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SUBJECT CODE NO: - Y-2009
FACULTY OF SCIENCE AND TECHNOLOGY
B.Sc. T.Y (Sem-VI)
Examination March / April - 2023
Chemistry Paper –XVI (Inorganic Chemistry)

[Time: 1:30 Hours]**[Max. Marks: 50]**

Please check whether you have got the right question paper.

N. B

- 1) Attempt all questions.
- 2) Draw neat labelled diagram whenever necessary.

Q1 a) Give any two methods of preparation, properties and uses of Organoaluminium compounds. 10

b) Give the limitations of VBT. 10

OR

c) Discuss the splitting of d-orbitals in tetrahedral complexes. 10

d) Explain metalloporphyrins with special reference to haemoglobin. 10

Q2 a) Explain electronic spectra of $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$ complex ion. 10

b) Discuss the following. 10

i) Spin Selection rule

ii) Ascending paper chromatography

OR

c) Write short notes (Any Four) 20

1) Biological role of calcium

2) Rf Value

3) Assumptions of CFT

4) Orgel diagram of d^9 configuration

5) Nature of bonding in metal carbonyls

6) Shape of d-orbitals

Q3 Multiple Choice questions.

1) Which of the following ligand causes maximum crystal field splitting?

- a) NH_3 b) F^- c) CO d) H_2O

2) CFSE value depends on

- a) nature of ligands b) charge on the metal ion
c) Geometry of complex d) Whether the metal ion from 3d, 4d and 5d series

3) The spin allowed transition are

- a) $3T_{1g} \rightarrow 3T_{2g}$ b) $4T_{1g} \rightarrow 4A_{2g}$
c) $4T_{2g} \rightarrow 4A_{2g}$ d) All these

4) For Laporte allowed transition

- a) $\Delta l = 0$ b) $\Delta s = 0$ c) $\Delta l = \pm 1$ d) None

5) Which of the following is an organometallic compound

- a) $\text{Ti}(\text{C}_2\text{H}_4)_4$ b) $\text{Ti}(\text{OC}_2\text{H}_5)$
c) $\text{Ti}(\text{OCOCH}_3)_4$ d) $\text{Ti}(\text{OC}_6\text{H}_5)_4$

6) CH_3MgBr is organometallic in nature due to the presence of

- a) Mg-Br bond b) C-Mg bond
c) C-Br bond d) C-H bond

7) Which of the following has Magnesium

- a) Chlorophyll b) Haemoglobin c) Vit.B-12 d) Vit.C

8) Nitrogenase catalyzes one of the following conversion

- a) Dinitrogen to ammonia b) Nitrite to Nitrate
c) Ammonia to dinitrogen d) All these

9) In TLC, Stationary phase is

- a) Solid b) liquid c) gas d) plasma

10) Mobile phase can be

- a) Gas or liquid b) solid or liquid c) only solid d) only gas