2022

(November)

BIOCHEMISTRY

(Honours)

(BCHEM–301)

(Proteins and Enzymes)

Marks : 56

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer *any* **four** questions

1. How is a protein isolated? Outline the sequence of steps and methods used in protein purification. 3+11=14

2. *(a)* What is enzyme activity? How do you distinguish between unit activity and specific activity? 3+4=7

(b) How are enzymes classified? Discuss giving examples of each main class. 4+3=7

3. *(a)* What is activation energy? Explain how enzyme affects the activation energy in the process of catalysis. 4+5=9

(b) Enzyme increases the rate of the reaction, but does affect the equilibrium? Discuss. 5

4. *(a)* Describe the mechanism of action of the enzyme chymotrypsin. 10

(b) Briefly describe the structure and function of FAD^+. 4

5. *(a)* What is the Lineweaver-Burk plot? How is it useful in enzyme kinetic studies? 4+3=7

(b) Define and distinguish among K_m, K_{cat}, K_{cat}/K_m. 7

6. *(a)* What are the hallmarks of competitive, non-competitive and uncompetitive inhibitions? Discuss. 10

(b) Explain what you understand by the term 'protein turnover'. 4

7. *(a)* What do you understand by the term 'enzyme regulation'? How does covalent modification control enzyme activity? 2+8=10

(b) What is sigmoidal kinetics? Explain using appropriate diagram/figure. 4

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