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H-6341

M.Sc. (Semester- IV) Examination, July 2022

CHEMISTRY

(Bio-inorganic Chemistry)

Time Allowed : Three Hours

Maximum Marks : 70

Minimum Passing Marks : 25

Note : This question paper is divided into four sections. Attempt questions from all the four sections as directed. Distribution of marks is given in each section.

SECTION-A

(Objective Type Questions)

Note : Attempt **any ten** questions. Each question carries **1** mark. [1x10=10]

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(1)

[P.T.O.]

1. (i) Deoxyhaemoglobin is :
- (a) Five coordinated complex
 - (b) High spin complex
 - (c) Both (a) and (b)
 - (d) None of these
- (ii) Myoglobin is :
- (a) tetramer
 - (b) dimer
 - (c) trimer
 - (d) none of these
- (iii) Iron-Sulfur clusters are involved in :
- (a) Proton transfer
 - (b) Atom transfer
 - (c) Group transfer
 - (d) Electron transfer

(iv) A well known organometallic compound is :

- (a) Vit. B₁₂ coenzyme
- (b) Chlorophyll
- (c) Cytochrome P-450
- (d) Myoglobin

(v) ADPase requires for its action :

- (a) Zn²⁺
- (b) Mn²⁺
- (c) Ca²⁺
- (d) None of these

(vi) Degree of saturation for Mb is :

- (a) Lower than for Hb
- (b) Same as for Hb
- (c) Higher than for Hb
- (d) None of these

- (vii) Nitrogenase enzyme contains :
- (a) Fe-S Protein
 - (b) MoFeS Protein
 - (c) Both (a) and (b)
 - (d) None of these
- (viii) Cytochromes act as :
- (a) $2e^-$ transfer agent
 - (b) $1e^-$ transfer agent
 - (c) Multielectron transfer agent
 - (d) None of these
- (ix) Carboxypeptidase enzyme contains
- (x) Phosphatase enzyme contains
- (xi) Ferritin and transferrin are :
- (a) Hydrolyse is
 - (b) Metal storage and structural proteins

- (c) Electron carriers
- (d) Metal sensors
- (xii) Carbonic anhydrase enzyme contains as metal ions.

SECTION-B

(Very Short Answer Type Questions)

Note : Attempt **any five** questions. Each question carries **02** marks. (Word limits **25-30** words) [5x2=10]

- 2.
- (i) What is calcium carrier?
 - (ii) Explain Metal ion toxicity.
 - (iii) Write structure of Vaska's complex.
 - (iv) What is Hemocyanin?
 - (v) Explain Metal-DNA interaction.
 - (vi) Explain Photosynthesis.
 - (vii) What is crown ethers?

SECTION-C

(Short Answer Type Questions)

Note : Attempt **any five** questions. Each question carries **04** marks. (Word limit **250** words) [5x4=20]

3. (i) Describe Biomembranes.
- (ii) Discuss Non-heme oxygen carrier.
- (iii) Write notes on Alkaline phosphatase.
- (iv) Discuss nitrogen fixation pathway.
- (v) Explain role of Pt-complex in cancer therapy.
- (vi) Write note on Peroxidase enzyme.
- (vii) Write note on Gold containing drugs as antirheumatic agent.

SECTION-D

(Essay Type Questions)

Note : Attempt **any three** questions. Each question carries **10** marks.(Word limit more than **500** words) [3x10=30]

4. (i) Write notes on the following :
- (a) Haemoglobin and Myoglobin
 - (b) Ferredoxin and Rubredoxin
- (ii) Write notes on the following:
- (a) Na and K ion transport mechanism.
 - (b) Biological redox reaction
- (iii) Discuss the following :
- (a) Role of Li in psychopharmacological drugs
 - (b) Dinuclear phosphatases enzyme
- (iv) Write notes on the following :
- (a) Dinitrogen complexes
 - (b) Cobalt Schiff base as oxygen carrier

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