

S-463

Total Pages : 3

Roll No.

MSCCH-506

Inorganic Chemistry-II

M.Sc. Chemistry (MSCCH)

2nd Semester Examination, 2022 (Dec.)

Time : 2 Hours]

Max. Marks : 70

Note : This paper is of Seventy (70) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

SECTION-A

(Long Answer Type Questions)

Note : Section 'A' contains Five (05) long answer type questions of Nineteen (19) marks each. Learners are required to answer any Two (02) questions only.

(2×19=38)

1. What is magnetic susceptibility? Describe the Quinckes method for the determination of magnetic susceptibility of complexes.

2. Define the crystal field stabilization energy (CFSE)? Discuss the various factor which affect the crystal field stabilization energy.
3. What is the Orgel diagram? Give the limitation of the Orgel diagram. Draw the Orgel diagram for the d^3 both tetrahedral and octahedral field.
4. What are Outer sphere reactions ? Explain Outer sphere reactions with suitable example.
5. What is the Nucleophilic Substitution reaction? Give the mechanism of the nucleophilic substitution reaction of the octahedral complexes.

SECTION-B

(Short Answer Type Questions)

Note : Section 'B' contains Eight (08) short answer type questions of Eight (08) marks each. Learners are required to answer any Four (04) questions only. (4×8=32)

1. What are the selection rule for electronic spectra ?
2. What the factors that influences the rate of acid hydrolysis of octahedral complexes.

3. Write short note on :
- (a) Spectrochemical series.
 - (b) Jahn teller distortion.
4. What is the trans effect? Discuss the Polarization and π -bonding theories of the trans effect.
5. Attempt any *two* :
- (a) Anation reaction.
 - (b) Racah parameter.
 - (c) Marcus hush theory.
6. What are labile and inert complex? Explain with suitable examples.
7. Find the ground state term symbol for the d^3 , d^4 , d^6 and d^8 ions.
8. Explain why :
- (a) Chelate complexes is more stable than normal coordination complexes.
 - (b) Why $[\text{CoF}_6]^{-3}$ have greater CFSE value than $[\text{Co}(\text{H}_2\text{O})_6]^{+3}$ while both complexes have same central metal ions.
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