

2/22

1708E286

Candidate's Seat No : \_\_\_\_\_

B.Sc. Sem-5 Examination

CC 304

Biotechnology

August 2021

Time : 2-00 Hours]

[Max. Marks : 50

- Instructions: (1) All Question in **Section I** carry equal marks.  
(2) Attempt any **THREE** questions in **Section I**.  
(3) Question IX in **Section II** is **COMPULSARY**.  
(4) Draw figures where necessary. Show question number against each answer.  
(5) Figures in right are marks.

**Section I**

1. (A) Discuss lock and key and induced fit model of enzyme catalysis. 7  
(B) Discuss various factors affecting enzyme activity. 7
2. (A) Derive and explain Michaelis-Menten Equation for enzyme kinetics. 7  
(B) Discuss nomenclature and classification of Enzyme with examples. 7
3. (A) Explain single and multi-substrate systems of enzyme complex. 7  
(B) What are Isoenzymes? Give importance of isoenzyme forms of Lactate dehydrogenase. 7
4. (A) Define Co-enzymes. Explain structure and role of NADP as coenzyme. 7  
(B) Describe the role of inhibitors and allosteric regulators in enzyme catalysis. 7
5. (A) Explain production process and recovery of Fungal Amylase. 7  
(B) Write a note on heterologous Bio-production of Insulin. 7
6. (A) Explain methods of protein purification based on Polarity. 7  
(B) Discuss methods for protein purification based on Specificity based separation. 7
7. (A) Explain techniques of Immobilization for Enzymes. 7  
(B) Write a note on Protein Engineering. 7
8. (A) Explain principle and working of Biosensors. 7  
(B) Discuss enzymatic reactions in Organic and Solid phases. 7

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## Section II

## 9. Answer in Short (any eight)

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- 1) Define: Specific Activity of enzyme
  - 2) What is turn-over number?
  - 3) Name 2 methods for determination of amino acid composition in a protein.
  - 4) Give 2 key properties of enzyme.
  - 5) Mention an example of enzyme and its use in medicinal industry.
  - 6) What are enzyme inhibitors?
  - 7) What is allosteric regulation?
  - 8) Draw structure of PLP.
  - 9) What are abzymes?
  - 10) What are ribozymes?
  - 11) What is iso-electric point of a protein?
  - 12) Give an example of anionic and cationic exchanger.
  - 13) Name 2 methods of protein separation based on selective binding.
  - 14) Name 2 methods for homogenization for extraction of protein from animal cell.
  - 15) Write two application of Erythropoietin
  - 16) Give application of DNA ligase.
  - 17) How can we check the activity of Taq DNA polymerase during enzyme production?
  - 18) Write any two characteristics of matrix used for immobilization.
  - 19) What are supercritical fluids?
  - 20) What are different levels of protein structure?
  - 21) Give two methods for protein engineering.
  - 22) What is the full form of GCSF?
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