

TDC (CBCS) Odd Semester Exam., 2020  
held in March, 2021

BIOTECHNOLOGY

( 3rd Semester )

Course No. : BTCSEC-301T

( Enzymology )

*Full Marks : 50*  
*Pass Marks : 20*

*Time : 3 hours*

*The figures in the margin indicate full marks  
for the questions*

SECTION—A

Answer any *fifteen* of the following questions :  
1×15=15

1. Which enzymes can break peptide bonds?
2. Transaminases capable of transferring amino group belong to which class of enzymes?
3. Give one example of lyases.

4. What is coenzyme?
5. Define zymogens.
6. What is prothrombin?
7. What is binding site?
8. What is enzyme specificity?
9. What is E-S complex?
10. What is enzyme kinetics?
11. Define active site.
12. Who proposed induced fit theory?
13. What is ordered mechanism of two-substrate reaction?
14. What is random mechanism of two-substrate reaction?
15. What is ping-pong mechanism of two-substrate reaction?
16. What is alcohol dehydrogenase?

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17. What is lysozyme?
18. What is the function of chymotrypsin?
19. Which enzyme catalyzes the first step in the biosynthesis of pyrimidines?
20. Which enzyme catalyzes the conversion of lactate to pyruvate and back?
21. Define allosteric enzymes.
22. What are multifunctional enzymes?
23. What is cooperativity?
24. What is the function of phosphofructokinase?
25. What is site directed mutagenesis?
26. What is enzyme engineering?
27. What are immobilized enzymes?
28. What are water-soluble enzymes?
29. Define soluble enzymes.
30. Write about enzyme evolution.

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( Turn Over )

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SECTION—B

Answer any *five* of the following questions : 2×5=10

31. State two approaches for purification of enzymes.
32. State two major ways for activation of zymogens.
33. Give the Michaelis-Menten equation.
34. Define free energy.
35. What are isozymes? Give example.
36. What is RNase? Why does presence of RNase spoil extraction of RNA?
37. What are the functions of protein-ligand complexes within a cell?
38. State the principle of protein-ligand binding.
39. Give the outline of a method for large-scale production of enzyme.
40. Give the outline of a method for immobilization of enzyme.

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( Continued )

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SECTION—C

Answer *any five* questions

41. Write a note on principle, procedure and purpose of crystallization of enzymes. 5
42. Give a detailed account of methods of enzyme analysis. 5
43. How will you determine  $K_m$  and  $V_{max}$  of an enzyme? State their physiological significance. 5
44. Describe various factors affecting the rate of enzyme action. 5
45. Write a note on factors associated with catalytic efficiency of enzyme action. 5
46. Describe the types of enzyme inhibition with necessary examples. 5
47. What is scatchard plot? What is hill plot? State the importance of scatchard and hill plots.  $1\frac{1}{2}+1\frac{1}{2}+2=5$
48. Give an illustrated account of multienzyme complexes. 5

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49. Write a note on methods for proteins sequencing. 5
50. Describe briefly the application of immobilized and soluble enzyme in health and industry. 5

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