

### III B.Sc BIOCHEMISTRY

S.NO	SEMESTER	ODD/ EVEN	TITLE OF THE PAPER
1	V	ODD	ENZYME AND ENZYME TECHNIQUES
2	V	ODD	HUMAN PHYSIOLOGY
3	V	ODD	GENETICS AND MOLECULAR BIOLOGY
4	V	ODD	BIOSTATISTICS
5	V	ODD	HORMONAL BIOCHEMISTRY
6	V	ODD	SKILL BASED - BIOINFORMATICS
7	VI	EVEN	NUTRITIONAL AND PLANT BIOCHEMISTRY
8	VI	EVEN	INTERMEDIARY METABOLISM
9	VI	EVEN	BIOTECHNOLOGY
10	VI	EVEN	IMMUNOLOGY
11	VI	EVEN	CLINICAL BIOCHEMISTRY
12	VI	EVEN	HERBAL TECHNOLOGY

### D.K.M.COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1.

#### III B.Sc Biochemistry

Semester : V

**Title of the paper: Enzymes and Enzyme Techniques**

**Subject Code : 15CBC5A**

**SECTION-A      2 MARKS**

1. Define enzyme.
2. Name the six major classes of enzymes.
3. What are oxidoreductases?
4. What are transferases?
5. How are enzymes classified based on occurrence?
6. What is turnover number of enzymes?

7. Define active site of an enzyme.
8. What are marker enzymes?
9. What are enzyme units?
10. What is specific activity of enzyme?
11. Give the properties of enzyme.
12. What is reaction rate?
13. What are the factors affecting enzyme activity?
14. What are inhibitors?
15. What is optimum pH?
16. What is optimum temperature?
17. What is temperature coefficient?
18. What is the significance of determining  $K_m$  and  $V_{max}$ ?
19. What is enzyme inhibition?
20. How is enzyme inhibition classified?
21. What is substrate analogues?
22. Define co-enzyme.
23. What are vitamin and non-vitamin co-enzyme?
24. What are Metalloenzymes?
25. What are metal activated enzymes?
26. Define Multienzyme complex. Give example?
27. What is enzyme specificity?
28. What are serine proteases? Give example?
29. Write short notes on the structure and function of Chymotrypsin.

30. Write short notes on the structure and function of Ribonuclease.
31. What is acid-base catalysis?
32. What is covalent catalysis?
33. What are abzymes or catalytic antibodies?
34. What are ribozymes?
35. What are isoenzymes? Give example.
36. What is a biosensor?
37. What is enzyme immobilization?
38. What are the advantages and disadvantages of enzyme immobilization?
39. Write notes on isoenzymes of Creatine phosphokinase.
40. Explain the clinical use of LDH isoenzymes.
41. Give few examples of enzymes which are useful in clinical diagnosis.
42. What are functional and non-functional enzymes?
43. What is a designer enzyme?
44. What are the different methods of enzyme immobilization?
45. Give the importance of streptokinase and asparaginase.?
46. How is muscle disorders diagnosed?
47. How is myocardial infarction diagnosed?
48. What are the enzymes useful in diagnosis of cancer?

**SECTION-B            5 Marks**

1. Give an account on intracellular localization of enzymes.
2. Give an account on oxidoreductases with example.
3. What is the role of transferases?

4. How are enzymes classified?
5. Write short notes on enzyme units.
6. What is enzyme specificity? How is it classified?
7. Explain the importance of enzyme distribution in the cell.
8. How are enzymes extracted?
9. What are the criteria for enzyme – protein purification?
10. Describe the role of denaturation-fractionation in enzyme purification.
11. Describe salt fractionation.
12. Describe the role of ion-exchange chromatography in enzyme purification.
13. How is a bacterial enzyme purified?
14. What are the general precautions to be adopted during enzyme purification?
15. Give an account on the enzymes present in mitochondria?
16. How is lysosome separated? What is the marker enzyme used for?
17. Explain the use of western blotting in enzyme purification.
18. Explain the importance of adding chemicals during the extraction of enzymes.
19. What are the methods used for cell lysis?
20. How are nucleic acids removed during enzyme purification?
21. Explain the basic rules for handling the enzymes.
22. Explain fast reaction of enzyme.
23. What is stopped flow technique?
24. Give an account on the enzymes present in the cytoplasm.

25. List the goals of enzyme kinetics.
26. Describe the kinetics of bisubstrate enzyme reactions.
27. What are the important assumptions made in deriving the Michaelis-Menten equation?
28. Give the difference between reversible and irreversible inhibition.
29. What is a suicide inhibition?
30. Derive LB equation.
30. Derive Hanes woolf plot.
31. Derive Eadie-Hofstee plot.
32. Write a short note on competitive inhibition. Give example.
33. What is concerted inhibition?
34. Explain feedback inhibition with example.
35. What is the effect of temperature in influencing enzyme activity?
36. What is the effect of pH in influencing the enzyme activity?
37. What are allosteric enzymes? Explain with example.
38. What are vitamin and non-vitamin co-enzymes?
39. Explain why most of co-enzymes are derived from vitamins.
40. Explain the role of folate co-enzymes.
41. Describe the role of biotin in carboxylation reaction.
42. Give the important reactions in which coenzyme A are involved.
43. What is FAD? Give its role in the enzyme catalysis.
44. What is the coenzymic form of vitamin B1? Give the structure and function of it.

45. Explain the mechanism of transamination in which PLP coenzyme is involved.
46. Explain the coenzymic function of NAD and NADP.
47. What is multienzyme complex? Explain with example.
48. What are metalloenzymes? Explain.
49. Write a note on the salient features of active site of an enzyme.
50. Give an account on the lock and key model of enzyme activity.
51. What is induced fit theory?
52. Explain the different types of enzyme specificity.
52. Describe in detail the general acid-base catalysis of enzyme.
53. Explain covalent catalysis with example.
54. Explain proximity effect on enzyme catalysed reaction rate.
55. Describe substrate strain theory and entropy effect theory.
56. Give the application of immobilized enzymes.
57. What are the advantages of using immobilized enzymes?
58. Discuss the clinical applications of enzymes.
59. Give an account on the industrial applications of enzymes
60. How is serum enzymes classified?
61. What are functional and non-functional enzymes?
62. What are isoenzymes? Give example with their clinical significance.
63. Give short notes on synthetic and artificial enzymes.

**SECTION-C**

**10 Marks**

1. Give an account on the nomenclature and classification of enzymes.
2. How are enzymes isolated and purified by various methods.
3. What is intracellular compartmentalization of enzymes?
4. Derive MM equation. Give the significance of  $K_m$ .
5. Write a detailed account on the different types of enzyme inhibition.
6. Write about the structure and coenzymic function of NAD and FAD.
7. Give the coenzymic function of PLP.
8. Explain the structure and function of non-vitamin coenzymes.
9. What are the different methods used for enzyme immobilization?
10. Explain the structure and mechanism of action of chymotrypsin.
11. Explain the structure and mechanism of action of Ribonuclease.
12. Explain the clinical and industrial applications of enzymes.
13. Give an account on enzyme engineering?
14. Explain the clinical significance of Isoenzymes.
15. Give a detailed account on the applications of Biosensors?