EASTERN UNIVERSITY, SRILANKA
SECOND EXAMINATION IN SCIENCE (FIRST SEMESTER)2001/2002
CH201 ANALYTICAL CHEMISTRY

Time :01 Hour
Answer all questions

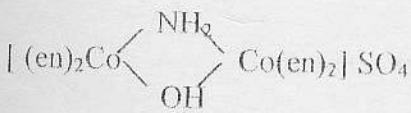
Coordination & Main group chem

1.(a) Write the IUPAC name of the following complexes.

(i) $[Cu(en)_2]SO_4$

(ii) $K[AuF_4]$

(iii) $Na[CoCl_4(NH_3)_2]$

(iv) 

(b) Write the chemical formula of the following complexes.

(i) decammine -μ-amidodicobalt(III) Nitrate.
(ii) Ammonium tetraisothiocyanatodiamminechromate(III)
(iii) Sodium pentacyanonitrosylferrate(III)
(iv) trichlorotriamminecobalt(III)
(v) hydroxopentaaquoaluminium(III)

(c) How does the Valence Bond Theory accounts for the following observations.

(i) $[Ni(CN)_4]^{2-}$ is diamagnetic and square planar.

(ii) $[Ni(CO)_4]^{2-}$ is diamagnetic and tetrahedral.

[Atomic no: Ni –28]

(d) Briefly explain the following terms with one example for each.

(i) Ionization isomerism.
(ii) Hydrate isomerism.
(iii) Co-ordination position isomerism.
(iv) Linkage isomerism.

Contd.....

2. (a) Indicate the d-electron arrangement in $[Ni(NH_3)_6]^{2+}$ and calculate the crystal field stabilisation energy (CFSE) and spin only magnetic moment value.

(b) Briefly describe the physical and chemical properties of groupII A elements.

(c) How does Nitrogen differ from other groupV elements?
Give three methods for the preparation of Nitrogen. (Give balanced chemical equation).

(d)(i) Oxygen forms only divalent compounds whereas sulphur forms 2,4,6 valence compounds. Briefly explain the above statements.

(ii) Give three uses of Hydrogen.

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