Reg. No…….. Name…….

19U506

B.Sc. DEGREE END SEMESTER EXAMINATION - OCTOBER 2019

SEMESTER **–5: CHEMISTRY (CORE COURSE)**

COURSE: **15U5CRCHE05: INORGANIC CHEMISTRY - I**

(Common for Regular 2017 admission & Improvement 2016/ Supplementary 2016/2015 admission)

Time: Three Hours Max. Marks: 60

SECTION A

Answer all questions. Each question carries 1mark

1. Draw the structure of $Fe(CO)_5$. How is it confirmed?
2. State and explain Lux-Flood concept of acids and bases
3. Explain why Ti^{3+} ion exhibit purple colour.
4. Give two biological functions of Cu.
5. What are metallocenes? Give one example.
6. Name a hexadendate ligand.
7. IUPAC name of the complex $[Pt\ Cl\ (NO_2)\ (NH_3)_4]SO_4$ is …….
8. Oxidation state of Re in $[Re_2Cl_8]^{2-}$ is …… (1 × 8 = 8)

SECTION B

Answer any six questions. Each question carries 2 marks

9. Is OH^- or S^{2-} more likely to form insoluble salts with 2+ transition metal ions? Why?
10. Explain Ionization isomerism with suitable example.
11. How is Fischer carbene different from Schrock carbene.
12. At room temperature, the observed value of μ_{eff} for $[Cr(en)_3]Br_2$ is $4.90\mu_B$. Is the complex high-spin or low-spin?
13. What are metalloenzymes? Give two examples.
14. Give an account of the toxic effect of Pu and Hg.
15. What is the difference between an inner orbital complex and an outer orbital complex? Discuss with one example each.
16. Briefly explain Chelation therapy. (2 × 6 = 12)

SECTION C

Answer any four questions. Each question carries 5 marks

17. Discuss the preparation and structure of ferrocene.
18. (a) What is lanthanoid contraction? (b) Explain how the lanthanoids can be separated from their ores.
19. What is meant by Chelate effect? What are the factors affecting the stability of chelates?
20. Explain the bonding in metal-alkene complexes.
21. Give a brief account of biological action of Carbonic anhydrase and Carbonic peptidase.
22. Explain Na/K pump. (5 × 4 = 20)

SECTION D

Answer any two questions. Each question carries 10 marks

23. Discuss the mechanism of oxygen transport in blood.

24. a) Explain Crystal Field theory. How does it differ from the Valence Bond theory?

    b) State Jahn-Teller theorem and explain Jahn-Teller distortion in Cu(II) complexes

25. a) Discuss the optical isomerism exhibited by complexes of coordination no. 4 and 6.

    b) Explain the bonding in metal-acetylene complexes.

26. What is trans effect? Discuss the theories of trans effect. Which theory explains better the trans effect of CO compared to that of pyridine? (10 × 2 = 20)

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