Reg. No…….. Name…… **20U508**

B. Sc. DEGREE END SEMESTER EXAMINATION OCT. 2020: JANUARY 2021

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

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

(Common for Regular 2018 admission & /Improvement 2017/ Supplementary 2017/ 2016/2015 admissions)

Time: Three Hours Max. Marks:60

SECTION A

Answer all questions. Each question carries 1mark

1. Apart from three histidine groups, Zn in carbonic anhydrase is coordinated to which group?
2. The enamel on teeth is a double salt of ----------.
3. What is Bohr effect?
4. The complexes $[Co(NH_3)_6]$ $[Cr(CN)_6]$ and $[Cr(NH_3)_6]$ $[Co(CN)_6]$ exhibit which type of isomerism?
5. IUPAC name of the complex $Na_2[ZnCl_4]$ is ----------
6. Explain why Ti^{3+} ion exhibit colour while Sc^{3+} is colourless.
7. What is Lux-Flood concept of acids and bases.
8. What is symbiosis? (1 × 8 = 8)

SECTION B

Answer any six questions. Each question carries 2 marks

9. Explain two Applications of HSAB Concept with appropriate examples?
10. Identify the probable type of isomerism for (a) $Co(en)_3Cl_3$; (b) $Cr(NH_3)_3Cl_3$.
11. Briefly discuss platinum based anticancer agents.
12. Distinguish between Fischer and Schrock carbenes.
13. What is Na/K pump?
14. What is lanthanide contraction?
15. Calculate the CFSE in the octahedral d^3 and d^8 cases.
16. What is EAN rule and how is it different from 18 electron rule? (2 x 6 = 12)

SECTION

Answer any four questions. Each question carries 5 marks

17. Discuss the factors affecting the stability of complexes.
18. Of the following cyanide complexes, $[Ni(CN)_4]^{2-}$, $[Mn(CN)_6]^{3-}$, and $[Cr(CN)6]^{3-}$, which one would you most expect to be (a) labile or (b) inert? Briefly justify your answer.

19. Explain the mechanism of alkene polymerization by Zeigler- Natta polymerization
20. Device a methodology to prepare cis- and trans-amminedichloronitroplatinate(II) taking the advantage of trans effect in the process.
21. Write briefly on the separation of lanthanides by ion exchange method.
22. Discuss the mechanism of oxygen transport in blood. (5 × 4 = 20)

SECTION D

Answer any two questions. Each question carries 10 marks

23. Briefly describe the CF theory applied to octahedral complexes. How this theory is useful in explaining magnetic moments of $Na_3[Fe(CN)_6]$ and $Na_3[FeF_6]$.
24. What is Jahn-Tellar distortion? Describe and explain the Jahn-Teller effect in octahedral complexes of Cr^{2+} and Cu^{2+}.
25. Compare the spectral and magnetic properties of lanthanides and actinides.
26. Elaborate on industrially important catalytic applications of organometallic compounds

(10 × 2 = 20)

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