

[A7]

Sardar Patel University  
MSc Integrated Biotechnology Examination -Semester 5  
PS05CIGB01: Enzymology  
12<sup>th</sup> April, 2016  
10:30 am to 1:30 pm

Note:

Total Marks: 70

1. Figures to the right indicate marks.
2. Draw neat and labelled diagram, wherever necessary.

**Q.1 Multiple choice questions**

[08]

- 1 Law of mass action was given by.....
  - a) Gibbs and Henri
  - b) Gulberg and Waage
  - c) Nelson and Coles
  - d) Roberts and Wilson
- 2 Metalloenzymes can't form ..... bridge complex.
  - a) E-S-M
  - b) E-M-S
  - c) M-E-S
  - d) All of them
- 3 In..... method, enzymes are separated based on their isoelectric point.
  - a) Electrophoresis
  - b) Isoelectric focussing
  - c) affinity elution
  - d) Gel filtration
- 4 Which reagent is used in protein precipitation?
  - a) ammonia
  - b) ammonium sulphate
  - c) toluene
  - d) All of above
- 5 Which type of inhibition plays an important role in metabolic regulation?
  - a) Substrate inhibition
  - b) Partial inhibition
  - c) Allosteric inhibition
  - d) Mixed inhibition
- 6 ..... is the slope of Hane's plot.
  - a)  $-K_m$
  - b)  $-1/V_{max}$
  - c)  $1/V_{max}$
  - d)  $V_{max}/K_m$
- 7 In ..... method of enzyme immobilization, enzymes becomes enclosed in a capsule of permeable membrane.
  - a) Adsorption
  - b) Matrix entrapment
  - c) Covalent linkage
  - d) None of the above
- 8 Enzymes having same function but different structure are known as.....
  - a) monomers
  - b) isozymes
  - c) steriomers
  - d) none of the above

**Q.2 Attempt any seven**

[14]

- 1 Give "lock and key" hypothesis of Fischer.
- 2 Write difference between metalloenzymes and metal activated enzymes.
- 3 What is significance of dialysis and ultrafiltration.
- 4 Give principle of isoelectric focusing.
- 5 Which are the different methods of protein purification based on changes in solubility?
- 6 Define Uncompetitive and Non-competitive enzyme inhibition.
- 7 Give Michaelis - Menton assumption with Briggs - Haldane modification.

- 8 Define: Immobilized biocatalyst with its advantages.
- 9 What is the function of creatin phosphokinase and alkaline phosphatase?
- Q.3** A Explain Koshland induced fit hypothesis with example. [06]  
B Describe structure and significance of active site. [06]
- OR
- B What are cofactors? Explain role of FMN/FAD in enzyme catalysis by taking glutathione reductase as an example. [06]
- Q.4** A Enlist methods of protein purification based on polarity. Explain ion exchange chromatography in detail. [06]  
B Describe affinity chromatography in detail. [06]
- OR
- B Write a note on methods of homogenization for isolation of enzymes from different sources. [06]
- Q.5** A Derive Michaelis – Menton equation for competitive enzyme inhibition. [06]  
B Give full forms and significance of M.M. and L.B. equations. [06]
- OR
- B Derive Michaelis – Menton equation for single substrate enzyme catalyzed reaction with its Briggs-Haldane modification. [06]
- Q.6** A Enlist advantages of immobilization of enzymes and explain adsorption and entrapment in detail. [06]  
B Describe LDH isoenzymes in detail. [06]
- OR
- B Write a note on covalent binding and membrane confinement. [06]

ALL THE BEST

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