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The Assam Royal Global University, Guwahati
Royal School of Biosciences
M.Sc Biochemistry 3rd Semester
Semester End Examination, January 2023
Course Title : Advanced Enzymology
Course Code : BCH154C301

Time: 3 Hours

Maximum Marks: 70

Note: Attempt all questions as per instructions given.
The figures in the right-hand margin indicate marks.

Section – A

1. Attempt **all** questions. (Maximum word limit 50) **2 x 8**
- a. What is an enzyme?
 - b. What is K_m ?
 - c. What is enzyme turnover?
 - d. What is K_d of an enzyme?
 - e. What are the multienzymes proteins?
 - f. What are the enzymatic activities present in pyruvate dehydrogenase complex?
 - g. What is the function of ribonuclease?
 - h. What is a zymogen?

Section – B

2. Attempt **any two** of the following: **6 x 2**
- a. How does entropy influence reaction rate? Explain with an example.
 - b. Discuss the titration of glycine.
 - c. Discuss the ping-pong reaction mechanism with an example.
3. Attempt **any two** of the following: **7 x 2**
- a. How does haemoglobin regulate the binding and release of oxygen?
 - b. What are the various models on cooperative binding? Discuss.
 - c. What are the different methods to measure K_s and K_d of an enzyme?
4. Attempt **any two** of the following: **7 x 2**
- a. Discuss the properties of multienzyme complexes.
 - b. Discuss the functioning of the fatty acid synthase complex.
 - c. Discuss the structure and functions of the vitamins that act as coenzymes in the PDH complex.
5. Attempt **any one** of the following: **14 x 1**
- a. Discuss the reaction mechanism of an isomerase enzyme.
 - b. Discuss the various ways to regulate enzyme activity.