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CHH 551

**IV Semester M.Sc. Degree Examination, September/October 2022
(CBCS – 2016 – 2017 Syllabus) (Freshers and Repeaters)
CHEMISTRY
Bioinorganic Chemistry**

Time : 3 Hours

Max. Marks : 70

Instructions : 1) Answer Part – **A** and **any four** questions from Part – **B**.
2) Figures to the **right** indicate marks.

PART – A

1. Answer **all** the following sub-questions. **(9×2=18)**
- Zinc is an important growth factor : Comment on this statement.
 - Ca^{2+} is more selective than Mg^{2+} in biochemical process. Give reason.
 - What is meant by active transport and passive transport ?
 - What is cooperative interaction in oxygen affinity of *hemoglobin* ?
 - Write the structure of *corrin* ring. How it is different from *porphyrin* ring ?
 - Why cytochrome P-450 is known as detoxifying agent ?
 - What is chelation therapy ?
 - What are the clinical symptoms of As-poisoning ?
 - Write the structures of BAL and D-penicillamine.

PART – B

Answer **any four full** questions.

2. a) Classify the ionophores in terms of mechanism of ion transport. How do you distinguish them ?
- b) Describe the in-vitro dinitrogen fixation.
- c) Explain the light and dark phase reactions in photosynthesis. **(5+4+4)**

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3. a) Explain the selectivity of the $\text{Na}^+ - \text{K}^+$ pump in transporting the Na^+ and K^+ ions across the biological membrane.
- b) Comment on the prospect of abiological N_2 -fixation.
- c) Write the structure of Chlorophyll. What is the role of Mg^{2+} in it ? **(5+4+4)**
4. a) Discuss structural features of different copper proteins.
- b) Explain any two biochemical reactions catalyzed by vitamin- B_{12} coenzyme.
- c) Discuss the structure and activity of alcohol dehydrogenase enzyme. **(5+4+4)**
5. a) Describe the mechanism of iron storage and release in humans.
- b) Discuss the structural features of hemoglobin. Mention the roles of proximal and distal histidine in oxygen binding.
- c) Compare the mechanisms of action of catalase and peroxidase. **(5+4+4)**
6. a) What are the major sources of Hg-toxicity ? CH_3Hg^+ is more toxic than inorganic Hg^{2+} . Explain.
- b) Discuss the utility of gold compounds as antiarthritic drugs.
- c) The metal complex drugs are used as radio diagnostic agents. Give the suitable explanation. **(5+4+4)**
7. a) Illustrate the role of Chelating agent in antimicrobial activities.
- b) What do you mean by biomethylation ? Give the mechanism of biomethylation of Hg^{2+} ion.
- c) Discuss the anticancer activity of *cis-platin*. **(5+4+4)**
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