

A-061

Total Pages : 4

Roll No.

MSCCH-506

M.Sc. CHEMISTRY (MSCCH)

(Inorganic Chemistry-II)

2nd Semester Examination, 2024 (June)

Time : 2:00 Hrs.

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. *Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.*

Section-A

(Long Answer Type Questions) 2×19=38

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.

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P.T.O.

1. What is magnetic susceptibility ? Describe the Quinckes method for the determination of magnetic susceptibility of complexes.
2. What is the Orgel diagram ? Give the limitation of the Orgel diagram. Draw the Orgel diagram for the d^8 both tetrahedral and octahedral field.
3. What is the Nucleophilic Substitution reaction ? Classify the nucleophilic substitution reaction. Give the mechanism of the nucleophilic substitution reaction of the octahedral complexes.
4. What is the oxidation-reduction reaction by electron transfer ? Explain the outer sphere electron transfer with appropriate example.
5. Explain the following :
 - (a) Discuss the molecular orbital diagram for octahedral complex.
 - (b) What are the normal and inverse spinel ? Explain the both type of spinel with the help of example.

Section-B

(Short Answer Type Questions) 4×8=32

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.

1. What are the selection rule for electronic spectra ?
2. What is the Jahn teller distortion ? Discuss the Jahn-Teller distortion in Cu^{2+} complexes.
3. Attempt any *two* :
 - (a) Anation reaction.
 - (b) Weak field and strong field ligand.
 - (c) Spin orbit coupling
4. What is the ground state term symbol ? Find the ground state term symbol for the d^1 , d^2 , d^7 and d^9 ions.
5. What is the thermodynamic and kinetic stability of the complexes ?
6. What is the chelate effect ? Discuss the factors which affect the stability of the Chelate.

7. Discuss the nucleophilic substitution reaction in square planar complexes.
8. (a) Spectrochemical series and its applications.
(b) What you do understand by quenching of orbital momentum.
