


المستوى الثالث  
كيمياء / الجيولوجيا

|   |   |                 |                              |                          |
|---|---|-----------------|------------------------------|--------------------------|
|  | TANTA UNIVERSITY<br>FACULTY OF SCIENCE<br>DEPARTMENT OF CHEMISTRY |                 |                              |                          |
|   | FINAL EXAMINATION FOR ALL DOUBLE MAJOR THIRD LEVEL STUDENTS       |                 |                              |                          |
| COURSE TITLE:   | (Coordination Chemistry)  |                 | COURSE CODE:<br>CH3246       |                          |
| DATE:   | 1, JUNE 2017  | TERM:<br>SECOND | TOTAL ASSESSMENT MARKS<br>50 | TIME ALLOWED: 2<br>HOURS |

**Answer the following Questions:**

1-) For each complex define the following: (Total marks 20)

1-Name

2- The type of isomerism

3- The type of hybridization

4- Calculate the magnetic moment

I-)  $[\text{Mn}(\text{H}_2\text{O})_6]\text{Cl}_2$

(5marks)

II-)  $\text{K}_2[\text{Zn}(\text{CN})_4]$

(5marks)

III-)  $\text{K}_2[\text{Ni}(\text{NO}_2)_4]$

(5marks)

IV-)  $\text{Na}_3[\text{CoCl}_6]$

(5marks)

2-) A-) Iron ion forms an inner diamagnetic complex ion containing the cyano ligand.

Derive the formulae of the complex. (4marks)

B-) Discuss the effect of central metal ion and its charge on  $\Delta_o$  value. (4marks)

C-) Manganese (II) ion forms inner complex ion with cyano ligands. Calculate the magnetic moment value of the complex. (4marks)

D-) Discuss the hydration isomerism with example. (3marks) (Total marks 15)

3-) A-) Write full account on Jahn-Teller effect with examples (5marks)

B-) What is the formula of the following complex: (2marks)

Tetrammine copper (II) hexachloro copperate (II)

C-) For the two complexes: 1-) Hexammine cobalt(III) chloride (8marks)

2-) Potassium hexacyano ferrate (II)

a-) Draw the d-orbital splitting indicate the number of electrons in  $t_{2g}$  and  $e_g$

b-) Calculate the CFSE value and magnetic moment for each complex. (Total marks 15)

Note : (Atomic number for Mn 25, Fe 26, Co 27, Ni 28, Cu 29 & Zn 30)

**Good Luck**

Examiners: Prof. Dr : Kamal Elbaradie, Prof. Dr: Ekhlas Abd Elhay



Chemistry Department  
Faculty of Science  
Tanta University

**Final Examination**  
**For 3<sup>rd</sup> grade students**  
**(Double Major Students)**  
May 2017, Spring semester

Course title:  
Natural Products  
Course Code: CH3250  
Exam time: 2 hours  
Assessment Mark: 100 M

Answer ALL the following questions

**Q1. Discuss briefly the following. (Total 28 marks, each point 7 marks)**

- 1- Properties and uses of Ephedrine.
- 2- One synthetic method of Piperine. (use chemical equations ONLY to describe your answer)
- 3- Synthesis of Caffeine from Urea. (use chemical equations ONLY to describe your answer)
- 4- Synthesis of Cocaine. (use chemical equations ONLY to describe your answer)

**Q2. Write shortly about the following. (Total 28 marks, each point 7 marks)**

- 1- Clinical significance, antioxidant activity, and synthesis of Vitamin E.
- 2- Synthesis of both Vitamin K<sub>1</sub> and Vitamin K<sub>3</sub> (use chemical equations ONLY to describe your answer).
- 3- The different chemical structures and the synthesis of Vitamin B<sub>6</sub>.
- 4- Synthesis of Vitamin C (Ascorbic acid).

**Q3. Answer the following points. (Total 24 marks)**

**a- Mark the following statements as True or False, correcting the false statement.**

**(10 marks, each point 2 marks)**

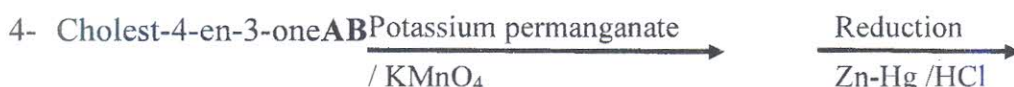
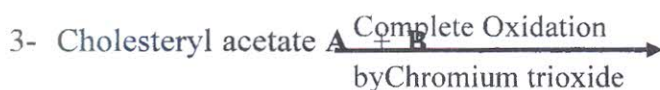
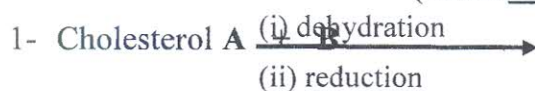
- 1- Myrcene is cyclic monoterpenoid with three conjugated double bonds, forming an adduct.
- 2- Formaldehyde, acetone, and ketodialdehyde are the products of ozonolysis of  $\alpha$ -Terpineol.
- 3- Hydration of Geraniol in the presence of sulphuric acid give Citral.
- 4- Geraniol is an optically active cyclic monoterpenoidal alcohol.
- 5- The reduction of Citral in the presence of sodium ethoxide give Geraniol.

**b- Convert the following by using chemical equations. (14 marks, each point 7 marks)**

- 1- Pentane 1,3,5-tricarboxylic acid to Limonene
- 2- P-Toluic acid to  $\alpha$ -Terpineol.

**Q4. Complete the following equations by chemical structures, naming your answer.**

**(Total 20 marks, each point 5 marks)**



----- انتهت الأسئلة -----

**Good Luck**

Examiners: Prof. Dr. Mohamed Reda Berber, Prof. Dr. Yehia Hafez

