



Tanta University
Faculty of Science
Department of Chemistry

Final Examination for Second and Third Level Students of Chemistry/ Geology,
Zoology, Microbiology, Botany, Entomology. Biochemistry)

Chemical Kinetics Chemistry

Course code: CH 2240

June 13th, 2015 Term: Second Total Assessment Marks: 100 Time Allowed: 2h

Answer all the following questions : (20 marks for each)

- 1- a) Discuss the factors affecting the reaction rate?
- b) An elementary reaction $2A + C \rightarrow D$, is second order in A and first order in C and the rate of this reaction is $2.5 \times 10^{-1} \text{ M/S}$.when the concentration of A, C and D are all 1.0 M. What is the rate constant of this reaction?
- 2- a) Define the rate equation of chemical reaction and discuss how can you determine it ?
- b) The following data were obtained in the decomposition of N_2O_5 in CCl_4 at 40 °C

t (sec)	600	1200	1800	2400	3000	ω
$\text{O}_2(\text{ml})$	6.30	11.40	15.53	18.90	21.70	34.75

Find out the order of this reaction and its half life time?

- 3- a) Enumerate the methods for determination the order of chemical reaction and discuss the differential method?
- b) The half-life for radioactive disintegration of radium is 1590 Yr . calculate the decay constant .In how many years will three-quarter of the radium have undergone decay? (The decay is first order)

(انظر خلفه)

4- a) Deduce the integrated rate equation of the opposing first-order reaction



b) The half-life of thermal denaturation of hemoglobin first order process has been to be 3460 Sec at 60 °C and at 65 °C. Calculate the activation energy (ΔE).



5- a) Write short notes about characteristics and classifications of catalysts and discuss the mechanism of chemical catalysis according to Arrhenius concept (Equilibrium treatment).

b) The reaction mechanism, $A + B \xrightleftharpoons[k_{-1}]{k_1} C \xrightarrow{k_2} P$ if $k_1 \gg k_{-1}$. Find out the rate law and the order of this reaction.

GOOD LUCK

Prof. Dr M. Y. EL SHEKH

Prof. Dr Hosny EL-Daly

		Tanta UNIVERSITY, Faculty of Science, Department of Botany			
EXAMINATION for freshmen (Second level) Chemistry/ Microbiology Students					
JRSETITLE:		Mycology		COURSE CODE:MB2220	
DATE: 6/6/2015	JUNE, 2015	TERM: SECOND	TOTAL ASSESSMENT MARKS: 150	TIME ALLOWED: 2HOURS	

Answer the following questions:

First questions:

(45 Marks)

- 1-Explain with draw life cycle of *Saprolegnia* .
- 2-Illustrate the classification of Mastigomycotina .
- 3-Charaters of order blastocladales and Euallomyces.

Second questions:

(30 Marks)

- 1-What is the different types of ascocarps.
- 2- Mention the methods of sexual reproduction in fungi.
- 3- Write an account on sexual life cycle in *Rhizopus stolonifer*.
- 4- Classes of Ascomycotina-----,-----,-----and-----.
- 5- Identify Proliferation and diplanetism in *Saprolegnia*

Third questions :

(50 Marks)

- a- Illustrate with drawings the life cycle of *Saccharomyces ludwigii* .
- b-What are the major fruiting bodies of Ascomycotina with drawings .
- c- Discuss the fungal cycle progress in Rye by *Claviceps purpurea* .
- d-Compare between Epigean operculate discomycetes and Hypogen discomycetes.

Fourth question:

(25 Marks)


Complete the following sentences :

- 1-Asexual reproduction of *Taphrina* is by , and
- 2-Ergot disease caused by *Claviceps purpurea* form a on plant .
- 3- Basidiomycotina characterized by typicallyandbasidium.
- 4- Uredinales characterized by formingSporidia but in Ustilaginales form Sporidia.
- 5-*Puccinia graminis* form andin wheat plant butandin *Berberia vulgaris*

Dr. Saida amer

Dr.Eman Abd El-Zaher

C

 1050	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF BOTANY				
	EXAMINATION FOR FRESHMEN (SECOND LEVEL) CHEMISTRY/MICROBIOLOGY				
	COURSE TITLE:	Photosynthesis		COURSE CODE:BO2242	
DATE:	2015- 2016	JUNE	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED:2 HOURS	

Answer the following questions:

(30 Marks)

1. Complete the following:

- a) The role of phycobilins in photosynthesis is:.....
- b) PSI in photosynthetic electron transport is responsible for.....
- c) J. Priestly stated that.....
- d) The differences between chloroplast and chromatophore are.....
- e) The differences between photorespiration and normal respiration are.....
- f) The conditions for cyclic photophosphorylation are.....

2. Write on the following:-

(30 Marks)

- a) Crassulacean acid metabolism.
- b) Energy transfer.
- c) Reactions of photorespiration.

3. Give accounts of the followings:


(40 Marks)

- a) Emerson effect.
- b) Structure and function of carotenoids.
- c) C4- Plants.
- d) Regeneration phase of Calvin cycle.

Prof. Mohamed Elanwar

GOOD LUCK

1069

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	EXAMINATION FOR FRESHMEN (SECOND YEAR) STUDENTS OF CHEMISTRY/MICROBIOLOGY, CHEMISTRY/BOTANY			
	COURSE TITLE:	KINETIC THEORY OF GASES		COURSE CODE: CH2242
DATE:	10 JUNE, 2015	TERM: SECOND	TOTAL ASSESSMENT MARKS: 50	TIME ALLOWED: 2 HOURS

Answer all the following questions:-

(Total Marks 50)

[I]. Choose the correct answer from each of the following:-

(20 Marks)

- The vander Waals equation of state for a real gas is given by: $(P + n^2a/V^2)(V-nb) = nRT$. Identify the incorrect statement concerning this equation:
 - The constant **b** is related to the physical dimensions of the molecules.
 - The constant **a** is related to the intermolecular attractions between the molecules.
 - Deviations of gases from their ideal behavior are predicted by this equation.
 - Deviations of gases should become significant for gases at low pressures and/or high temperatures.
- What does the Kinetic Theory of Gases describe?
 - Small numbers of small particles in constant random motion.
 - Large numbers of small particles in constant random motion.
 - Large numbers of small particles in an accelerating random motion.
 - Large numbers of large particles in constant random motion.
- What forces are assumed to exist between particles in the ideal gas?
 - Attractive
 - Repulsive
 - Both attractive and repulsive
 - No force
- In an elastic collision, there is.....
 - a net gain of potential energy
 - a net gain of kinetic energy
 - a net loss of potential energy
 - no net loss of kinetic energy
- Consider the following statements concerning ideal gases:
 - Boyle's Law establishes the inverse proportionality between volume and pressure of a fixed amount of ideal gas at fixed temperature.
 - Charles' Law establishes the direct proportionality between temperature and pressure of a fixed amount of ideal gas at fixed volume.
 - Dalton's Law establishes the additivity of pressures of a mixture of ideal gases.
 - Avogadro's hypothesis establishes the direct proportionality between volume and moles of ideal gas present, holding pressure and temperature fixed.
 - all are true except I
 - all are true except II
 - all are true except III
 - all are true
- A sample of a gas having a volume of 1 L at 25°C and 1 atm pressure is subjected to an increase in pressure and an increase in temperature. The volume of the gas.....
 - decreases
 - increases
 - remains the same
 - either increases or decreases, depending on the sizes of the pressure and temperature changes
- In the separation of gaseous helium from hydrogen (H_2) by an effusion process, the hydrogen will effuse from the container at aboutthe rate of helium effusion.
 - the same rate
 - twice
 - half
 - 1.9 times
 - 1.4 times

Go to the next page

8. Identify the incorrect statement below:

- a) The average kinetic energy of gas molecules is directly proportional to the temperature of the sample.
- b) The average kinetic energy of molecules of different gases is equal at a given temperature.
- c) The average speed of gas molecules is directly proportional to the square root of the temperature.
- d) The average speed of molecules of different gases is equal at a given temperature.

9. Which of the following gases is not in the top three most abundant substances by mass in dry air?

- a) Ar b) He c) O₂ d) N₂

10. Identify the incorrect statement below:

- a) When the vapor pressure of a liquid equals the surrounding pressure, the liquid boils.
- b) The boiling point is the temperature at which the vapor pressure of the liquid equals the surrounding pressure.
- c) The normal boiling point is the temperature at which the vapor pressure of the liquid equals 1 atm.
- d) The vapor pressure of a liquid increases as the temperature of the liquid increases.
- e) Easily vaporized liquids are called volatile liquids, having low vapor pressures.

[II]. Explain each of the following:- (12 Marks)

- a) How does the air pressure in a balloon change when the balloon is squeezed? Explain why this change occurs using gas laws?
- b) The basic assumptions that the kinetic theory makes about gases.
- c) The relation between thermal conductivity coefficient, K and the heat capacity, C_v.

[III]. Write on each of the following: - (12 Marks)

- a) Factors affecting mean free path.
- b) Types of collisions between gas molecules.
- c) The derivation of barometric formula.
- d) Temperature dependence of viscosity in both liquids and gases.

[IV] Solve the following problems:- (6 Marks)

- a) Find the temperature at which the rms of a molecule of hydrogen gas equals 343 m/s. (R = 8.314 J/mole.k).
- b) A 2.79 L container of ammonia gas for which P = 0.776 atm and T = 18.7°C is connected to a 1.16 L container of HCl gas for which P = 0.932 atm and T = 18.7°C. What mass of solid ammonia chloride will be formed? What gas is left in the combined volume, and what is its pressure? (R = 0.08206 L atm/mol.K).


(Note:- ${}_1\text{H}^1$, ${}_2\text{He}^4$, ${}_7\text{N}^{14}$, ${}_{17}\text{Cl}^{35.45}$, ${}_8\text{O}^{16}$, ${}_{18}\text{Ar}^{39.94}$)

Good Luck

Examiner

Dr. Marwa Nabeeh El-Nahass

مراجعه

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	EXAMINATION FOR FRESHMEN (SECOND YEAR) STUDENTS OF CHEMISTRY/MICROBIOLOGY, CHEMISTRY/BOTANY			
	COURSE TITLE:	KINETIC THEORY OF GASES		COURSE CODE: CH2242
DATE:	10 JUNE, 2015	TERM: SECOND	TOTAL ASSESSMENT MARKS: 50	TIME ALLOWED: 2 HOURS

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[I]. Choose the correct answer from each of the following:-

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(Note:- ${}_1\text{H}^1$, ${}_2\text{He}^4$, ${}_7\text{N}^{14}$, ${}_{17}\text{Cl}^{35.45}$, ${}_8\text{O}^{16}$, ${}_{18}\text{Ar}^{39.94}$)

Good Luck

Examiner

Dr. Marwa Nabeeh El-Nahass

	TANTA UNIVERSITY, FACULTY OF SCIENCE, BOTANY DEPARTMENT			
Final Examination for second level Students (Chem/ Micro)				
Course title:	PRICIPLES OF VIROLOGY		Course Code: MB2222	
DATE: 1, JUNE, 2015	TERM: SECONDS	TOTAL ASSESSMENT MARKS: 100	Time Allowed: 2 hours	

Answer the following questions:-

Q1: Discuss:

[30 marks]

Consequences of infection by temperate bacteriophage.

Q2: Give an account on:

[30 marks]

- a- structure of influenza virus.
- b- Types of viral proteins.

Q3: Complete the following:

[20 marks]

- a- Neuraminidase plays a role in
- b- The virus genome consists of eitheror.....
- c- Viruses can pass through the bacterial filter and therefore they called agents.


Q4: Explain the black assay method for bacterial virus quantification.

[20 marks]

Best wishes

Examiner: Prof. Dr. Wagih El-Shouny

15/01/2016

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF BOTANY			
	EXAMINATION FOR FRESHMEN (SECOND LEVEL) CHEMISTRY/MICROBIOLOGY			
	COURSE TITLE:	Photosynthesis		COURSE CODE:BO2242
DATE:	2015- 2016	JUNE	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED:2 HOURS

Answer the following questions:

(30 Marks)

1. Complete the following:

- a) The role of phycobilins in photosynthesis is:.....
- b) PSI in photosynthetic electron transport is responsible for.....
- c) J. Priestly stated that.....
- d) The differences between chloroplast and chromatophore are.....
- e) The differences between photorespiration and normal respiration are.....
- f) The conditions for cyclic photophosphorylation are.....

2. Write on the following:-

(30 Marks)

- a) Crassulacean acid metabolism.
- b) Energy transfer.
- c) Reactions of photorespiration.

3. Give accounts of the followings:


(40 Marks)

- a) Emerson effect.
- b) Structure and function of carotenoids.
- c) C4- Plants.
- d) Regeneration phase of Calvin cycle.

Prof. Mohamed Elanwar

GOOD LUCK

السيد محمد عبد الحليم

	Tanta University Faculty of Science Department of Botany EXAMINATION for level 2 Students of Chemistry /Microbiology			
Course title:	Plant Ecology			Course Code:BO2240
Date:25/5	2015	Term: second	Total assessment Marks: 50	Time ALLOWED:2 ours

- 1- (10 درجات)
أ- ضع علامة (√) و (X) أمام العبارات التالية مع تصحيح الخطأ إن وجد: (5 درجات)
- 1- يعتبر سريان الطاقة ودوران العناصر من الدراسات البيئة المتطورة ()
 - 2- تستمد الكائنات الحية احتياجاتها من العناصر الغذائية من المكون الإحيائي ()
 - 3- هرم الطاقة يعبر عن كمية الطاقة منسوبة لوحد الكتلة في وحدة الزمن ()
 - 4- تماثل الموارد الطبيعية في الموطن البيئي ينتج ما يسمى التكتل المنتظم العشوائي ()
 - 5- يدل وجود أعداد كبيرة من الأفراد حديثة العمر على أن الجماعة متزايدة ذات نمو بطيء ()

ب- عرف ما يأتي: (5 درجات)
Biosphere – Food webs – Humus – Ecological pyramids – Potential longevity

- 2- ما لفرق بين كل من الآتي:- (مع الرسم أن أمكن) (20 درجة)
- 1- r and k-selection population
 - 2- Stationary and Declining population
 - 3- Frequency and Density of population
 - 4- Gaseous and Sedimentary cycles (one for each)
 - 5- Single channel and Y-shaped flow model (with diagram only)

3- ناقش كلا من: (20 درجة)

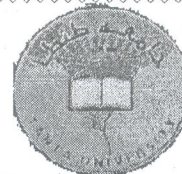
- 1- أهمية ظاهرة الهجرة
- 2- مفهوم السعة الحملية لموطن بيئي معين
- 3- التوزيع الموضعي للجماعة
- 4- طرق قياس الإنتاجية في النظام البيئي

انتهت الأسئلة

مع تمنياتي لكم بالتوفيق والنجاح أستاذ المادة: أ.د. محمد أحمد البحيري



أ. د. محمد ربيع



Tanta University - Faculty of Science - Chemistry Department
Final Exam of "Instrumental-1" – Course Code: CH2244
For 2nd Level Students [Ch-Botany, Ch-Geology, Ch-Microbiology],
Date: 30/5/2015 – Total assessment marks: 100 – Time Allowed: 2h

Answer the following questions:

Question (1)

[20 marks]

Discuss the following:

- Mode of vibrations and techniques used in Infrared measurements and the types of bands appear in the spectra.
- Photometry and Stoichiometry applications of electronic absorption spectroscopy.

Question (2)

[4 marks for each]

In brief, differentiate between the following:

- interference filter and an absorption filter.
- Phototube and Photomultiplier.
- Vibrational relaxation and Intersystem crossing.
- Molecular emission and atomic emission.
- Gratings and filters monochromators.

Question (3)

[4 marks for each]

Mark (✓) or (X) and give reasons for each:

- In a ultraviolet-visible spectrometer, the sample placed after the monochromator?
- Excitation source in flame photometer is "Gas discharge lamp".
- Internal conversion is radiative process from excited singlet to ground states.
- Unknown concentration of saturated hydrocarbons can be determined by UV spectrometers.
- Spectra of Nitrogen can be studied using Infrared spectrometer.

Question (4)

[20 marks]

- Illustrate with drawing "Jablonisky diagram" and define the different processes of deactivation the exited states.
- Explain with examples, the different electronic excitation states in organic and inorganic molecules.

Question (5)

[20 marks]

- Explain the Idea and draw the schematic diagram of flame photometer and metallic spectra.
- Derive Beer's – Lambert law and explain its deviations.

===== *Best Wishes and Good luck* =====

Examiner: Prof. Dr. Ahmed Rehab

**EXAMINATION FOR SOPHOMORES (SECOND LEVEL) STUDENTS OF
CHEMISTRY / BIOLOGY SECTIONS**

DATE: 27	MAY , 2015	TERM: SECOND	TOTAL ASSESSMENT MARKS: 50	COURSE CODE:CH 2246	TIME ALLOWED: 2 HOURS
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Answer The Following Questions :

- 1) Compare between each of the following: (10 Marks)
 - i- Stereoselective addition of cis- and trans-2,3-diphenyl-2-butene.
 - ii- Diastereomers and Enantiomers.
 - iii- Racemization via cation and anion formation

- 2) Describe the separation of 2-aminobutane using (R)-(-)- mandelic acid . (7 Marks)

- 3) Mark (✓) or (X) and correct the false sentences: (8 Marks)
 - i- Mutarotation is the conversion of glucose to fructose . ()
 - ii- Streching vibration of C=C of trans-stillbene is lower than that of cis-isomer. ()
 - iii-Trans-isomer of 2- pentene has lower λ_{max} and very lower ϵ than that of cis-isomer with UV- spectra . ()
 - iv- Fumaric acid readily forms with heating a cyclic anhydride while maleic acid does not give an anhydride under the same conditions. ()
 - v- Any molecule with a plane of symmetry or a center of symmetry must be achiral.()

- 4) Explain the synthesis of (±)-2-metyl-1-hexanol using malonic acid . (7 Marks)

- 5) The chemical shift of ethylenic proton δ_H was found experimentally to be 7.65 ppm for α - methyl cinnamic acid . What is the geometrical isomerism of the above acid ? (substituent constants for chemical shift are : $-\text{Ph}_{gem} = 1.35$, $-\text{COOH}_{cis} = 1.35$, $\text{COOH}_{trans} = 0.47$, $-\text{CH}_3_{cis} = -0.26$, $-\text{CH}_3_{trans} = -0.29$ ppm) . (6 Marks)

- 6)a- Draw and name the isomers of the following compounds (with comment):(9 Marks)
 - i- Aldotetrose . ii- 2,3-Dibromobutane . iii-Dimethylcyclohexane .
 b- Draw the following compounds : (3 Marks)
 - i- (R) - 3-Hexanol . ii- (2S,3S)-2,3-Dichloropentane .

Examinars:

Prof.Dr. Adel Selim

Dr. Mohamed Azam