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M.Sc. (Semester-IV) Examination, June-2025

(Backlog)

CHEMISTRY

(Bio Inorganic Chemistry)

Time Allowed : Three Hours

Maximum Marks : 70

Note : Question paper is divided into **four** sections. Attempt questions of **all four** sections as per given direction. Distribution of marks is given in each section.

SECTION-A

(Objective Type Questions)

Note : Attempt **all ten** questions. Each question carries **1** mark.

[10×1=10]

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(1)

[P.T.O.]

1. (i) The Colour of Oxyform of Hemocyanin is :
- (a) Red
 - (b) Blue
 - (c) Colourless
 - (d) Green
- (ii) Molecular weight of Myoglobin is :
- (a) 65000
 - (b) 1,08,000
 - (c) 17000
 - (d) 45,000
- (iii) The P^4 dependence of Haemoglobin is known as :
- (a) Trans effect
 - (b) Bohr effect
 - (c) Synergic effect
 - (d) Cryptate effect

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(2)

- (iv) Cytochrome P-450 is named from the optical spectrum of its reduced complex with :
- (a) O_2
 - (b) CO_2
 - (c) CO
 - (d) CS
- (v) Catalases made up of four identical subunits each containing _____ heme group.
- (a) Two
 - (b) Three
 - (c) One
 - (d) Four
- (vi) _____ and _____ are two important Iron stores in mammalin.
- (a) Transferrin and Ferritin
 - (b) Hemosiderin and Transferrin
 - (c) Ferritin and Hemosiderin
 - (d) Haemoglobin and Myoglobin

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(3)

[P.T.O.]



- (vii) The simplest class of Iron sulphur protein is_____.
- (viii) The enzyme system responsible for fixing N_2 is known as_____.
- (ix) Azurin is a_____protein.
- (x) _____is a non heme Iron protein.

SECTION-B

(Very Short Answer Type Questions)

Note: Attempt **any five** questions. Each question carries 2 marks.(Word limit : 25-30 words) : [5×2=10]

2. (i) What is Photo Phosphorylation?
- (ii) Give the structure of [4Fe-4s] proteins.
- (iii) Give the functions of Haemocyanin.
- (iv) What are Laccase?
- (v) Define light reaction in photosynthesis.
- (vi) What are Chemotherapeutic agents?
- (vii) Give functions of Hemosiderin.

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(4)

SECTION-C

(Short Answer Type Questions)

Note: Attempt **any five** questions. Each question carries 4 marks.(Word limit : 250 words) [5×4=20]

3. Discuss the following : (any five)
 - (i) Cytochrome P-450
 - (ii) Urease
 - (iii) Molybdenum proteins
 - (iv) Hemocyanin
 - (v) Transferrin
 - (vi) Role of Ca^{2+} in muscle contraction
 - (vii) Nitrogenase

SECTION-D

(Long Answer Type Questions)

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

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(5)

[P.T.O.]



4. (i) Explain Photosynthesis (PS-I and PS-II) in detail.
- (ii) Discuss different types of Iron Sulphur proteins and their synthetic models.
- (iii) Describe Interaction of metal complexes with DNA. What are Chemotherapeutic agents?
- (iv) Discuss the following :
- (a) Catalysis of Phosphate transfer by Mg^{2+} ion
- (b) Structure of Haemoglobin

—x—