The Assam Royal Global University, Guwahati

Royal School of Biosciences
B.Sc. Biochemistry, 2nd Semester
Semester End Examination, August 2021
Course Title : Enzymes
Course Code : BCH152C202

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. Can magnesium be considered as an example of co-factor?
b. What are the different classes of enzymes?
c. What are the two types of single displacement reactions?
d. What is a competitive inhibitor?
e. What are zymogens?
f. What are the different ways of reversible enzyme modification?
g. What role does pyridoxal phosphate carry out as an enzyme cofactor?
h. What is the role of NAD as an enzyme cofactor?

2. Attempt **any two** of the following: **6 x 2**

a. What would happen to the binding energy if the number of attachment points between enzyme and substrate are lowered? Explain using an example.
b. Discuss the major factors upon which enzyme activity depends?
c. How does the oxygen evolving complex carry out the water splitting activity?

3. Attempt **any two** of the following: **7 x 2**

a. Discuss how the Vmax and Km alter between bisubstrate reactions involving a ternary complex and without the ternary complex.
b. How does competitive and uncompetitive influence Km and Vmax of an enzyme? Discuss.
c. How does binding energy help overcome the barriers for a reaction to occur?

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Section – B

4. Attempt **any two** of the following: **7 x 2**

a. How does reversible enzyme modification influence the activity of glycogen phosphorylation?
b. Discuss the enzymatic reactions involved in the production of acetyl-CoA from pyruvate.
c. What are zymogens? How are they activated? Discuss using chymotrypsin as an example.

5. Attempt **any two** of the following: **7 x 2**

a. Discuss the properties of NAD/NADH as enzyme cofactors.
b. Discuss the function of biotin in an enzyme catalyzed reaction.
c. What are the uses of single immobilized enzymes?