



EASTERN UNIVERSITY, SRI LANKA

SECOND EXAMINATION IN SCIENCE-2012/2013(March/April-2016)

FIRST SEMESTER

**CH201 COORDINATION CHEMISTRY & MAIN GROUP CHEMISTRY
(Proper)**

Answer all questions

Time: 01 hour

a) Give the molecular formula of the following compounds.

(i) tetraamminedichloridorhodium(III) nitrate

(ii) μ -chlorido- μ -hydroxido-bis(tetraamminecobalt(IV)) chloride

(iii) tetra- μ -acetato-bis(aquacopper(II))

(iv) ethylenediaminedinitratopalladium(II)

(20 Marks)

b) Give the IUPAC nomenclature for the following coordination compounds.

(i) $[\text{CoCl}_2(\text{NH}_3)_4]^+$

(ii) $[\text{Ru}(\text{NH}_3)_5(\text{OH}_2)]^{2+}$

(iii) $[\text{IrH}_3(\text{PPh}_3)_3]$

(iv) $\text{Na}[\text{PtBrCl}(\text{NH}_3)(\text{NO}_2)]$

(20 Marks)

c) Draw a diagram to show the pattern of d-orbital splitting changes as an octahedral complex undergoing Jahn-Teller distortion and eventually becomes a square planar complex. (10 Marks)

d) Calculate the Crystal Field Stabilization Energy (in Δ_o) for the following complexes.

(Hint: $\Delta_t = \frac{4}{9}\Delta_o$)

(i) d^7 tetrahedral complex

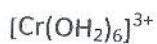
(ii) d^6 octahedral high spin complex

(iii) d^5 octahedral low spin complex

(20 Marks)

Contd.....

- e) Give the oxidation state, d-orbital occupation (spin type), coordination number of the complex and expected magnetic moment of the central metal ion for the complex.



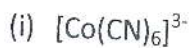
- 2) a) Briefly describe the physical and chemical properties of Hydrogen.

- b) Briefly explain the following terms with one example for each.

(i) Ionization isomerism

(ii) Linkage isomerism

- c) Discuss the formation of the following complexes by using the Valence-Bond theory.



- d) Find out which of the following complexes obey the Effective Atomic Number rule.

