Roll No. | | | | | | | | | | |

M. Tech. (Biotechnology)

SECOND SEMESTER EXAMINATION, 2009-10

ENZYME ENGINEERING

Time : 3 Hours | Total Marks : 100

Note : (i) Attempt any Five questions.
(ii) Marks are indicated against each question.

1. (a) What are the difficulties encountered in isolation and purification of eukaryotic enzymes in a prokaryotic system? Briefly describe the strategies currently available to increase the yield. 10

   (b) Derive the Michelis-Menten equation by steady state of enzyme kinetics. 10

2. (a) What are allosteric enzymes? How does the kinetics of an allosteric enzyme differ from that of a conventional enzyme? Justify your answer. 10

   (b) What are abzymes? Discuss their medical and pharmaceutical applications with the help of suitable examples. 5

   (c) What are the factors of a suitable support in an immobilized enzyme system? 5

3. With the help of an example of a suitable enzyme describe the kinetics of enzymes catalyzing multisubstrate reactions. 20

4. Describe the methods of immobilization of enzymes and discuss the advantages and disadvantages of each method. 20

5. (a) Describe in detail the design of enzyme reactor and discuss its reactor dynamics. What is the effect of non-ideal mixing in an enzyme reactor? 10

(b) What are the indicators of performance of an enzyme reactor? Briefly discuss the factors affecting the reactor performance. 10

6. Present an account of enzyme catalysis in organic media and discuss the utility of enzymes catalyzing such reactions. 20

7. Write short notes on any Four of the following: 5 x 4 = 20

(a) Inhibition of enzymes

(b) Analytical applications of enzymes

(c) Mass transfer in enzyme reactors

(d) Ideal enzyme reactor

(e) Rubisco and its significance