

# CBCS SCHEME

18BT53

## Fifth Semester B.E. Degree Examination, June/July 2023 Enzyme Technology and Biotransformation

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- Explain any two separation methods employed for enzyme based on size or mass. (10 Marks)
  - A protein has sedimentation coefficient values of  $3.12 \times 10^{-13}$  s in water. Its diffusion coefficient in  $H_2O$  is  $8.2 \times 10^{-7}$  cm<sup>2</sup>/s. Both the above values have been corrected for 20°C in  $H_2O$ . The partial specific volume of the protein is 0.735 and the density of  $H_2O$  at 20°C is 0.9982. Determine the molecular weight of the protein. (05 Marks)
  - Distinguish between biocatalyst and chemical catalyst. (05 Marks)

OR

- Describe Acid-Base catalysis with example. What could be the possible applications of knowing the mechanism of action and why? (10 Marks)
  - Elution profile of a mixture of proteins (A, B, C, D) resolved by exclusion is given above. Which is the largest protein? Justify with answer.

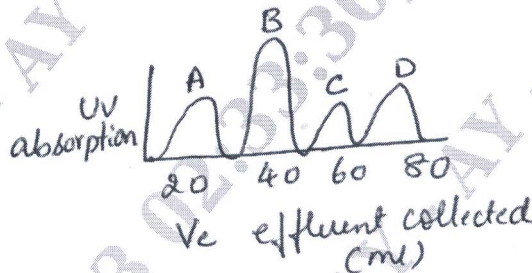


Fig.Q2(b)

- Discuss the mechanism where active site and substrate are complementary to each other. (05 Marks)

### Module-2

- Explain the mechanism of coenzyme NAD/NADP (Answer should address both structure as well as physiological function) (10 Marks)
  - How does standardization and optimization will be carried out for enzyme array? (10 Marks)

OR

- Explain the mechanism of coenzyme PLP. (Answer should address both structure as well as physiological function) (10 Marks)
  - Illustrate isoenzyme measurement with two examples by kinetic method. (10 Marks)

### Module-3

- Kinetic parameter of immobilized enzyme and free enzyme will differ. Justify. (10 Marks)
  - Extremozymes represent the technology of the future. Justify. (10 Marks)

OR

- 6 a. Define immobilized enzyme. Note on covalent technique of immobilization of enzyme. (10 Marks)  
b. Discuss the configuration and design of immobilized enzyme reactor. Add a note difference between free and immobilized enzyme reactor. (10 Marks)

**Module-4**

- 7 a. Using steroid as a template, explain the construction of novel enzymes. (10 Marks)  
b. Describe the biological importance of HMG COA reductase inhibitors. (10 Marks)

OR

- 8 a. Explain host guest complexation chemistry with example. (10 Marks)  
b. Enzymes can be used in disease therapy. Justify with three examples. (10 Marks)

**Module-5**

- 9 a. SGOT and SGPT act as excellent markers for disease. Explain. (10 Marks)  
b. Discuss the application of protease in food and leather and wool industry. (10 Marks)

OR

- 10 a. Enzyme as a biomarker for Myocardial infraction. Justify. (10 Marks)  
b. Explain the production of glucose syrup from starch. (10 Marks)

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