Total No. of Questions :4]

SEAT No. :

P1961

[Total No. of Pages :2

[4923]-37
M.Sc. II
INORGANIC CHEMISTRY
CH-330: Coordination Chemistry Magnetism and Reaction Mechanism
(2008 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***All questions are compulsory and carry equal marks.***
2) ***Neat diagrams must be drawn wherever necessary***
3) ***Use of logarithimic tables and calculator is allowed.***

Q1) Attempt Any Four of the following: **[20]**

a) Explain why certain Ni (II) complexes show anomalous magnetic moments.

b) What are magnetically diluted and concentrated systems.

c) Explain the experimental magnetic moment of the following ions.

i) Ti^{3+} μB . m. expt = 1.7 to 1.8 B.m.

ii) Co^{2+} μB.m. expt = 4.1 to 5.2 B.m.

[Given:- atomic no. of Ti=22 and Co=27]

d) Explain the terms.

i) Magnetic domain.

ii) Canting.

e) Draw the crystal field splitting of d orbitals of a central metal ion in symmetric octahedral, tetrahedral and tetragonal complexes.

Q2) Attempt Any Four of the following: **[20]**

a) Write about super exchange model for an antiferromagnetic interaction.

b) Write a note on 'High spin-Low spin' equilibria.

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c) Explain the extent of exchange interaction in the Cu_2o_2 ring system is greater than that in Cr_2o_2 ring system.

d) What are mixed valence compounds? How they are classified?

e) Explain the terms:-

i) Spin pairing.

ii) Antiferromagnetic material.

Q3) Attempt Any Four of the following: **[20]**

a) Explain the main reaction types with suitable examples.

b) Give in brief an account of π -bonding theory of trans effect.

c) Write a note on anation reaction.

d) Explain conjugate Base mechanism with reference to octahedral cobalt (III) complexes.

e) Differentiate between Associative and Dissociative mechanism.

Q4) Attempt Any Four of the following: **[20]**

a) Discuss the mechanism of electron transfer with reference to outer- sphere reactions.

b) Write a note on oxidative addition reactions.

c) Discuss in brief recemization of trischelate complexes.

d) Explain the various steps involved in photographic process.

e) Complete the following chemical equations.

i) $(CH_3)_3B + N(CH_3)_3 \rightleftarrows$ ☐

ii) $BF_3 + \overline{F} \rightarrow$ ☐

iii) $CH_3Mn(Co)_5 + PPh_3 \rightarrow$ ☐

iv) $[Fe(CN)_6]^{4-} + [IrCl_6]^{2-} \rightarrow$ ☐ + ☐

v) $[PtCl_4]^{2-} \xrightarrow{?}$ ☐ $\xrightarrow{?}$ ☐