JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- MARCH-2023

COURSE CODE (CREDITS): 21MS1MB211 (03)   MAX. MARKS: 15

COURSE NAME: Enzymes and Bioprocess Technology

COURSE INSTRUCTORS: Dr. Saurabh Bansal   MAX. TIME: 1 Hour

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

1. In an experiment, when you incubate carbonic anhydrase enzyme with EDTA solution, the enzyme loses its activity. How will you interpret the observation?   [1]

2. How will you analyze the fact that an enzyme shows higher activity with the substrate concentration at 50 mM as compared to 25 mM?   [1]

3. Assume for an enzyme, Vo = 3 U/ml with 40 mM substrate concentration. But in the presence of an inhibitor 2 mM), the same enzyme system shows Vi = 2 U/ml. Determine the degree of inhibition.   [1]

4. What do you understand by turnover number? Explain its significance.   [2]

5. In an enzyme-catalyzed reaction at 25 °C, K_M is equal to 0.05 M. The rate of reaction is 1.5×10^{-4} M. sec^{-1} when the substrate concentration is 0.5 M. Determine the maximum velocity of the reaction.   [2]

6. How will you map the positioning of serine residue in the active site of any enzyme which is critical for the catalytic property of the enzyme?   [2]

7. What do you understand by a bioprocess? What are the advantages of bioprocessing over the chemical processing?   [3]

8. Differentiate between Competitive and classic non-competitive reversible inhibition of enzymes along with at least one suitable example.   [3]