LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **BIOTECHNOLOGY**

SECOND SEMESTER – NOVEMBER 2016

BT 2825 - ENZYMOLOGY & ENZYME TECHNOLOGY

Date: 03-11-2016 Dept. No. Max. : 100 Marks
Time: 01:00-04:00

PART – A

Answer ALL the Questions

I. Choose the correct answer **(5 x 1 = 5 Marks)**

1. Enzyme increases the reaction rate by
   a) Increasing the activation energy b) Changing the reaction equilibrium
   c) Decreasing the activation energy d) Increasing free energy change
2. Amino acid predominantly found in the active site of an enzyme
   a) Glycine b) Proline c) Histidine d) Alanine
3. Which one of the following enzymes is mostly produced for industrial applications?
   a) Protease b) Amylase c) Cellulase d) Pectinase
4. Alanine transaminase levels exceed aspartate transaminase levels during
   a) Mannosidosis b) Chronic liver disease c) Immunodeficiency d) Cardiac arrest
5. Which one of the following enzymes is used in detergents?
   a) Pectinase b) Xylanase c) Laccase d) Protease

II. State whether the following are true or false **(5 x 1 = 5 Marks)**

6. Ribozymes need protein part in their active site for catalysis.
7. Adsorption mediated enzyme immobilization involves non covalent interactions.
8. Support or matrix is involved in enzyme cross linking
9. Enzyme replacement therapy can be administered in the form of intravenous injections.
10. Thermostability of the enzyme can be improved by introducing proline residues at specific positions in the enzyme structure.

III. Complete the following **(5 × 1 = 5 Marks)**

11. Enzymes that catalyze the addition of groups to double bonds are called as _____
12. Enzyme immobilization by adsorption can be done by using a matrix such as _____.
13. The active site of lysozyme contains His57, _____ and _____.
14. _____ cleaves RNA in a RNA-DNA hybrid.
15. _____ specific sequences are compared in homology based enzyme discovery.

IV. Answer the following, each within 50 words **(5 x 1 = 5 Marks)**

16. Mention the characteristic features of an enzyme?
17. Comment on homology based enzyme discovery.
18. Give two examples of zymogens.
19. Define transition state.
20. What are the secondary serum enzymes?

PART – B **(5 × 8 = 40 Marks)**

Answer the following, each within 500 words. Draw diagrams wherever necessary.

21. (a) Discuss the mechanisms of enzyme catalysis.

OR

(b) Describe in brief about coupled reactions and mention all the coupled reactions in glycolysis pathway.

22. (a) Write a short note on LDH and Creatinine kinase isozymes.

OR

(b) What are zymogens? Write about the proteolytic activation of any 3 zymogens.

23. (a) Discuss the use of *in vitro* recombination to obtain novel enzyme genes.

OR

(b) Explain how the thermostability of an enzyme can be improved by addition of disulphide bonds.

24. (a) What are Isozymes? Briefly explain the significance of isozymes in disease diagnosis.

OR

(b) Give an account of the enzymes used in the textile and paper industry.

25. (a) Give a brief account of the various reporter enzymes.

OR

(b) Write a short note on various enzymes used in food and dairy industries.

PART – C **(2 × 20 = 40 Marks)**

Answer any TWO of the following, each within 1500 words; Draw diagrams wherever necessary.

26. Describe the following:

(i) Regulation of enzymes (ii) Diagnostic enzymes for liver disorders

27. What is a catalytic triad? Describe in detail about the mechanism of Chymotrypsin.

28. What is immobilization? Describe various methods, advantages, and applications of Immobilization.

29. Elaborate on the different enzymes used in genetic engineering.