



EASTERN UNIVERSITY, SRI LANKA  
EXTERNAL DEGREE  
SECOND YEAR FIRST SEMESTER EXAMINATION IN SCIENCE  
2004/2005 (July/August 2008) – Proper & Repeat  
EXTCH201: COORDINATION CHEMISTRY AND MAIN GROUP CHEMISTRY

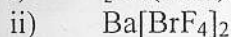
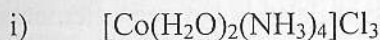
Answer all the questions

Time: 1 Hour

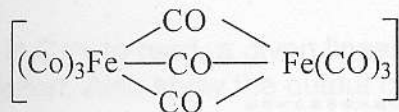
You may find the following data useful  
(Atomic number for Cr – 24, Co – 27, Ni – 28, Cu - 29)

1)

a) Write the IUPAC name of the following compounds.



iii)



(28 marks)

b) Write the molecular formula of the following compounds.

i) Dichlorobis(methylamine)copper(II).

ii) Tetraamminedithiocyanatochromium(III) ion

iii) Sodium amminebromochloronitroplatinate(II)

(28 marks)

c) Discuss each of the following observations

i) The ion  $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$  is a regular octahedron, but  $[\text{CuCl}_6]^{4-}$  is a flatten octahedron .

ii) Octahedral high spin Ni(II) complexes have magnetic moment in the range 2.9 – 3.4  $\mu\text{B}$ , tetrahedral Ni(II) complexes have magnetic moments of up to 4.1  $\mu\text{B}$ , square planar Ni(II) complexes are diamagnetic.

(44marks)

2)

a) Using the crystal field theory and valence bond theory, compare the magnetic properties that would expect for  $[\text{CoF}_6]^{3-}$ .

(30 marks)

b) Draw all the isomers of an octahedral complex, which has three unidentate ligands of type A and three unidentate ligands of type B.

(20 marks)

c) i) List out five uses of hydrogen.

(30 marks)

ii) List out four similarities and dissimilarities between elements of sub group I<sup>A</sup> and II<sup>A</sup>.

(20 marks)

\*\*\*\*\*