1/3/23

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D6BCH2001

Reg.No.....

Name: .....

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2023

(Regular/Improvement/Supplementary)

CHEMISTRY

GCHE6B09T: INORGANIC CHEMISTRY IV

Time: 2 Hours **Maximum Marks: 60**

SECTION A: Answer the following questions. Each carries *two* marks.
(Ceiling 20 Marks)

1. Explain the term atomization in AAS. Give the name of two atomization methods.
2. Write any two advantages of spectrophotometric method over the colourimetric method.
3. The ionisation energy of transition elements are in the order 5d > 3d > 4d. Why?
4. Why are La^{3+} and Lu^{3+} compounds colourless?
5. Mention the types of hybridisation and shapes of (i) $[Cr(NH_3)_6]^{3+}$ and (ii) $[FeF_6]^{3-}$.
6. $[NiCl_4]^{2-}$ is paramagnetic. Is it square planar or tetrahedral in shape?
7. Give two important limitations of VBT.
8. Give an example each for the application of complexes in inorganic (i) qualitative analysis and (ii) quantitative analysis.
9. What is 18 electron rule? Name two carbonyls which obey the 18- electron rule.
10. Explain the term hapticity of a ligand in organometallic chemistry.
11. What is Wilkinson's catalyst?
12. Give one method of preparation for ferrocene.

SECTION B: Answer the following questions. Each carries *five* marks
(Ceiling 30 Marks)

13. Discuss the applications of flame emission spectroscopy.
14. Discuss the principle of x-ray diffraction (XRD) analysis.
15. Mention the important differences between first row and other two rows of transition metals.
16. What are the consequences of lanthanide contraction?
17. Briefly discuss the merits and demerits of MOT of complexes.
18. Write briefly on the bonding in metal carbonyls.
19. Compare the oxygen binding capacities of haemoglobin and myoglobin.

SECTION C: Answer any 1 question. Each carries *ten* marks.

20. What is CFSE? Determine the CFSE for octahedral complexes in which the central metal ion has d^4, d^5, d^6 and d^7 configurations.
21. Write a note on anticancer drugs and its action. Explain the structure, significance and limitations of any two anticancer drugs.

(1 x 10 = 10 Marks)