Assiut University
Faculty of Science
Geology Department

جامعة أسيوط
كلية العلوم
قسم الجيولوجيا

Final Examination in Mineral Exploration and Industrial Minerals and Rocks (G435)

Time: 2 hours	Total marks: 50	May, 2019

Mineral Exploration Part (Prof.Dr. Gamal Zidan)

(25 Marks)

(A)- Answer the following questions: (5 marks each)

1- Explain in details the five different steps for mineral exploration
2- With the help of drawing discuss the differences and similarities between geobattery and biogeobattery models in self-potential method

(B)– Write on only three of the following: (5 marks each)

1- The advantages of using both resistivity and induced polarization methods in mapping disseminated sulfide ore deposits in quartz veins
2- The acquisition of 3D resistivity data with the help of drawing
3- The magnetic gradiometer and its advantages and limitations
4- Gravity survey on land with examples of minerals that consider good target in gravity survey
5- A case study for the application of geophysics in mineral exploration

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GOOD LUCK.....

Part Two
Industrial minerals and rocks

Answer Three questions only of the following (25M)

Q1 (8.5 M)

i- Mention some minerals used in the construction and chemicals?

ii- Write briefly on the application and importance of those minerals and rocks: fluorite, talc, graphite, garnet and perlite?

Q2 (8.5 M)

i- Explain the applications of industrial minerals used in paint and ceramics industry?

ii- Describe the various uses of zeolites?

Q3 (8.5 M)

i- Mention the importance of green and critical minerals?

ii- Explain the applications of industrial minerals used in adhesives and sealants industry?

Q4 (8.5 M)

i- Clays, limestone, diatomite and halite are used in water treatment industry. Comment?

iii- Discuss the applications of industrial minerals in plastics and polymers industry?

تمت الاسئلة وبالتوفيق

أ.د. جلال الحباك

جامعة أسيوط
كلية العلوم - قسم الجيولوجيا

بسم الله الرحمن الرحيم

امتحان التحريرى للمستوى الرابع بكلية العلوم شعبة الجيولوجيا والكيمياء

المادة: خريطة مصر الجيولوجية (٤١٠ ج)

(Geologic Map of Egypt (410 G)

دور يونيو ٢٠١٨/٢٠١٩م الدرجة: ٥٠ درجة الزمن: ساعتان

Answer the following questions:

First Question: (15 Marks)

1) Compare and correlate in a stratigraphic table the subsurface Miocene rock units in the Nile Delta and Gulf of Suez. (9 Marks)

2) Give reasons for three only of the following statements: (6 Marks)
   i- The important of the Nubian Sandstone in the Western Desert.
   ii- The important of the middle Eocene rocks in Fayoum.
   iii- The difficult in the discrimination between the Paleozoic sediments in Egypt.
   iv- The differences in the thickness of the Paleozoic rocks in Egypt.

Second Question: (15 Marks)

1- Describe the early Cretaceous rocks at Sinai, illustrate your answer by drawing. (8 Marks)

2- In a stratigraphic table trace and arrange the Nile Valley Eocene rock units from the south of Egypt near Luxor to the north of Egypt near Maadi.. (7 Marks)

Third Question: (20 Marks)

1- Summarize the subsurface stratigraphic sequence of the Cretaceous rock units in north Western Desert. (8 Marks)

2- Compare and correlate in a stratigraphic table the Paleozoic rock units at Sinai and Gebel Uweinat.. (7 Marks)

3- Sketch a generalized stratigraphic section for the Upper Cretaceous rock units at Aswan. (5 Marks)

Good Luck

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Prof. Dr. Nageh A. Obaidalla

كلية العلوم-قسم الجيولوجيا

جامعة أسيوط

امتحان طلاب المستوى الرابع مقرر (٤٤٥ ج)

جيولوجيا تصويرية واستشعار عن بعد

الزمن : ساعتان | الدرجة الكلية (٥٠ درجة) | مايـو 2019

PART I. PHOTOGEOLOGY (25 Marks)

ANSWER THE FOLLOWING QUESTION (7 marks)

1. Explain how differential erosion is considered the first key to bedrock identification and interpretation on aerial photographs.

ANSWER ONLY THREE OF THE FOLLOWING QUESTIONS: (18 marks)

2. Discuss scale variations and differences in parallax on vertical aerial photographs. (6 marks)
3. Compare and contrast between photo-geologic characteristics of the following pairs:
   a- Limestones and Sandstones (3 marks)
   b- Stream deposits and Lake deposits (3 marks)
4. Discuss the following statement : "Geologic photo-interpretation depends on essential factors that help in lithologic discrimination and structural identification". (6 marks)
5. Explain the main geometric differences between a vertical aerial photograph and a map. (6 marks)

PART II. REMOTE SENSING (25 Marks)

Answer Two questions ONLY of the following, illustrating your answer with diagrams:

1. Give short notes about: (2.5 marks each)
   a) Interaction mechanism between EMR and matter.
   b) Image contrast
   c) Detectability and recognizability
   d) Resolution and resolving power
   e) Spectral reflectance curves
2. Comment in detail on:
   a) Remote sensing bands (4 marks)
   b) Atmospheric effects (4.5 marks)
   c) Orbit paths of Landsat (4 marks)
3. Write what you know about:
   a) Lineaments (4 marks)
   b) Lineament metallotects (4.5 marks)
   c) Linear plutons (4 marks)

GOOD LUCK !!

Prof.Dr. Mohamed E. Habib

Prof.Dr. Moustafa M. Youssef

Geology Department
Faculty of Science
Assiut university

Final Exam of
Radiometric & Geothermal Methods (G452)

Jun. 2019 *Time: 2 Hours*

Answer the following questions

The First Question *(30 mark)*

a) Write on

1. Geothermal parameter
2. Radioactivity Survey
3. Classification of geothermal resources of Egypt
4. Potassium- Argon method used age dating
5. Geothermal systems

***b)* Compare between**

- Hot springs, Geysers and Fumaroles
- Scintillation counter and Geiger counter

The Second Question *(20 mark)*

***a)* Complete the missing answer**

1. Gamma-ray spectrometer calibrated by .....and.....
2. Roentgen used for.....while Rem used for.....
3. The highest concentrations are detected in two locations, namely ..... and ..... which are the hottest waters in Egypt
4. Sources of Earth's Internal Energy are come from..... , ...and.....
5. Conductive systems include.....

b) Discuss with Proof the law of radioactive decay, half-life and Radiometric age of rock in years

b) Put mark (√) or (X) with error correction

1. Alpha particles are positively charged particles (Helium nuclei) emitted from the nucleus of unstable atom. ( )
2. Geochemical exploration consider one of the steps for geothermal surveying ( )
3. Half life time of Tritium H_3 is 12.5 yr. ( )
4. The important factors in geothermal reservoir are rock units, tectonic elements, and the presence of high temperature ( )

Assiut University Faculty of Science Geology Department		جامعة أسيـــوط كلية العلوم- قسم الجيولوجيا

Fourth Level Examination in
Sedimentary Basins &Sequence stratigraphy (G420)
For Geology and Geophysics students

Time: Two Hours **(50 degree)** **11- Jun- 2019**

PART-I: Sedimentary Basins (25 degree)

Answer the following question:

1- a. What is a sedimentary basin? (3 marks)

b. What does the term pre-depositional basin mean? (3 marks)

c. Mention the t basin shapes of sedimentary basins? Illustrate your answer using drawing. (3 marks)

Answer two questions only from the following:

2- a. Choose the correct answer (4 marks)

Forearc basins are formed in:

- Subduction-related basins
- Collision-related basins

b. What is the economic significance of rift basins? (4 marks)

3- a. Choose the correct answer (4 marks)

Pull-apart basins are:

- Subduction-related basins
- Strike-slip basins

b. Describe briefly the sedimentary sequence in pull-apart basins (4 marks)

4- Write a brief note on the closing phase of the Wilson Cycle. Illustrate your answer with drawing (8 marks)

PART-II: Sequence Stratigraphy (25 degree)

A) Answer TWO questions ONLY (*Illustrate your answer by diagrams*):

1- How can relative sea level rise and water depth decrease? ***(5marks)***

2- What is the parasequence bounding surface and what its characteristic features? ***(5marks)***

3- Sketch out typical patterns generated by seismic reflectors ***(5marks)***

B) Answer the following THERR questions (*Illustrate your answer by diagrams*):

4-Describe 1st, 2nd and 3rdorder relative sea level cycles in terms of the time periods over which they operate and the possible causative mechanisms. ***(3marks)***

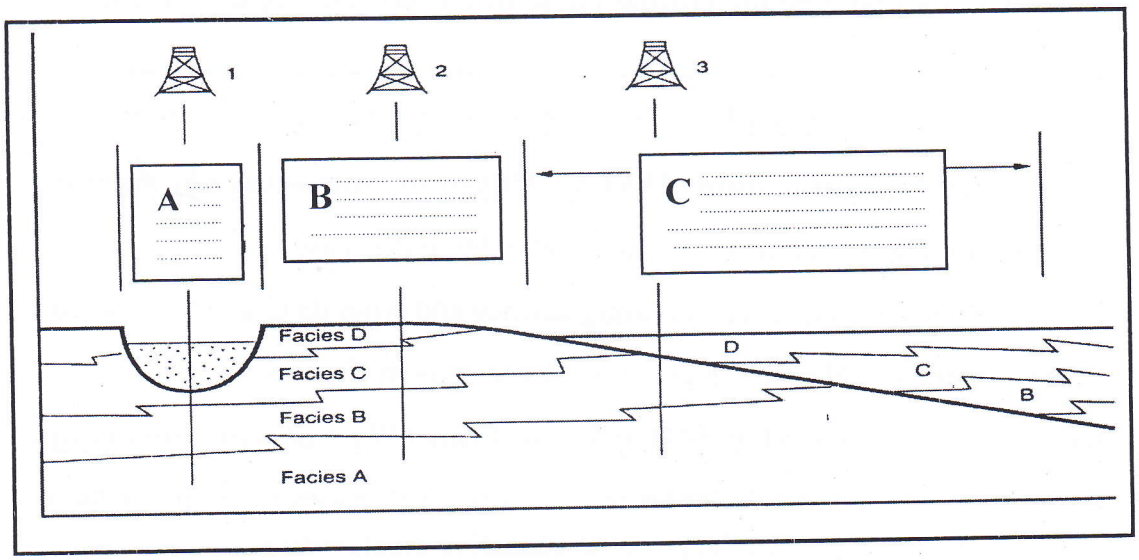
5 Matching questions *(7marks)*

1)Marine Flooding Surface	a) Deposited by a relatively slow rise in sea level and the filling of incised valleys.
2)Incised Valley Fill	b) Marine beds immediately overlying non-marine beds, may contain clasts from underlying unit, may have mixed faunal assemblages
3)Transgressive Lags	c) A surface that separates younger from older strata, across which there is evidence of an abrupt increase in water depth
4)Type 1 Sequence is bounded	d) below by a type 1 sequence and above by a type 1 or type 2 sequence boundary
5)Transgressive Systems Tract	e) The lower-most systems tract associated with a type 2 sequence boundary. one or more weakly progradational to aggradational sequence sets
6)Type 2 Sequence is bounded	f) below by a type 2 sequence boundary and above by a type 1 or type 2 sequence boundary
7)Shelf Margin Systems Tract	g) The middle systems tract of both type 1 and type 2 sequences. One or more retrogradational parasequence sets.

6) a-Write in the three empty boxes below (**A**, **B** and **C**) the main feature(s) which each well shows. *(3marks)*

b- Which wells show clear evidence of presence of a sequence boundary?

Well no. 1 ..... Well no. 2 ..... Well no. 3 ..... *(2marks)*



----------*GOOD LUCK*----------

Prof. Dr. Mohamed Ahmed Soliman *Prof. Dr. Ahmed-Reda El Younsy*

Geology Department
Faculty of Science
Assiut University

Final exam, fourth level (Geology)
Palaeoecology & Biostratigraphy (G414)
June 2019

Total score: 50 marks **Time allowed: 2 hours**

ملحوظة: أسئلة الامتحان لهذا المقرر على الوجهين – من فضلك أقلب الورقة

I- PART ONE (PALAEOECOLOGY)

ANSWER THE FOLLOWING QUESTION:

Question No. 1: Mark the (right) and (wrong) statements: (7 marks; 1 mark each)

a- The recognition of populations within the physical and biological environment is termed synecology.
b- Plant microfossils can be good environmental indicators.
c- Diatoms are good depth indicators within the marine environment.
d- The taxonomic uniformitarian approach is limited to the vertebrates.
e- The term "ecosystem" refers only to the environmental variables.
f- Qualitative data gives data that might be less expressive than quantitative data.
g- Ecology is the study of the interaction of organisms with one another and with the physical environment in the geologic past.

ANSWER THREE ONLY OF THE FOLLOWING QUESTIONS:

Question No. 2: *(6 marks; 3 marks each)*

Discuss briefly the following:

a- Biostratinomy b- Biocoenosis and thanatocoenosis

Question No. 3: Answer the following: *(6 marks; 3 marks each)*

a- The final assemblage investigated by a paleoceologist may be quite different from the original, explain.
b- Compare between substantive and methodologic uniformitarianism.

Question No. 4: Complete the missing word(s): *(6 marks; 2 marks each)*

a- The living organisms may not be totally preserved due to.....
b- Explanation of a complex ..... is simplified by presenting the most important parameters.
c- Organisms that can be part of the sediment may have a low probability of becoming fossilized because of .....

Question No. 5: Write briefly on: *(6 marks; 3 marks each)*

a- Fossil diagenesis. b- Environmental significance of corals.

أنظر خلفه لباقى الأسئلة

II- PART TWO (BIOSTRATIGRAPHY)

ANSWER THE FOLLOWING QUESTIONS:

*Question No. 6: Write briefly on **two only** of the following:* *(6 marks; 3 marks each)*

a- Reasons for mass extinctions.

b- Importance of index fossils in biostratigraphy.

c- Correlation of biozones.

Question No. 7: Mark the (right) and (wrong) statements: *(5 marks; 1 mark each)*

a- Species can overlap through space and time.

b- The "Acme Zone" is considered one of the "Interval Zones" group.

c- Boundaries between major time-stratigraphic units are usually marked by extinction events.

d- Biostratigraphic zonation seems a simple procedure but numerous factors should be checked before reasonable interpretations.

e- Index fossils are typically dominating others in all Phanerozoic rocks.

Question No. 8: Complete the missing word(s): *(4 marks; 1mark each)*

a- Biostratigraphic correlation concepts are .....but numerous difficulties would prevent establishment of reasonable accurate results.

b- Zonal boundaries are delineated by .....

c- The smallest chronostratigraphic unit that has worldwide significance is called the .....

d- Abrupt non-evolutionary changes are called .....

*Question No. 9: Write on **two only** of the following* *(10 marks; 5 marks each)*

a- Biostratigraphic problems and pitfalls.

b- Biostratigraphy versus chronostratigraphy.

c- Types of interval zones.

تمت الأسئلة مع أطيب الأمنيات بالتوفيق

Examiners:

Prof. Dr. Magdy S. Mahmoud (Geology Department)

Dr. Abdelhamid M. Salman (Geology Department)

Geology Department
Faculty of Science
Assiut university

Final Exam of Statistical Methods (G456)

May. 2019

Time: 2 Hours

Answer the following questions

The First Question *(30 mark)*

a) **Define** 1. Population 2. Sample 3. Member 4. Variable 5. Observation 6. Representative Sample 7. Variance 8. Correlation Coefficient 9. Variogram 10. Trend kriging

b) **Write on** a) Random sampling b) Global/Local Interpolations

c) **Compare between**

- kriging and Minimum Curvature methods **(Advantages and disadvantages)**
- Descriptive Statistics and Inferential Statistics

The Second Question *(20 mark)*

a) **Complete the missing answer**

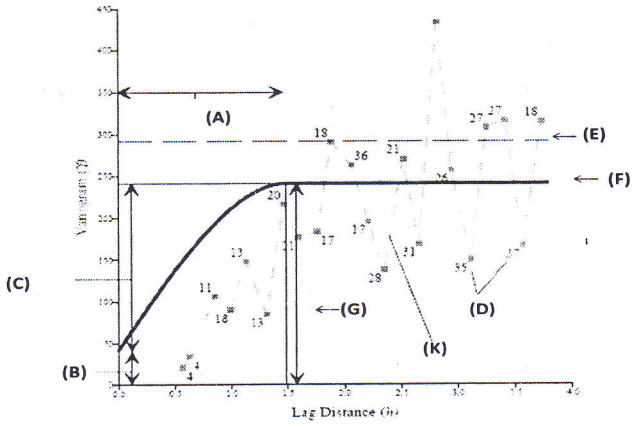
1- Some "objects" have spatial distribution that is usually far from random, such as: 1).....2).....3).....

2- The minimum sample size is.....

3- The assumption that makes interpolation a viable option is that spatially distributed objects are.....

b) **How** do we use Kriging?

c) This figure shows the Variogram model. **What** is the type of this model and the Capital letters (A, B, C, D, E, F, G and K)?



جامعة اسيوط
كلية العلوم- قسم الجيولوجيا

امتحان مادة جيولوجا الاثار (٤٥٨ ج)
الفصل الدراسى الثانى - العام الجامعى (٢٠١٨/٢٠١٩)

المستوى الرابع — الزمن ساعتان

Answer FOUR questions only of the following (50M)

Q1 (12.5 M)

Give short notes about the following:

i. **Techniques used to determine provenance of artifacts.**
ii. **Importance of geoarchaeology to society.**
iii. **Useful information from archaeomineralogy.**
iv. **Geoarchaeological *site exploration*.**

Q2 (12.5 M)

i- **Limestone and sandstone were the main building stones of Ancient Egypt. Comment?**
ii- **Explain the relation between geomorphological and geoarchaeological investigations with a brief case study?**

Q3 (12.5 M)

i- **Write on the World's oldest surviving geological map?**
ii- **Discuss the applications of geochemical methods to archaeological investigations?**

Q4 (12.5 M)

i- **Write on the lime- (and gypsum-) based building materials used in the Neolithic Age?**
ii- **Discuss the importance of sedimentology in archaeology with emphasizes on the useful analytical parameters of sediments and soils?**

Q5 (12.5 M)

i- **Soil phosphate mapping is the most widely used chemical method involved in archaeological site prospecting. Comment?**
ii- **Mention some geological features about the gold of the Pharaohs?**

أ.د. جلال الحباك — تمت الاسئلة وبالتوفيق

Assiut University

Faculty of Science
Geology Department

Final Examination for B Sc. Students — ECONOMIC GEOLOGY (G: 434)

Total Mark 50

June 2019 — Time allowed :2hours

QUESTION No. 1 IS COMPULSARY

Elucidate your answer with drawings whenever it possible

Question No. 1 (20 Marks)

A- What are the important criteria for distinguishing fissure filling type hydrothermal deposits? What are their common forms? Many types of water rich fluids circulated through the earth crust, which could give rise to a wide variety of hydrothermal ore deposits. Name these types of fluids. What ores that could result from such different sources of fluids? The mineral assemblages that form as a result of hydrothermal fluids vary as a function of five factors, What are these factors? What are the common fundamental alterations haloes that used as practical guides for prospecting of hydrothermal deposits? (10 Marks)

B-What are the common characteristic features of porphyry copper deposits? Where are the most important occurrences for copper mineralization in Egypt? Specify the genetic mode of formation and the average Cu content (kg/t) in each of these occurrences. (5 Marks).

C-What are the main factors that control uranium concentration, solubility (mobility) and deposition? Give the names and the type of occurrences for five important localities of U-and/or Th–bearing mineralization in Egypt. (5Marks).

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Answer Only TWO Questions from the following

Question No. 2 (15 Marks)

A-How can you genetically classify the different gold occurrences of Egypt to be in harmony with the evolutionary model trend of the Egyptian terrain? Explain briefly the differences in the genetic mode of formation for both the Epithermal gold - silver mineralization and the Mesothermal - Orogenic Lode-gold mineralization styles. How gold precipitation mechanism goes in the above two different environmental styles? In Egypt, Where the famous exploited localities for gold? Give the average gold content (grade, g/t) and the genetic category for three most important gold bearing localities. (8 Marks).

Continued Overleaf

B- What features distinguishing the ores of the early magmatic stage from those of the late magmatic stage? What are the main ore products of these stages? From Where the world largest economic production for these ores come? Where these ores occur in Egypt? (4Marks)

C-What are the important economic ores or/ minerals that resulted from metamorphic process? Where these deposits occur in Egypt? (3 Marks)

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Question No.3 (15 Marks)

A-What are the economic ; genetic ; textural and mineralogical differences/or similarities between the different Egyptian iron ores: oolitic ironstone formation (southern Eastern Desert); Banded iron ore formation (BIF) (Red Sea coast and Uwainate southern Western Desert) as well as the Baharia iron ore (Westerns Desert) (5Marks).

B-What is meant by: S-type and I-type granites? What are the characteristics and the economic ore potentiality of the so named G1, G2 and G3 Egyptian granites? Mention their associated mineralizations and their famous known Egyptian localities. (5 Marks)

C-What factors controlling and limiting the development of oxidation zone? What types of ores you look fore in the oxidation zone? Elucidate your answer with chemical equations. (5Marks).

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Question No.4 (15 Marks)

A- What are the genetic differences between stratiform Volcanic Massive Sulfide (VMS) deposit and strata- bound Sedimentary Exhalative (SED-EX) deposits? Where do these deposits occur in Egypt? and Where their correspondence famous known world types exist? (5Marks)

B- What are the requirements for formation of salt deposits? Give the paragenitic sequences of the deposited evaporate assemblage in marine brine. From Where the natural Egyptian resource wealth comes? (5Marks).

C- In the framework of the plate tectonic theory; How can you interpret the occurrence of the most famous Egyptian deposits in relation to the different plate tectonic setting models? (Elucidate your answer with drawing) (5Marks)

Examiner: Prof. Dr. Nadia Sharara *Good Luck* و بالتوفيق

Geology Department Faculty of Sciences Assiut University Second level		Second Term Examination Ore genesis (438 G) May, 2019 Two Hours

Ore forming processes (438g)

Answer the following questions :

1. Complete the following sentences by the name of mineral deposit process: (10 pts)

1. **The process by which chromite separated from the magma is named.....**
2. **Sn-W, Beryl deposits associated with coarse grained felsic rocks is forming by .....process**
3. **Bauxite is deposited from Al-rich felsic rocks by process named.....**
4. **The process by which leaching of certain elements from the upper part of a mineral deposit and their re-precipitation at depth produce higher concentration is named.....**
5. **Minerals concentrated by flowing surface water and depositing high density minerals either in stream or near cost lines is named.....**
6. **Ore deposits formed by replacement of wall rocks adjacent to an intrusive body is named .....**
7. **Based on the degree of temperature hydrothermal solution classified to 1. ....., 2. ....., 3.....**
8. **Stratiform accumulations of sulfide minerals that precipitate from hydrothermal fluids in the seafloor volcanic is named.....**
9. **Ore minerals which are spatially and genetically related to felsic to intermediate intrusions and are dominantly structurally controlled is named.....**
10. **Ore deposits formed by replacement of wall rocks adjacent to an intrusive body is named .....**

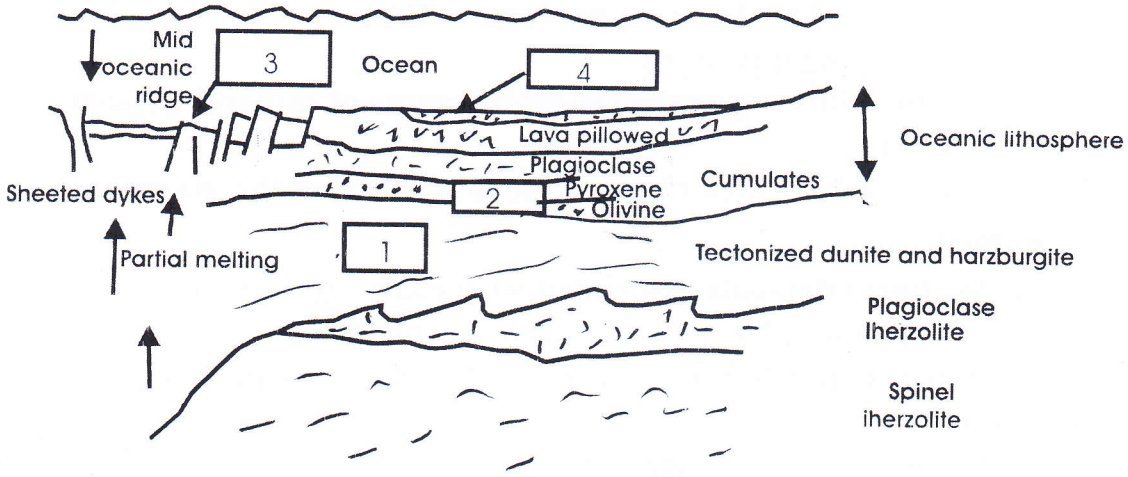
2. Write the metal zonation of porphyry type deposits. (5pts)

a. A core composed of .....

b. Intermediate zone.....

c. The outer or upper zone.....

3. Look to the oceanic crust architecture in the following sketch and write the main types of ore deposits related to 1,2,3,4 settings (5pts)



4. What are the differences and similarities between stratiform and podiform deposits of chromite? (5pts)

5. Identify the following processes and mention ore deposits related to each process (5pts)

Mechanical accumulation-liquid immiscibility- hydrothermal deposit- Skarn type deposits-Secondary supergene enrichment

6. In basic magma S-saturation is reached due to fractional crystallization of olivine, pyroxene, chromate and magnetite from the magma why? (5 pts)

7. Write in short about the sources of water, heat and metals in mineralized hydrothermal solution. (5pts)

8. Write briefly about the sources *of Metals and sulpher in Porphyry Deposits* (5pts)

9. What are the main types of VMS? (5pts)

ارجو لكم التوفيق

Prof. Dr. El-Sayed AboElla and Prof. Dr.M Sensoy

Assiut University
Faculty of Science
Department of Geology

Date: May 2019
Time allowed: 60 minutes

Final Exam

Subject: Petroleum Geology (G460), 4 th level, special geology, geochemistry and geophysics groups, Total 50 Marks

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Pàt I (Petroleum Geology 25 Marks)

Transfer the questions to your answer sheet and answer the following questions

I- Complete the missing answer on only five of the following: -
(10 Marks, 2 Marks each)

1- For petroleum accumulation, five types of traps in which gas and/or oil can accumulated. Mentioned these elements with **discussion and drawing**: -

a- .....
b- .....
c- .....
d- .....
e- .....

2- The different types of kerogen can produce gas, oil or immature kerogen at subsurface three zones based on depth and temperature, mentioned these zones with **discussion and drawing**: -

a- .....
b- .....
c- .....

3- Time aspect in petroleum system and modeling including three different times, mentioned these time aspects with **discussion**: -

a- .....
b- .....
c- .....

4- Petroleum system is completed by elements and processes:-
The elements are, ..., ..., ..., ... and .....
Whereas, the processes are, ..., ..., ... and .....

5- The LCI and VCI are highly controlled the reservoir continuity. These indexes are generally affected by: -
   a- .....
   b- .....
   c- .....

6- In Gulf of Suez oil fields, the main clastic reservoir rocks are, ... formation, ... formation, and ..... formation which belonging to Lower Miocene age. Whereas, the source rocks are .....formation, which belonging to Paleocene and ..... formation which belonging to Cenomanian age.

II- **Choose the correct answer and comment on your choice with illustration on only six of the following: -** **(9 Marks, 1.5 mark each)**

1- At catagensis zone of petroleum generation, the produced hydrocarbon is mainly:-
   a- Gas
   b- Oil
   c- Immature hydrocarbons

2- Secondary migration of hydrocarbons is generally carried out in :-
   a- The source rocks
   b- The reservoir rocks
   c- Metagensis zone of petroleum generation.

3- Most of hydrocarbon reserves all over the world are generally occurred in:-
   a- Regions of high tectonic and sedimentation
   b- Regions of high tectonic and low sedimentation
   c- Regions of low tectonic and high sedimentation

4- Permeability of reservoir rocks has direct effect in:-
   a- Reservoir productivity
   b- Reservoir continuity
   c- Trapping of hydrocarbons

5- North Sanai region is characterized by predominate structure feature nominated as Syrian Arc system, accordingly, most of oil traps in this region are:-
   a- Stratigraphic traps
   b- Structural traps
   c- Hydrodynamic traps

6- The inclined gas/oil contact (GOC) or oil/water contact (OWC) is generally accompanied with: -
   a- Hydrodynamic traps
   b- Diapiric traps

c- Stratigraphic traps

7- At Metagensis level, the Hydrogen-carbon ratio declines and hence, the generated hydrocarbon is: -
   a- coal
   b- Oil
   c- Gas

III- What is the differences with illustration between only three of the following: - (6 marks, 2 marks each)

1- Porosity and permeability in reservoir characterization.
2- Organic and thermal gases.
3- Surface geophysical and borehole geophysical methods in hydrocarbon exploration.
4- Water drive, gas drive and artificial methods for hydrocarbon production.

Part II (Hydrogeology)

Answer only two of the following questions:

1. Discuss with drawing: (12.5Mark)
   a. The main benefits from a grain size distribution curve in the aquifer material.
   b. Biological characters of groundwater.
   c. The differences between the saturated and unsaturated zones.

2. Give an account with drawing on: (12.5Mark)
   a. Industrial uses of groundwater.
   b. The groundwater aquifer characteristics.
   c. Water bearing formations.

3. Write short notes on the following: (12.5Mark)
   a. Specific yield and retention.
   b. The major and minor dissolved constituents in the groundwater
   c. The different types of groundwater aquifers.

========== Best Wishes ==========

بسم الله الرحمن الرحيم

جامعة أسيوط
كلية العلوم
قسم الجيولوجيا

Assiut University
Faculty of science
Geology Department

إمتحان المستوى الرابع (شعبتى الجيولوجيا والجيوفيزياء)

مقرر ٤١٥ ج (جيولوجية مصر)

Course 415 G (Geology of Egypt)

الدرجة: ٥٠ درجة الزمن : ثلاث ساعات

دوريونيو ٢٠١٩

الإمتحان مكون من أربعة صفحات

Part I (PreCambrian) 10 Marks

Answer the following question:

Question 1 (A-B): (10 Marks)

1-A: Discuss briefly the tectonic evolution of the Egyptian basement. (5 Marks)

1-B: Compare between the ophiolite suites and the fresh ultramaphic-mafic associations exposed in the Egyptian basement. (5 Marks)

Part II (Cambrian to L. Cretaceous) 10 Marks

Answer the following question:

Question 2 (A-C) (10 Marks):

2- A: Compare and correlate in a Stratigraphic table the Paleozoic rock units in the southern and northern parts of Western Desert. (4 Marks)

2- B: Summarize in a stratigraphic table the sub-surface Cretaceous rocks units in the northern part of Western Desert. (4 Marks)

2-C: Sketch a generalized stratigraphic section for the Upper Cretaceous rock units in Aswan.(2 Marks)

Part III (Upper Cretaceous to Quaternary) 20 Marks

Answer Only TWO Questions of the following:

Question 3:

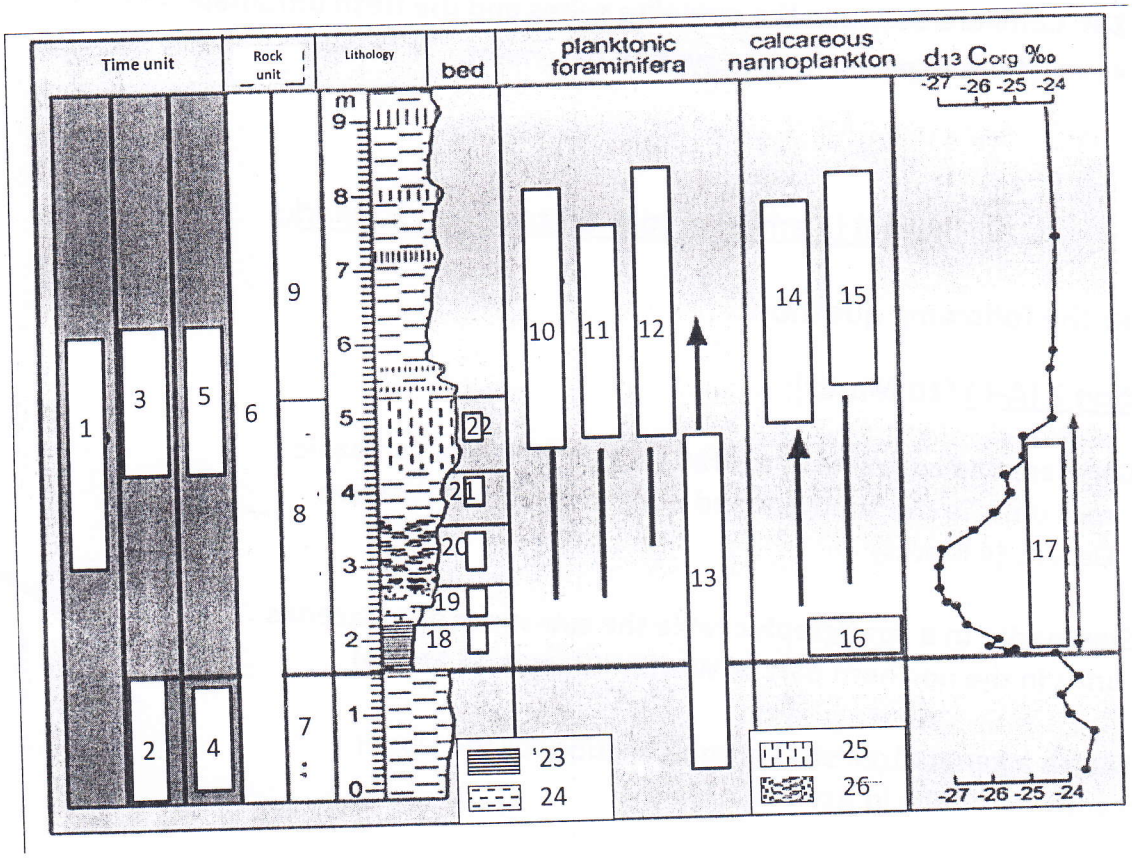
Correlate in a time table the Oligocene-Miocene rock units in the NorthernWestern Desert, the Nile Delta and the Gulf of Suez. (10 Marks)

Question 4:

Write a short article on the stratigraphy of the Kharga Oasis explaining your answer by drawings as possible as you can(10 Marks)

Question 5(A-B):

5-A: If you know in the following table that No. 2 is the Paleocene Epoch and No. 3 is the Eocene Epoch in the GSSP of the P/E boundary, please identify the type locality of this boundary, and fill the remaining white spaces from 1 to 26 in the given table by appropriate litho- , chemo- and chronostratigraphic terms as well as characteristic bioevents which mark the this boundary. (7 Marks)



5-B: Compare and correlate the Middle –Upper Eocene rock units and their equivalent time units in Fayoumdepression and Cairo district (3 Marks)

Part IV(Structural Framework, Paleogeography and Paleoenvironment)

Answer the following question: (10 Marks)

Question 6 (A-C)

6-A) Answer only ONE of the following(3.5 Marks)

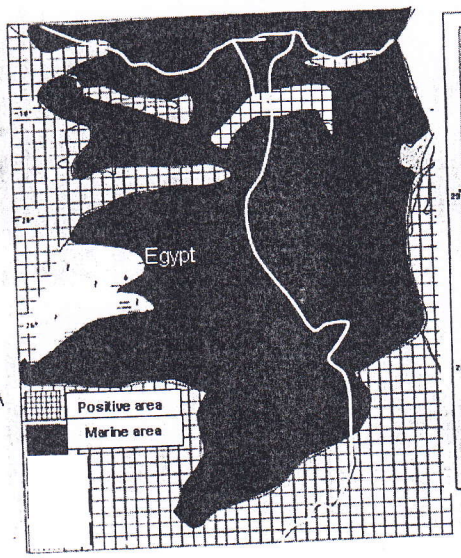
1-Write short notes on the classification of the Egyptian granites.
2-Compare between Dokhanvolcanics and Island arc volcanics.

6-B) Discuss ONLYTWO of the following statements:(2.5 Marks)

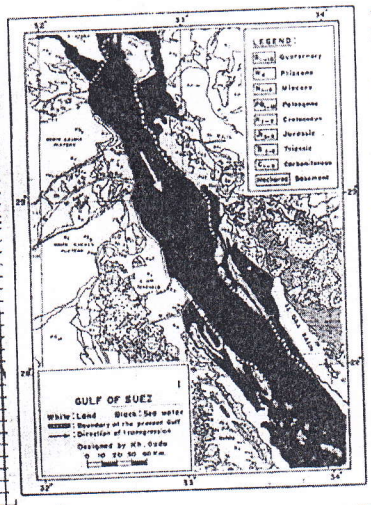
i- The Cenomanian sediments in north Sinai and Bahariya Oasis.
ii-RaisanAniza and Mallaha formations..
iii- Jurassic rocks in the northern part of Western Desert.

6-C: Look to the followingpaleogeographic maps and define the Period, Epoch and Absolute age during which the Egyptian land was submerged in a way such as in figures A, B, C, D and E. (4.0 Marks)

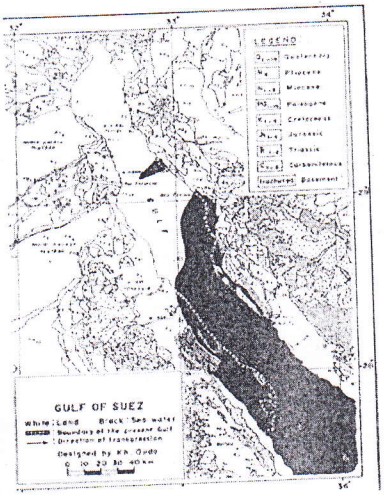
A



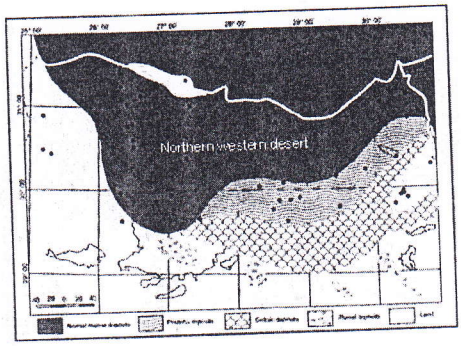
C

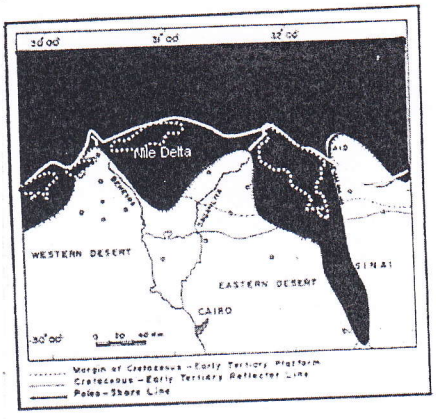


D



B





E

Good Luck. *Prof. Khaled Ouda; Prof. Ali Khudeir; Prof. NagehObaidalla*