

- c) Justify the statement "Haem group in the absence of globin chain cannot function as an oxygen carrier".
(5, 5, 5)

[This question paper contains 4 printed pages.]

Your Roll No.....

आपका अनुक्रमांक.....

Sr. No. of Question Paper : 3315

I

Unique Paper Code : 2174001003

Name of the Paper : GE: Bioinorganic Chemistry

Name of the Course : B.Sc. Hons/B.Sc. Prog.

Semester : I/III/V

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
 2. Attempt four questions in all..
 3. All questions carry equal marks.
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1. a) Describe the tense and relaxed states of haemoglobin. Explain the change in magnetic behavior of haemoglobin in going from "tense" to the "relaxed" state.

- b) Classify the elements according to their action in biological systems with example.
- c) Write down the toxic effect of mercury in humans. How can it be treated? (5, 5, 5)
2. a) What is an ion pump? Show how the Sodium-Potassium maintains the concentration gradient of the relevant ions as well as the charge gradient across the cell membrane.
- b) Why is copper essential element for humans? What are the diseases associated with the excess and deficiency of copper?
- c) How chelation therapy useful in detoxification of heavy metals? Explain briefly. (5, 5, 5)
3. a) Compare the oxygen saturation curves of myoglobin and hemoglobin. Justify "myoglobin has greater affinity for oxygen than hemoglobin".
- b) Explain Bohr effect.
- c) Briefly discuss the role of calcium in bone formation. (5, 5, 5)

4. a) Describe the active site of the enzyme carboxypeptidase A and list the various interactions that help the enzyme to function.
- b) Discuss the role of iodine in human body. What are the symptoms of iodine deficiency?
- c) Explain biological significance of transferrin and ferritin. (5, 5, 5)
5. a) What is meant by the cooperativity effect in haemoglobin? What acts as the trigger for the cooperative effect? Discuss briefly.
- b) How can excess of iron be removed from the body and how can the deficiency of iron be cured?
- c) Discuss biological importance of magnesium and zinc. (5, 5, 5)
6. a) What are the biochemical effects of exposure to arsenic? Name the antidote for arsenic poisoning?
- b) What are metalloenzymes? Explain Carbonic Anhydrase.