



*Answer **THREE QUESTIONS ONLY** from the following*

QUESTION NO. ONE IS COMPULSARY

Elucidate your answer with drawings whenever it possible

Question No.1

(Total 20 Marks)

A- **What** are the genetic as well as textural and mineralogical differences/or similarities between **Aswan** Ironstone formation; the **Red Sea** Iron ore , **El Baharia** Iron ore and the **Uwainate** S.WD Iron ore Of Egypt ? **What** are the important factors you should take in your consideration when you evaluate the economic potentiality of these ores?

(12Marks)

B- **What** are essential features for the formation of hydrothermal mineral deposits?

What are the important criteria for distinguishing fissure filling type hydrothermal deposits from replacement type deposits? **What** are the characteristics and the economic potentiality of the G1, G2 and G3 Egyptian granites? **What** important ores found in associations with them and **Where** it do occur?

(8Marks)

Answer Only TWO Questions from the following

Question No.2

(Total 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?

Discuss briefly the dominant characteristics genetic aspect for both the **Epithermal gold silver (copper)** mineralization and the **Mesothermal – Orogenic (Lode-gold)** mineralization styles. **How** gold precipitation mechanism goes in the above two different environmental styles? **Mention three** important Egyptian gold bearing localities and give their average gold content (grade. g/t)

(10Marks)

B- **What** are the most important factors affecting U **mobility** and U **deposition** during cycle of weathering and sedimentation? **Mention** the names and chemical formula for **four** common known Uranium and Thorium minerals. **How** can you explain the genesis of G. Gattar U mineralization?

(5 Marks)

(Continued overleaf)

Question No.3

(Total 15 Marks)

A-What are the common characteristic features of porphyry copper mineralization? **Where** are the most important occurrences for copper mineralization in Egypt? **Emphasis** the genetic mode of occurrences and the reasonable average Cu content (kg/t) in each Egyptian locality. **Where** the most famous world occurrences of copper deposits? **How** supergene enrichment for copper is developed? and **What** conditions prevent the formation of the secondary Cu-minerals in this zone? (10Marks)

B-What are the main features necessary for the formation of marine evaporates? **What** are the paragenetic sequences of an evaporate assemblages from a sea water brines? **Where** the Egyptian natural evaporates wealth resource comes? (5 Marks)

Question No.4

(Total 15 Marks)

A-What factors controlling and limiting the development of oxidation zone? **What** types of ores you look fore in the oxidation zone? **Where** such ores occur in Egypt? **Elucidate** your answer with chemical equations.

How can you distinguish between:

i- False and True and gossans.

ii- S-type and I-type granites and their associated mineralization's.

iii--Podiform chromites and Layered chromites

(10 Marks)

B-Show How can you interpret the occurrence of the most famous Egyptian deposits in relation to the different plate tectonic sitting models that spatially related to crustal growth of the Egyptian Shield? **Illustrate** your answer with drawing. (5 Marks)

و بالتوفيق

Examiner: Prof. Dr. Nadia Sharara

Good Luck

(Time: 2 Hours)

Geology Department _____

Faculty of Science

Assiut University

Examination for Fourth Year Students of Faculty of Science in

Geological Map of Egypt (Course, 410G)

Write Briefly on the Following Topics:

(1) Write on the Pre-Cambrian Rocks in Egypt Showing:

- (A) The geographic distribution of these rocks.
- (B) Lithology of these rocks.
- (C) Different names of these rocks.
- (D) Age of these rocks.

(2) The Lithological & Stratigraphic Difference between the Quseir Formation, Dakhla Formation & Esna Formation.

(3) The occurrence of Quaternary Sediments in Egypt.

(4) The Geomorphology of the Egyptian Eastern & Western Deserts.

(5) Write on the Nubian Formation From the Points of:

- (A) Nomenclature.
- (B) Geographic Distribution.
- (C) Stratigraphic Setting.
- (D) Lithology.
- (E) Depositional Environment.
- (F) Economic Importance.

(6) The Name of Rock Units in Egypt of the: 1) Upper Cretaceous, 2) Paleocene & 3) Eocene.

(7) The Tectonic Events and development of the:

- 1) Red Sea, Gulf of Suez & Nile Valley.
- 2) Syrian Arc System.

Good Luck



Final Examination, Geostatistical Methods in Geophysics

June 2017

Geost. Methods (456G)

50 Points

Time: 2 Hours

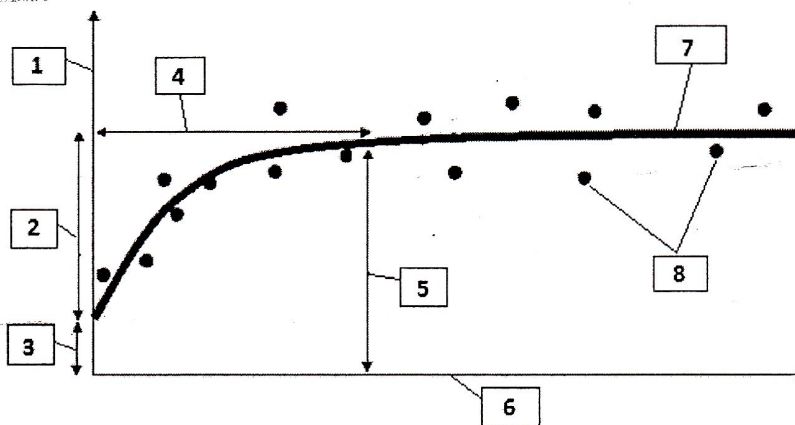
I. Answer only two of the following (use illustrations)(15 points)

- A)- Discuss the different types of variables
- B)- Compare between the variogram, covariogram and corellogram
- C)- Compare between IDW and Spline interpolation methods

II. Answer the following question.....(8 points)

The following Figure is illustrating a variogram model, what do the numbers on the Figure Represent?

- 1-.....
- 2-.....
- 3-.....
- 4-.....
- 5-.....
- 6-.....
- 7-.....
- 8-.....



III. Answer the following question.....(15 points)

From the following Table,

8	13	20	15	30	20	28	15	10	28	25	15	25
13	20	20	10	25	30	20	25	28	20	15	32	13

- 1. Calculate the Mean, Median, Mode, Range, Root Mean Squared, Variance, Standard Deviation, Kurtosis and Skewness
- 2. Draw the frequency curve for the given data and describe it

IV. Choose the correct answer of the following:.....(12 points)

1. The spline technique of interpolation fits a surface

- a. of minimum curvature through observation points
- b. of minimum variance to observation points, but not necessarily through them
- c. that is explicitly weighted by inverse distance
- d. that does not pass through the data points

2. Inverse distance weighting is a technique for

- a. merging two grids
 - b. spatial interpolation of point data
 - c. finding the difference between two grids
 - d. calculating hillshades
3. **In the concept of random sampling, when the selection of an object does not affect the selection of another object is termed.....**
- a. independence of sampling
 - b. unbiased sampling technique
 - c. independence of variable
 - d. unbiased natural occurrence
4. **Sampling procedure from an outcrop of a uniform, homogeneous and isotropic geologic unit is considered.....**
- a. random sampling technique
 - b. un-biased sampling technique
 - c. uniform sampling technique
 - d. biased sampling technique
5. **Given a huge rasterized data distribution, it is wise to useand.....to interpolate this data set**
- a. variogram and kriging method
 - b. variogram and IDW
 - c. variogram and nearest neighbor
 - d. none of the above
6. **A spatial interpolation technique that relies on fitting a polynomial to data points is called.....interpolation method:**
- a. IDW
 - b. Trend
 - c. Kriging
 - d. Minimum curvature
7. **When using the global interpolators, the change in the used function will cause.....**
- a. much abrupt changes in the surface
 - b. a change in the whole surface
 - c. exact honoring of all input data
 - d. local changes in the map
8. **When interpolating data with fluvial pattern, it's worth it to use.....**
- a. a variogram with isotropy
 - b. a variogram with nugget effect
 - c. a variogram without sill
 - d. a variogram without isotropy
9. **A big set of data has a variance value of zero, this indicates that.....**
- a. all values of the dataset are positive
 - b. all values of the dataset are identical
 - c. all values of the dataset are negative
 - d. all values of the dataset are missing
10. **Kriging is a**
- a. spatial interpolation technique
 - b. method that requires lots of user input
 - c. form of inverse distance weighting
 - d. all of the above
11. **A semivariogram is used to**
- a. look for patterns in z values over distances
 - b. find an exact solution for inverse distance weighting
 - c. find the best fit for a spline surface
 - d. all of the above
12. **One of the strengths of Kriging is the ability to**
- a. exactly estimate the highs and lows through averaging
 - b. look for trends in data before attempting to model them
 - c. produce surfaces with abrupt changes
 - d. create reasonable grids from points with large gaps in between



Final Examination, Hydrogeology 1

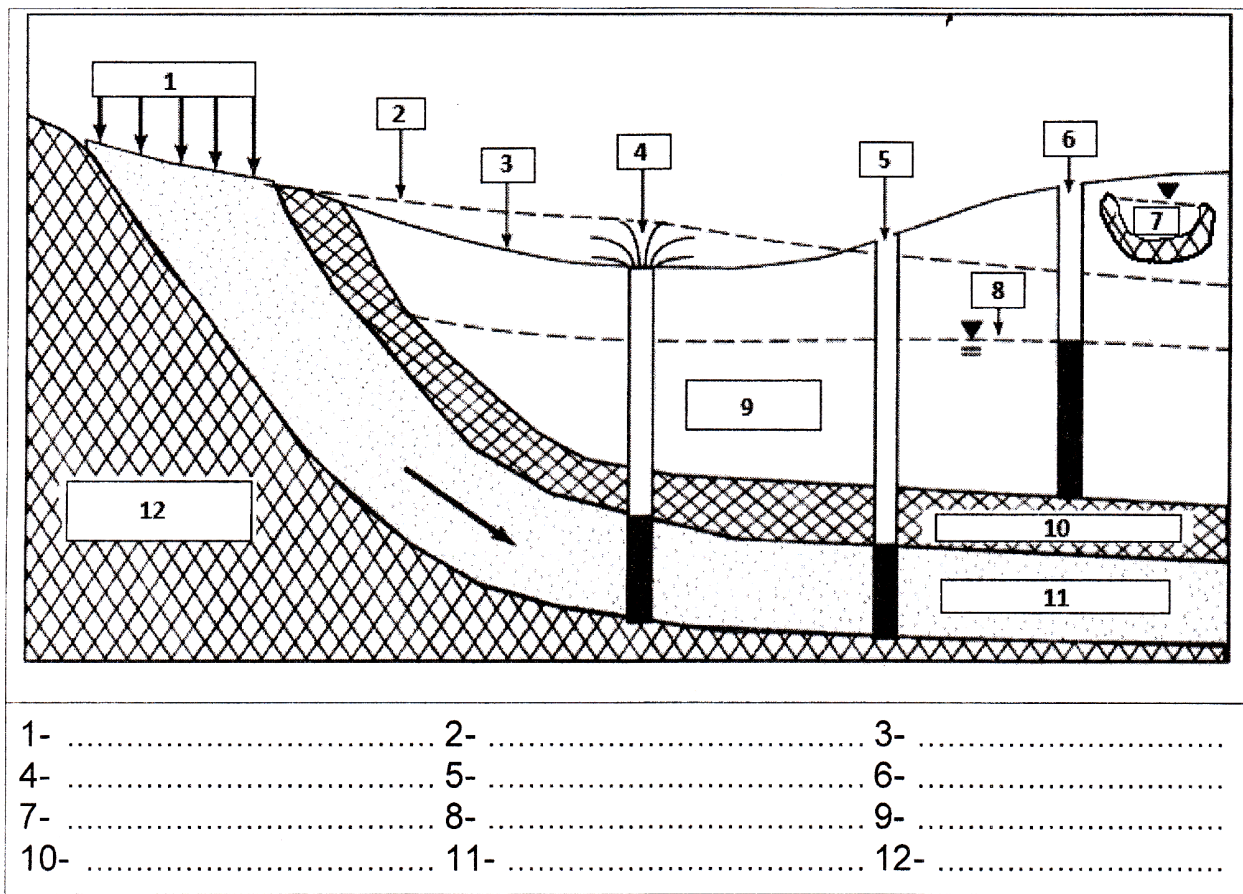
May 2017	Hydrogeology 1 (460G)	25 Points	Time: 1 Hour
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Answer the following questions

I. Answer the following question (6 points)

Water well is a hole excavated in the earth to obtain groundwater, on the light of this sentence, describe the different types of groundwater wells: (use illustrations to support your answer)

II. What are the numbers on the Figure stand for? (6 points)



III. Mark true or false for the following (correct the wrong one(s)) (3 points)

1. An aquifer without vadoze zone is vulnerable to contamination (.....)
2. Water volume on the earth is huge, however, most accessible at rivers (.....)
3. Interflow is the process by which water moves from surface to groundwater (.....)
4. A rain gauge is a method by which we can interpolate the rainfall values (.....)
5. A Piezometer is an instrument that measures the pressure head (.....)
6. The drawdown in a confined aquifer is resulting in decrease in water table (.....)

IV. Choose the correct answer of the following: (10 points)

1. Diffusion is the process of mixing that occurs as a result of in porous media
 - a. hydraulic gradient
 - b. concentration decay
 - c. advection
 - d. mechanical mixing
2. When pumping an unconfined Aquifer in a pump test, we should give much attention on:
 - a. storativity
 - b. porosity
 - c. transmissivity
 - d. hydraulic conductivity
3. Cooper and Jacob (1946) usedto analyze the aquifer test data
 - a. semi logarithmic paper
 - b. logarithmic paper
 - c. transparent paper
 - d. model-type-curve paper
4. Advection is a process in which the water should be.....
 - a. static
 - b. contaminated
 - c. polluted
 - d. flowing
5. The groundwater volume in a given aquifer depends mainly on:
 - a. Transmissivity
 - b. The effective porosity
 - c. The total porosity
 - d. Hydraulic conductivity
6. The duration of a pump test is designed so, that the aquifer is being pumped until:
 - a. the well becomes dry
 - b. the aquifer becomes saturated
 - c. for ever
 - d. a steady state is reached
7.expresses the ease in which water can flow through pore spaces or fractures
 - a. Storativity
 - b. Transmissivity
 - c. Porosity
 - d. Hydraulic conductivity
8. The water that vertically flows within the unsaturated zone after rainfall to reach groundwater is described by:
 - a. Infiltration
 - b. Percolation
 - c. interflow
 - d. Runoff

9. A point at which a water table meets the ground surface in a way or other is called:

- a. a flowing well
- b. artesian well

- c. water table well
- d. none of the above

10. Theis solution (1935) assumed that all geologic formations are horizontal and the flow is:

- a. static
- b. horizontal

- c. at infinite
- d. bounded

Best wishes

Dr. Ahmed Seif



Final Examination, Petroleum Geology 1

May 2017	Petroleum Geology 1 (460G)	25 Marks	Time: 1 Hour
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Answer the following questions

I. Fill in the gaps in the following question (10 marks)

A- Complete five only from the following:- (2.5 marks, 0.5 mark each)

- 1- Crude oil is.....
- 2- Maturation is.....
- 3- API is inversely proportion with and
- 4- Critical moment in petroleum system is
- 5- Kerogen is
- 6- Tar sand or Tar-mat is

B- Complete five only from the following:- (7.5 marks, 1.5 mark each)

- 1- For hydrocarbon formation and accumulation, five elements must be present. These elements are:-

a- b-

c- d-

e-.....
- 2- Hydrocarbon traps comprises five main types. These types are:-

a- b-

c- d-

e-
- 3- Petroleum system includes elements and processes :-

The elements are,, ,

and.....

Whereas, the processes are,, ,

..... and
.....
- 4- Lateral and vertical continuity indices of hydrocarbon reservoir are mainly controlled by different geologic features. The main such features, the following:-

a-

b-

c-

d-

- 5- In Gulf of Suez oil fields, the main clastic reservoir rocks are,,
, andformation which belonging to
age. Whereas, the source rocks arewhich belonging
 to Paleocene and formation which belonging to Cenomanian age.
- 6- In western desert oil fields the main source rocks are,
, and
 formations which are belonging to Jurassic – Cretaceous ages. Whereas, the clastic reservoir
 rocks are formation that belonging to Paleozoic and
, formation which
 belonging to Lower and Upper Cretaceous.

II. Choose the correct answer (ten only) of: (10 Marks, one mark each)

- 1- At Metagenesis zone of petroleum generation, the produced hydrocarbon is mainly:-
 - a- Gas
 - b- Oil
 - c- Immature hydrocarbons
- 2- Primary migration of hydrocarbons is generally carried out:-
 - a- From source rock to reservoir rock
 - b- From migration rock to reservoir rock
 - c- From migration rock to source rock
- 3- Most of hydrocarbon reserves all over the world are generally occurred in:-
 - a- Late Jurassic – Early Tertiary rocks
 - b- Pliocene – Recent rocks
 - c- Precambrian rocks
- 4- Capillary pressure in the reservoir is generally increases with:-
 - a- Increasing of pore size of the reservoir rocks
 - b- Decreasing of the pore size of the reservoir rock
 - c- Increasing of hydrocarbon contents
- 5- Gulf Suez constitutes major tectonic units formed from rifting, most oil traps in this region are:-
 - a- Stratigraphic traps
 - b- Structural traps
 - c- Diaperic traps
- 6- Water drive production of hydrocarbon depends on:-
 - a- Presence of rechargeable groundwater aquifer
 - b- Presence of salt upwelling
 - c- Presence of sealing rocks
- 7- Preliminary exploration of large sedimentary basins which may be contain hydrocarbons is
 generally carried out by applying:-
 - a- Seismic methods
 - b- Gravity and/or magnetic methods
 - c- Electric methods

- 8- In Post rift stage, thermal Subsidence is predominant and hence the resulted hydrocarbon traps are mainly:-
- a- Structural traps
 - b- Stratigraphic traps
 - c- Hydrodynamic traps
- 9- Post-discovery volumetric reserve calculation of hydrocarbons is estimated from:-
- a- Surface geophysical results
 - b- Borehole geophysical results
 - c- Surface geochemical results
- 10- Diagenesis is generally resulted in secondary porosity and/or permeability of rocks. This predominant in:-
- a- Clastic sediments with silica cementation
 - b- Clastic sediments with dolomite cementation
 - c- Carbonate rocks especially limestones
- 11- Vitrinite kerogen which originated from fibrous and woody plants as well as fragment and structureless colloidal humic matters generally produces:-
- a- Oil at depth level 2.5-4km and high temperature
 - b- Gas at depth level 4-5km and low temperature
 - c- Gas at depth level 4-5km and high temperature

III. What are the differences (with illustrations) between five only of the following:- (5 marks, one mark each)

- a- Stratigraphic traps associated with unconformities and that unassociated with unconformities

Stratigraphic traps associated with unconformities	illustration
1-	
2-	
3-	
Stratigraphic traps unassociated with unconformities	illustration
1-	
2-	
3-	

b- Net pay, gross pay and pool

	illustrations
Net pay	
Gross pay	
Pool	

c- Source rocks, reservoir rocks and sealing rocks

	illustrations
Source rocks	
Reservoir rocks	
Sealing rocks	

d- Oil window, gas window and immature window of hydrocarbon

	illustrations
Oil window	
Gas window	
Immature window	

e- Secondary porosity formed by solution and that not formed by solution of reservoir rocks.

Secondary porosity formed by solution	illustration
1- 2-	
Secondary porosity not formed by solution	illustration
1- 2- 3-	

f- Grain size and grain sorting in effecting on reservoir porosity and permeability.

Grain size	illustration
.....	
Grain sorting	illustration
.....	

Best Wishes, Prof. Dr. Mahmoud Senosy



Ore forming processes (438g)

Answer the following questions :

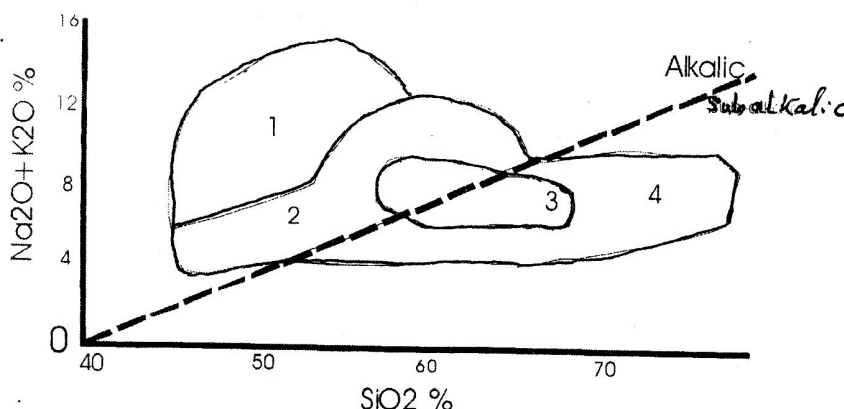
1. Complete the following sentences by the name of mineral deposit process: (10 pts)

1. Leaching of soluble elements leaving concentrations of insoluble elements is named.....
2. Separation of Cr-ore from the magma is named.....
3. Leaching of certain elements from the upper part of a mineral deposit and their reprecipitation at depth produce higher concentration is named.....
4. Settling out of Cu-Ni sulphid melts from magma with decreasing temperature is named.....
5. Ore deposits formed by replacement of wall rocks adjacent to an intrusive body is named
6. Sn-W, Beryl deposits associated with coarse grained felsic rocks is named.....
7. Minerals concentrated by flowing surface water and depositing high density minerals either in stream or near costlines is named.....
8. Stratiform accumulations of sulfide minerals that precipitate from hydrothermal fluids in the seafloor but also land-based volcanic is named.....
9. Ore minerals are dominantly structurally controlled and which are spatially and genetically related to felsic to intermediate intrusions is named.....
10. Cassiterite and wolframite ores which can be formed by hydrothermal processes at high temperature is named.....

2. Discuss briefly the main methods by which PGE transfer from the mantle in to the crust. (5pts)

3. mention why intermediate and high sulphidation epithermal gold deposits are related to porphyry type deposit, while low sulphidation is not ? (5pts)

4. The figure illustrates zones (1,2,3,4) of magmatic series and related porphyry type deposits. Write the name of zones and their related deposits. (5pts)



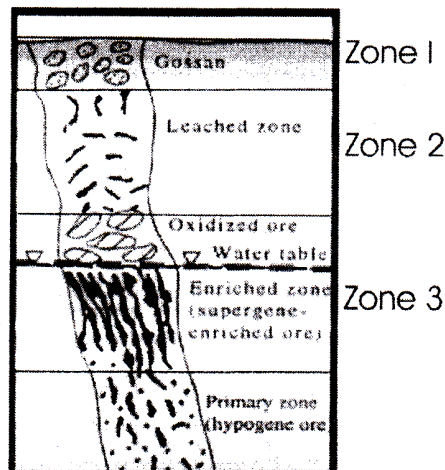
5. In basic magma S-saturation reached due to fractional crystallization of olivine, pyroxene, chromate and magnetite from the magma? (5pts)

6. Match between SULPHIDATION STATE (A) and related diagnostic mineral in (B) (5pts)

- | (A) | (B) |
|------------------------------|--------------------|
| 1. Very low sulphidation | Hematite –pyrite |
| 2. low sulphidation | Arsenopyrite (asp) |
| 3. Intermediate sulphidation | Covellite |
| 4. High sulphidation | Arsenopyrite-As |
| 5. Very high sulphidation | Bornite |

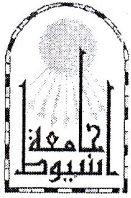
7. Compare between VMS and porphyry type deposits from the following points: (5pts)
rock association, Ore deposits shape, ore forming processes, types of alterations

8. The figure represent the supergene enrichment processes. Write the chemical reaction which lead to the enrichment beginning with the upper oxidation zone (Zone1) to the lower reduced enriched zone (zone3). (5pts)



9. a) What are the sources of water, heat and metals in mineralized hydrothermal solution?
b) What the types of hydrothermal mineralization based on temperature (5pts)

Best wishes
Prof.Dr/Mohamed Abdel-Moneim



Geology Department
Faculty of Science
Assiut University

Final exam, fourth level (Geology)
Palaeoecology & Biostratigraphy (G414)
May 2017

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: (5 marks; 1 mark each)

- a- The taxonomic uniformitarianian approach is limited to the invertebrates.
- b- Dinoflagellates can be good environmental indicators.
- c- Stromatolite forms reflect current velocity.
- d- Studying populations within physical and biological environment is called synecology.
- e- The total biotic component of the ecosystem is the biocoenosis.

ANSWER FOUR ONLY OF THE FOLLOWING QUESTIONS:

Question No. 2: (5 marks)

Paleoecologic reconstruction depends on well-established stratigraphy, good taxonomy and comprehensive ecologic background of preserved taxa; discuss this statement.

Question No. 3: : (5 marks; 2.5 marks each)

Discuss briefly the following:

- i- Necrolysis
- ii- Organic community

Question No. 4: Answer the following: (5 marks; 2.5 marks each)

- a- How can morphology of ostracod shells reflects substrate, turbulence and locomotion method?
- b- Compare between substantive and methodologic uniformitarianism.

Question No. 5: Complete the missing word(s): (5 marks; 1 mark each)

- a- The final assemblage investigated by the paleoecologist may be quite different from the original living assemblage due to.....
- b- Explanation of a complex is simplified by presenting the most important parameters.
- c- is the study of the interaction of organisms with one another and with the physical environment.
- d- Even those organisms that avoid being eaten have a low probability of becoming fossilized because most of them undergo
- e- Quantitative data as absolute abundance gives greater precision than

Question No. 6: Write briefly on: (5 marks; 2.5 marks each)

- 1- Fossil diagenesis
- 2- Biostratigraphy



أنظر خلفه لباقي الأسئلة

II- PART TWO (BIOSTRATIGRAPHY)

ANSWER THE FOLLOWING QUESTIONS:

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

- a- Ranges of species can overlap through space and time.
- b- The "Partial Range Zone" is not considered one of the "Interval Zones" group.
- c- Stage boundaries are usually marked by extinction events.
- d- Although basic concepts of biostratigraphy would seem simple, numerous factors should be checked before reasonable interpretations.
- e- In biostratigraphic applications, species that overlap through space and time must be excluded from zonal schemes.

Question No. 8: : Write on **two only** of the following (10 marks; 5 marks each)

- a- Defining and naming biozones.
- b- Biostratigraphic and chronostratigraphic units.
- c- Kinds of biozones.

Question No. 9: Complete the missing word(s): (4 marks; 1 mark each)

- a- Concepts of biostratigraphic correlation arebut 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- The regional biostratigraphic unit which is bounded by abrupt non-evolutionary changes in the dominant elements is called

Question No. 10: Write briefly on **two only** of the following: (6 marks; 3 marks each)

- a- Causes of missing of taxa.
- b- Importance of index fossils in biopstratigraphy.
- c- Correlation of biozones.

تمت الأسئلة مع أطيب الأمنيات بالتوفيق

Examiners:

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

Dr. Amr S. Deaf (Geology Department)



2016-2017 Second Semester, Final Examination for 4th Level Geophysics Students

On: Radiometric and Geothermal Methods (452-G)

May 2017	(Total Marks: 50)	Time allowed: 2 hours
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Answer the following questions:

First Question: Write *short notes* on ONLY FOUR ITEMS of the following: (20 marks)

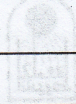
1. Geothermal resources in Egypt.
2. Gamma-ray spectrometer.
3. Radiometric field surveys.
4. Radon emanometer.
5. Radiocarbon dating method.
6. Geophysical methods in geothermal exploration.

Item no. 1:

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Item no. 2:

Assiut University
Faculty of Science
Geology Department



2016-2017 Second Semester, Final Examination for 4th Level Geophysics Students

Our Radiometric and Geothermal Methods (452-G)

May 2017	(Total Marks: 50)	Time allowed: 2 hours
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Answer the following questions.

For Questions 1-5 Write short notes on ONLY FIVE ITEMS of the following. (20 marks)

1. Geothermal resources in Egypt.
2. Gamma-ray spectrometer.
3. Radiometric field surveys.
4. Radon concentration.
5. Radiometric dating methods.
6. Geophysical methods in geothermal exploration.

Item no. 1:

Item no. 3:

Item no. 4:

Second Question: True (T) of False (F):

(5 marks)

1. Uranium-238 emits a gamma radiation of high energy. One gram of uranium with its daughter-products emit 27583 photons gammas per second. ()
2. Some advantages of the K-Ar dating method are the abundance of potassium and relatively short half-life of K-40. ()
3. An advantage of the Rb/Sr age-dating method is that all products are solids and therefore unlikely have been lost. ()
4. On a local scale, thermal measurements can be used to infer the position of structures such as shallow salt domes, anticlines, faults, fissures, etc. ()
5. The history of geothermal power can be traced back to over 10,000 years ago to the Italians at their settlements in hot springs. ()

Third Question: Choose the correct answer:

(15 marks)

1. Uranium-238 decays to which of the following daughter isotopes?
a. Lead-206 b. Lead-207 c. Lead-208 d. None of them.
2. The following is (are) the visible sign(s) of the large amount of heat lying in the Earth's interior:
a. Volcanoes b. Geysers c. Hot springs d. All of them
3. Atoms of AA decay to atoms of BB with a half-life of 100,000 years. If there are 20,000 atoms of AA to begin with (and 0 atoms of BB), how long will it take for there to be 2,500 atoms of AA?
a. 100,000 years b. 200,000 years c. 300,000 years d. 400,000 years
4. When heat is transferred from hot body to cold body without affecting the intervening medium, it is referred as heat transfer by:
a. Convection b. Radiation c. Conduction d. Both (a) and (c)
5. Which of the following radioactive isotopes is most useful for dating a very young sample (<20,000 years) of wood?
a. Uranium-238 b. Rubidium-87 c. Carbon-14 d. Potassium-40
6. Geothermal energy is the thermal energy present:
a. On the surface of the Earth. b. In the interior of the Earth.
c. On the surface of the ocean. d. None of the previous.
7. A rock formed with 1,000 atoms of a radioactive parent element, but only contains 250 radioactive parent atoms today. If the half-life is 1,000,000 years, how old is the rock?
a. 250,000 years b. 500,000 years c. 1,000,000 years d. 2,000,000 years
8. Hot water or steams carrying geothermal energy often comes up to surface in countries:
a. New Zealand b. Iceland c. Both (a) and (b) d. Pakistan
9. The radon environmental hazard is associated with the radioactive decay of:
a. Rubidium-87 b. Carbon-14 c. Potassium-40 d. Uranium-238
10. The geothermal gradient in the crust averages:
a. 1 degree Celsius per kilometre. b. 10 degrees Celsius per kilometre.
c. 25 degrees Celsius per kilometre. d. 100 degrees Celsius per kilometre.
11. When doing absolute dating, geologists test for a certain amount of _____, which is an element that has the same number of protons, but a different number of neutrons.
a. Half life b. Carbon-12 c. An isotope d. Uranium-235
12. In hydrothermal source of geothermal energy
a. Hot water or steam is available. b. Hot gases are available.
c. Molten lava is available. d. None of the previous.

13. Which of the following radioactive isotopes has the shortest half-life?

- a. Rubidium-87 b. Uranium-238 c. Potassium-40 d. Carbon-14

14. Why is geothermal energy the best way to heat and cool our homes?

- a. It's a fossil fuel. b. It is renewable.
c. It can save our environment. d. Both (b) and (c).

15. Radiometric age is often referred to as _____ age.

- a. Total b. Absolute c. Historic d. Geologic

Fourth Question: Complete the following sentences:

(6 marks)

1. _____ are parcels of electromagnetic radiation. They can travel for up to 300 m through air, but are stopped by water and other molecules.
2. A _____ is a sort of acidic hot spring with limited water. It usually takes the form of a pool. The acid and microorganisms decompose surrounding rock into clay and mud.
3. A _____ is a volume of rocks in the subsurface which exploitation in terms of heat can be economically profitable.
4. _____ produced in the upper atmosphere as a result of cosmic ray activity and mixes with active hydrogen reservoir of the Earth. It used to study the water cycle.
5. _____ is the unit used for measuring the activity of a radioactive specimen. It corresponds to activity of 1 gram of Radium-226.
6. A _____ is a hot spring in which water intermittently boils, sending a tall column of water and steam into the air.

Fifth Question: Write the *scientific term* for each equation from the following:

(4 marks)

$$N = N_0 e^{-\lambda t}$$

$$q = -K \frac{\partial T}{\partial Z}$$

a. _____

b. _____

$$t_{1/2} = \frac{\ln 2}{\lambda}$$

$$\frac{N_{Sr}}{N_{Rb}} = \frac{(1 - e^{-\lambda t})}{e^{-\lambda t}}$$

c. _____

d. _____

==== Good Luck,, ===== Dr. Rashad Sawires =====

**Fourth Level Examination in
Sedimentary Basins & Sequence stratigraphy (G420)
For geology and geophysics students'**

Time: Two Hours

(50 degree)

May, 2017

PART-I: Sedimentary Basins (25 degree)

1- Answer the following question:

- a. What is a sedimentary basin? (5 marks)
b. Mention with drawing the basin shapes? (5 marks)

Answer three questions only from the following:

2- Choose the correct answer (5 marks)

Backarc basins are formed in:

- Basins related to Subduction
- Basins related to collision

3- Mention briefly the sedimentary fills and ore deposits in the foreland basins? (5 marks)

4- Choose the correct answer (5 marks)

Forearc basins are related to:

- Subduction-related basins
- Strike-slip basins
- Collision-related basins

5- Write a brief account on the closing phase of the Wilson Cycle. Illustrate your answer with drawing. (5 marks)

PART-II: Sequence Stratigraphy (25 degree)

Answer the following TWO questions (Illustrate your answer by diagrams):

I- Write on THREE questions of the following: (15 marks)

- 1- How do you distinguish a low stand system track from a transgressive system track? What are the information might you use to test this? (5 marks)
2- What is the distinguishing characteristic of a sequence boundary? (5 marks)
3- What are the effects of sediment influx and subsidence on accommodation? (5 marks)
4- What is the distinguishing characteristic of Parasequence bounding surfaces? (5 marks)

II- Provide short definitions of FOUR terms of the following and explain why they are important in sequence stratigraphy: (10 marks)

- a) Gamma Ray Logs. b) Coastal onlap. c) Maximum flooding surface.
d) Base level. e) Sequence stratigraphic seismic surfaces

-----GOOD LUCK-----

Prof. Dr. Mohamed Ahmed Soliman

Prof. Dr. Ahmed-Reda El Younsy

**Fourth Level Examination in
Seismic Sequence stratigraphy (Gp.426)
For Petroleum Geology students**

Time: Two hours

(50 degree)

May, 2017

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

I- Write on, and differentiate between THREE ONLY of the following: (24 marks)

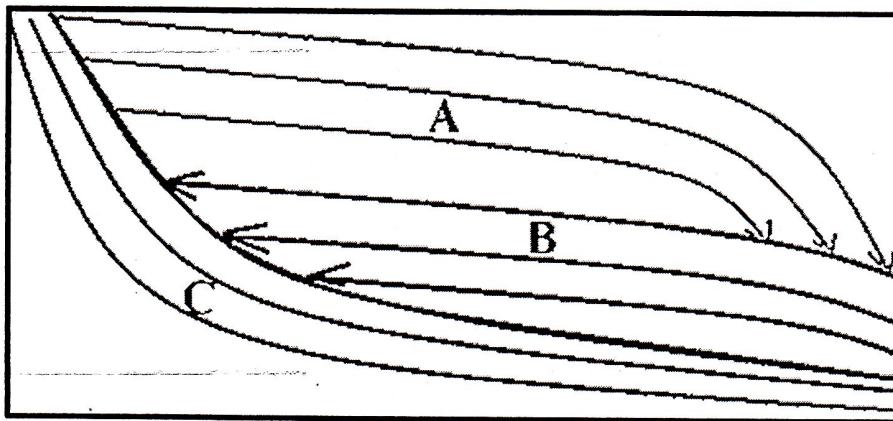
1. The difference between retrogradational and progradational stratal pattern in response to sea level changes and sediment flux. (8marks)
2. Write on the differences between sequence boundaries (SB), maximum Flooding Surfaces (MFS) and marine Flooding Surfaces. (8marks)
3. The criteria of recognition of sequence boundaries. (8marks)
4. How do you distinguish a low stand system track from a transgressive system track? (8marks)

II- Write on TWO questions ONLY: (16 marks)

1. Factors controlling global sea level change (eustasy). (8marks)
2. Parasequence stacking patterns. (8marks)
3. What are the effects of sediment influx and subsidence on accommodation? (8marks)

III- Answer the following TWO questions: (10 marks)

1. Sketch out typical patterns generated by seismic reflectors. (5marks)
2. What letters on the following diagram represent the toplap-downlap sequence? (5marks)
(Yes, it is two different things, so watch out!)



GOOD LUCK



كلية العلوم-قسم الجيولوجيا



جامعة أسيوط

امتحان طلاب المستوى الرابع مقرر (445 ج)
جيولوجيا تصويرية واستشعار عن بعد

مايو 2017

الزمن : ساعتان

الدرجة الكلية (50 درجة)

PART I. PHOTOGEOLOGY (25 Marks)

ANSWER THE FOLLOWING QUESTION

(7 marks)

1. Discuss the following statement : "Geologic photo-interpretation depends on essential factors that help in lithologic discrimination and structural identification. "

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

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: (6 marks)
 - a- Granites and Sandstones
 - b- Stream deposits and Slope deposits
4. Explain how differential erosion is considered the first key to bedrock identification and interpretation on aerial photographs. (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:

1- Write briefly on:

- a- Interaction mechanism between EMR and matter. (3 marks)
- b- Lineament metalotects. (4.5 marks)
- c- Sedimentary uranium deposits. (5 marks)

2- Give short notes about:

- a- Resolution and resolving power. (3 marks)
- b- Significance of ratio images. (3.5 marks)
- c- Detection of hydrothermal alteration halos. (6 marks)

3- Comment on:

- a- Enhancement processes. (4 marks)
- b- Spectral-reflectance curves. (4.5 marks)
- c- Arcuate features. (4 marks)

GOOD LUCK !!

Prof.Dr. Mohamed E. Habib

Prof.Dr. Moustafa M. Youssef

بسم الله الرحمن الرحيم

جامعة أسيوط

كلية العلوم

قسم الجيولوجيا

Assiut University

Faculty of Science

Geology Department

إمتحان المستوى الرابع (شعبة جيولوجيا البترول)، 4 صفحات

مقرر 405 ج ب (جيولوجية مصر والإحتمالات البترولية)

Course 405 PG (Geology of Egypt), 4 pages

دور يونيو 2017 الدرجة: 50 درجة الزمن: ساعتان

ملحوظة: الإمتحان يقع في أربع صفحات

Part I (Precambrian) 10 Marks

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

Write on the following items:

1-A: The characteristic features of the Ophiolitic sequences exposed in the Eastern Desert of Egypt. (5 Marks)

1-B: List the main differences between the Island Arc Metavolcanic and the Dokhan Volcanica. (5 Marks)

Part II (Phanerozoic) 30 Marks

Answer **THREE** Questions of the following:

Question 2:(10 Marks)

2: Define stratigraphically in a time table the different rock units of the Oligocene-Miocene Series in the Gulf of Suez region and correlate them with those of the northern onshore of the Red Sea coast.

Question 3: (10 Marks)

3: Describe in a time table the litho-, bio- and chemostratigraphy as well as the paleoenvironment and paleontology of the Paleocene-Eocene boundary interval as given in the Global Stratotype Section and Point (GSSP) at Dababiya, south Luxor.

Question 4(A-B): (10 Marks)

4-A: Select from list B the equivalent rock units to those of list A, and re-arrange the units of list A in stratigraphic order according to their ages: (6 Marks)

List A

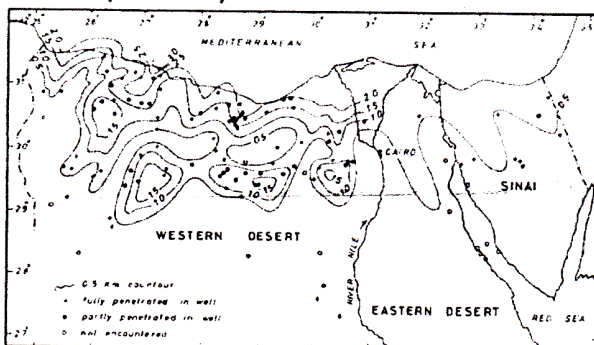
Belayim Formation
Kiseiba Formation
Dabaa Formation
Garra Formation
BirketQarun Formation
Mamura Formation
Ryan Formation
Tanka Formation
Bir El Temsah Formation
Kareem Formation

List B

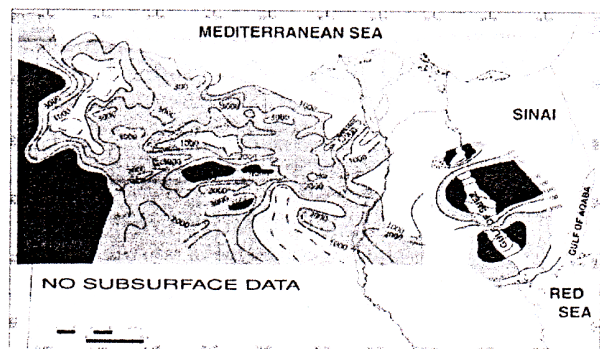
Rudeis Formation
Mokattam Formation
Um Mahara Formation
Quseir-Dakhla Formations
Syatin Formation
Tarawan Formation-Hanadi Member
Observatory Formation
El Qurn-WadiGarawi Formation
Abu Madi Formation
Geisum Formation
Qasr El Sagha – Qattrani Formation

Dungul Formation

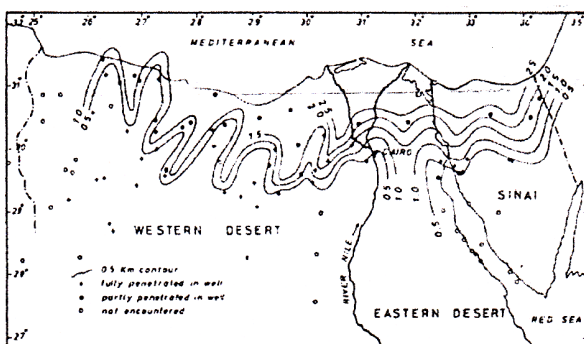
4-B: Look to the following isopachmaps and define the Era, Period, and Epoch of the subsurface rocks whose thickness and distribution are given in A, B, C and D (4Marks)



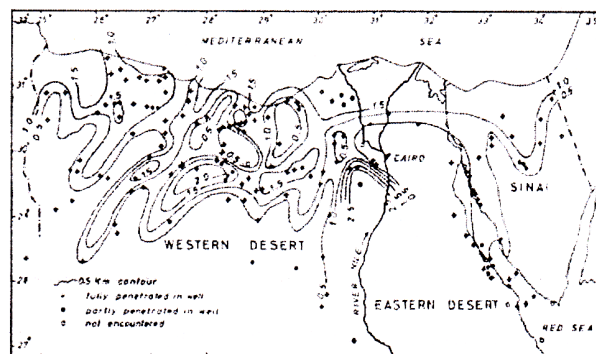
A



B



C



D

Question 5(10 Marks)

6: The following table is a generalized stratigraphic Paleozoic-Cenozoic column in the subsurface of the northern Western Desert including the oil potentialities. Fill the empty spaces in the table from 1 to 20 by suitable rock unit, time unit or lithology and environment.

TIME UNITS		ROCK UNITS	LITHO.	LITHOLOGY & ENVIRONMENT	
CENOZOIC		MIOCENE	17		CONTINENTAL CLASTICS
		OLIGOCENE	16		FLUVIOMARINE CLASTICS AND CARBONATES
		EOCENE	15		OPEN MARINE CARBONATES
		PALEOCENE			
MESOZOIC	1	5	14		OPEN MARINE CHALK
					SHALE
		SANTONIAN TURONIAN	13	A	20
				B	
				C	
				D	
				E	
				F	
				G	
		4	12		FLUVIOMARINE CLASTICS
		3	11		19
		APTIAN	10		SHALLOW MARINE DOLOMITE AND LIMESTONE
		BARREMIAN NEOCOMIAN	9		FLUVIAL AND FLUVIOMARINE CLASTICS
	JURASSIC	UPPER	8		18
		MIDDLE	7		
		LOWER	6		
PALEOZOIC	DEVONIAN	2	GHAZALAT		FLUVIAL TO SHALLOW MARINE CLASTICS WITH IGNEOUS INTRUSIONS
	SILURIAN		ACACUS		
	ORDOVICIAN		GARGAF		
	CAMBRIAN				
	PRECAMBRIAN		BASEMENT		

Part III (Oil and Gas Potentialities in Egypt) 10 Marks

Answer the following question:

Question 6 : (10 Marks)

6: Give the appropriate data on the following items:

- i- The reserves by age and petroleum system in the Gulf of Suez and Western Desert of Egypt (2 Marks)
- ii- The difference between crude oil, natural gas and condensates (1 Mark)
- iii- The total world reserves of crude oil and natural gas at the beginning of 2008; how much of these reserves occur in the Middle east (2 Marks).
- iv- The source rocks, reservoirs and estimates of volumes of undiscovered oil and gas in the Nile Delta Basin (Nile Cone and Nile Margin) in the eastern Mediterranean. (5 marks)

Good Luck. Prof. Khaled Ouda; Prof. Ali Khudeir; Prof. Nageh Obaidalla

بسم الله الرحمن الرحيم

جامعة أسيوط
كلية العلوم
قسم الجيولوجيا

Assiut University
Faculty of science
Geology Department

إمتحان المستوى الرابع (شعبتي الجيولوجيا والجيوفيزياء) 4 صفحات

مقرر 415 ج (جيولوجية مصر)

Course 415 G (Geology of Egypt), 4 pages

الزمن ثلاث ساعات

الدرجة: 50 درجة

دور يونيو 2017

الإمتحان مكون من أربعة صفحات

Part I (PreCambrian) 10 Markes

Question 1:

Answer the following question: (10 Marks)

1-Write briefly on the different efforts carried out on the classifications of the Egyptian Granites.

Part II (Cambrian to L. Cretaceous) 10 Marks

Question 2 (A-B) :

Answer the following question: (10 Marks)

2-A): Compare and correlate in a geological table the Paleozoic outcrops rock units in northern and southern provinces of Egypt. (7 marks)

2-B)- Discuss the Triassic rocks in Egypt. (3 Marks)

Part III (Upper Cretaceous to Quaternary) 20 Marks

Answer TWO Questions of the following:

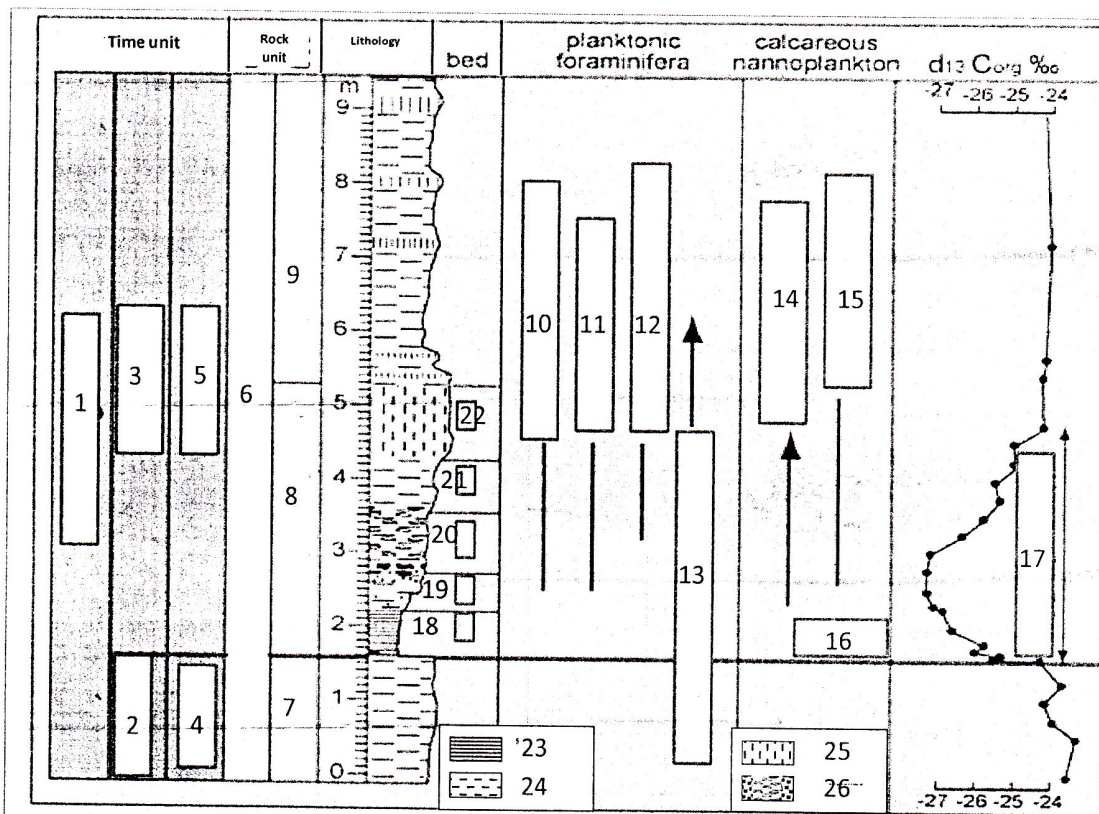
Question 3 (A-B): (10 Marks)

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

3-B: Identify in a time table the different rock units of the Miocene Series in the Nile Delta and their equivalent time units (5 Marks)

Question 4: (10 Marks)

4-: 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 chrono-stratigraphic terms as well as characteristic bioevents which mark the this boundary.



Question 5 (A- B):

5-A: Select from list B the equivalent rock units to those of List A and rearrange the units of list A in stratigraphic order according to their age. (5 Marks)

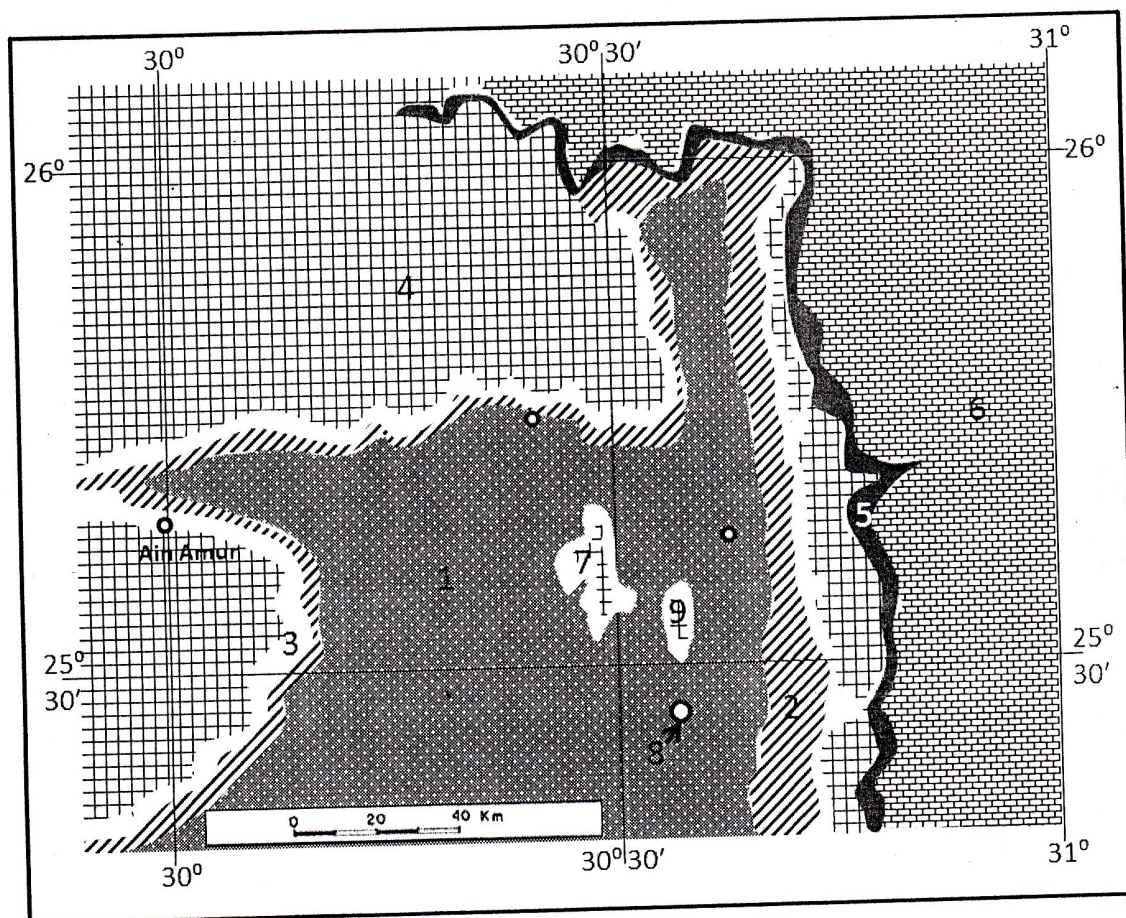
List A List B

Kiseiba Formation
 Belayim Formation
 Garra Formation
 Dabaa Formation
 BirketQarun Formation
 Mamura Formation
 Ryan Formation
 QawasimFormtionEl Qurn-WadiGarawi Formations
 Bir El Tamsah Formation
 Kareem Formation

Mokattam Formation
 Rudeis Formation
 Um Mahara Formation
 Quseir-Duwi-Dakhla
 Syatin Formation
 Tarawan Formation-Hanadi Member
 Observatory Formation
 Belayim –South Gharib Formations
 Geisum Formation
 Qasr El Sagha – Qattrani Formations

Darat-Khaboba Formations

5-B: Look to the following map and define: a) the name of district, b) the names , lithology and age of rock units from 1 to 6; C) the name of topographic and geographic features from 7-9 (5 Marks)



Part IV (Structural Framework, Paleogeography and Paleoenvironment) (10 Marks)

Answer the following question:

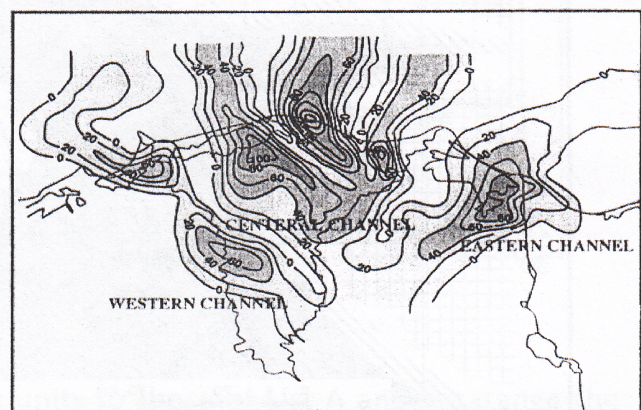
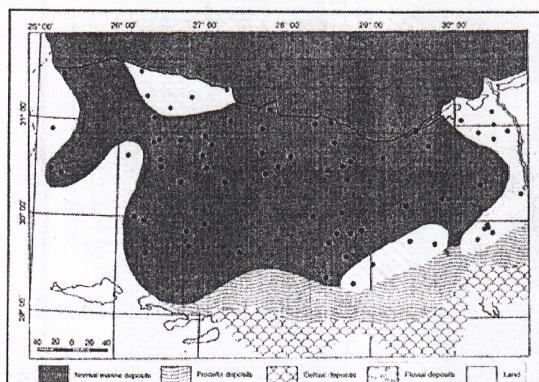
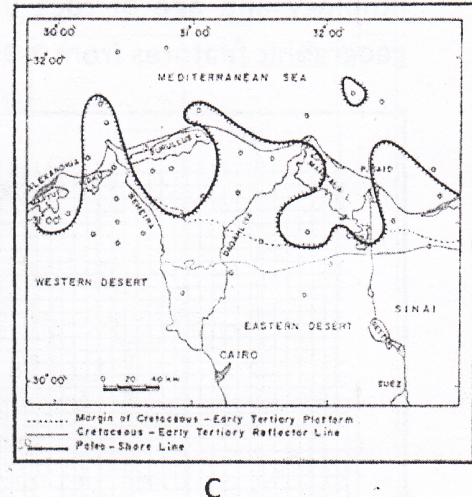
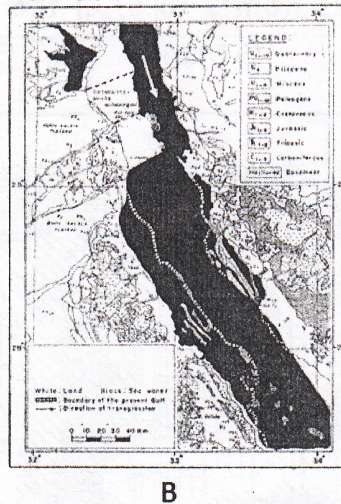
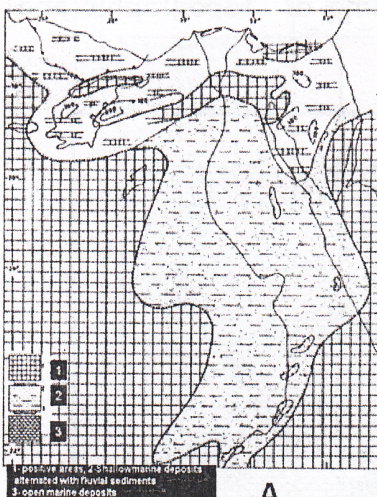
Question 6 (A-C)

6- A): Write on ONE of the following (3.5 Marls)

1. Compare between the ophiolitic suites and fresh ultramafic-mafic associations occurring in the Egyptian Basement.
2. Compare between the Younger Island Arc associations and the Dokhan Volcanics.

6-B: Compare and correlate the Early Cretaceous sediments at Sinai (3 Marks)

6-C: Look to the following paleogeographic 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)



Good Luck. Prof. Khaled Ouda; Prof. Ali Khudeir; Prof. Nageh Obaidall