Sessional Exam 2025

North Gauhati College

Semester : IV (Major/Minor) (FYUGP)

Subject : Chemistry I

Paper Code: CHE0400104

Total marks: 30 **Time: 1hr 30 mins**

1. Give an example of a sulphide ore. 1
2. Explain the term 'smelting'. 1
3. How do you explain the anomalous electronic configurations of Cr and Cu? 2
4. Why do transition metals exhibit variable oxidation states? 2
5. Calculate CFSE for high spin d^4 octahedral complex. 2
6. Which complex has smaller magnitude of Δ_0 value and why ? 2

   $[Fe(H_2O)_6]^{3+}$ or $[Ru(H_2O)_6]^{3+}$
7. Why do tetrahedral complexes exhibit high spin complexes? 2
8. Why cerium and terbium exhibit oxidation state other than +3 as well? 2
9. Describe the bonding in $[Co(H_2O)_6]^{2+}$ and $[Fe(CN)_6]^{3-}$ in terms of crystal field theory. 3
10. Write short notes on (**any four**): 2.5x4=10
    A) Mond process
    B) Hydrometallurgy
    C) Parting process
    D) Van Arkel-de-Boer process
    E) Zone refining
11. Write some consequences of lanthanoid contraction. 3

Or

The magnetic character of (magnetic moments) of actinoids are less than predicted from calculated value. Explain. 3

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