



K25U 2318

Reg. No. :

Name :

V Semester B.Sc. Degree (C.B.C.S.S.-O.B.E. – Regular/Supplementary/
Improvement) Examination, November 2025
(2019 to 2023 Admissions)
CORE COURSE IN CHEMISTRY/POLYMER CHEMISTRY
5B08CHE/PCH : Inorganic Chemistry

Time : 3 Hours

Max. Marks : 40

SECTION – A

Answer all questions. Each question carries 1 mark.

(4×1=4)

1. Niobium and tantalum are difficult to separate out from their ores because
2. The hapticity of 1, 3-butadiene in forming π -complex is _____
3. Name two zinc containing metalloenzymes.
4. The number of unpaired electrons in $[\text{CoF}_6]^{3-}$ ion is _____

SECTION – B

Answer any 7 questions. Each question carries 2 marks.

(7×2=14)

5. Why is the separation of lanthanides difficult?
6. Why $[\text{NiCl}_4]^{2-}$ paramagnetic while $[\text{Ni}(\text{CO})_4]$ is diamagnetic?
7. Why is lead considered as a toxic metal?
8. Why are La^{3+} and Lu^{3+} compounds are colorless?
9. State whether $\text{H}_2[\text{Fe}(\text{CO})_4]$ obeys the 18-electron rule or not. Justify your answer.
10. What are ambidentate ligands? Give an examples.
11. Discuss the bonding in $\text{Fe}_2(\text{CO})_8$.

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12. Tetrahedral complexes are generally high-spin. Why?
13. What are the applications of graphene?
14. Calculate CFSE in respect of the complex $[\text{Mn}(\text{H}_2\text{O})_6]^{3+}$ and $[\text{Mn}(\text{H}_2\text{O})_6]^{2+}$.

SECTION – C

Answer any 4 questions. Each question carries 3 marks.

(4×3=12)

15. Discuss the factors that affect the stability of complexes.
16. Discuss the magnetic properties of lanthanide ions.
17. Discuss the bonding involved in Ziese's salt and its structure.
18. Write briefly on the optical isomerism exhibited in coordination complexes.
19. Explain sodium-potassium pump.
20. Explain the bonding and geometry of $[\text{Fe}(\text{CN})_6]^{3-}$ and $[\text{Ni}(\text{CN})_4]^{2-}$.

SECTION – D

Answer any 2 questions. Each question carries 5 marks.

(2×5=10)

21. What is meant by lanthanide contraction? What are its consequences?
22. Discuss crystal field splitting. Explain crystal field splitting in square planar complexes.
23. Discuss the structure and bonding in ferrocene.
24. Discuss the structure and functions of haemoglobin.