

Final Examination of Organic chemistry for 2th year students

Chemistry, Botany, Geology, Microbiology organic chemistry

- 1-) A- Define each term and give an example (4.5 for each item , 6 for item a) 24 marks
- a-) Benzoin condensation b-) oxime c-) glyoxal
d-) Aromaticity e-) deactivating group
- B-) Discuss the mechanism for the reaction of nitrobenzene with Concentrated nitric acid in the presence of sulphuric acid 5 marks
- 2-) Explain why the methoxy group acts as an ortho-para director and activating when it is present on benzene ring undergoing electrophilic substitution 8 marks
- B-) Explain why m-xylene undergoes nitration 100 times faster than P-xylene 5 marks
- 3-) Arrange each group of compounds in order of increasing acidity 10 marks
- a-) benzoic acid , P-nitrobenzoic acid , m-nitrobenzoic acid
b-) phenol , ethanol , formic acid
- B-) Explain why nitration of aniline is slow and why it gives mostly meta substitution 5 marks
- 4-) Show how you would accomplish the following synthesis 25 marks
- all these conversions require more than one step
- a) Benzene \longrightarrow N - benzylacetamide
b) Benzene \longrightarrow Cinnamic acid
c) P-Aminotoluene \longrightarrow m-Aminotoluene
d) Benzene \longrightarrow P-nitrophenol
e) Toluene \longrightarrow P - Hydroxybenzoic acid
- 5-) A-Show how you would use friedel - crafts acylation and wolf-Kishner reduction to prepare the following compound 10 marks
- a-) n-butyl benzene
b-) 1-phenyl propane
- B- propose a mechanism for the reaction of aniline , salicylic acid with acetylchloride (mention the name of the products) 8 marks

Tanta University
Faculty of Science
Department of Chemistry

Principles of Analytical Chemistry (CH2105)
(First Semester Test - Level two)



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(First Semester Test - Level three)
كيمياء/ جيولوجيا

December 31, 2013

Total Assessment Marks: 100

Time Allowed: 2 h

(I)- Write (✓) for the true and (×) for false statements, (Give the reasons):

(65 Marks)

- 1) Acid media must be avoided in determination of Cl^- by titration with $AgNO_3$ ()
- 2) ph.ph is dibasic acid while M.O is Monoacidic base ()
- 3) For determination of CNS^- by titration with Hg^{+2} ions white precipitate of mercury nitroprusside is formed at the end point. ()
- 4) Weak acid of $pK_a \leq 10^{-7}$ give sharp end point. ()
- 5) For saturated solution of $AgCl$ ($K_{sp}(AgCl) = 1.2 \times 10^{-10}$), white precipitate can be observed. ()
- 6) The useful pH range of ph.ph is 8-10. ()
- 7) For titration with EDTA, metal-EDTA complex must be less stable than metal-indicator complex. ()
- 8) Detection of end point in "Mohr method" is the formation of a soluble color compound. ()
- 9) 2.5 gm of Na_2CO_3 dissolved in 500 ml of water. Normality of this solution is 0.05 gm.eq/L (Atomic weight : Na = 23, C = 12, and O = 16 gm/mol). ()
- 10) Upon addition of S^{2-} as precipitant agent to mixture of (Ag^+ and Hg^{+2}), Ag_2S is precipitated first then HgS ($K_{sp}(Ag_2S) = 2 \times 10^{-29}$ & $K_{sp}(HgS) = 4 \times 10^{-53}$) ()
- 11) Cu metals can not dissolve in HCl but it can dissolve in HNO_3 ($E^0_{Cu/Cu^{2+}} = +0.34$ V & $E^0_{NO_3^-/NO} = +0.96$ V vs. NHE and $E^0_{H_2/H^+} = 0.0$) ()
- 12) H_3PO_4 can not be titrated stepwise with NaOH ($K_{a1} = 7.5 \times 10^{-3}$, $K_{a2} = 6.2 \times 10^{-8}$ and $K_{a3} = 1 \times 10^{-12}$) ()
- 13) Cu^{+2} can almost completely complexed with EDTA at pH 3.5 ()

باقي الأسئلة في الصفحة الخلفية

II- Answer the following questions

(35 Marks)

- 1) Discuss in details whether the following reaction takes place spontaneously or no:
Passing I_2 in FeI_2 solution (1M)

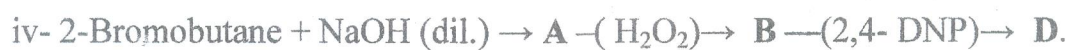
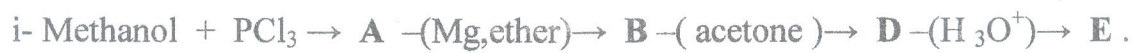
$$(E^{\circ}_{I_2/I^-} = + 0.536 \text{ V and } E^{\circ}_{Fe^{3+}/Fe^{2+}} = + 0.77 \text{ V vs. NHE}).$$

- 2) Is the titration of 0.1 N H_2CO_3 with 0.1 N $NaOH$ ($K_1 = 4.2 \times 10^{-7}$ and $K_2 = 4.8 \times 10^{-11}$) stepwise titration or not? - What are the pH values at the possible equivalence points and the suitable indicators that can be used to detect them?
- 3) Define "Masking" and "Demasking" agents. Explain their roles with examples.
- 4) What is mean by "Buffer capacity". Calculate buffer capacity of "Acetate buffer"; ($pK_a(CH_3COOH) = 4.76$).
- 5) Calculate the values of the pH of 50 ml solution of (0.02 M CH_3COOH + 0.02 M CH_3COONa).

Good Luck

Prof. Dr. Hanaa El-Desoky

6) Complete the following equations(name the last product) : (20 Marks)



ل/ عبدالرحمن

Tanta University
Faculty of Science
Geology Department

Final Exam in Optical Mineralogy (GE 2105)

For

The Second Level of Chemistry- Geology Students

Date: Jan.2014

Total marks: 100 marks

Time Allowed: 2 hrs.

Answer the following questions. Illustrate your answer.

1.Explain WHY? 30 marks

- Isotropic minerals have no interference figures
- Some minerals have only one optical property in plane polarized light.
- Calcite displays double refraction, whereas other minerals have no this property.
- Optic axis represents a focal point in indicatrix and its optical properties.
- Pleochroism is only favor seen in polarized light.
- Twinkling is very restricted property for very rare minerals.

2.Explain and illustrate how you can get e-ray and o-ray using calcite rhomb with polarized light? 10 marks


3.State whether the following statements are True or False and WHY? 30 marks

- BXa is obtained by sections cut normal to the C-axis of uniaxial minerals.
- The prismatic sections of tetragonal minerals give the lowest optical properties.
- Isogyres are formed due to extinction position.
- Biaxial minerals with the slow elongation give negative optic sign.
- Anomalous interference colors display in the most common minerals.
- Twinning is characteristic optical feature of quartz and biotite.

4. Sketch two types of uniaxial and biaxial interference figures showing their relations to indicatrix. 30 marks

EXAMINER: PROF.DR.MOHAMEDTH.S.HEIKAL

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	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY			
	CHEMISTRY-GEOLOGY			
COURSE TITLE:	Micropaleontology (1)		COURSE CODE: GE (2109)	
DATE: 21/1/2014	JANUARY, 2014	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Write short notes on the following questions. Illustrate your answers with clear drawings:

- 1-Perforations on the foraminiferal test. (20 Marks)
- 2-Dimorphism in Foraminifera. (20 Marks)
- 3- Position of apertures in Foraminifera (FIVE ONLY) (20 Marks)
- 4- Mixed arrangements. (20 Marks)
- 5- Give Examples: (20 Marks)
 - A-Biumbonate Test.
 - B-Chevron-shaped arrangement.
 - C-Keeled periphery.
 - D-Spinose ornamentation.
 - E-Looped-shaped aperture in Foraminifera.

BEST WISHES

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Tanta University, Faculty of Science, Chemistry Department	Principles of analytical chemistry	
	Course code: CH2105	
Exam for Level Two كيمياء - جيولوجيا	Time allowed: 2 Hours Total Assessment Marks : 100	Date: 31/12/2013

Answer the following questions :

Each question (20 marks)

[1] Write short notes with examples on:

- (a) Equivalence weight calculations for acids, bases, and salts in neutralization reactions.
- (b) Metal ion indicators.

[2] Draw the titration curves for:

- (a) Hydrochloric acid (HCl) against standard solution of (NaOH) and show the equivalence point and suitable indicator (s).
- (b) Phosphoric acid (H_3PO_4) against standard solution of (NaOH) and show the suitable indicator (s).

[3] Calculate pH values for a solution resulted from the addition of (V) ml of 0.1 N NaOH to 100 ml of 0.1 N CH_3COOH ($K_a = 1.85 \times 10^{-5}$):

- (a) $V = 0$ ml. (b) $V = 50$ ml. (c) $V = 100$ ml (d) $V = 101$ ml

[4] (a) Define each of the following with examples:


- (i) oxidation- reduction reactions. (ii) buffer solution.
- (b) Compare between Mohr, Volhard and Fajan methods of titrations.

[5] Write short notes on only three types of EDTA titrations.

(GOOD LUCK)

Prof. Dr. / Elsayed Kandyel

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	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY		
	EXAMINATION for level 2, Semester1 Chemistry-Geology Students		
	COURSE TITLE:	Crystallography	COURSE CODE: GE2101
DATE:	DEC., 2013	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Part I

Answer the following questions illustrating with drawing:

- 1- **Define the following terms:** (15 marks)
 - a- Crystal face
 - b- Crystallographic axes
 - c- Axis of symmetry

- 2- The basic classification of crystallographic systems (15 marks)

- 3- The stereographic projections of the following (20 marks)
 - a- Rhomiododecahedron
 - b- Tetragonal bipyramid
 - c- Orthohomoc side pinacoid
 - d- Front and side domes

Part II

- 1- Define the elements of symmetry and holo symmetrical class for trigonal, monoclinic and triclinic systems (15 marks)

- 2- Define and draw the stereographic projections for some forms in monoclinic system (e.g. clino-dome, hemi-orthodome, hemi-bipyramid) (15 marks)

- 3- Draw the stereographic projections of the following (15 marks)
 - a- Rhombohedron
 - b- Hexagonal bipyramid (first and second order)
 - c- Dihexagonal prism
 - d- Hexagonal basal pinacoid

- 4- Give some examples of minerals crystallized in hexagonal, trigonal, monoclinic and triclinic systems (5 marks)

Good luck