
	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	EXAMINATION FOR B. SC. STUDENTS			
	COURSE TITLE: LASER CHEMISTRY			COURSE CODE: CH4113
DATE: 18TH JANUARY 2023	TERM: FIRST 22-23	TOTAL ASSESSMENT MARKS: 50	TIME: 2 HOURS	

Answer the following questions (10 marks each)

- 1- Tunneling of small particles is an important phenomenon of many chemical applications. Discuss this phenomenon and its application to explain splitting in ammonia vibrational spectral lines, non-linear Arrhenius plots and deviation from kinetic isotope effect.
- 2- The application of molecular rigidity effect on fluorescence efficiency in salmonella detection, DNA quantification and fingerprint modification.
- 3- The technique of thermal lensing is an important application on laser collimation. Draw a time- resolved thermal lensing experimental setup and trace upon using the technique to study singlet oxygen sensitization kinetics.
- 4- Briefly describe each of the following:
 - (a) The technique of polarized fluorescence and its application in studying drug-protein interactions.
 - (b) The technique of single photon counting and its application in lifetime measurement.
 - (c) Laser applications in isotope separation
 - (d) The synthesis of vinyl chloride from 1,2-dichloroethane is an important multibillion industrial process demonstrating the advantages of laser applications. Write the reaction scheme and mention the advantages of laser application in comparison with thermal applications.
- 5 - Draw and label each of the following:
 - (a) Ground and the first two excited states in oxygen molecule giving the appropriate notations.
 - (b) Energy levels in He-Ne laser
 - (c) Energy levels in excimer lasers
 - (d) Energy levels in salicylamide as a proton transfer dye laser
 - (e) Energy levels in carbon dioxide lasers

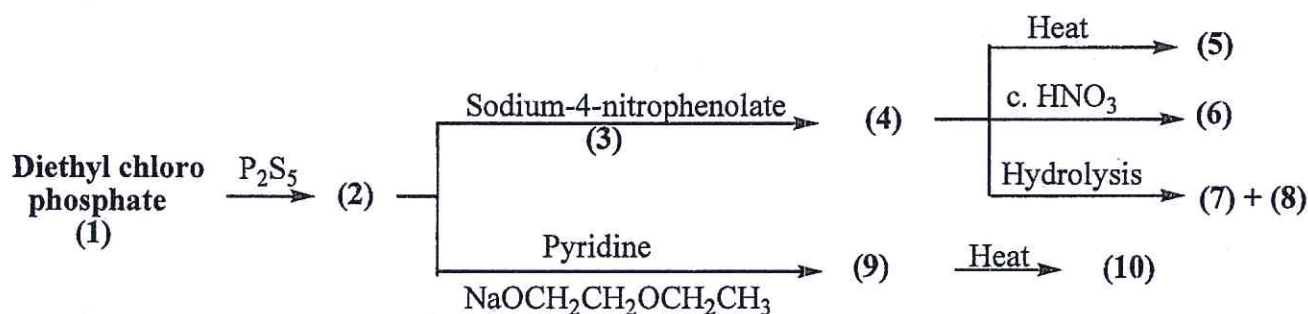
Prof. Dr. El-Zeiny Mousa Ebeid and Prof. Dr. Samy Abdallah El-Daly

	Tanta University, Faculty of Science, Chemistry Department		
	Examination for Fourth Level (Credit hours) Students		
Course Title	Pesticides	Course Code: CH4119	
Date:	4 January 2023	Total Assessment Marks: 50	Time Allowed: 2 hrs

I) Write about each of the following: (10 Ms):

1. The metabolism of DDT
2. Merits and demerits of organophosphorus pesticides
3. The metabolism of Carbofuran

II) Complete with chemical equations the following scheme and name all products: (10 Ms)




III) Write one method for preparation of the following pesticides: (10 Ms)

1. Nicotine
2. Ethyl chloro benzilate
3. Trialkyl tin hydroxide
4. Bis(4-chlorophenyl) sulphonate
- 5- Sodium fluosilicate

IV) Mark (✓) or (×) for the following statements (10 Ms):

1. The complete breakdown of Pesticides forms carbon dioxide, water and minerals ()
2. Nicotine is less toxic than its salts ()
3. Pesticides applied indoors usually breakdown at faster rate due to the lack of sunlight ()
4. γ -Isomer of gammexane is the most toxic isomer to the insect ()
5. Thiolo isomer of parathione is more effective as insecticides than the thiono isomer ()
6. Carbamates are the newest group of synthetic compounds with high insecticidal activity ()
7. Acute toxic effect arises from long term exposure to small quantities of pesticides ()
8. Contact poison depends on the action of stomach and consumed through mouth parts ()
9. Methyl parathion is hydrolyzed 4.3 times slower in alkali than parathion ()
10. Bordeaux mixture is a mixture of calcium sulfate and copper oxide ()

See the second page

	Tanta University, Faculty of Science, Department of Chemistry		
	Final Exam of Solid State Chemistry [4 th Level] Chem-Bio, Micro, Bot, Ent, Geo, Zol, and Mat Science		
Course Title: Solid State Chemistry – جميع الشعب المذدوجه		Code: CH4143	
Date: 21-January -2023	1 st Semester		Time: 2 Hours

Part(I).....30 Marks

Answer the following:

Q1. True or False (√ & x), and if it is false correct it:20 Marks

- 1) Graphite is Sp^2 hybridization and good insulator.
- 2) Deliquescent materials are not vapor absorption matter.
- 3) Stoichiometric defects are belonging to point defect type.
- 4) Covalent crystals are bonded to each other by ionic bonds.
- 5) Interstitial defects are belonging to stoichiometric ionic solids.
- 6) Metal deficient defects are belonging to stoichiometric point defects.
- 7) Smectic liquid crystal phase is not ordered crystals.
- 8) Monoclinic crystals are maximum symmetry crystals type.
- 9) Conduction in solids is hole mechanism-only.
- 10) Liquid crystals (LC) are not obeying Bragg's law for X-ray diffraction.
- 11) Conductors have no energy gab (Eg).
- 12) n-type semiconductors are electron conduction mechanism.
- 13) Diamagnetic materials have no unpaired electron.
- 14) Polymerized crystalline arrays obey Bragg's law.
- 15) Potassium chloride is belonging to Ionic solids.
- 16) Population-inversion is the base of Laser-generation.
- 17) Semiconductors conduction is enhancing via raising of temperature.
- 18) Sol-Gel technique produces a microstructure better than other techniques.
- 19) Annealing rates controlled in the formed crystalline phases.
- 20) Volume of lattice cell is greater than volume of atoms present within lattice.

تابع باقى الاسئله..... خلف الورقه.....



QII. Write the Scientific Term/or Sentence equal to each of the following;(10 Marks)

- ❖ Allotrope
- ❖ Type of defects are present specially in ionic solids.
- ❖ Laser.
- ❖ The smaller ions are dislocated from its sites to interstitial sites.
- ❖ Bragg's law.
- ❖ Materials with the same chemical composition but differ in crystal form.
- ❖ Capability and efficiency of crystal form to insert more atoms.
- ❖ The zone in matter controlled in conduction mechanism.
- ❖ Application of electricity to produce chemical reaction.
- ❖ Crystalline Polymorphism.

Part (II).....20 Marks

QIII. Write a brief account on, Only Five Items:(10 marks)

- III.1. Photo-Voltaic Devices & Semiconducting Lasers.
- III.2. Polymorphism in iron/carbon.
- III.3. Atomic Packing efficiency (APF) .
- III.4. Doping in semiconductors (*n-type and p-type*) semiconductors.
- III.5. Techniques applied for solid state synthesis.
- III.6. Different phases of liquid crystal.

QIV. Compare with drawing between each couple of the following;.....(10 Marks)

1. Crystalline and Amorphous solids.
2. Diamond and Graphite.
3. Frenkel and Schottky defects.
4. Polymorphism in carbon and calcium silicates.
5. Linear defects, Edge and Screw dislocations.

Best Wishes
Prof.Dr. Khaled M. Elsabawy
Professor of Materials Sciences
2023

FINAL EXAMINATION IN CHEMISTRY OF PETROLEUM FOR LEVEL 4
OF DOUBLE MAJOR STUDENTS ALL SECTIONS Jan 2023

COURSE TITLE:

PETROLEUM CHEMISTRY
TOTAL ASSESSEMENT 50 MARKS

COURSE CODE: CH4145

Answer the following questions:

1] Show which one of the following statements true or fals and correct the

Fals one: (10 marks)

- a} Thermal cracking is superior to catalytic cracking
- b) Highly paraffinic crude oil has a high wax content and higher pour point
- c} The sulfer compounds are not harmful for gasoline
- d} Crede oil have a higher ratio of olefin compounds
- e} As linear hydrocarbons increase octane number increase

2] Choose the correct answer: (20 marks)

a} CI- index value indicates :

- i} Predominance of paraffinic and aromatic in crude oil
- ii} The presence of olifins in crude oil
- iii} Wax contents in crude oil
- iv} Metals oxide in crude oil

b} Carbon disuphide is produced from petroleum using :

- i} Mehane and sulpher
- ii} Methane and hydrogen sulphide
- iii} CO₂ and sulpher
- iv} Methane and SO₂ gas

انظر خذله →

c} As a branching hydrocarbons increase :

- i} Octane number increase ii} Cetane number increase
- iii} Octane number decrease iv} No effect on both octane and cetane

d} Polyester fiber is produce from petroleum using :

- i} Terphthalic acid only ii} Isophthalic acid
- iii} Terphthalic acid and ethylene glycol iv} Ethylene glycol only

e} Caprolactame is produced from petroleum using:

- i} Cyclohexanone ii} Benzene iii} Benzyl alcohol iv} Vinyl alcohol

3] Write short note on the following : (10 marks)

- a} API-Gravity b} The defects of inorganic hypothesis
- c} The kerosene zone d} Heavy gas oil e} Aniline point


4] Show with equations how the following compounds were prepared from

Petroleum : (10 marks)

- a} Linear alcohols b} Teflone c} Nylone 6;6
- d} Black carbon e} Ammonia nitrate fertilizer

GOOD LUCK

Prof /ABDEL-BASET SHOKR

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY		
	FINAL EXAMINATION for level 4 (Geology) Students		
	COURSE TITLE:	Geochemistry	
DATE:	DEC., 2022	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following questions:

1-Define the following:

(18 marks)

- | | |
|------------------------|--------------------------|
| a- HFSE | b- Ionic potential |
| b- Clark of an element | c- partition coefficient |
| d-Achondrite | d-element Camouflage |

2-Say Why ?

(16 marks)

- Depletion Eu compared to the other rare earths.
- Sr has various degree of Compatibility in plagioclase and olivine.
- Li is an incompatible element
- MORB exhibits a Eu depletion as compare with upper continental crust.
- Continental crust is enriched in Lithophile elements.

3- Explain the relationship between the following pairs:

(16 marks)

- Behavior of Ba⁺²: 1.43 A° and K⁺ : 1.33 A° during magmatic crystallization.
- Solubility of the rare gases in melts and their atomic radius .
- Incompatible vs. compatible trace elements
- Highly charged HREE and LREE
- Variation of relative trace element concentration and fraction crystallization

4- Write briefly on the following:

(20marks)

- Discuss Goldschmidt rule for major elements during magmatic crystallization and factors affect the distribution
- Explain the Siderophile elements and their distribution in the earth.
- Distinguish between the composition of meteorites and similarities with different part from the earth
- Compare between the geochemical characteristics of A-type and M-type granites and their tectonic setting.
- Define the magma type based on Al₂O₃ saturation

من فضلك باقى الاسئله خلف الورقة

5-Complete the followings:

(20 marks)

- 1- Geochemical classification of the elements based on,, and classified into,,
- 2- The mantle is mainly formed from elements whereas the crust is mainly formed from elements such as
- 3- Normative composition of S-type granites should include,and..... minerals and these rocks formed intectonic setting due to and have magma type.
- 4- I-type granites characterize by SiO_2 and $\text{Na}_2\text{O} + \text{K}_2\text{O}$ with magma type and characterize by some index minerals such as.....
- 5- Chlorine, fluorine and water in the of crystallization with of complexity and increasing of Substitution.
- 6-magma has Al_2O_3 and low Na_2O , K_2O and CaO , it contains some characteristic minerals such as.....
- 7- Ni and Cr elements occurs in rocks such as, which contains high amount ofelements
- 8- Uranium - thorium mineralization occurs in rocks for example,rocks contain high amount of,,elements.
- 9- The tholeiitic magma characterized by high amount of and low amount ofwhereas Calcalkaline magma contains high amount of and low amounts of
- 10-Volcanic arc granites have a magma type and originated in tectonic setting

6-Put \checkmark or \times marks and correct the wrong ones:-

(10 marks)


- 1- Rhyolite in QAP diagram of volcanic rock classification characterize by low SiO_2 and $\text{Na}_2\text{O} + \text{K}_2\text{O}$
- 2- The mantle are mainly formed from lithophile elements whereas the crust are mainly formed from chalcophile elements such as Ca and Li
- 3- Oceanic granite is A- type granites, mainly alkali feldspar granites, contains garnet and formed in island arc setting.
- 4- XRF used for analyses of REE in minerals and rocks whereas XRD used for isotope analyses.
- 5- The tholeiitic magma characterized for rocks contains high amount of sodium and potassium and contain high amounts of fluorine.

Examiners:

Prof. Mohamed F Ghoneim

Prof Mohamed M Abu Anbar

Good Luck

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY		
	EXAMINATION FOR SENIORS STUDENTS OF GEOPHYSICS		
COURSE TITLE:	PETROLEUM GEOLOGY-1		COURSE CODE:GE4109
DATE:	JAN. 2023	SEMESTER:FIRST	TOTAL ASSESSMENT MARKS: 100 TIME ALLOWED: 2 HOURS

Answer the following questions (Sketch maps and diagrams should be drawn whenever possible):

1-Discuss the following subjects: (45 marks)

- a) Total organic carbon.
- b) Interfacial tension (IFT) of petroleum fractions.
- c) Role of catalytic reaction in petroleum formation

2- Complete the followings: (15 marks)

- a) Most petroleum contain and which are found in organic material
- b) The well for test is called
- c) oil has API gravity over 40 degree.
- d) Black color index indicate to Kerogen maturity stage.
- f) H / C ratio of exinite kerogen type almostly equals to

3- Write briefly on the classification of the chemical reservoir rocks. (15 marks)

4- Write account of the followings: (25 marks)

- a) Classification of sandstone reservoir rocks.
- b) Subsurface occurrences of petroleum.
- c) Miscellaneous reservoir rocks.

EXAMINERS	PROF. DR.NADER EL GENDY	DR. SHADIA ABD EL REHIM
-----------	-------------------------	-------------------------