

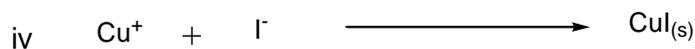
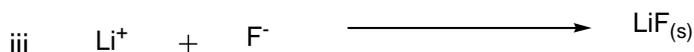
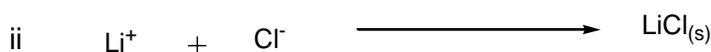
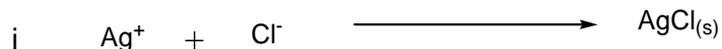


EDO UNIVERSITY IYAMHO, EDO STATE
FACULTY OF SCIENCE
DEPARTMENT OF CHEMISTRY/PHYSICS
2017/2018 FIRST SEMESTER EXAMINATION
COURSE CODE: CHM 212
COURSE TITLE: INORGANIC CHEMISTRY

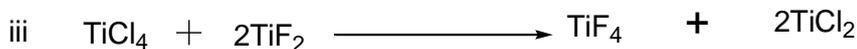
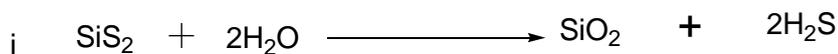
**INSTRUCTION: ANSWER FIVE QUESTIONS IN ALL
TIME ALLOWED: 3 HOURS**

(1a) What are hard acids and soft acids? Give 2 examples each

(1b) Which of following interactions is / are highly favourable? Give reasons for your answer



(1c) Which of the following reactions will proceed as written? Give reasons for your answer



(1d) The radius of a calcium ion is 94pm, and of an oxide ion is 146pm. Predict the crystal structure of calcium oxide.

(2a) Briefly discuss the occurrence and extraction of phosphorus.

(2b) i. Suggest reasons why PF_5 is known and NF_5 is not

ii. How is nitrogen gas produced in car air bags?

(2c) Substance (A) is a gas of vapour density 8.5. On addition of oxygen at high temperature with platinum catalyst it gave a colourless gas (B), which rapidly turned brown in air, forming a gas (C). Gas C reacts with water to give a mixture of acids (D) and (E). Mixture of HCl and solution of acid D is used as aqua-regia for dissolution of metal samples.

(5c) Write short note on the following:

- i. protic solvent ii. metathesis iii. F-Centre iv. lattice constant

(6a) Differentiate clearly between Schottky defects and Frenkel defects in crystals.

(6b) The coordination number of barium ions, Ba^{2+} , in barium fluoride crystal (BaF_2) is 8. What must be the coordination number of the fluoride ions, F^- .

(6c) Aluminium ion (Al^{3+}) prefers fluoride base (F^-) to iodide (I^-) during the formation of compounds. Account for this observation.

(7a) List and explain three properties of transition elements

(7b) Write the electronic configuration of M^{3+} ion for the first row transition metal series

(7c) Provide the IUPAC names of the following transition metal complexes:

- i. $[\text{Ti}(\text{H}_2\text{O})_6]\text{Cl}_3$
ii. $[\text{Pt}(\text{en})_2][\text{PtCl}_4]$ en = ethylenediamine
iii. $[\text{Pt}(\text{H}_2\text{NCH}_2\text{CH}_2\text{NH}_2)_2\text{Cl}_2]\text{Cl}_2$
iv. $[\text{Co}(\text{H}_2\text{O})_6]\text{SO}_4$
v. $(\text{NH}_4)_2[\text{Ni}(\text{C}_2\text{O}_4)_2(\text{H}_2\text{O})_2]$

(7d) Which of the ligands in 7c above is / are monodentate, bidentate or polydentate ligands?