

**A-0559**

**Total Pages : 3**

**Roll No. ....**

**MSCCH-603**

**M.Sc. CHEMISTRY (MSCCH)**

**(Bio-Inorganic, Bio-Organic and  
Bio-Physical Chemistry)**

**3rd Semester Examination, Session December 2024**

**Time : 2:00 Hrs.**

**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      2×19=38**

*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.*

1. What are the key biological functions of metalloporphyrins, particularly in relation to hemoglobin, myoglobin, and cytochrome enzymes ?
2. Discuss the DNA polymerization in brief. Give the structure and significance of DNA.
3. Write notes on the following :
  - (a) Tertiary structure of protein
  - (b) Fisher's lock and key hypothesis
4.
  - (a) Explain the role of thiamine phosphate as a coenzyme.
  - (b) How enzymes are involved in recombinant DNA technology ?
5. What are the different methods to determine the molecular mass of biopolymers ?

### **Section–B**

#### **Short Answer Type Questions      4×8=32**

**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.

1. Explain how ATP functions in biological system.
2. What is immobilization of enzyme ? Explain methods, of immobilization with the help of suitable example.
3. Write note on  $\text{NAD}^+$  and  $\text{NADP}^+$ .
4. Discuss the kinetics of enzyme action.
5. Write short notes on the following
  - (a) Lysozyme
  - (b) Proximity effect
6. What are essential and trace metals ? Give the role of iron, zinc and copper in biological system.
7. What is the superoxide dismutase ? Describe the role of superoxide dismutase in oxidative metabolism.
8. Explain mechanism of action of enzyme carboxypeptidase A.

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