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MSCCH-603

Bio-Inorganic, Bio-Organic and Bio-Physical Chemistry

M.Sc. Chemistry (MSCCH)

3rd Semester Examination, 2023 (Dec.)

Time : 2 Hours] **Max. Marks : 70**

Note : This paper is of Seventy (70) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein. Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

SECTION–A

(Long Answer Type Questions)

Note : Section 'A' contains Five (05) long answer type questions of Nineteen (19) marks each. Learners are required to answer any Two (02) questions only.

(2×19=38)

1. What is the haemoglobin? Explain the structure and function of haemoglobin in living.

2. Write a reaction that is catalyzed by vitamin B_{12} and propose a mechanism for such reaction. What are the advantages of using vitamin B_{12}?

3. (a) What is carborxypepdase A. Which active metal in carborxypepdase A. Discuss its structure and mechanism.

(b) Write down the function of ferritin and transferritine.

4. What are the main theoretical models that try to explain the formation of the enzyme-substrate complex?

5. (a) How the enzyme therapy works? Explain in detail with suitable example of diseases or disorders cured by enzyme therapy.

(b) Describe about clinical uses of enzymes.

SECTION–B
(Short Answer Type Questions)

Note : Section 'B' contains Eight (08) short answer type questions of Eight (08) marks each. Learners are required to answer any Four (04) questions only. (4×8=32)

1. What is cooperative effect? How it is helpful for the binding of oxygen in hemoglobin?

2. What is carbonic anhydrase? How it is helpful for the conversion of CO_2 into carbonic acid.

3. Discuss DNA polymerization. Give the structure and biological significance of DNA.

4. Write a short notes on :

(a) Primary structure of protein.

(b) Haworth structure of glucose.

5. Write a note on acid-base catalysis.

6. Explain NAD^+ and $NADP^+$.

7. Determine the relationship between the equilibrium constant and the change in free energy in the system.

8. Why are co-enzymes necessary? Explain.
