



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY

SECOND SEMESTER – APRIL 2016

BT 2825 - ENZYMOLOGY & ENZYME TECHNOLOGY

Date: 22-04-2016
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

PART – A (20 Marks)

Answer ALL the Questions

I. Choose the correct answer

(5 x 1 = 5 Marks)

- Enzyme increases the reaction rate by
 - Increasing the activation energy
 - Changing the reaction equilibrium
 - Decreasing the activation energy
 - Increasing free energy change
- Amount of enzyme causing transformation of 1 μ M of the substrate per minute is called
 - Katal
 - Unit
 - Kcat
 - Turn over number
- Expression cloning of enzyme coding genes involves
 - pUC
 - pET
 - PBR322
 - phage vectors
- Starch hydrolysis to make glucose syrup involves
 - α Amylase
 - Glucoamylase
 - α Amylase and Glucoamylase
 - β Amylase
- Phenyl ketonuria is caused as a result of mutation in gene coding for
 - Homogentisic acid oxidase
 - Phenylalanine hydroxylase
 - Tyrosinase
 - Transaminase

II. State whether the following are true or false, if false, give reason

(5x1=5 Marks)

- Vitamins are the precursors of the coenzymes.
- In a cationic exchanger, the stationary phase has positively charged ions.
- Support or matrix is involved in enzyme cross linking
- Alkaline phosphatases prevent self ligation of vectors.
- Disease condition reflects drop in primary serum enzymes.

III. Complete the following

(5 x 1= 5 Marks)

- is the allosteric inhibitor of hexokinase
- Key amino acids present in the active site of lysozyme-----.
- Two different restriction enzymes with same recognition site and cuts differently are called -----.
- specific sequences are compared in homology based enzyme discovery.
- Enzyme marker used in diagnosis of myocardial infarction is -----.

IV. Answer the following, each within 50 words

(5 x 1 = 5 Marks)

- Mention the characteristic features of an enzyme?
- What is Turn over number?
- List out the natural polymers used for matrix preparation in immobilization?
- What is the significance of cellulose in textile industry?
- What are the secondary serum enzymes?

PART B

(5 x 8 = 40 Marks)

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

21. (a) Write briefly on Induced fit and lock and key models with specific examples.

OR

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

22. (a) Briefly explain the catalytic mechanism of lysozyme.

OR

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

23. (a) Briefly discuss about the protein engineering strategies to increase enzyme stability and specificity.

OR

(b) Write a short note on the structure and function based screening of enzymes.

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

OR

(b) Write a note on Enzyme deficiency disorders.

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 x 20 = 40 Marks)

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

26. Derive Michaelis – Menton kinetic equation, and write a note on significance of V_{max} and K_m .

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. Write in detail about the enzyme replacement therapy for inborn errors, cystic fibrosis, digestive disorder and cancer.
