

Reg. No .....

Name .....

26U682

**B. Sc. DEGREE END SEMESTER EXAMINATION - MARCH 2026**

**SEMESTER 6 : CHEMISTRY**

**COURSE : 19U6CRCHE13: APPLIED INORGANIC CHEMISTRY (EL)**

*(For Regular 2023 Admission and Supplementary 2022/ 2021/2020/2019 Admissions)*

Time : Three Hours

Max. Marks: 75

**PART A**

**Answer any 10 (1 mark each)**

1. ----- is considered as the most toxic heavy metal in the environment.
2. What are polyphosphazenes?
3. Give two examples for HNCC.
4. DSC : Heat; DTA:-----
5. What are sandwich compounds?
6. Give an example for hexahapto ligand.
7. Name any two metals which are carcinogens.
8. The Re-Re bond order in  $[\text{Re}_2\text{Cl}_8]^{2-}$  is.....
9. The wavelength range used in colorimetric study is-----
10. The two ores which can be subjected to calcination are-----
11. What is the principle behind liquation process for the refining of metals?
12. Define hybrid organic-inorganic polymer?
13. What is cisplatin?

**(1 x 10 = 10)**

**PART B**

**Answer any 10 (2 marks each)**

14. What is hapticity? Give one example for a penta hapto ligand.
15. Give the principle of DSC analysis.
16. Illustrate the chain arrangement of a) Crystalline b) Amorphous and c) Semicrystalline polymer?
17. Give the structure and function of cytochromes.
18. State Beers law.
19. Explain Zone refining.
20. Explain Van-Arkel method.
21. During the extraction of aluminium from bauxite, finely divided ore is treated with hot NaOH solution. Why?
22. Which are ionic organometallic compounds.
23. What are pi-acid ligands? Give two examples.
24. What is 18 electron rule? Check whether the compound  $\text{Mn}_2(\text{CO})_{10}$  obeys the 18-electron rule.
25. Why are transition metals such as Mn, Fe, Co and Cu needed in photosynthesis and respiration rather than metals such as Zn, Ga or Ca ?
26. Discuss the preparation, properties and uses chalcogenic glasses.

**(2 x 10 = 20)**

**PART C**

**Answer any 5 (5 marks each)**

27. What are ionic and metal-carbon sigma bond based organometallic compounds?
28. Explain five different properties of inorganic polymers.
29. The CO stretching frequency of  $M(CO)_3(PF_3)_3$  is  $2100\text{ cm}^{-1}$  and that of  $M(CO)_3(py)_3$  is  $1600\text{ cm}^{-1}$ . Analyze.
30. Write a note on anti cancer drugs.
31. Draw and explain the DTG curve for Calcium oxalate monohydrate.
32. What is synergic effect in metal-alkene complexes?
33. Explain a) oxidative refining and b) Vapour phase refining.
34. Discuss on the toxic effects of mercury and cadmium.

**(5 x 5 = 25)**

**PART D**

**Answer any 2 (10 marks each)**

35. Discuss in detail the extractive metallurgy of Nickel.
36. Describe the principle behind colorimetric analysis. Briefly describe the colorimetric determination of Iron.
37. Classify the ligands in organometallics based on its hapticity. Represent each one with an example.
38. How metal carbonyls are prepared? Discuss its important properties and bonding.

**(10 x 2 = 20)**