18U610 (Pages: 2) Name: ……..…….

Reg. No…….……

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2021

(CUCBCSS-UG)

(Regular/Supplementary/Improvement)

CC15U CHE6 B09 - INORGANIC CHEMISTRY IV

(Chemistry - Core Course)

(2015 Admission onwards)

Time: Three Hours Maximum: 80 Marks

Section A (One word)

Answer ***all*** questions. Each question carries 1 mark.

1. Mercury is produced by directly roasting ---------- in air.
2. Percentage of silver in german silver is ----------
3. ---------- is an example for a chelating ligand.
4. Give the IUPAC name of $K_2[Cr(H_2O)_3(C_2O_4)_2Br]$
5. Geometry of $[Ni(CN)_4]^{2-}$ is ----------
6. ---------- is an example for an organometallic compound with 4-centre, 2-electron bond.
7. Hapticity of cyclopentadienyl anion is ----------
8. Draw the structure of carboplatin.
9. Oxidation state of cobalt in cyanocobalamine complexes is ----------
10. The spin only magnetic moment of Cr^{3+} is ----------

(10 × 1 = 10 Marks)

Section B (Short answer)

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

11. What is bessemerisation?
12. Discuss the term oxidative refining.
13. Cupric ion is blue coloured while cuprous ions are colourless. Why?
14. How to interconvert chromate and dichromate?
15. What is linkage isomerism? Give an example.
16. Check whether the complex $[Cu(CN)_2]$ obeys EAN rule.
17. Explain the applications of metal complexes in colorimetric analysis.
18. What is the first prepared organometallic compound (reported in 1827)? Draw the structure of the compound.
19. Outline the nitration of ferrocene.
20. Why lead is toxic to living organisms?

21. Account for the anomalously low melting point of manganese.
22. What are chlorophylls?

(10 × 2 = 20 Marks)

Section C (Paragraph)

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

23. What is meant by geometrical isomerism in complexes? Explain with examples.
24. Compare inert and labile complexes.
25. Explain the manufacture of potassium permanganate.
26. Comment on the decrease in ionic size from Ce^{3+} to Lu^{3+} in the periodic table and what are its consequences?
27. What are Ziegler Natta Catalysts? Explain the significance of their uses in polymerization reactions with examples.
28. Write a brief note on processes involved in various temperature zones of blast furnace.
29. Discuss the structure, geometry and magnetism of $[NiCl_4]$ and $[CoF_6]^{3-}$
30. Discuss the structure of hemoglobin. Explain the role of hemoglobin and myoglobin in the transport and storage of oxygen.

(5 × 6 = 30 Marks)

Section D (Essay)

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

31. Discuss the isolation and separation of lanthanides from monazite sand.
32. What is Ellingham diagram? Draw and explain its utility in metallurgy.
33. a) Discuss the bonding in metal carbonyls?
    b) Explain sodium-potassium pump. [5 + 5 =10]
34. Explain the following:
    a) Postulates of Werner's theory.
    b) Spectrochemical series.
    c) Crystal field splitting of d-orbitals in octahedral and square planar complexes.

[3 + 3 + 4 = 10]

(2 × 10 = 20 Marks)

****