

239403

May, 2019

M.Sc. - IV SEMESTER

Inorganic Chemistry Special III (CH-403-A)

Time : 3 Hours]

[Max. Marks : 75

Instructions :

1. It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.
2. Answer any four questions from Part-B in detail.
3. Different sub-parts of a question are to be attempted adjacent to each other.

PART-A

1. (a) Give the effect of heavy metal ion on nucleic acid. (1.5)
(b) Will cytochrome-c be a useful electron carrier? Explain your answer. (1.5)
(c) Why does CO bind more tightly to iron (II) porphyrins? (1.5)
(d) Explain the roles of Fe-Mo and Fe-S proteins in N₂ fixation. (1.5)
(e) Draw the structure of porphyrin. (1.5)

- (f) What is the role of globin part in the functionality of Hb? (1.5)
- (g) Write two examples of gold complexes having anticancer activity. (1.5)
- (h) Compare electronic states of metal atom in oxy and deoxyhaemerythrin. (1.5)
- (i) Write the biological functions of peroxidase. (1.5)
- (j) What are carcinostatic agents? Give two examples. (1.5)

PART-B

2. (a) Discuss the structure and explain the functionality of carboxypeptidase and carbonic anhydrase. (10)
- (b) Draw the structures of oxy and deoxyhaemocyanin and compare electronic states of metal ion. (5)
3. (a) Why are transition metals viz Mn, Fe, Co and Cu required in photosynthesis and respiration rather than metals such as Zn, Ga, or Ca. (5)
- (b) What is biochemical basis of iron, copper and zinc deficiencies? Explain their therapies also. (10)
4. Discuss the structural features of haemoglobin. How does it differ from myoglobin? Briefly explain their role in transporting O₂ in living cells. (15)

5. (a) Define ionophores and give its classification. (5)
- (b) Write a note on the structure and function of blue copper protein in electron transport process and explain structure and role of cytochrome P-450 to catalyze oxidation of organic substances. (10)
6. (a) Explain the structure of cis-platin and describe its chemotherapeutic action. (5)
- (b) Write the synthetic models of iron and cobalt complexes as oxygen transport system. (10)
7. (a) Outline the structure and functions of nitrogenase in nitrogen fixation. (5)
- (b) What is meant by active transport in Na/K pump? Give a diagrammatic representation of the process and explain the mechanism involved in it. (10)