	Tanta UNIVERSITY Faculty of Science Department of CHEMISTRY		
	Examination of second level (General Chemistry students)		
	Course title:	Chemical Thermodynamics	Course Code: CH2141
Date	25 Dec. 2017	Total Assessment Marks: 100	Time allowed: 2 hours

**Answer the following questions** (20 marks) for each question)


- 1- Write only the mathematical equations for the following (define each term):
- The First law of thermodynamics for different processes.
  - The relation between heat content ( $\Delta H$ ) and the temperature.
  - Reversible work for isothermal expansion of a gas at constant pressure and for ideal gas.
  - The relation between  $T$ ,  $V$  and  $P$  for adiabatic processes.
  - The relation between  $\Delta S$  and  $\Delta G$ .
- 2- (i) define the spontaneous and the non-spontaneous process and indicate whether the following Processes is spontaneous or non-spontaneous.?
- The transformation of heat from hot body to the surrounding.
  - The transformation of liquid water to ice.
  - The removing of the rusting of an iron pipe exposed to atmosphere.
  - The combustion of gasoline.
  - Sugar dissolving in water.
- (ii) A system suffers an increase in internal energy of 80 Joule and at the same time has 50 Joule of work done on it. What is the heat change of the system
- 3- (i) 2 moles of an ideal gas of 20 liters in vessel at  $27^\circ\text{C}$  is compressed isothermally and reversibly to 10 Liters. Determine:  $\Delta E$ ,  $W$ ,  $Q$ ,  $\Delta S$  and  $\Delta G$  for this process.  $R = 2 \text{ cal K}^{-1} \text{ mol}^{-1}$
- (ii) Explain briefly, why?
- $\Delta S = 0$  for adiabatic processes.
  - $\mu_{J,T} = 0$  for ideal gases
  - The heat engine cannot convert heat to work isothermally
- 4- (i) A quantity of air at  $25^\circ\text{C}$  is expanded adiabatically and reversibly from pressure of 200 atm. to 20 atm. Assuming ideal behavior and  $c_v = 5 \text{ cal/mole degree}$  for air. Calculate the final temperature and the work done.  $R = 2 \text{ cal K}^{-1} \text{ mol}^{-1}$
- (ii) Choose the correct answer:
- In isothermal processes:
    - $dV = 0$
    - $dQ = 0$
    - $dW = 0$
    - $dE = 0$
  - For ideal gases:
    - $c_p = c_v$
    - $c_p < c_v$
    - $c_p + c_v = R$
    - $c_p - c_v = R$
  - The enthalpy ( $H$ ) is equal to:
    - $E + PT$
    - $G + PV$
    - $E + PV$
    - $S + PV$
- 5- (i) Define the following:
- The Joule -Thomson effect
  - The intensive and extensive properties of the thermodynamic systems.
- (ii) An engine operates between two thermal reservoirs at  $100^\circ\text{C}$  and  $0^\circ\text{C}$ . If 1000J of heat absorbed from the warm reservoir. Determine the change in the internal energy and the efficiency of this engine.

Good Luck

Examiner: Prof. Dr. : H. El-Dally and Prof. Dr. M. H. Shaaban



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	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY			
	EXAMINATION FOR SECOND LEVEL STUDENTS OF (GEOLOGY) - (GEOPHYSICS) - (GEOLOGY-CHEMISTRY)			
	COURSE TITLE:	MICROPALAEONTOLOGY (1)		COURSE CODE: GE 2109
DATE:	JANUAR, 2016	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

1) Write short notes on Five of the following questions. Illustrate your answers with clear drawings and give examples:

- A. Mixed chambers arrangement of test. (Five only) (10 Marks)
- B. Shape of the apertures in Foraminifera (Five only) (10 Marks)
- C. Mode of coiling in foraminifera (10 Marks)
- D. Sutures in Foraminifera. (10 Marks)
- E. Dimorphism in Foraminifera. (10 Marks)
- F. Application of Foraminifera (10 Marks)

2) Give Examples: (15 Marks)

- A. Biumbonate test.
- B. Surface ornamentation.
- C. Lobulate periphery.

3) Explain in details the factors controlling the distribution of foraminifera. (20 Marks)

4) Choose the correct answer of the following questions: (15 Marks)

1. Microfossils are generally excellent indicators of  
a) Tectonics      b) Earthquake      c) paleoecology      d) Paleogeography
2. Foraminifera is  
a) Unicellular animal    b) Unicellular plant    c) Multicellular animal    d) Multicellular plant
3. Agglutinated foraminiferal test is formed of  
a) Calcareous wall    b) Siliceous wall    c) Chitineous Walls    d) coarse/fine cemented particles
4. Porcelaneous foraminiferal test is:  
a) Perforate      b) semiperforate      c) imperforate      d) non-perforate
5. Unilocular foraminiferal test is  
a) septate      b) non septate      c) simply septate      d) limbate

*Best wishes*

Examiners	Prof. Mahmoud Faris Mohamed	Prof. Abdelfattah Ali Zalat
	Prof. Akmal Marzouk	



Chemistry Department  
Faculty of Science  
Tanta University

**Final Examination**  
**for 2<sup>nd</sup> grade students**  
**(Double Major Students)**  
December 2017, Fall semester

Course title:  
Organic Chemistry 1  
Course Code: CH2143  
Exam time: 2 hours  
Assessment Mark: 100 M

Answer ALL the following questions.

- 1- Convert the following (use chemical equations to describe your answer) **(25 Marks, 5 marks each)**
- From Benzene to Picric acid
  - From Phenol to 2,4,6-trinitrotoluene
  - From Toluene to n-propylbenzene
  - From Aniline to meta-bromoaniline
  - From Benzoic acid to para-methyl acetophenone
- 2- Write down about (use chemical equations to describe your answer) **(25 Marks, 5 marks each)**
- Kolbe-schmidt reaction
  - Replacement of sulphonic group of benzenesulphonic acid by other groups (give three examples)
  - Acylation mechanism of nitrobenzene
  - Preparation of Diphenyl thiourea from aniline
  - Mechanism of *para*-hydroxyazobenzene formation
- 3- Explain briefly the following: **(25 Marks)**
- Differentiation between 1°, 2° and 3° aromatic amines **(5 Marks)**
  - The aromaticity of:- **(15 Marks, 3 marks each)**
    - Furan
    - Cyclopentadiene anion
    - Cyclopropyl cation
    - Benzene
    - Anthracene
  - The use of phenylmagnesium bromide to prepare aromatic alcohols **(5 Marks)**  
(give three different examples)
- 4- Discuss the following: **(25 Marks)**
- The mechanism of chlorination of phenol, showing why the hydroxyl group is *ortho*- and *para*- directing group. **(5 Marks)**
  - The synthetic route of the following: **(20 Marks, 5 marks each)**  
(start from Benzene or Toluene)
    - Halazone
    - Acetanilide
    - ortho*-nitroaniline
    - meta*-chlorobenzenoic acid


انتهت الأسئلة  
**Good Luck**



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Examiners: Prof. Dr. Mohamed Berber and Prof. Dr. Abdel basset Morsi

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	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY			
	EXAMINATION FOR SECOND YEAR STUDENTS OF GEOPHYSICS			
COURSE TITLE	OPTICAL MINERALOGY		COURSE CODE: GE 2105	
DATE:	JANURY 2018	TERM: FIRST	TOTAL ASSESSMENT MARKS :100	TIME ALLOWED:2 HOURS

Answer the following questions, illustrating your answers with diagrams if it possible:

1-Write short notes on the following:

- a -Two methods of light polarization------(10 marks)
- b- Mechanism of interference figure formation------(10 marks)
- c- Anisotropic minerals------(10 marks)
- d- Interference colours and their orders in anisotropic mnerals------(10 marks)

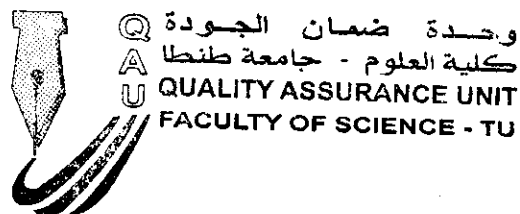
2-Discriminate between the following:

- a- Interference figures of uniaxial and biaxial minerals----- (10 marks)
- b- Twinkling and pleochroism----- (8 marks)
- c- Retardation and birefringnce------(6 marks)
- e- Extinction and twinning in anisotropic minerals------(10 marks)

Best wishes

**Examiner:**

Prof. Gaafar A El Bahariya





TANTA UNIVERSITY  
FACULTY OF SCIENC  
CHEMISTRY DEPARTMENT



FINAL EXAM FOR 2<sup>nd</sup> LEVEL STUDENTS (ALL SECTIONS)

COURSE TITLE	CHEMISTRY OF THE MAIN GROUP ELEMENTS	TIME ALLOWED 2 H	
CODE	CH2107		
DATE: JAN 3, 2017	TERM: FIRST	TOTAL ASSESSMENT MARKS	100

[I]. Give reasons for the following. (20 Marks)

- 1- Water has abnormal low volatility and the stability of hydrides decreases down group VI
- 2- Silanes are strong reducing agents, but alkanes are chemically unreactive.
- 3- Li and group II metals form nitrides on heating in air
- 4-  $\text{PCl}_5$  is known but  $\text{PH}_5$  is not.

[II]. Draw and explain the structure of the following: (20 Marks)

- 1- Phosphorus trioxide and pentaoxide
- 2- Orthoborates and metaborates
- 3- Beryllium halides and hydrides
- 4- Diborane
- 5- Silicones

[III]. Rank "FOUR ONLY" of the following series from high to low according to the given criteria and explain reasons: (20 Marks)

- 1-  $\text{NaCl}$ ,  $\text{MgCl}_2$ ,  $\text{AlCl}_3$  (Polarization and polarizability)
- 2-  $\text{NH}_3$ ,  $\text{PH}_3$ ,  $\text{AsH}_3$  (Donor properties and stability)
- 3-  $\text{HF}$ ,  $\text{HCl}$ ,  $\text{HBr}$ ,  $\text{HI}$  (Acidity Strength)
- 4-  $\text{BF}_3$ ,  $\text{BCl}_3$ ,  $\text{BBr}_3$  (Lewis acid strength)
- 5-  $\text{Li}$ ,  $\text{K}$ ,  $\text{Cs}$  (Reaction with water)


[IV]. Compare between the following: (20 Marks)

- 1- Trimethylamine and trisilyamine in structure and donor properties.
- 2- Group I and II elements in softness.
- 3- Diamond and Graphite.
- 4-  $\text{SO}_3$ ,  $\text{SO}_2$  and  $\text{SeO}_2$

[V]. Choose the correct answer "FIFTEEN ONLY" with REASON: (20 Marks)

- 1- In which of the following compounds, nitrogen exhibits lowest oxidation state?  
a-  $\text{HNO}_3$       b-  $\text{N}_2\text{H}_4$       c-  $\text{N}_2$       d-  $\text{NH}_2\text{OH}$       e-  $\text{NH}_3$
- 2- Which of the following contains P - O - P bond?  
a- Tripolyphosphoric acid      c- Hypophosphorous acid  
b- Pyrophosphoric acid      d- a and b
- 3- Which of the following compound is ionic?  
a-  $\text{PCl}_5$       b-  $\text{CCl}_4$       c-  $\text{PbF}_4$       d-  $\text{PbBr}_4$



	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY		
	EXAMINATION FOR SOPHOMORES (SECOND YEAR) STUDENTS		
1969	COURSE TITLE:	PRINCIPLES OF STRATIGRAPHY	COURSE CODE: GE2107
DATE:	16 JAN., 2018	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100 TIME ALLOWED: 2 HOURS

Answer the following questions.

I- Complete the following sentences:

(20 marks)

- 1- Stratigraphy is .....
- 2- Lithostratigraphy is .....
- 3- The periods of Cenozoic era are ....., .....
- 4- Non-conformable surface separates between.....and .....
- 5- The present is the key .....

II- Discuss in details with drawing the conformable boundaries.

(20 marks)

III- Explain the following principles with drawing:

(30 marks)

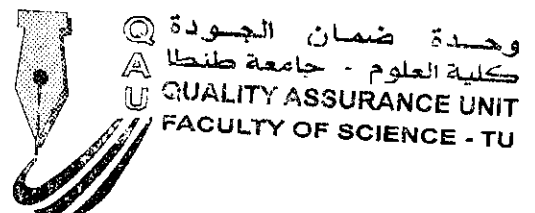
- a- Principle original horizontality.
- b- The law of superposition.
- c- Principle of Cross-Cutting Relationships.
- d- Walther's Law of Facies Succession.


IV- Write notes about the followings with drawing:

(30 marks)

- a- Strata and stratification.
- b- Outcrop stratigraphic procedures.

EXAMINERS	PROF. H.M. KHALIL DR. M.S. FATHY	WITH BEST REGARDS
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	<b>TANTA UNIVERSITY</b> <b>FACULTY OF SCIENCE</b> <b>DEPARTMENT OF CHEMISTRY</b>			
	<b>Final Examination of for second year students (Double major)</b>			
<b>COURSE TITLE</b>	<b>Organic Chemistry 2</b>		<b>COURSE CODE: CH2111</b>	
<b>DATE:</b>	<b>JAN. 2018</b>	<b>TERM: FIRST</b>	<b>TOTAL ASSESSMENT MARKS: 100</b>	<b>TIME ALLOWED: 2 HOURS</b>

**Answer the following questions: (Each question 25 marks)**

**1] Correct by equations each of the following:**

- i) Ozonolysis followed by hydrolysis of isobutene gives acetaldehyde and formaldehyde.
- ii) Alkaline hydrolysis of 1,1-dichlorobutane and /or 2,2- dichlorobutane forms the same product.
- iii) Treatment of a mixture of benzaldehyde and formaldehyde with NaOH gives sodium benzoate and methyl alcohol.
- iv) Acetic anhydride formation is the reaction of silver acetate with ethylchloride.
- v) Secondary alcohol is formed from the reaction of Grignard reagent with formaldehyde.

**2] A) Carry out the following conversions:**

- i) Acetylene into 5-methyl-2-hexyne.
- ii) Acetone into Acetic acid.
- iii) Ethylene into tartaric acid.

**B) Two hydrocarbons of the M.F.  $C_6H_{12}$  are treated separately with acidify  $KMnO_4$ , in one case, the products are butanone and acetic acid; in the other case, the products are 3-methylbutanoic acid, carbon dioxide and water. Write their structures by using equations.**

**3] A) Explain by equations, what is the action of:**

- a- Aqueous KOH      b- Ammonia

On each of the following compounds

- i)  $\beta$ - and  $\gamma$  -Chlorobutyric acid
- ii) Acetaldehyde
- iii) Ethylchloride
- iv) Ethylacetate