Acid Phosphatase
- d) Creatine Kinase(CK-MB)

12- As regards isoenzymes, which of the following is incorrect:

- a) They have similar polypeptide chains.
- b) They have different affinity to the substrate
- c) They can be separated by electrophoresis.
- d) They catalyze the same reaction

13- Which statement is incorrect regarding feedback inhibition:

- a) Inhibition is usually allosteric.
- b) The final end product inhibits an enzyme catalyzing an early step of the metabolic pathway.
- c) It prevents the accumulation of unnecessary excessive products.
- d) It is a type of competitive inhibition.

14- Allosteric inhibition of an enzyme involves which of the following?

- a) Binding of an inhibitor to a site other than the substrate binding site.
- b) Binding of an inhibitor competitively to the substrate binding site.
- c) Binding of an inhibitor noncompetitively to the substrate binding site.
- d) Allosteric inhibitors increase the affinity of the enzyme to its substrate.

15- Enzymes accelerate reactions by _____ the activation energy needed for the reaction.

- a) stopping
- b) raising
- c) lowering
- d) binding

16- In competitive inhibition, the inhibitor:

- a) Competes with the enzyme.
- b) Irreversibly binds with the enzyme.
- c) Binds with the substrate.
- d) Competes with the substrate.

17- The allosteric inhibitor of an enzyme:

- a) Causes the enzyme to work faster
- b) Binds to the active site
- c) Participates in feedback regulation
- d) Denatures the enzyme

18- 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

19- A patient presents with extreme swelling and tenderness in the joints of the extremities. Examination of synovial fluid extracted from the big toe reveals the presence of urate crystals and confirms the diagnosis of gouty arthritis. The drug allopurinol is prescribed to inhibit which of the following enzymes?

- a) Adenosine deaminase
- b) AMP deaminase
- c) Nucleoside phosphorylase
- d) Xanthine oxidase

20- In enzyme kinetics K_m is:

- a) The substrate concentration that gives one half V_{max}
- b) The dissociation constant for the enzyme substrate complex
- c) Concentration of enzyme
- d) Half of the substrate concentration required to achieve V_{max}

21-Non steroidal anti inflammatory drugs, such as aspirin act by inhibiting the activity of the enzyme:

- a) Lipoxygenase
- b) Cyclooxygenase
- c) Phospholipase A2
- d) Lipoprotein lipase

22-Regulation of some enzymes by covalent modification involves addition or removal of

- a) Acetate
- b) Sulphate
- c) Phosphate
- d) Coenzyme

23-An inorganic ion required for the activity of an enzyme is known as

- a) Activator
- b) Cofactor
- c) Coenzyme
- d) None of the above

24-The isozyme CK-MB is specifically increased in the blood of patients who had

- a) Skeletal muscle disease
- b) Recent myocardial infarction
- c) Infective hepatitis
- d) Brain infarction

25-Multiple forms of the same enzymes are known as

- a) Zymogens
- b) Pre-enzymes
- c) Proenzymes
- d) Isoenzymes

26-An allosteric enzyme influences the enzyme activity by

- a) Competing for the catalytic site with the substrate
- b) Changing the specificity of the enzyme for the substrate
- c) Changing the conformation of the enzyme by binding to a site other than catalytic site
- d) Changing the nature of the products formed

27-An enzyme is a

- a) Carbohydrate
- b) Lipid
- c) Protein
- d) Nucleic acid

MCQ Answers

1-b	2-a	3-a	4-b	5-d	6-c	7-d	8-b	9-c	10-a
11-d	12-a	13-d	14-a	15-c	16-d	17-c	18- a	19-d	20-a
21-b	22-c	23-b	24-b	25-d	26-c	27-c			