

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

August 2024 Supplementary Examinations

Programme: B.E.

Branch: Biotechnology

Course Code: 19BT6DCETK

Course: Enzyme Technology & Kinetics

Semester: VI

Duration: 3 hrs.

Max Marks: 100

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

- 1 Distinguish between the following, with illustrated examples wherever relevant. **20**
- Specificity & specific activity of enzymes
 - Fold purification & yield in purification
 - Hydrolases & Lyases
 - Native & SDS-PAGE (application in determining enzyme purity)

UNIT - II

- 2 a) Distinguish between K_m & K_{cat} . How would you interpret a situation wherein an enzyme 'E' fails to act on substrate 'S' yielding product 'P' given that there was a 4-fold increase in the K_m value? Also, can immobilization of the enzyme 'E' alter K_m or K_{cat} . Substantiate with reasons. **10**
- b) Distinguish between continuous & stopped flow kinetics with examples. Which is preferable & why? Indicate which of the 2 preparations of enzyme 'E' is purer: Preparation E1 with a specific activity of 300 U/mg or E2 having 350U/mg with reasons for your answer. **10**

UNIT - III

- 3 a) Distinguish between biotin and thiamine pyrophosphate with respect to their role in metabolic functioning. **10**
- b) Distinguish between Acid-base catalysis & substrate- strain hypothesis. **10**

OR

- 4 a) Distinguish between the mode of action of NAD^+ & FAD. **10**
- b) What is oxidative deamination? Explain the mechanism of the reaction catalyzed by transaminases with PLP as a coenzyme. **10**

UNIT - IV

- 5 a) Which is preferable according to you- free or immobilized enzymes? Why? Cite your answer with reasons & examples. **10**
- b) Evaluate ionic binding and physical adsorption as methods of immobilization of enzymes. **10**

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

UNIT - V

- 6 a) Organic solvents provide certain advantages with respect to enzyme-catalyzed reactions. Do you agree? Whether yes/no, justify. **10**
b) What are abzymes? How do they differ from enzymes? Justify with examples **10**

OR

- 7 a) Distinguish between artificial enzymes & novel enzymes with examples. **10**
b) Distinguish between thermophilic, hyperthermophilic & psychrophilic enzymes with examples of each. **10**

SUPPLEMENTARY EXAMS 2024