

CORE-VII (Fundamentals of Biochemistry and Microbiology)

Answer the following questions [1 marks]

1. Enzymes are

- a) Carbohydrate
- b) RNA
- c) Proteins
- d) Fats

2. The term enzymes are coined by

- a) Pasteur
- b) Buchner
- c) Urey Miller
- d) Kuhne

3. The fastest enzymes is

- a) Pepsin
- b) Carbonic unhydrase
- c) DNA gyrase
- d) DNA polymerase

4. Fat is hydrolysed by the enzyme known as

- a) Trypsin
- b) Lipase
- c) pepsin
- d) Amylase

5. The term apoenzyme is applicable to

- a) Simple enzyme
- b) Protein part of conjugate enzyme
- c) Organic cofactor of a conjugate enzyme
- d) Inorganic cofactor of a conjugate enzyme

6. Enzymes

- a) Do not require activation energy
- b) Do not change requirement of activation energy
- c) Increase requirement of activation energy
- d) Lowest requirement of activation energy

7. Zymogen is

- a) Enzyme poison
- b) Enzyme modulator
- c) Enzyme precursor
- d) Enzyme inhibitor

8. Allosteric enzyme possesses

- a) Active site and an allosteric site
- b) Active site and two types of allosteric sites
- c) Active site and three types of allosteric sites
- d) Three types of allosteric sites

9. Enzyme generally have

- a) Same pH and temperature optima
- b) Same pH but different temperature optima
- c) Different pH but same temperature optima
- d) Different pH and different temperature optima

10. The enzyme which forms the peptide bond is known as

- a) Carbonic unhydrase
- b) Peptidase
- c) Carbohydrase
- d) Peptidyl transferase

11. The enzyme, tyrosinase, is activated by

- a) Iron
- b) Copper
- c) Zinc
- d) Potassium

12. "Lock and key" theory of enzyme action was proposed by

- a) Fischer
- b) Koshland
- c) Kuhne
- d) Arrhenius

13. Trypsin are active in

- a) Acidic
- b) Alkaline

- c) neutral
- d) None of these

14. Koshland's theory of enzyme action is known as

- a) Reduced fit theory
- b) Lock and key theory
- c) Induced fit theory
- d) Enzyme coenzyme theory

15. The enzymes involved in feedback inhibition are called

- a) Allosteric enzymes
- b) Holoenzymes
- c) Apoenzymes
- d) Coenzymes

Answers:

1. c) Proteins
2. d) Kuhne
3. b) Carbonic unhydrase
4. b) Lipase
5. b) Protein part of conjugate enzyme
6. d) Lowest requirement of activation energy
7. c) Enzyme precursor
8. b) Active site and two types of allosteric sites
9. a) Same pH and temperature optima
10. d) Peptidyl transferase
11. b) Copper
12. a) Fischer
13. b) Alkaline
14. c) Induced fit theory
15. a) Allosteric enzymes

Answer the following questions in 2-3 sentences [1.5 marks]

1. Give the structure of virus.
2. How do viruses reproduce?
3. What are bacteriophages?
4. State about viroids.
5. Write about prions.
6. How are microbes useful in agriculture?

7. Give the industrial applications of microbes.
8. How are microbes beneficial for the food industry?
9. What are the symptoms of typhoid?
10. State about the cause and transmission of cholera.
11. How can tuberculosis be cured?
12. What are the preventive measures for swine flu?
13. What are the symptoms of zika fever?
14. State about HIV.
15. What are α -helix breakers? Give examples.
16. What is quaternary structure of protein?
17. What are zwitter ion?
18. Give the structure of IgM.

Answer the following questions in 75 words [2 marks]

1. What are triacylglycerols?
2. What are steroids?
3. Give the physiological importance of essential and non-essential amino acids.
4. Amino acids are amphoteric in nature. Justify.
5. What are the bonds stabilizing protein structure?
6. Differentiate between simple and conjugate proteins.
7. What is denaturation and renaturation?
8. What are antigenic determinants?
9. Name some denaturing agents?
10. What are the characteristics of denatured proteins?
11. What are cofactors?
12. State about the specificity of enzyme action.
13. What are isozymes?
14. What are the factors affecting rate of enzyme catalyzed reactions?
15. Give the concept of V_{max} and K_m .
16. What are the assumptions made in calculating the Michaelis-Menten equation?
17. State about Lineweaver-Burk plot.
18. What are multi-substrate reactions?
19. Write a short note on regulation of enzyme action.

Answer the following questions in 500 words [6 marks]

1. Give the structure and biological importance of monosaccharides.
2. Give the structure and biological importance of disaccharides.
3. Give the structure and biological importance of polysaccharides.
4. Give a detailed account on glycoconjugates.
5. State about structure and significance of physiologically important saturated and unsaturated fatty acids.
6. Give a detailed account on phospholipids.
7. State about glycolipids.
8. Give the structure and general properties of α -amino acids.

9. Give an account on classification of amino acids.
10. What are the levels of organization in proteins?
11. Explain the basic structure of immunoglobulins.
12. Give the classes and functions of immunoglobulins.
13. State about nomenclature and classification of enzymes.
14. Give the mechanism of enzyme action.
15. Give a detailed account on enzyme kinetics.
16. Derive Michaelis-Menten equation.
17. State about enzyme inhibition.
18. Write about allosteric enzymes and their kinetics.
19. Give the classification, structure and reproduction in bacteria.
20. Give the classification of virus.