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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)**
- a) Zinc is an important growth factor : Comment on this statement.
 - b) Ca^{2+} is more selective than Mg^{2+} in biochemical process. Give reason.
 - c) What is meant by active transport and passive transport ?
 - d) What is cooperative interaction in oxygen affinity of *hemoglobin* ?
 - e) Write the structure of *corrin* ring. How it is different from *porphyrin* ring ?
 - f) Why cytochrome P-450 is known as detoxifying agent ?
 - g) What is chelation therapy ?
 - h) What are the clinical symptoms of As-poisoning ?
 - i) 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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