	Tanta UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF BOTANY			
	EXAMINATION for Juniors (<u>Fourth Level</u>) students of <u>Chemistry/Botany</u>			
COURSE TITLE:	Nitrogen Metabolism		COURSE CODE: BO4118	
DATE: 23/12/2017	DECEMDER, 2017	FINAL EXAM OF THE <u>FIRST TERM</u>	MARKS: 100	TIME: 2 HOURS.

Define each of the following: (20 Marks, each point is 5)

- | | |
|------------------------------|------------------------------|
| 1. Protein bodies | 2. Calcicoles and Calcifuges |
| 3- Volatilization of ammonia | 4. Atmospheric deposition |

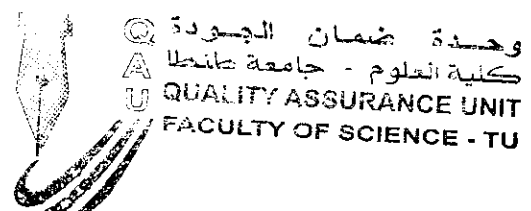
Complete the following: (20 Marks, each point is 5)


1. Salting out of proteins is -----
2. Toxicity of ammonium is due to -----
3. With nitrate nutrition, the plant can maintains its internal electroneutrality by-----
4. The charges on the amino acids are important because

Discuss each of the following: (60 Marks, each point is 12)

1. The assimilation pathway of ammonium.
2. The different methods of protein separation.
3. The protein structure and its classification on the basis of its:
 - a- Function
 - b-Location
 - c-structure shape
4. The advantages and disadvantages of nitrate nutrition.
5. The classification of amino acids and their biosynthesis by transamination reactions.

EXAMINER	PROF.DR./ WEDAD ABD EL-AZIZ KASIM
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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	1st 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

Tanta University Faculty of Science Chemistry Department	Final Exam Chemistry of Petroleum		
	Level Four	Course Code: CH 4145	
		Total Assessment Marks: 50	
Double Major	Time allowed : 2 Hours	Date: 30/12/2017	

Answer the following questions:

1) Illustrate the inorganic theory which discusses the genesis of petroleum.

(10Marks)

2) Write short notes on the following: (10 Marks)

i- Pour point.

ii- sulfur compounds in petroleum.

iii- Kerosene zone in petroleum.

iv- Naphthenes or Cycloparaffins.

v- Aniline point.

3) Define each of the following with examples: (20 Marks)

i- Catalytic Cracking.

ii- Alkylation.

iii- Classification of Crude Oils

iv- Petrochemical from H_2S .

4) Show with equations how the following compounds could be prepared from petroleum and show its uses. (10 Marks)

1- Carbon black.

2- Adipic acid.

3- Teflon.

4- Ethylene glycol.

5- Hydrazine hydrate.

6- Acrylic acid.

7- Methyl methacrylate.

8- Ammonium nitrate fertilizer


9- Phenolic Resins.

10- Nylon 6, 6.

..... **Good Luck**

Prof. Abd-elbaset shokr

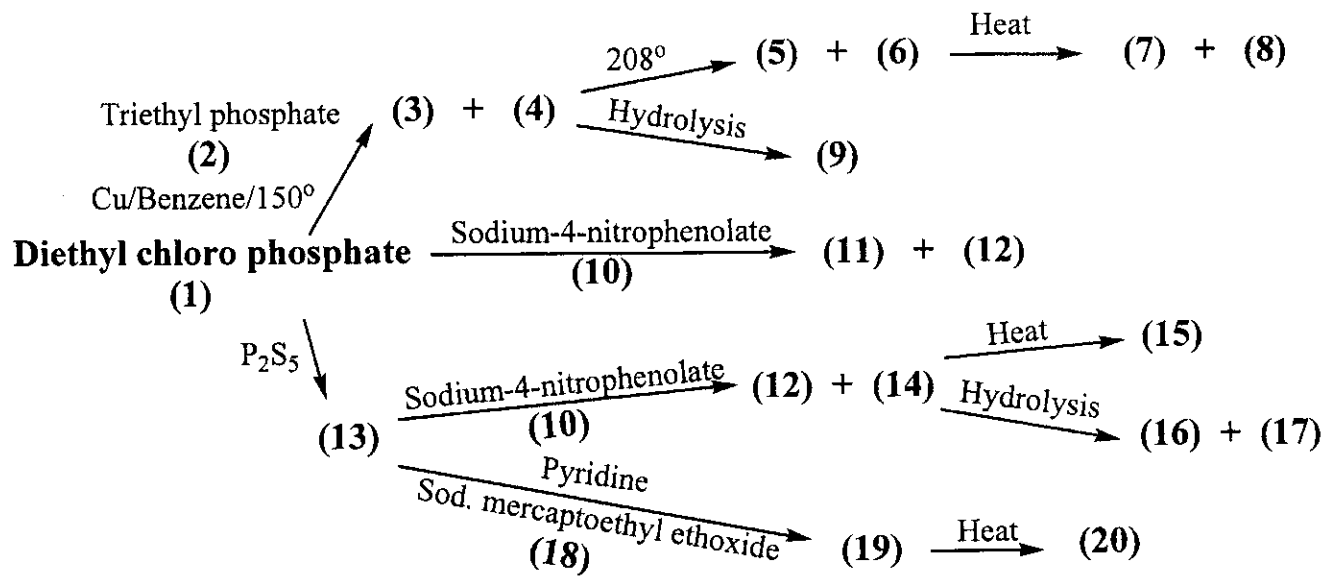
Assistant.Prof. Seham Abd-elatif

	Tanta University, Faculty of Science, Chemistry Department		
	Examination for Fourth Level (Credit Hours) Students		
Course Title	Chemistry of Pesticides	Course Code: CH4119	
Date:	3 January 2018	Total Assessment Marks: 50	Time Allowed: 2 hrs

I) Discuss each of the followings (10 Marks):

- a) Metabolism of carbofuran.
- b) Merits and demerits of organophosphorous compounds as pesticides.

II) Complete the following scheme and name all the products (10 Marks):



III) Write one method to prepare the following pesticides (10 Marks):

- a) Nornicotin
- b) Ethylchlorobenzilate
- c) Chlordan
- d) Bis-(p-chlorophenoxy) methane
- e) Sodium fluosilicate

IV) Complete the following chemical equations and name all the products (10 Marks):

- a) 4-Chlorobenzaldehyde + Nitroethane \rightarrow A $\xrightarrow{\text{---Chlorobenzene---}}$ B
- b) Trichloro acetaldehyde + Chlorobenzene $\xrightarrow{\text{---c. H}_2\text{SO}_4\text{---}}$ C $\xrightarrow{\text{---Drastic nitration---}}$ D
- c) DDT $\xrightarrow{\text{---alc.KOH---}}$ E $\xrightarrow{\text{---Hydrolysis---}}$ F
- d) DDT $\xrightarrow{\text{---Zn dust/EtOH---}}$ G $\xrightarrow{\text{---alc.KOH/300}^\circ\text{---}}$ H
- e) Carbaryl $\xrightarrow{\text{---epoxidation---}}$ I $\xrightarrow{\text{---hydrolysis---}}$ J

V) Carryout the following conversions (10 Marks):



- a) DDT to 1,1-bis(4-chlorophenyl)ethene
- b) Acetylene to aldrin
- c) Mercuric bromide to alkyl mercuric hydroxide
- d) Ethanol to methoxychlor
- e) Carbon disulfide to ferric dialkyl dithiocarbamate

With Best Wishes,

Dr. Mohamed Azaam

Dr. Atif El-Gharably

Prof. Dr. Ahmed El-Barbary

	TANTA UNIVERSITY, FACULTY OF SCIENCE, DEPARTMENT OF BOTANY			
	FINAL EXAMINATION (JANUARY 2018) FOR THE FOURTH YEAR STUDENTS (SPECIAL BOTANY AND CHEMISTRY/BOTANY)			
COURSE TITLE	GENETIC ENGINEERING		COURSE CODE: BO4103	
DATE:	JANUARY, 2018	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS	

Answer the following questions:

- 1) Write briefly on only three of the followings (30 marks)
 - a) Biolistic Gun technique for gene delivery.
 - b) Problems encountered with gene expression in prokaryotes.
 - c) Basic steps to produce transgenic plants.
 - d) Types of cloning vectors.

- 2) Compare between only four of the followings: (20 marks)
 - a) Insertion and replacement cloning
 - b) Prokaryotic and Eukaryotic expression vectors
 - c) Selectable markers and reporter genes with examples.
 - d) Electroporation and Microinjection
 - e) Cosmids and plasmids.


- 3) Give reasons for: (20 marks)
 - a) *Agrobacterium*-mediated system can't be used for transformation of monocotyledonous plants.
 - b) Genomic clones can't be expressed in prokaryotic expression vectors.
 - c) Use of Gold metal and Helium gas in Biolistic Gun.
 - d) Chemical methods are not commonly used for gene transfer.

- 4) Complete the followings: (10 marks)
 - a) Different types of promoters are:
 - b) Features of cloning plasmids are:

- 5) With labeled drawings only illustrate the followings: (20 marks)
 - a) *Ti*-plasmid.
 - b) Typical eukaryotic expression vector.

Best wishes

Examiner committee:
 Prof. Dr. Ashraf Haider
 Prof. Dr. Hanan Ibraheem

 1969	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY		
	FINAL EXAM FOR SPECIAL CHEMISTRY STUDENTS		
COURSE TITLE: LASER CHEMISTRY			
DATE: 11 JANUARY 2018	TERM: FIRST	TOTAL ASSESSMENT MARKS: 50	COURSE CODE: CH4113 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

 1969	TANTA UNIVERSITY		FACULTY OF SCIENCE	DEPARTMENT OF BOTANY
	THEORETICAL EXAMINATION FOR 4 TH YEAR STUDENTS OF CHEMISTRY/ MICROBIOLOGY			
COURSE TITLE:		PHYSIOLOGY OF ALGAE		COURSE CODE: BO 4123
DATE: JAN 2018	TERM: 1	TOTAL ASSESSMENT MARKS: 100		TIME ALLOWED: 2H.

Question 1: Give short notes on the followings (40 marks)

- 1- Batch algal cultures: definition, function, advantages and disadvantages.
- 2- Chemical structure of vitamin B₁₂ and its three analogous.
- 3- Photobioreactors for algae: uses, advantages and disadvantages.
- 4- Chemical structure of the chlorophyll molecule.
- 5- Photoassimilation of acetate by algae.
- 6- Nitrogenase enzyme composition and its role in nitrogen fixation process.
- 7- Photorespiration via glycolate pathway. What are the purposes of this process?
- 8- Carotenoids pigments and their role in photosynthesis process.

Question 2: Correct the underlined words on the followings (20 marks)

1. Continuous cultures are used for mass production process like biodiesel.
2. Stirring is used to maintain the pH of an algal culture while aeration supplies it with energy.
3. Salinity is a limiting factor in sea water algal cultures.
4. FAD and glutathione are needed for nitrogen fixation process.
5. In chemotrophy, light energy is converted into chemical energy of ATP and NADPH₂.
6. The chlorophyll is extracted using chloroform and then identified by weighing.
7. Cu and Si are inorganic macronutrients for algal growth.
8. Closed indoor algal cultures are easily exposed to contaminations.
9. The violaxanthin is the type of phycobiliproteins found in Rhodophyta.
10. Euglenophyta members are considered autotrophic algae while chlorophyta are auxotrophic.
11. The inflow medium is usually added according to the generation time in batch culture systems.
12. Inoculum age and size are factors affecting the phase of declining relative growth in algae.
13. Mixing and pH are factors affecting nitrogen fixation by algae.
14. Chlorophyll C is characterized by two spectra light bands in the blue region.

Question 3: Explain the following scientific terms (20 marks)

- 1- Mixotrophic and heterotrophic algae.
- 2- Thiamine requirement by algae.
- 3- Combined nitrogen affects nitrogen fixation by algae.
- 4- The turbidostat and chemostat algal cultures.
- 5- The oxytroph and haplotroph algae.

