

Printed Pages : 3



EBT401

(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 154407**

Roll No.

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## B. Tech.

(SEM. IV) THEORY EXAMINATION, 2014-15

### ENZYME ENGINEERING

Time : 3 Hours]

[Total Marks : 100

**Note :** Attempt all questions as directed. All questions carry equal marks.

1 Attempt any two of the followings :

- (a) What are buffers? Mention their importance in preparing homogenates for isolating an enzyme? How do we select the buffer for isolation of a particular enzyme? Mention the various parameters.
- (b) Describe the normal procedure for purification of a cytoplasmic enzyme from bacterial cells. How does it differ from that of wall bound enzymes?
- (c) What do you understand by activity assay? Mention the units of enzyme activity and describe the importance of specific activity.

2. Attempt any two of the followings :
- (a) What do you understand by turn over number and enzyme efficiency. Which one is preferred for characterization of major substrate?
  - (b) Describe the methods to study kinetics of single substrate enzymatic reactions. How can  $K_m$  play an important role? Describe with the help of suitable expressions.
  - (c) What is active site? Mention the properties and role of active site in an enzyme. How does it help regulating the activity?
3. Attempt any two of the followings :
- (a) Write a short note on feedback inhibition. Describe the principle behind this and its importance in vivo.
  - (b) What do you understand by types of inhibitions? Describe the changes in kinetics of an enzyme during competitive inhibition.
  - (c) Describe the importance of Lineweaver-Burk Plot and Michaelis Menten curve. How do they help characterizing an enzyme?
4. Attempt any two of the followings :
- (a) What are immobilized enzymes? How do they behave when immobilized? Mention their advantages over soluble enzymes.
  - (b) What are enzyme electrodes? Describe the principle and importance of enzyme electrodes in making biosensors.
  - (c) Write a note on application of immobilized enzymes in health care.

**5** Attempt any two of the followings :

- (a) What are the parameters of assessment of immobilized enzymes in a reactor? How do these parameters ensure large scale catalysis? Describe with the help of suitable examples.
  - (b) Describe as to how fluidized bed reactors function? Support your answer taking at least one example and mention the parameters affecting enzyme catalysis.
  - (c) What are the key considerations for designing a bioreactor? How do they influence the efficiency of bioreactors?
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