	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY			
	EXAMINATION FOR LEVEL FOUR STUDENTS OF GEOLOGY(CHEMISTRY / GEOLOGY)			
	COURSE TITLE	PRECAMBRIAN GEOLOGY		COURSE CODE:GE4206
DATE:	JUNE 2018	TERM: SECOND	TOTAL ASSESSMENT MARKS :100	TIME ALLOWED:2HOURS

Answer the following questions:

1-Discuss briefly the classification of the Precambrian rocks of Egypt based on the plate tectonic theory.....(25 marks)

2- Write short notes on the following:

a-Petrographic features and petrochemical characters of the Younger and Older granites.....(14 marks)

b-Examples of ring complexes in Egypt and their ages.....(6 marks)

c- Different classifications of the Egyptian granites.....(5 marks)

3-Compare between the ophiolitic metagabbros , intrusive metagabbro-diorite complex and unmetamorphosed gabbros in the light of the following points :

a-Field description.....(8 marks)

b-Petrographic features.....(8marks)

c-Geochemical characters.....(9 marks)

4-Discuss the following:


a-Mode of occurrences of ophiolites in the Precambrian belt of Egypt.....(6 marks)

b-Origin of the Egyptian serpentinites.....(7marks)

c-Petrographic varieties and geochemical charactes of the Dokhan volcanics.....(6 marks)

d-Relative stratigraphic position of : a-Older granites , b-Dokhan volcanics.....(6 marks)

Examiner : Prof. Abdelsalam M. R. Abu El Ela

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY			
	EXAMINATION FOR SENIOR (FOURTH YEAR) STUDENTS OF SPECIAL GEOLOGY			
1969	COURSE TITLE:	PHANEROZOIC GEOLOGY OF EGYPT (2)		COURSE CODE: GE4202
DATE:	2 JUNE, 2018	TERM: SECOND	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following questions.

I- Write in details on:

- 1- Stratigraphy of the Cretaceous rocks in northern Sinai. (20 marks)
- 2- The Cretaceous/Tertiary contact at the Quseir area, Red Sea coast. (15 marks)
- 3- The stratigraphic succession of the Nubia Group in southern Egypt. (15 marks)

II- Give a report about the Quaternary of Egypt (15 marks)

II- Compare between the geological setting of Egypt during **Eocene** time and **Oligo-Miocene** time (15 marks)

IV- Discuss the distribution and economic aspect of the following:

- a- Eocene carbonate rocks in Egypt. (10 marks)
- b- Fluvial and fluvio-marine sediments in Egypt. (10 marks)

EXAMINERS	PROF. ABDEL MONEM TAWFIK DR. MOHAMED S. FATHY	WITH BEST REGARDS
-----------	--	-------------------



TANTA UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF GEOLOGY

EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OF CHEMISTRY/GEOLOGY

COURSE TITLE:	MINING GEOLOGY	COURSE CODE: 4208
DATE:	JUNE, 2018	TOTAL ASSESSMENT MARKS: 100
		TIME ALLOWED: 2 HOURS

Illustrate your answers with drawing if it possible

Question One: Compare between the following pairs..... (25 marks)

- 1- Types of proving wells in case of a gently inclined ore body with thin overburden versus a gently inclined ore body with thick overburden.
- 2- Rod and ball mills.
- 3- Tonnage and reserve of the ore.
- 4- Genetic modelling and exploration modelling of the ore deposit.
- 5- Measured and indicated ores

Question Two: Write briefly on..... (25 marks)

- 1- Ground geophysical survey of BIFs
- 2- Room and pillar mining.
- 3- Strip ratio,
- 4- Cut and fill mining,
- 5- Semi-autogenous grinding mill

Question Three: Explain..... (20 marks)


- 1- To find gold mineralizations, presence of granite is sometimes unnecessary.
- 2- Processing methods in ore concentration might be different.
- 3- Geophysical exploration method of small uranium differs than that of the large ones.
- 4- C.I.L is used in processing of gold.

Question Four: Detect the right and wrong sentences and then correct the wrong ones, explaining your answers..... (30 marks)

- 1- Remote sensing exploration depends on much samples and literature data,
- 2- Structures are proper trapes for chromite deposits.
- 3- Uranium is sometimes found as placer deposits, but rarely present within altered trachyte dikes.
- 4- Mesh is a tool for supporting the hard rocks.
- 5- Magnetic surveying is used for whatever the density contrast between the ore and the country rocks.
- 6- Even after production of the ore starts, it is necessary to locate and delineate any extensions to the mineralization
- 7- Exploration may depend on detection of the wadi ore fragments intensity, as it is an indication for the abundance and distribution of the ore.
- 8- Fire assay is the most proper method to detect the content of uranium in its ore.
- 9- Balance reserve is equal to the commercial one.
- 10- Blast rig fixes blasts till a depth of 10 meters.

With all the best


EXAMINERS	PROF. MOHAMED M. HAMDY
-----------	------------------------

	TANTA UNIVERSITY FACULTY OF SCIENCE			
	DEPARTMENT OF GEOLOGY			
	EXAMINATION FOR FOURTH LEVEL STUDENTS OF GEOLOGY			
COURSE TITLE:	Final Exam of Mining Geology		COURSE CODE: GE4208	
DATE:	JUNE, 2018	TERM: SECOND	TOTAL ASSESSMENT MARKS:100	TIME ALLOWED: 2 HOURS

Write briefly on the following questions: (80 marks)

1. Advantages and disadvantages of surface mining methods.
2. Types of explosives .
3. Mine drainage.
4. Types of surface mining methods.
5. Types of underground supports.
6. Vertical shafts.
7. The first, the second and the fourth stages in the life of a mine.
8. Mine gases and methods of mine ventilation.
9. Complete the following: (20 marks)
 - a- Ore reserves are classified into:.....and.....
 - b- Blasting caps detonators include
 - b- The main sources for mine dust:1.....,2.....and 3.....
 - c- Sloping shafts for mineral production depending on
 - d- A drift is..... whereas, an adit is.....

Examiner: Prof. Ibrahim Salem

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY			
	FINAL EXAMINATION FOR FOURTH LEVEL STUDENTS OF GEOPHYSICS			
	COURSE TITLE:	Integration of Geophysical Data		COURSECODE: GP4202
DATE:	11 JUNE , 2018	SEMESTER: SECOND	TOTAL ASSESSMENT MARKS: 150	TIME ALLOWED: 2 HOURS

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

Part I: **(60 Minutes, Total Marks 75)**

Answer the following questions:

- 1) Write about the main bases of gravity, magnetic and electrical methods as geophysical methods in mineral exploration. (25marks)
- 2) Write about the role of microgravity method in archaeological searching. (25marks)
- 3) Mention the different electrical arrays used in exploration of subsurface structures. (25marks)


Part II: **(60 Minutes, Total Marks 75)**

Answer of the following questions:-

- 4- Write about the integrated geophysical approach to solid mineral exploration (case study). (25 degree)
- 5- How could we select the appropriate geophysical methods? (25 degree)
- 6- Give reasons: (25 degree)
 - a) It is better to use integration of methods.
 - b) Use geotechnical geophysics.
 - c) Use the resistivity electrical method in cave detection and landfills.

Good Luck.

EXAMINERS	PROF. MOHAMED REFAAT SOLIMAN	PROF. SHADIA TAHA ELKHODARY
-----------	------------------------------	-----------------------------

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY			
	EXAMINATION OF GEOPHYSICS FOR 4TH LEVEL STUDENTS -SPECIAL GEOPHYSICS			
	COURSE TITLE:	THEORETICAL EXAM. " MINING GEOPHYSICS "	COURSE CODE: GP 4206	
DATE:	21 / 5 / 2018	TERM : SECOND	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2H

ANSWER THE FOLLOWINGS :

1 00 Markets

- 1- What are you know about the Surface Mining . (25)
- 2- Write about " The Area Selection " as a stage of mining data processing (25).
- 3- Write about the Shallow and Deep Drilling. (25).
- 4- Write about ONE ONLY of the followings: (25)
 - A- Environmental hazards of mining Processes
 - B- TWO Geophysical methods used in Mining Survey.

EXAMINER:

PROF. DR. Mohamed Refaat H. Soliman

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY		
	EXAMINATION FOR (LEVEL 4) GEOPHYSICS		
COURSE TITLE:	Stratigraphy of Egypt		CODE: GE 4232
DATE:	MAY, 2018	SEMESTER: 2	TOTAL MARKS:150
			TIME ALLOWED: 2 HOURS

Question 1: **(40 Marks)**

A- Tectonically, Egypt can be divided into six tectonic units, Write in details on the Stable Shelf.

B – Illustrate by **drawing only** a composite lithostratigraphic section at the Gulf of Suez region.

Question 2: **(40 Marks)**

State the type locality, lithology and age assignment for each of the following rock units:

- | | |
|----------------------|------------------------|
| 1- Naqus Formation | 2- Abu Durba Formation |
| 3- Shifa Formation | 4- Abu Nusra Formtion |
| 5- Masajid Formation | 6- Kareem Formation |

Question 3: **(40 Marks)**

The Cretaceous sediments in Sinai include several formations:
Give a brief description for each of these formations from the oldest to the youngest.

Question 4: **(30 Marks)**

A- Illustrate **by drawing** only the stratigraphic section for the Paleozoic rock units at Um Bogma, Sinai.

B- Complete the following:

a- The marine Triassic beds in Egypt only exposed at the core of

b- The most complete Jurassic section in Egypt is exposed at, it includes the following formations from older to younger:1....., ...2....., ...3.....,4.....,5....., ...6.....

c- State the economic importance for each of the following rock units:

- Lower Paleozoic sandstone - Um Bogma Formation - Duwi Formation - Safa Formation - Naqb Formation - Belayim Formation

d- The Cenozoic rock units in Sinai includes (from older to younger):

1. 2. 3- 4. 5.

Examiners	Prof. Dr. Hamza Khalil	Dr. T. Abd El Monsef
------------------	-------------------------------	-----------------------------



TANTA UNIVERSITY
FACULTY OF SCIENCE
GEOLOGY DEPARTMENT

EXAMINATION FOR SENIOR (LEVEL FOUR) STUDENTS OF CHEMISTRY/GEOLOGY

COURSE TITLE:	HYDROGEOCHEMISTRY		GE 4220	
DATE:	JUN, 2018	SECOND SEMESTER	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

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

- 1. Write on the following hydro-geochemical processes (20 Marks)**
 - Direct and reverse ion exchange and how it could be estimated from piper diagram.
 - Gravity driven groundwater flow changes in hydrochemistry.
 - Ions selective up take.
 - Organic matter decay.
- 2. Sodium and salinity hazards are the major factors affecting the water quality for irrigation purposes. Discuss using different relations and diagrams. (20 Marks)**
- 3. Answer the followings:- (20 Marks)**
 - Explain the continental effect, seasonal effect, latitude effect on the precipitation stable isotopic contents.
 - What are the indications of the stable isotopic contents of the Nubian Sandstone Aquifer?
- 4. Write short notes on the followings:- (20 Marks)**
 - Pollution sources with examples.
 - Drastic index
- 5. Discuss the followings:- (20 Marks)**
 - The factors affecting water quality of the Nile Delta Aquifer
 - The groundwater flow systems of Lower and Upper Cretaceous aquifers in Sinai. Mention the reasons.
 - The Geographical location, age, sources of groundwater recharge, groundwater flow system, groundwater salinity of the Moghra aquifers.

EXAMINERS	PROF. DR. MOHAMED G. ATWIA	PROF. DR. ZENHOM E. SALEM
-----------	----------------------------	---------------------------

	TANTA UNIVERSITY			
	FACULTY OF SCIENCE			
	DEPARTMENT OF GEOLOGY			
EXAMINATION FOR SENIOR (LEVEL FOUR) STUDENTS OF GEOLOGY				
COURSE TITLE:	HYDROGEOLOGY 2	GE		
DATE:	JUN, 2018	TERM:	SECOND	TIME ALLOWED: 2HOURS

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

1- Give reasons on the followings :- (20 Marks)

- a- Sodium concentration is important in classifying an irrigation water .
- b-Casing is necessary during drilling by cable tool method.

2-write on the following : (30 Marks)

- a- Seasonal , Altitude and continental (rain out) effects on the stable isotopic composition of rain water .
- b- Drastic index and the factors control the groundwater pollution .


3- Write on the following subjects : (30 Marks)

- a-Trilinear and semi-logarithmic diagrams for graphic representation of chemical analysis of groundwater .
- b-Hydrogeology of Nile Delta and Nile valley aquifers .
- c- Groundwater classification based on total dissolved solids (TDS)

4- concisely review the followings: (20 Marks)

- a- Rotary and air Rotary methods for drilling deep wells .
- b- Two only of well development procedures applied to increase its specific capacity , prevent sanding , and obtain maximum economic well life .

EXAMINERS	PROF. DR. MOHAMED GAMAL ATWIA	PROF. DR. ZENHOM E. SALEM
------------------	--------------------------------------	----------------------------------

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY		
	EXAMINATION FOR SENIORS STUDENTS OF GEOPHYSICS		
COURSE TITLE:	PETROLEUM GEOLOGY-2		COURSE CODE:GE4209
DATE:	MAY 2018	SEMESTER:SECOND	TOTAL ASSESSMENT MARKS: 100 TIME ALLOWED: 2 HOURS

Answer the following questions:

1-Discus the following subjects: (30 marks)

- a) Role of gas expansion in oil movement.
- b) Hydrostatic pressure.
- c) Migration process.

2-Compare between the followings: (18 marks)

- a) Structure traps and stratigraphic traps.
- b) Gross pay and net pay.


4- Discuss the following subjects: (24 marks)

- a) Causes of tilted oil – water contact.
- b) Fold traps.
- c) Diapric traps.

5- Write on the classification of the following subjects: (18 marks)

- a) Stratigraphic traps.
- b) Salt domes.

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

	TANTA UNIVERSITY FACULTY OF SCIENCE			
	DEPARTMENT OF GEOLOGY			
	EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OF GEOLOGY			
COURSE TITLE:	Final Exam of Ore Mineralogy		COURSE CODE:GE4226	
DATE:	JUNE. 2018	TERM: SECOND	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Part I

(50 Marks)

1- Write on the following: -

(30 marks)

- a- Reflectance
- b- Objective lenses
- c- Grinding and polishing equipments
- d- Instrumental techniques for VHN measurements
- e- Polishing hardness

2- Answer the following with drawing ONLY: -(20 marks)

- a- Schematic cross- section of different zones of deformation.
- b- Cross- section of ore microscope.
- c- Free working distance.
- d- Shapes and fractures of hardness micro-indentations.

Part II:


Write briefly on the following, illustrate your answer with drawing if it possible:

(50 Marks)

- 1- Replacement textures.
- 2- Colloform textures of supergene minerals and growth zoning textures.
- 3- Solid solution in oxide minerals .
- 4- Pentlandite- Pyrrhotite ,Bornite-Chalcocite and Chalcopyrite-Sphalerite exsolution textures.
- 5- Factors favouring diffusion and criteria for the recognition of exsolution textures.

Examiners: Prof. Ibrahim Salem

Prof: Bothina El-Desoky


	TANTA UNIVERSITY FACULTY OF SCIENCE GEOLOGY DEPARTMENT			
	EXAMINATION FOR 4 th LEVEL Geology (GEOPHYSICS)			
COURSE TITLE:	SOIL MECHANICS		COURSE CODE: GP4202	
DATE:	26 MAY, 2018	TERM: 2ND	ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

WRITE ON THE FOLLOWINGS SUPPORTED WITH DRAWINGS WHEREVER POSSIBLE:

- 1- SOIL SAMPLING AND METHODS USED FOR COHESIVE SOILS 20 Marks
- 2- SHEAR STRENGTH TESTS 20 Marks
- 3- **IN BREIF, EXPLAIN THE FOLLOWINGS:** 30 Marks
 - A. ESTIMATES OF BEARING CAPACITY FROM IN-SITU TESTING (PLT & SPT)
 - B. EFFECT OF ECCENTRIC AND INCLINED LOADING ON FOUNDATIONS
 - C. FORMS OF BEARING CAPACITY FAILURE
- 4- PROBLEMATIC SOILS AND THEIR GEOTECHNICAL PROPERTIES. 15 Marks
- 5- GEOTECHNICAL SOIL REPORT: THE EGYPTIAN EXAMPLE. 15 Marks

WARMEST WISHES WITH GREAT SUCCESS

EXAMINERS:	PROF. DR ALAA AHMED MASOUD	
	PROF. DR SAMIR ZAKI KAMH	


	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY		
	EXAMINATION FOR 4 th LEVEL STUDENTS (SPECIAL GEOLOGY & CHEMISTRY/GEOLOGY)		
COURSE TITLE:	PHOTOGEOLOGY	COURSE CODE: GE 4204	
DATE:	23/05/2018	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Write short notes with drawing (whenever possible) on the following:

- 1- Types of drainage patterns and write in details on **three** of them. (20 Marks)
- 2- Recognition elements of aerial photographs and write in details on **three** of them. (20 Marks)
- 3- Methods of transfer of interpreted data from aerial photographs onto a base map. (10 Marks)
- 4- Compare between photo lineations resulting from foliation and dipping beds. (10 Marks)
- 5- Identification of **intrusive igneous rocks** and **faults** on aerial photographs. (20 Marks)
- 6- Drainage density, angularity, consequent stream and obsequent stream. (10 Marks)
- 7- Compare between earth resources satellites and environmental satellites. (10 Marks)

EXAMINERS	Prof. Mahmoud H. Ashmawy
------------------	---------------------------------

2

 1969	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY			
	EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OF GEOLOGY			
	COURSE TITLE:	REMOTE SENSING (2)		COURSE CODE: GE 4216
DATE:	19 MAY, 2018	TERM: SECOND	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following Questions (using drawing when it possible)

1- Write **SHORT NOTES** on the following: - (40 marks)

- The two main approaches to lithological/mineralogical mapping from remote sensing data. (20 marks)
- Distortions in radar images. (20 marks)

2- Compare between the following: - (20 marks)

- Surface roughness and surface orientation in the interpretation process of radar images. (10 marks)
- Minimum distance to mean and maximum likelihood classifiers. (10 marks)

3- Give the reason(s) to: (10 marks)

- It is possible to acquire radar data at any time, also during the night.
- The using of all the available image bands can disturb the image classification process.


4- Explain how: (30 marks)

- Can you validate the image classification result? (10 marks)
- Remote sensing techniques have found extensive application in structural studies, **emphasize** your answer by the mapping of folds, faults and lineaments. (20 marks)

EXAMINERS	Prof. Alaa A. MASOUD	Prof. Samir Z. KAMH
-----------	----------------------	---------------------

☺ Good Luck ☺



	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY			
	FINAL EXAMINATION FOR 4 TH LEVEL GEOLOGY STUDENTS			
COURSE TITLE:	Basin Analysis			CODE NO. GE4210
DATE:	MAY, 2018	TERM: SECOND	TOTAL ASSESSEMENT MARKS: 100	TIME : 2 HOURS

Answer the following questions:

- 1) Define with drawings when possible the following: (10 marks)
 - a) Basin Inversion
 - b) Extensional Basins
- 2) Explain briefly the methods and stages of formation of sedimentary basins. (20 marks)
- 3) Write short notes on "paleocurrent indicators" and the sedimentary structures that may contain useful paleocurrent information. (20 marks)
- 4) Write briefly on how basins are made and classified. (20 marks)
- 5) Write short notes on the following: (10 marks)
 - a. Gazzi-Dickinson point-counting method
 - b. Factors affecting sandstone composition and plate tectonic setting
- 6) Draw the QmFLt diagram constructed by Dickinson et al., 1983 for sandstone provenances. (10 marks)
- 7) Discuss the continental provenances in terms of tectonic setting and sand composition. (10 marks)

EXAMINERS	DR. AHMED EL SHEISHTAWY	DR. TAREK ABDEL MONSEF
-----------	-------------------------	------------------------



TANTA UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF GEOLOGY

EXAMINATION FOR SENIORS STUDENTS OF GEOPHYSICS

COURSE TITLE:	PETROLEUM EVALUATION AND ECONOMICS	COURSE CODE: GP4208		
DATE: 6 /6/ 2018	JUNE, 2018	TERM: SECOND	TOTAL ASSESSMENT MARKS: 150	TIME ALLOWED: 3 HOURS

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

Part I: PETROLEUM EVALUATION (90 Minutes, Total Marks 75)

1) Write a brief account on three of the following: (39 marks)

- Types of Western Desert oil.
- Reservoirs of Abu Gharadig basin.
- Identification of the source rocks intervals in a well by using open- hole well log data.
- Trapping mechanism of Pliocene, N. Port Said concession.

2) October oil field is one of the largest hydrocarbon-bearing fields in the northern part of the Gulf of Suez province; explain the hydrocarbon potentialities of its oil field. (22 marks)

3) Put true (✓) or false sign (x) and correct the false answer. (14 marks)

- A relative decrease in sonic transit time and an increase in resistivity indicate the presence of organic-rich sediments in non-permeable sediments. ()
- The geothermal gradient of Western desert is high weighted average values ranging from 1.5° to 4°C/100 m while the geothermal gradient of the Gulf of Suez is ranging from 1.8 to 2.654°C/100m. ()
- Nile Delta region subdivided into four structural provinces. ()
- Van Krevelen diagram of the Shushan-1X well shows that Khatatba, Alam El-Bueib and Abu Roash-G shales contain mixed kerogen types. ()
- The vitrinite reflectance Ro values of Abu Madi/Elqar'a gas field indicating that the samples are thermally not mature stage of hydrocarbon. ()
- The high percentage of sulfur contents (>1%) indicates a terrestrial origin. ()
- Oils in the Gulf of Suez were sourced from potential source rock intervals in the prerift succession that are typically oil prone (type I), and in places oil and gas prone (type II). ()

بقية الأسئلة في الخلف

Part II: PETROLEUM ECONOMICS (90 Minutes, Total Marks 75)

4) Write brief on ***Only Four*** of the following: (40 marks)

- a) Petroleum Resources Management System (PRMS) and major principles of PRMS.
- b) Major Crude Oil Benchmarks.
- c) Petroleum Resource Classification Scheme with special references to Project maturity stages.
- d) Characteristics of Product Sharing Contract/Agreement (PSC/PSA).
- e) Classification of the Petroleum Industry.

5) What is a (/an): (15 marks)


- a) Oil Contract? b) OPEC Basket c) Oil Supply Chain d) Categorized Reserves
- e) Oil in Place f) Oil reserves g) Upstream Oil Companies h) Contingent Resources
- i) Service Contracts j) Midstream Oil Companies

6) Compared between: (15 marks)

- a) Brent and WTI Benchmark of Crude Oil
- b) National Oil Companies (NOC) and International Oil Companies (ICO)

7) Where will the new production come from? (5 marks)

Examiners: Prof. Hassan Z. Harraz Dr. Shadia Abd EL Rehim

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY		
	EXAMINATION for B.Sc (Chemistry-Geology Students)		
COURSE TITLE:	ADVANCED GEOCHEMISTRY	COURSE CODE: GE4222	
DATE:	MAY, 2018	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Part I: (60 min.) (50 marks)

1- Explain the following:

- a- Whole rock isochrones and mineral isochrones have different slopes.
- b- A positive δ value means that the isotopic ratio of the sample is higher than that of the standard.
- c- Water vapor is enriched in light ^{16}O
- d- Rocks derived from mantle usually have positive δ values.

2- We deal; with volcanic rocks suffered alteration. Explain how we could assign both absolute age of a rock and the age of disturbance using U-Pb method.

3- What are essential precautions and requirements that are needed for isotopic measurements?

4- Correct the following statements:

- a- Weakly alkaline iron-bearing solution flowing into the sea from neighbouring land areas must precipitate more of their iron in the weakly alkaline marine waters
- b- The oxidation potentials decrease rapidly with the increase of pH.
- c- Radiation is independent process (affect by temp. pressure or chemical action)
- d- Isobars elements are elements with equal atomic number same.
- e- Rain water is enriched in ^{18}O than oceanic water.
- f- Delta values of most igneous rocks is δ -5 to +15%, whereas sedimentary rocks have higher δ (usually δ +ve values)

Part I: (60 min.) (50 marks)

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

(20 marks)

- 1- Si in tetrahedron site in amphiboles and pyroxenes substitute by Ca and Fe
- 2- Hypersthene and enstatite are calcic amphiboles contain high amount of Ca and Na
- 3- Arvedsonite are calcic pyroxenes contain Na more than 1.54
- 4- Sm- Nd isotopes used for petrogenesis and dating mantle rocks using alkali pyroxenes and alkali feldspar
- 5- Radioactivity in rocks is related to presence of radioactive minerals such as olivine and amphiboles and predominant in basic rocks such as gabbros
- 6- SMOW is mineral used for calculate the chemical formula of isotope minerals
- 7- The chemical formulae for minerals calculate as oxides and depend on number of silicon atoms.
- 8- Presence of tourmaline in metamorphic rocks indicates metamorphic origin

- 9- Mineral chemistry of pyroxenes discriminate different types of tectonic setting and magma types
10- Mineral chemistry used for study age determination

2- Discuss the applications of: K- Ar method, Initial Sr ratios, O isotopes, H isotopes, C isotopes, SHRIMP, advantages of U- Pb method *(14 marks)*

3- Discuss the analytical procedures and different techniques used for isotope studies. *(4 marks)*

4- Write on the rule of minor and trace elements in metamorphic rocks and give example for their applications in study of ores *(4 marks)*

5- Discuss different methods and instruments used for study mineral chemistry. *(4 marks)*

6- Explain the Nomenclature of amphiboles and basis of classification. *(4 marks)*

Examiner: Prof. Mohamed Fouad Ghoneim

Examiner: Prof. Mohamed Metwaly Abu Anbar

Good Luck