

DEPARTMENT OF CHEMISTRY

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

FIRST SEMESTER EXAMINATION 2012/2013 SESSION

COURSE CODE: CHM 212

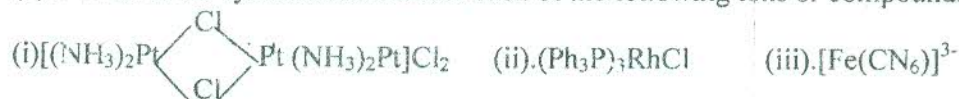
UNITS: 2

COURSE TITLE: INORGANIC CHEMISTRY II

TIME ALLOWED: 2 hours

INSTRUCTIONS: ANSWER ANY THREE QUESTIONS

(1)a. What is the systematic name for each of the following ions or compounds?



(2 marks each)

b. What is the systematic formulae for each of the following ions or compounds?

(i) Tetrapyrindineplatinum(II) tetrachloroplatinate(II)

(ii) Tris(ethylenediamine)chromium(III)chloride

(2 marks each)

(c) For each co-ordination number from 3-7 state the principal geometrical arrangement(s) and give one example where necessary (10 marks)

2a(i) Explain why Scandium and Zinc could not be strictly classified as transition metals (2 marks).

(ii). List two reasons for studying the first row transition metals (2 marks)

(b). Explain the crystal field theory. Use the theory to discuss crystal field splitting in Tetrahedral complex (10 marks)

3(a). Draw the structure of the following bidentate ligands

i) Nitrate (ii) sulphate (iii) Dithiocarbamate (iv) Acetylacetonate

(v) Bipyridyl

(1 mark each)

(b). Using chemical equations only describe

(i). Manufacture of sodium dichromate from *Chromite* (5 marks)

(ii). Extraction of Chromium metal (60% and 100%) (7 marks)

(c). Give three relationship between A and B families of group IV (3 marks)

4(a). Give one reason why Chromium is highly resistance to corrosion (2 marks)

(b). Using chemical equations only describe

(i). Preparation of Titanium (IV) chloride ( $\text{TiCl}_4$ ) (7 marks)

(ii). Reduction of Titanium (IV) chloride to Titanium metal (6 marks)

(c). Describes briefly relationship between A and B families of group vi (5 marks)