

D6BCH2101

Reg.No.....

Name:

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2024
(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. Differentiate between flame atomizer and electrochemical atomizer.
2. Write any two applications of spectrophotometry.
3. What are non-stoichiometric compounds? Give two examples.
4. Calculate the spin- only magnetic moment of Fe^{3+} and Mn^{3+} .
5. Give any two drawbacks of Werner's coordination theory.
6. What is CFSE? Calculate the CFSE of a d^3 system in an octahedral field.
7. What is Zeise's salt? Give its structure.
8. What are polynuclear carbonyls? Give an example.
9. Comment on Ziegler – Natta catalyst.
10. What are metallocenes? Give two examples with structure.
11. What is meant by Bohr's effect?
12. Name two Zn containing enzymes. Write their functions.

SECTION B: Answer the following questions. Each carries *five* marks.

(Ceiling 30 Marks)

13. Write the basic principle of flame emission spectroscopy.
14. Differentiate between Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM).
15. Explain the geometry and magnetic behaviour of $[\text{Fe}(\text{CN})_6]^{4-}$ on the basis of VBT.
16. Δ_t is less than Δ_o . Explain.
17. What is 18- electron rule? Illustrate an example for predicting the structure of a complex assuming that the 18-electron rule is obeyed.
18. Explain 'sodium- potassium pump'.
19. What is meant by metal toxicity? Explain the toxicity of lead.

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

20. What is lanthanide contraction? How does it originate and what are the important consequences of lanthanide contraction?
21. Explain the salient aspects of molecular orbital theory as applicable to an octahedral complex $[\text{ML}_6]$ having sigma bonds only.

(1 x 10 = 10 Marks)