

Total No. of Questions : 6]

SEAT No. :

P2037

[Total No. of Pages : 2

[4924]-12

M.Sc. (Semester - I)

BIOCHEMISTRY

BCH - 171 Enzymology and Biophysical Techniques

(2008 & 2010 Pattern)

Time : 3 Hour]

[Max. Marks : 80

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answer to both sections should be written in separate answer sheets.*
- 3) *Figures to the right side indicate full marks.*

SECTION - I
(Enzymology)

Q1) Answer any three of the following: **[15]**

- a) What is competitive inhibition.
- b) How is the rate degradation (K_d) of enzyme measured?
- c) Study of pre-steady state kinetics determines mechanism of enzyme catalysis. Explain.
- d) How activation of trypsin from trypsinogen takes place.

Q2) Answer any three of the following: **[15]**

- a) Explain the various conditions under which the enzyme-substrate complex is stabilized to determine mechanism of enzyme catalysis by x-ray crystallography.
- b) What is substrate cycle? Explain with suitable example.
- c) What is positive co-operativity? Explain with example.
- d) Modify Michaelis-Menten equation into Lineweaver-Burk equation and show effect of inhibitors on Lineweaver-Burk plot.

P.T.O.

Q3) Answer any two: [10]

- a) How substrate cycle and interconvertible enzyme cycle controls the activity of an enzyme.
- b) Why is Chymotrypsin most active at pH 8 explain its mechanism.
- c) Give significance of enzyme inhibitors.

SECTION - II
(Biophysical Techniques)

Q4) Answer any three of following: [15]

- a) How pulse field electrophoresis separate DNA fragments?
- b) Describe effect of pH and relative orientation of neighboring chromophores on absorption properties of chromophore.
- c) Write note on SDS-PAGE.
- d) Explain Affinity chromatography.

Q5) Answer any three of following: [15]

- a) How molecular weight of protein can be determined by gel chromatography?
- b) What physical characteristics of a biomolecule influence its rate of movement in an electrophoresis matrix?
- c) Describe principle components of gas chromatography with labelled diagram.
- d) What is finger-printing technique? Enlist its applications.

Q6) Answer any two: [10]

- a) Enlist Applications & explain principle of dialysis.
- b) How electrophoresis separate protein based on molecular weight.
- c) Describe applications of nitrocellulose filters in binding assay.

