

**M. Sc. (Biotechnology) Sem-IV (2012 Course)(Choice Based Credit System) : SUMMER - 2019**  
**SUBJECT: SPECILIZATION: a) ENZYMOLOGY & ITS INDUSTRIAL APPLICATIONS**

Day: Tuesday  
Date: 09/04/2019

**S-2019-1416**

Time: 02.00 PM TO 05.00 PM  
Max Marks. 60

**N.B.**

- 1) All Questions are **COMPULSORY**.
- 2) Figures to the right indicate full marks
- 3) Answers to both the sections should be written in *SAME* answer books.

**SECTION - I**

- Q.1** Answer **ANY TWO** of the following (10)
- a) How do you determine void volume, bed volume and elution volume of a column for Gel filtration Chromatography?
  - b) What are the different methods of immobilization of enzyme? Discuss briefly.
  - c) Describe the principle and working of MALDI-TOF.
- Q.2** Answer **all** the following: (12)
- a) Differentiate between 'Lock and Key' mechanism and "included fit" theory of enzyme substrate complex.
  - b) Explain the deviation in  $K_m$  and  $V_{max}$  on a double reciprocal plot for non – competitive inhibition.
  - c) What are diagnostic and therapeutic enzymes?
  - d) Write a note on factors affecting enzyme catalyzed reactions on large scale.
- Q.3** Answer in short (**Any TWO**) (08)
- a) Write a note on structure and function of Lysozyme enzyme.
  - b) What are allosteric enzymes? Discuss positive and negative allosteric modulation of enzyme in brief.
  - c) Discuss the principle and working of NMR.

**SECTION - II**

- Q.4** Answer any TWO (10)
- a) What is mass transfer effect? What are the precautions to be taken for mass transfer?
  - b) What is Fluorescence? How is it exploited to measure reaction rates/study kinetics of reaction?
  - c) Write a short note on applications of immobilized enzyme for biomedical use.
- Q.5** Answer the following (Any Two) (08)
- a) Explain the physiological significance of  $K_m$  of an enzyme with reference to alcohol dehydrogenase.
  - b) Describe briefly N-terminal sequencing of a protein.
  - c) Discuss the mechanism of action of pyruvate dehydrogenase.
- Q.6** Answer the following (12)
- a) Name two supports used for immobilization of enzyme by covalent binding.
  - b) What is the function of SDS in PAGE?
  - c) What precautions need to be taken for Gel permeation chromatography?
  - d) What are the advantages of HPTLC?
  - e) What is the principle of density gradient centrifugation?
  - f) What is the role of Dansyl Chloride in protein sequencing?

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