	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY		
	FINAL EXAM FOR SPECIAL CHEMISTRY STUDENTS		
	COURSE TITLE: LASER CHEMISTRY		COURSE CODE: CH4113
DATE: 11 JANUARY 2018	TERM: FIRST	TOTAL ASSESSMENT MARKS: 50	TIME: 2 HOURS

Answer the following questions:

- 1- Lasers have many advantages over traditional sources of electromagnetic radiations. Use concise schemes and/or drawings illustrating laser application in each of the following (14 marks):
 - (a) Synthesis of vinyl chloride starting from 1,2-dichloroethane.
 - (b) Isotope separation
 - (c) Modification of surfaces
 - (d) Laser welding of detached eye retina
 - (e) Laser capture microdissection (LCM)
 - (f) Laser lithotripsy to fragment calculi
 - (g) Single photon counting technique used in lifetime measurement.

- 2- The tunneling phenomenon is an important quantum-mechanical phenomenon. In the light of this phenomenon, answer the following (6 marks):
 - (a) Give the mathematical expression of the transmission probability $T(E)$.
 - (b) Explain the non-linear Arrhenius plots of aziridine inversion.
 - (c) The splitting of vibrational spectral lines in ammonia as a source of masers.

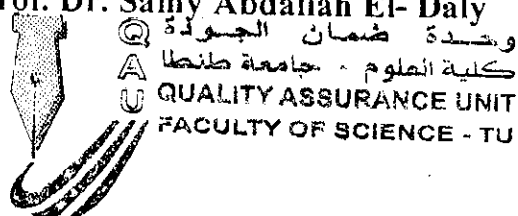
- 3- Draw and label each of the following (18 marks):
The modified Jablonskii diagram, the energy level diagrams in each of the following types of lasers: Excimer laser, semi-conductor solid state laser, He – Ne laser, CO₂ laser and proton transfer dye laser.

- 4- In thermal lensing technique (a) write equation of intensity change as a function of time, (b) draw the experimental setup of the apparatus, (c) draw the trace output and (e) draw a typical energy diagram for singlet oxygen sensitization showing the rate determining step in the sensitization process. (8 marks)


- 5- In no more than two lines, give the key reason(s) for each of the following: (4 marks):
 - i- Carbonyl compounds are common triplet sensitizers
 - ii- R6G-I is fluorescent in ethanol but non-fluorescent in CHCl₃.
 - iii- KI is usually added to Raman measurement samples.
 - iv- HClO₄ rather than HCl is usually used to adjust acidity in laser media

End of Exam

Examiners: Prof. Dr. El-Zeiny Mousa Ebeid and Prof. Dr. Samy Abdallah El- Daly



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	TANTA UNIVERSITY, FACULTY OF SCIENCE, DEPARTMENT OF CHEMISTRY		
	FINAL EXAMINATION FOR FOURTH-YEAR STUDENTS (DUAL MAJOR)		
	COURSE: SOILD STATE CHEMISTRY		CODE: CH 4143
25/12/2017	1 st TERM	TOTAL ASSESSMENT MARKS: 50	Time Allowed: 2 HOURS

Answer the following questions with short notes:

Question 1:

Compare between the following with suitable examples (2 Marks for each)

- (A) Ferromagnetic and Ferrimagnetic substances
- (B) Molecular and ionic solids
- (C) Schottky and Frankel defects
- (D) Anisotropic and isotropic solids

Question 2:

A) In cubic unit cell label the origin and axes then Draw (1 Marks for each)

- (I) Direction [110] (II) Plane (111) (III) Plane (120)
- (IV) Plane (00 $\bar{2}$) (V) Direction [010]

(B) A sample of ferrous oxide has actual formula $Fe_{0.93}O_{1.00}$. In this sample what fraction of metal ions are Fe^{2+} ions? What type of nonstoichiometric defect is present in this sample? (5 Marks)

Question 3:

(A) Explain the effect of heating on the following: (4 Marks for each)


- 1. Semiconductor and metallic conductor
- 2. Zinc oxide (ZnO)

(B) Calculate the number of lattice atoms and coordination number of each of the following:

(2 Marks for each)

- 1. Simple cubic 2. Face centered cubic 3. Body centered cubic

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	TANTA UNIVERSITY, FACULTY OF SCIENCE, DEPARTMENT OF CHEMISTRY		
	FINAL EXAMINATION FOR FOURTH-YEAR STUDENTS (DUAL MAJOR)		
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25/12/2017	1 st TERM	TOTAL ASSESSMENT MARKS: 50	Time Allowed: 2 HOURS

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TANTA UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF CHEMISTRY

EXAMINATION FOR LEVEL- 4 STUDENTS - SPECIAL CHEMISTRY SECTION

COURSE TITLE:

BIOCHEMISTRY 1

COURSE CODE: CH4107

DATE:

JAN. 2018

TERM : FIRST

TOTAL ASSESSMENT MARKS: 50

TIME ALLOWED: 2 HOURS

Answer the following questions:-

Q1:- (12 Marks)

a- Write the *Biochemical pathway* of the breakdown of *Glycogen* to *Glyceraldehyde-3-phosphate*. (6 Marks)

b- Amino acids form *Dopamine* and *Histamine*. (4 Marks)

c- Explain the formation of *Acetyl choline* from *Active acetate*. (2 Marks)

Q2:- (13 Marks)

a- Write the synthetic pathway of DPN^+ . (4 Marks)

b- Write the biochemical pathway and the overall reaction equation of the conversion of *α -Ketoglutaric acid* into *Succinyl- CoA*. (5 Marks)

c- Choose the correct answer and write the reaction equation:

The reaction between *Oxaloacetic acid* and *Glutamic acid* is catalyzed by: i- *Deaminase*. ii- *Aminotransferase* iii- *Transmethylase*.

iv- *Monoamineoxidase*. Write the reaction mechanism. (4 Marks)

Q3:- (13 Marks)

a- Explain the steps of *Glycogenesis* (5 Marks)

b- Explain by equations the action of the following enzymes *Trypsin*, *Chymotrypsin*, *Aminopeptidase* and the *Carboxypeptidase* on a polypeptide. (4 Marks)

c- Choose the correct answer and write the reaction equation:

Conversion of *Serine* into *pyruvic acid* is catalyzed by: i- *Decarboxylase*. ii- *Deaminase*. iii- *Carboxylase*. iv- *Dehydratase*. (4 Marks)

Q4:- Write the following biochemical pathways: (12 Marks)


a- *Conversion* of *Acetyl- CoA* into *Malonyl-CoA*. (3 Marks)

b- *Ascending* and *descending* reactions of sugar phosphates. (4 Marks)

c- Conversion of *Glutamate* into *α -Ketoglutarate* and *Amonia*. (2 Marks)

d- *Triacyl glycerol* into *Monoacyl glycerol* and *Fatty acids*. (3 Marks)

GOOD LUCK
Prof Dr. Ahmed Safan
Dr. Yehia Hafez

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY		
	EXAMINATION OF FOURTH LEVEL (SPECIAL CHEMISTRY STUDENTS)		
COURSE TITLE:	(The Chemistry of glasses and ceramics)	COURSE CODE:CH4115	
DATE:	23 DEC 2017	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS


Answer the following questions:

- 1- (i) Compare between each of the following (Chemical composition, properties, applications):
- (a) Earthenware and Stoneware silicate ceramics (3marks)
- (b) Soft-paste porcelains and Hardt-paste porcelains. (3marks)
- (ii) Discuss the Zachariasen and stanworth rules for an oxide, A_mO_n , to form a glass. (4marks)
- 2-(i) Explain the chemical structure of silica , Kaolin and Feldspar raw material of ceramics. Shows its application in ceramic industry (6marks)
- (ii) Define briefly the importance of the sintering in the ceramic processing, and discuss possible refinements (improvement) methods of the sintering process. (4marks)
- 3- (i) Explain briefly the five steps of Portland cement setting. (6marks)
- (ii) Discuss briefly the **phase** composition of Portland cements. (4marks)
- 4- (i) Draw the structure of Vitreous silica, Borate and Alkali Aluminium silicate Glasses (3marks)
- (ii) Compare between partially stabilized zirconia (PSZ) and fully stabilized zirconia (FSZ) (Chemical composition, phases, properties and applications). (4marks)
- (iii) Discuss the effect of addition of SiC (silicon carbide), vitreous silica and chromite on the properties of the Refractory materials. (3marks)
- 5- (i) Define the applications of the alumina ceramics and explain methods of the separation alumina from bauxite (Define by the chemical equations). (5marks)
- (ii) Mention the oxides which should be classified as: (a) Glass network formers (NWFs)
- (b) Glass network modifiers (NWMs) (c) Intermediates or conditional glass formers

Good Luck

Examiner: Prof.Dr: M.H.Shaaban

(2)

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	EXAMINATION FOR (SENIORS) STUDENTS OF SPECIAL BOTANY AND ZOOLOGY SECTIONS			
COURSE TITLE:	BIOCHEMISTRY 1		COURSE CODE: 4173 <i>ch</i>	
DATE: 15.1.18	JANUARY, 2017	FIRST TERM EXAM	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following questions:

I- A-Explain each of the following:-

(40 marks)

- i-pyruvate dehydrogenase catalyzes oxidative decarboxylation of pyruvate*
- ii-- Isomerases are a general class of enzymes that convert a molecule from one isomer to another..*
- iii-Flavin nucleotides involved in redox reactions of C-C Bonds.*
- iv-Transamination mechanism*
- v-Reaction sequence for the biosynthesis of pantothenic acid*

II- Give an account of the following by biochemical equations

(40 marks)

- i Glycogenesis is the process of glycogen synthesis, in which glucose molecules are added to chains of glycogen for storage.*
- ii-Some enzymes are relatively specific*
- iii-FMN and FAD synthesis*
- iv- Biosynthesis of NAD⁺ starts with nicotinic acid and PRP*
- v-Biotine acts as an enzyme-bound carrier of CO₂*

III- Choose the correct answer . Explain by equation

(20 marks)

i-TPP is synthesized by direct transfer of the pyrophosphate group from

- a-phosphoric acid*
- b-pyrophosphate*
- c- ATP*

ii-Trypsin and chymotrypsin exhibit :-

- a- absolute specificity*
- b- relative specificity*
- c- stereo specificity*

iii-The first step in the glycolytic pathway


- a- produces ATP*
- b-uses ADP as a substrate*
- c-produces glucose -6 -phosphate*

iv- Lipolysis is the breakdown of lipids and involves hydrolysis of triglycerides into

- a-Diacyl glycerol and free fatty acid*
- b- mono acylglycerol and free fatty acids*
- c- glycerol and free fatty acids*

PROF.DR. AHMED SAAFAN

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	TANTA UNIVERSITY FACULTY OF SCIENCE CHEMISTRY DEPARTMENT		
	FINAL EXAM FOR SENIOR STUDENTS (CHEMISTRY SECTION)		
	COURSE TITLE:	INDUSTRIAL CHEMISTRY (CH4123)	TIME ALLOWED: 2 HOURS
DATE: JANUARY 06, 2018	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	

Answer the Following Questions:-

1-(a)- Define each of the following terms:- (6 Marks)

(Crude oil – Penicillin – LPG - Drying oils - Natural gas- Octane number)

(b)- Briefly discuss:- (12 Marks)

- i) Properties of detergents.
- ii) The non-hydrocarbon compounds in petroleum.
- iii) Aromatic products and Chemical reactions carried out on benzene.

2-(a) Use the chemical equations to describe the following:- (20 Marks)

- i) Manufacture of alpha-eucaine.
- ii) Synthesis of Tramadol.
- iii) Fries rearrangement of phenolic esters.
- iv) Synthesis of Piperocaine.

(b)- Compare between:- (12 Marks)

- i) Mordant and Reactive dyes with examples.
- ii) Gasoline and Diesel Oil.
- iii) Acid and Basic dyes with examples.

3-(a) Write the Manufacture equations for: (4Marks)

- i) POX for H_2 production
- ii) H_2O_2

(b) Give reasons for the following statements: (20Marks)

- i) White phosphorous used in military.
- ii) Addition of V_2O_5 catalyst in manufacture of H_2SO_4 .
- iii) Graphite is a low density.
- iv) Using carbon in manufacture of white phosphorus.

Please turn over



Tanat university
Faculty of Science
Chemistry Department

First Term

Jun 2018

Time All . 2 hrs
Course No. : CH 4125

Final Examination of Organic chemistry for 4th year students

Selected topics in Organic chemistry

Total Assessment
marks 100

In all reactions name the products

Section (A)

1-) Give the products of reaction of 2-thiohydantoin with each of the followings : (15 mark)

- a-) HCHO and Piperazine (different moles)
- b-) 1,2 - Dibromoethane
- c-) - Acetobromoglucose (ABG) followed by oxidation

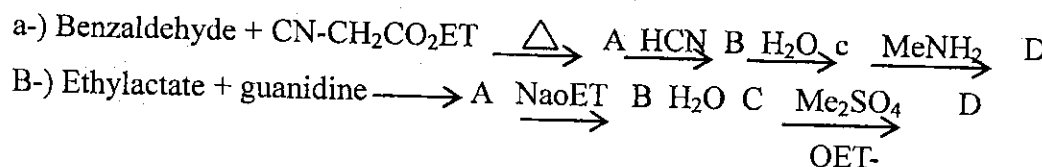
2-) Discuss the reaction of Lawesson's Reagent (LR) with each of the followings in different moles (10 mark)

- a-) Anthranilic acid
- b-) Methyl Vinyl Ketone


3-) Show the products of the reaction of 5-phenyl-1,3,4-thiadiazole-2-thione with (15 mark)

- a-) LR
- b-) 9-Diazafluorene
- c-) Methylamine

4-) Complete the following reaction (20 mark)



Prof. Dr. Ahmed El-Barbary

	TANTA UNIVERSITY FACULTY OF SCIENCE CHEMISTRY DEPARTMENT		
	FINAL EXAM FOR SENIOR STUDENTS (CHEMISTRY AND ZOOLOGY SECTIONS)		
	COURSE TITLE:	WATER TREATMENT (CH4127)	TIME ALLOWED:
DATE: JANUARY 01, 2018	TERM: FIRST	TOTAL ASSESSMENT MARKS: 50	2 HOURS

Question 1: Discuss briefly:

(20 Marks)

- 1) Comparison between BOD and COD.
- 2) Sludge digesters and drying beds.
- 3) Trickling filter and rotating biological reactors (composition and theory of action).
- 4) Lime-soda and ion exchange processes for water softening.

Question 2: Give the reason(s) for the following statements:

(10 Marks)

- 1) pH influences the degree of ionization and toxicity of hydrogen sulfide in surface water.
- 2) Blackening of soils, wastewater and sludge in locations with standing water.
- 3) Aeration and the addition of lime during municipal water treatment.
- 4) The impurities in water are sometimes beneficial.
- 5) Some water disinfectants cannot be shipped but are generated on-site.

Question 3: Complete the following sentences:

(20 Marks)

- 1) Water alkalinity is usually expressed as unit.
- 2) Water with high content of suspended solids may harm aquatic life by
or
- 3) Grit in wastewater consists of materials such as which do not biodegrade well.
- 4) The water sampling device should be made from
- 5) The suitable container for water samples, containing trace organics, is
- 6) Nitrogen fixation is defined as and it can be done via
..... or
- 7) During the freezing of liquid water samples, you should provide sufficient air gaps in containers so as to
- 8) Phosphorus is a minor element in natural water because
- 9) The two important sources of H₂S in the environment are and
.....

Please turn over



جامعة طنطا
كلية العلوم
QUALITY ASSURANCE UNIT
FACULTY OF SCIENCE - TU

Examiners: Prof. Mohamed Salem

Dr. Wael A. Amer

TANTA UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF CHEMISTRY

EXAMINATION FOR LEVEL FOUR CHEMISTRY STUDENTS

1969	Course Title:	BIOINORGANIC CHEMISTRY	Course Code: CH4117	
DATE	27/12/2017	TERM: first	Total assessment marks: 100	Time Allowed: 2 HOUR

Answer all of the questions

I. Discuss each of the following: (20 marks)

- 1- Role of calcitonin in Calcium regulation.
- 2- Mechanisms by which heavy metals induce toxicity.
- 3- Absorption and transport of Iron.
- 4- Anticancer effects of cis-diamminedichloroplatinum (II) (Cisplatin).

II. Write short notes on each of the following: (15 marks)

- a. Heparin
- b. Hemochromatosis
- c. Hypokalemia
- d. Hyperthyroidism
- e. ADH hormone

III. Determine the biological function of each of the following elements: (15 marks)

- 1- Copper 2-Iodine 3-Calcium 4- Chlorine 5- Iron

IV. Complete the following (30 marks)

- 1-Na, K, Mg, Cl are the major components of the.....and.....
- 2-Calcium constitutes the skeletal..... for organisms,
- 3-Sodium is not known to be essential plants. Because sodium is not supplied by.....
- 4-Kin both the respiration in muscles tissue and the of protein synthesis,