



EASTERN UNIVERSITY, SRI LANKA

SECOND EXAMINATION IN SCIENCE-2010/2011 (APRIL/MAY' 2013)

FIRST SEMESTER

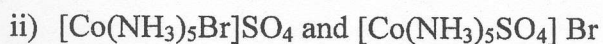
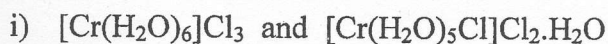
CH201 COORDINATION CHEMISTRY & MAIN GROUP CHEMISTRY

(Proper & Repeat)

Answer all questions

Time Allowed: One hour

1. (a) How would you distinguish between the following compounds?

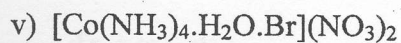
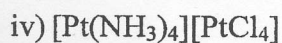
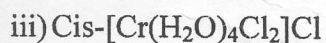
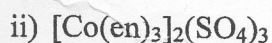


(20 Marks)

(b) Define the terms "Ligand" and "Co-ordination numbers" with suitable examples.

(20 Marks)

(c) Give the names of following co-ordination compounds.



(40 Marks)

Contd...

(d) Write down the structures of following polynuclear complexes.

- i) Decaammine- μ -hydroxodichromium(III) bromide
- ii) Tetrakis(ethylenediamine)- μ -amido- μ -hydroxo-dicobalt(III) sulphate
- iii) Tetrammine- μ -dihydroxo bis(ethylenediamine)dichromium(III) chloride
- iv) Triamminecobalt(III)- μ -trihydroxo-triamminecobalt(III) ion.

(20 Marks)

2. (a) Discuss the following with reference to coordination compounds.

- i) Coordination isomerism
- ii) Coordination position isomerism
- iii) Polymerisation isomerism

(15 Marks)

(b) Give the names and illustrate all types of isomers that are possible in an octahedral

Complex compound of one cobalt(III) ion, two en molecules two chlorides ions and one nitrate ion.

(20 Marks)

(c) Explain why the $\text{Ni}(\text{CO})_4$ is diamagnetic, tetrahedral.

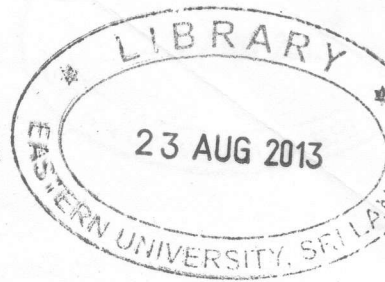
(10 Marks)

(d) Explain the following on the basis of Crystal Field Theory;

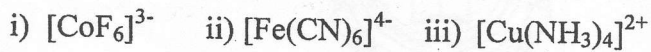
- i) $[\text{Co}(\text{NH}_3)_6]^{3+}$ is diamagnetic
- ii) $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$ is strongly paramagnetic and $[\text{Fe}(\text{CN})_6]^{3-}$ is less paramagnetic

(20 Marks)

Cont



(e) Calculate the CFSE (in Δ_o units) of the following complexes



(15 Marks)

(f) i). List out five uses of hydrogen

ii). Hydrogen can be placed with alkali metals or with halogens. Give four reasons for each and explain why it is placed in period I.

(20 Marks)
