

P-202[ENZYME TECHNOLOGY AND MICROBIOLOGY]

1. Answer the following questions.

[1 mark]

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

2. Answer the following questions within 2-3 sentences.

[1.5 mark]

1. What are oxidoreductase ?
2. What is lock and key hypothesis ?
3. What is induced –fit hypothesis ?
4. Name the different classes of enzymes .
5. Give the significance of allosteric enzymes.
6. State the Michaelis –Menten equation.
7. Write the assumptions made in deriving the Michaelis –Menten Equation.
8. Define turn over number of enzyme.
9. What is Ping-pong catalysis ?
10. What do you mean by bi-substrate reactions?
11. What is difference between ordered and ping –pong mechanism ?
12. What is ordered mechanism ?
13. What is random –order reaction ?
14. What is enzyme biosensor ?
15. What is application of biosensors ?
16. What is enzyme immobilization and how it is useful to us ?
17. Which is the first immobilized enzyme ?
18. What are the properties of immobilized enzyme ?
19. What are the components of immobilized enzyme ?
20. What is a chemostat ?
21. What are the uses of microbial toxins ?

3. Answer the following questions within 75-100 words.

[2 marks]

1. Give some properties of enzymes .
2. What are allosteric enzymes ?
3. Give some application of enzyme sin food industry .

4. State any 4 rules for the classification and nomenclature of enzymes.
5. How do phosphorylation affect enzyme function ?
6. What is Brigg's and Haldane quasi steady state approximation ?
7. What is competitive inhibition of enzymes ?
8. What is non-competitive inhibition of enzymes ?
9. What is uncompetitive inhibition of enzymes ?
10. Give some factors affecting enzyme activity .
11. What is ping –pong mechanism ? What is the different between sequential and ping-pong kinetics ?
12. What are the component of enzyme biosensor ?
13. What are the advantages of immobilized enzymes ?
14. What are the major factors affecting enzyme immobilisation ?
15. What are the 4 types of immobilisation ?
16. Give some factors influencing growth of microbes.
17. Mention some roles of microbes in industry.
18. What are the contributions of Louis Pasteur towards microbiology ?
19. What are the different types of microbial toxins ?
20. How do toxins contributes to pathogenicity of microorganisms ?
21. What are the classification of bacterial toxins ?

4. Answer the following questions within 500 words.

[6marks]

1. Give the classification and properties of enzymes.
2. Give the mechanism of action of enzymes . Add a note on nomenclature of enzymes.
3. State about allosteric , phosphorylation and proteolytic cleavage.
4. What re allosteric enzymes? What are its significance .
5. Give the application of enzyme in food industries .
6. Describe Michelis –Menten equation.
7. What is Brigg's and Haldane quasi steady state approximation.
8. State about enzyme inhibition and inhibition kinetics .
9. Give a brief account on turnover number and Kcat .
10. What are factors affecting enzyme activity ?
11. State about bi-substrate reaction kinetics .
12. What is ordered and random kinetics ?
13. State about Ping-Pong catalysis.
14. Give an account on enzyme biosensors.
15. Write about extraction and purification of enzymes illustrating the down streaming processing.
16. Define enzyme immobilization .Give the types , methods and application of enzyme immobilization in bio-reactors.
17. State about history and development of microbiology.
18. Give a brief account on general features of Bergy's Manual for classification of microbes.
19. Elaborate about isolation , culture and maintenance of microorganisms.
20. What do you know about microbial growth ? Explain.

- 21.State about continuous culture (chemostat).
- 22.What are the factors influencing growth of microbes.
- 23.What is the role of microbes in agriculture and industry ?
- 24.Give an account on types , mode of action and pathogenicity of microbial toxins.