

S.NO: 22N1-UCH

Course Code: BQG

A.D.M.COLLEGE FOR WOMEN, NAGAPATTINAM

(AUTONOMOUS)

B. Sc. (Chemistry) Degree Examination

V Semester – November – 2022

CC VII – INORGANIC CHEMISTRY I

Time: 3 hours

Maximum Marks: 75

Section –A

10X2=20

Answer ALL the Questions:

1. What are ligands? Give example.
2. Write the different types of structural isomerism in co-ordination compounds?
3. Define the term CFSE.
4. Write any two postulates of valence bond theory.
5. What are labile and inert complexes in co-ordination chemistry?
6. What is trans effect?
7. What are metal carbonyls?
8. What are borides?
9. Define magnetic susceptibility.
10. What is dipole moment?

Section -B

5X5=25

Answer **ALL** the Questions:

11. a) Give the IUPAC name for the following

- i) $[\text{Ag}(\text{NH}_3)_2]\text{Cl}$
- ii) $\text{K}_4[\text{Fe}(\text{CN})_6]$
- iii) $\text{K}_2[\text{PtCl}_6]$
- iv) $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$
- v) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$

(or)

b) Discuss briefly Sidgwick's theory of co-ordination compounds.

12. a) Write a short note on Jahn-Teller distortion of co-ordination compounds.

(or)

b) Discuss the postulates of crystal field theory.

13. a) What are the factors affecting the stability of complexes?

(or)

b) Bring out the biological role of Haemoglobin.

14. a) Explain the classification and preparation of nitrides.

(or)

b) Establish the structure and bonding of ferrocene.

15. a) Discuss the preparation and properties of sodium nitroprusside.

(or)

b) Write a short note on diamagnetism and paramagnetism.

Section -C

3 X 10 = 30

Answer any **THREE** Questions:

16. i) Describe the postulates of Werner's theory of co-ordination compounds.
- ii) Explain the geometrical isomerism for four co-ordinated complexes.
17. Explain the formation of $[\text{Co}(\text{NH}_3)_6]^{3+}$ through molecular orbital theory.
18. Discuss the unimolecular and bimolecular nucleophilic substitution reactions in octahedral complexes.
19. Describe the preparation, properties and structure of the following
 - i) $\text{Ni}(\text{CO})_4$
 - ii) $\text{Fe}(\text{CO})_5$
20. How to determine the magnetic susceptibility using Gouy-balance method?

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