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Roll No.

MSCCH-603

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

M.Sc. Chemistry (MSCCH)

3rd Semester Examination, 2023 (June)

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 answer 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. Write a note on : [19]
- Types of protein structure.
 - Role of metal ions in biological system.

2. Write a note on : [19]
(a) DNA polymerization model.
(b) Biological metal-coordination sites.
3. What is the superoxide dismutase ? Describe the role of superoxide dismutase in oxidative metabolism. [19]
4. What are metalloporphyrins ? Explain the structure of myoglobin and the dioxygenbinding reaction. [19]
5. Write a note on : [19]
(a) Structure of hemoglobin.
(b) Mode of action of nitrogenase.

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. How will you determine the molecular mass of biopolymers ?
Mention any two methods. [8]
2. Explain thermodynamics of biopolymer solutions. [8]

3. Explain how ATP functions in biological system. [8]
 4. Give a detail note on use of enzyme in recombinant DNA technology. [8]
 5. Explain NAD^+ and NADP^+ . [8]
 6. Briefly give note on :
 - (a) Clearance and condensation reactions catalysed by enzymes.
 - (b) Phosphorylation of glucose. [8]
 7. What is difference between specific and general acid catalysis ? Explain with suitable example. [8]
 8. Write a note on structure of DNA. [8]
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