

15U610

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Name:

Reg. No.

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, MARCH 2018

(CUCBCSS - UG)

CC15U CHE6 B09 - INORGANIC CHEMISTRY IV

Chemistry - Core Course

(2015 Admission)

Time: Three Hours

Maximum: 80 Marks

Part A

(Answer *all* questions in one word/sentence. Each question carries 1 mark)

1. What is meant by Bohr effect?
2. What is the significance of cis-platin?
3. What is the most stable oxidation state of Cerium? Why?
4. What is smelting ?
5. Draw the structure of Zeise's salt.
6. Count the number of electrons in the $\text{Mn}(\text{CO})_5$ complex.
7. Name the isomerism present in the complexes $[\text{Co}(\text{NH}_3)_5\text{Br}]\text{SO}_4$ and $[\text{Co}(\text{NH}_3)_5(\text{SO}_4)]\text{Br}$
8. Calculate the μ_{eff} of high spin complex of $[\text{Cr}(\text{NH}_3)_6]\text{Cl}_2$.
9. Write a method of preparation of KMnO_4 .
10. What is meant by Mond's process?

(10 x 1 = 10 Marks)

Part B

(Answer any *ten* questions. Each question carries 2 marks)

11. Write a short note on biochemistry of zinc.
12. $[\text{Ni}(\text{CN})_4]^{2-}$ is diamagnetic and square planar. Why?
13. Write the applications of Wilkinson catalyst.
14. What are the limitations of VBT theory in coordination complexes?
15. What are the consequences of lanthanide contraction?
16. Explain Kroll process.
17. What are intramedullary rods?
18. Explain the factors that influences the stability of metal complexes.
19. What is meant by spectrochemical series?
20. Explain the common ion effect of second group reagents used in the inorganic cation analysis.
21. Write a short note on toxicity of mercury.

22. Give the IUPAC name of a) $K_4[Fe(CN)_6]$ b) $[Co(NO_2)(NH_3)_5]Cl_2$

(10 x 2 = 20 Marks)

Part C

(Answer any *five* questions. Each question carries 6 marks)

23. Explain the preparation, properties and structure of ferrocene.
24. Explain oxygen transport process.
25. What is meant by CFSE and what are the factors affecting it?
26. What is the importance of beach sands in Kerala? Give the details of extraction of metals from it.
27. Explain Bayer's and Hall Heroult process.
28. Write detailed notes on various refining process in the metallurgy .
29. Explain (1) non-stoichiometric compounds (2) Zeigler Natta catalyst.
30. What are trans actinide elements? Explain its general characteristics?

(5 x 6 = 30 Marks)

Part D

(Answer any *two* questions. Each question carries 10 marks)

31. Explain (1) molecular orbital theory of octahedral complexes (2) Stereoisomerism in coordination compounds
32. Discuss the splitting of 'd' orbitals in (i) octahedral complex (ii) tetrahedral complex (iii) square planar complex. (iv) tetragonal complexes
33. Discuss the structures of (i) $Fe(CO)_5$ (ii) $Fe_2(CO)_9$ (iii) $Co_2(CO)_8$ (iv) $Fe_3(CO)_{12}$ (v) $Ni(CO)_4$
34. Write composition and uses of (i) German silver (ii) brass (iii) bronze (iv) gunmetal (v) alnico

(2 x 10 = 20 Marks)
