

Exam. Code : 103204

Subject Code : 7011

B.A./B.Sc. 4th Semester (Old Syllb 2018)

CHEMISTRY

(Inorganic Chemistry—III)

Time Allowed—3 Hours] [Maximum Marks—35

PART—A

Note :— Attempt *all* questions from this Part. Each question carries 1 mark. The maximum length of answer can be **one-third** of a page. $8 \times 1 = 8$

- Write the IUPAC name/formula of the following compounds :
 - Nickelhexachloroplatinate(IV)
 - $[\text{Cr}(\text{en})_3]\text{Cl}_3$.
- Calculate the effective atomic number in the following compounds :
 - $[\text{Fe}(\text{CN})_6]^{3-}$
 - $[\text{Co}(\text{en})_3]^{3+}$.
- Draw the structures of the possible isomers of : $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$.
- Write the electronic configuration and common oxidation states of Ce and Eu.
- Explain the redox reaction in terms of change in oxidation number with the help of an example.
- Why do actinides resemble more to the d-block elements than lanthanides ?
- What is Myoglobin ? Draw its structure.
- How is Ca^{2+} important in our life ?

PART—B

Note :— Attempt *two* questions from each Section. Each question carries $4\frac{1}{2}$ marks. The maximum length of answer can be upto **five** pages. $6 \times 4\frac{1}{2} = 27$

SECTION—I

9. Define isomerism. Discuss the following with the help of examples :
- Linkage isomerism
 - Ionisation isomerism
 - Geometrical isomerism.
10. Discuss the hybridization and geometry of $[\text{Ni}(\text{CN})_4]^{2-}$ on the basis of valence bond theory.
11. What type of solvent is the liquid SO_2 ? Discuss some reactions in liquid SO_2 .

SECTION—II

12. What do you understand by Pourbaix diagram ? Discuss its uses with the help of examples.
13. What are the consequences of the lanthanide contraction ? Explain with the help of examples.
14. How does the redox potential data useful ? Explain with the help of examples.

SECTION—III

15. Discuss the pyramid of oxidation states found in the actinides.
16. Discuss the biological importance of alkali and alkaline earth metal ions with the help of examples.
17. Discuss the process of oxy and deoxygenation of hemoglobin. How does the geometry of hemoglobin get affected during this process ?