

M.Sc. (Part-II) Semester-III (CBCS) Examination
CHEMISTRY (NEW)
(Inorganic Chemistry, Bio-Inorganic Chemistry)
Paper-XI
Special Paper-I

Time : Three Hours]

[Maximum Marks : 80

- Note :—** (1) All questions are compulsory.
(2) All questions carry equal marks.
(3) Use of scientific calculator is allowed.

1. (a) Differentiate between essential and non-essential elements. 5
- (b) Explain role of non-metal in biological system with examples. 5
- (c) Cr(VI) compounds are highly toxic whereas Cr(III) compounds are moderate. Explain. 6

OR

- (p) What are Siderophores ? Explain the transport of iron in micro organism with suitable example. 5
 - (q) Why cyanides are so toxic to all biological systems ? 5
 - (r) Write brief note on – Functions of Biominerals. 6
2. (a) Give the comparison of oxygenated haemoglobin and oxygenated myoglobin. 5
 - (b) Explain Hemerythrin acts as ' O_2 ' transfer. 5
 - (c) Describe the cooperativity in Haemoglobin. Suggest mechanism for cooperativity. 6

OR

- (p) What role proximal histidine play in O_2 transport by haemoglobin ? Explain. 5
 - (q) Discuss the structure and biological importance of ferritin. 5
 - (r) Write brief note on cytochrome P-450. 6
3. (a) Discuss the structure and functions of Rubredoxin and ferredoxin. 5
 - (b) Explain the steps involved in the oxidation of water to release O_2 in photosynthesis system-II. 5
 - (c) Give brief account – metal complexes in transmission of energy. 6

OR

- (p) Discuss the reaction involved in in-vitro nitrogen fixation using titanium (II) alkoxide. 5
- (q) Explain the importance of biological Nitrogen Fixation. 5
- (r) Write brief account on Iron Sulphur protein. 6

4. (a) Explain the terms with suitable example : Apoenzyme, Holoenzyme and Coenzyme. 5
(b) Discuss the role of Cobalt in Vit-B₁₂ and explain the Cobalt-Carbon bond cleavage in Vit-B₁₂. 6
(c) Write brief note on – Hydrogenases. 5

OR

- (p) What are metalloenzymes ? What is the active sites in enzyme carboxypeptidase ? What is the coordination environment of the metal in this enzyme ? 6
(q) Explain the role of catalase and peroxidase in biochemical reaction. 5
(r) Write a brief note on : Super oxide dismutase. 5
5. (a) Discuss the mode of action of cis-platin as anticancer drug. 5
(b) Explain anti-viral activity of metal complexes. 5
(c) Explain the role of gold in Chemotherapy. 6

OR

- (p) How does nature detoxify mercury ? Explain. 5
(q) Explain the conditions for ligands to be used in Chelation therapy. 5
(r) Write note on : Metals used as radiodiagnostic agents. 6