



National Open University of Nigeria
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja
Faculty of Science
Department of Pure & Applied Science
September, 2020 Examination

CHM423: Coordination Chemistry

CREDIT UNIT: 3 Units

TIME: 2 ½ HOURS

INSTRUCTION: ANSWER QUESTION ONE & ANY OTHER FOUR QUESTIONS

Question 1

- How are coordination compound formed? (2 marks)
- Compare and contrast between Lewis acid and Lewis base with respect to coordination chemistry (8 marks)
- What are the nitty-gritties of the Crystal field theory (6 marks)?
- Highlight four conclusion made by Alfred Werner's in coordination chemistry (6 marks)

Question 2

- (a) Give the IUPAC names for the following complex (i) $K_2[Ni(CN)_4]$ (ii) $[Cu(NH_3)_4(H_2O)_2]SO_4$ (4 marks)
- Differentiate between hydrate isomerism and ionization isomerism (4 marks)
- What system is used in naming coordination compounds? (4 marks)

Question 3

- (a) Mention any 4 methods used in preparing complexes (4 marks)
- Give an example of a partial decomposition reaction (4 marks)
- Balance the equation below;
 $[PtCl_4]_2 + NH_3 \longrightarrow x + Cl^-$ (4 marks)

Question 4

- (a) Transition in complexes can be grouped into three categories; name them(6 marks)
- Describe the three types of intraligand transition (3 marks)

(c) State spin rule (3 marks)

Question 5

- 5
- (a) Differentiate between paramagnetism and Diamagnetism (4 marks)
 - (b) Explain the term ferromagnetism (4 marks)
 - (c) What is anti-ferromagnetism (4 marks)

Question 6

6. Write briefly what you understand by the following terms:
- (a) thermodynamic stability (4 marks)
 - (b) chelate effect (4 marks)
 - (c) Kinetics of complex reaction (4 marks)