

M.Sc. 3rd Semester (CBCS Scheme)
Examination, December-2022

CHEMISTRY

Paper - 17CHE 23GA3

Inorganic Special - III

Time allowed : 3 hours]

[Maximum marks : 80

Note: Question no. 1 is compulsory and all questions carry equal marks. Attempt five questions in all, selecting at least one question from each section.

1. **Compulsory Question:** 8×2 = 16
- What are components of photochemical smog?
 - Which metal is found in Vitamin B-12?
 - Show H-bonding between the purine N-base pair in DNA?
 - Which bacteria plays important role in the N-fixation process?
 - What is green-house effect?
 - Write the names of any two Cu-enzymes.
 - Red colour of oxy-hemoglobin is mainly due to which one of:
 - d-d transition
 - MLCT
 - LMCT
 - Intra-ligand $\pi - \pi^*$ transition

- Which one metal ion is not prevalent in the biological system is:
 - Pt
 - Mn
 - Co
 - Nickel

Section - A

- Discuss the role of any three ultra-trace essential element in biological system. 8
 - Give the mechanism of Ca-pump in the human body cells. 8
- Discuss the interaction of metal ions in winding and unwinding of DNA molecules. 8
 - Discuss the process of blood clotting in human body. 8

Section - B

- Draw the structure and discuss role of metalloporphyrins as oxygen carrier. 8
 - Discuss the models of nitrogenase in detail. 8
- Draw structure and discuss role of chlorophyll in plant photosynthesis. 8
 - Explain the biological functions of Siderophores in the human body. 8

Section - C

6. (a) Discuss the structure and function of iron enzyme catalase. 8
- (b) What is basic structure of Cu-enzyme superoxide dismutase? Also give its enzyme reactions. 8
7. (a) Short notes : 8
- (i) copper coenzyme
- (ii) Blue-copper-Protein.
- (b) Define metalloenzyme and discuss about the active site of carbonic anhydrase. 8

Section - D

8. Discuss types of smog in detail and its presentation methods. 16
9. (a) Describe about the post effects of C, N & S oxides on environment. 8
- (b) Explain the mechanism of aerosol formation in air. 8