



Final Examination, Geostatistical Methods in Geophysics

Dec. 2016	Geost. Methods (456G)	50 Points	Time: 2 Hours
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I. Answer only five of the following (use illustrations)(30 points)

- A)- Discuss the classification of interpolation procedures
- B)- Describe the Variogram model and its components, and give four model examples
- C)- Why do we need geostatistics?
- D)- Discuss in details the Kriging interpolation method
- E)- Compare between the variogram, covariogram and corellogram
- F)- Compare between IDW and Natural neighbors interpolation methods

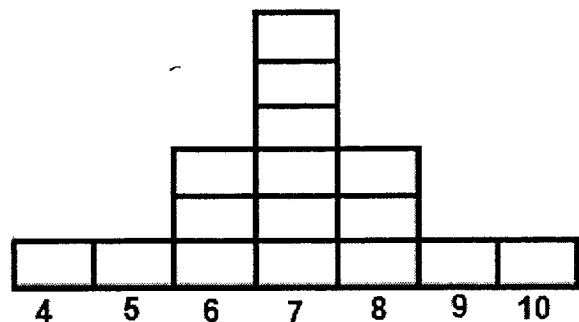
II. Define only four of the following(10 points)

- Tensor, Random sampling, Variable,
Skewness, Time series data

III. Answer the following question.....(10 points)

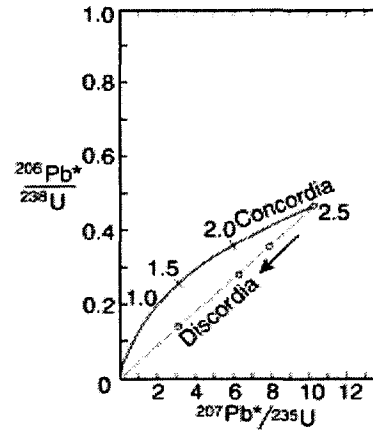
In the following Figure,

- Calculate the Mean, Median, Mode, Range, Root Mean Squared, Variance, Standard Deviation, Kurtosis and Skewness
- Based on the above statistics, give a full description of the frequency curve



Good Luck
Dr. Ahmed Seif

11) What is meant by concordia and discordia in the U-Pb-Th System, explain using the given diagram.



12) What are the source of errors in groundwater analysis?

Section two : Multiple Choice (typically these would be one point each)

Answer Six questions only from this part

13) The type of magma that has the highest silica content is:

- A. intermediate
- B. ultramafic
- C. mafic
- D. felsic

14) All these rocks have about the same chemical composition being basic except:

- a. gabbro
- b. norite
- c. syenite
- d. basalt

15) Which mineral is expected to be found in the feldspathoidal rocks

- a. biotite
- b. quartz
- c. nepheline
- d. hornblende

16) The type of feldspar that contains either Ca or Na is called:

- A. K-feldspar
- B. plagioclase
- C. calcite
- D. olivine

Geology Department
Faculty of Science
Assiut University

Time: 2 H
Juae: 2017

Structural geology (340G)
Prof. Dr. Mohamed Abdel-Raouf Hassan

- Answer the following questions: (50 marks)
- 1-Types of joints (15 marks)
 - 2-Type of faulting (15 marks)
 - 3-What is the part of folds (15 marks)
 - 4-Types of classification of structures (5 marks)

Assiut University

Geochemistry G433
Final Exam

Faculty of Science

Geology Department

Geology/ Chemistry & Geology Gps.

Course Coordinator: Prof. Dr. Mervat A. Elhaddad

27th of December 2016
Total 25 points

Time allowed: one hour
No. of Pages: 4

Wherever possible, show us that you understand the concept behind the question.

Section one: 12 short answer questions (typically these would be one point each)

- 1) How many mantles for the earth?
- 2) Mention four siderophile elements?
- 3) What are the major minerals of the upper mantle?
- 4) What are the processes controlled by heat loss on earth?
- 5) Which rock makes up the bulk of the Earth's mantle ?
- 6) What's meant by LOI?
- 7) What do we mean by alkalinity index? what are its three subdivisions?
- 8) Sr and Ba replaces which element from the rock forming minerals . Comment
- 9) Define what's meant by incompatible elements? Give examples
- 10) Define what's meant by major elements, minor elements and trace elements.

(EGYPT)

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

Answer the following question:

Question 6 (A&B) (10 Marks)

6-A: Give short notes about the following items: (3 Marks).

- i- The difference between crude oil, natural gas and condensates
- ii- The quantity of Production of crude oil, natural gas and condensates in Egypt during 2008-2009
- 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

6-B: Define graphically 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. (7 marks)

Good Luck.

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

7-Chemical weathering changes the chemical compositions of minerals that are unstable at the Earth's surface to minerals which are stable (Give 2 examples)

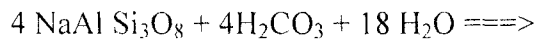
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8-Oxygen, carbon dioxide, nitric acid, sulphuric acid, humic complexes, ammonia and chlorides are the most important among the decomposition causing substances dissolved in natural water.

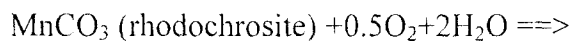
Where the substances dissolved in water come from?

- 1-
- 2-
- 3-
- 4-
- 5-

9-Complete the following reaction:



10-Complete the following reaction



11-Which one of the following is NOT typical of "resistates"

- A. They consist of the chemically undecomposed weathering residues.
- B. They are usually coarse- and medium-grained materials
- C. They possess a more or less clastic texture.
- D. They are deposited in deep water

12-The argillaceous (Hydrolyzates) substances are characterized by the following, EXCEPT:

- A. their occurrence as solid insoluble particles
- B. their transportation as suspended particles
- C. their certainly smaller particle size
- D. They consist partly of the chemically undecomposed materials
- E. They entirely composed of amorphous materials



Final Exam (first semester)
Subject: Subsurface Geology (G409)

Total 50 Marks
Students: 4th level (All groups)

Answer the following questions

- I- Choose the correct answer and on Only ten of the following:- (Comment on your choice with illustration):- **25 Marks (2.5 marks each)**
- 1- In log correlation for lithologic identification, the correlation must start:-
 - a- From top to bottom
 - b- From bottom to top
 - c- From unconformity surfaces
 - 2- Drilling horizontal layers by directional drilling TVT is increasing with:-
 - a- Decreasing of deviation angle
 - b- Increasing of deviation angle
 - c- Increasing of dip angle
 - 3- In areas of random distribution of wells with expected complicated structures contouring of will carried out by:-
 - a- Interpretative contouring
 - b- Mechanical contouring
 - c- Equal space contouring
 - 4- Increasing of expansion index from drilling layers in the upthrow and downthrown side of faults indicating to:-
 - a- Normal growth faults
 - b- Reverse growth faults
 - c- Wrench growth faults
 - 5- Reverse fault of downthrown less than thickness of the down- faulted beds can be recognized from structure contour map by:-
 - a- Presence of fault gap
 - b- Repetition of contour lines within the fault zone area
 - c- Repetition of only one or two contours in a very narrow area
 - 6- Wrench Faults of horizontal displacement can be recognized on structure contour map by:-
 - a- Nosing of the contour lines
 - b- Pending of the contour lines
 - a- Repetition of the contour lines
 - 7- Migration of shoreline can be recognized from isopach maps of successive subsurface layers by:-
 - a- Concordant of maximum contours in specified fixed zone within the successive maps

Part III (Upper Cretaceous to Quaternary) 20 Marks

Answer TWO Questions of the following:

Question 3(A-B):

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

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

Question 4:

4: 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 village , south Luxor, and correlate stratigraphically the rock units of this interval in both Dababiya and Abu Ghurra. (10 Marks)

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

Kiseiba Formation
Belayim Formation
Garra Formation
Dabaa Formation
Birket Qarun Formation
Mamura Formation
Ryan Formation
Qawasim Formtion
Bir El Tensah Formation
Kareem Formation

List B

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

بسم الله الرحمن الرحيم

ASSIUT UNIVERSITY
FACULTY OF SCIENCE
GEOLOGY DEPARTMENT

جامعة أسيوط
كلية العلوم
قسم الجيولوجيا

الزمن ساعة

إمتحان المستوى الرابع جيولوجيا البترول

دور يناير 2017

مقرر 427 ج ب (تحليل حوضى وأحواض ترسيب مصرية)

Part 2: Sedimentary basins in Egypt (5 pages)

Answer TWO of the following questions:

QUESTION 1: Identify the items from 1 to 33 in the given table of the generalized stratigraphic column of the Cenozoic basins and oil potentialities in the Gulf of Suez Region.

Time units Epoch & Age = Series & Stage		Rock units Formations & members		Lithology	Thickness	33	Reservoir Rock	Oil Field	
2	6	13	31		3000 feet		X	●	
		12	30		2300 feet		X	●	
	5	11	17	29		1400 feet		X	●
				Feiran					
				28					
	10	16	27						
			26	1000 feet	<input type="checkbox"/>		●		
			25			X			
	4	9	15	24		32			●
				23					
				22					
				21					
	8	14	Khoshera		1200 feet			X	●
20									
19									
18									
1	3	7	Abu zenima & Tayiba Beds		450 feet				



First Semester, Fourth Level Final Examination

Time: 2 hours	Total marks: 50	GEORADAR AND PALEOMAGNETISM (G453)	January, 2017
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Part One: GEORADAR (25 Marks)

I. Answer ONLY THREE of the following questions and illustrate your answer by suitable drawings when possible: (15 Marks)

1. Ground penetrating radar is an important geophysical prospecting method used to provide high resolution images of the subsurface. **List five different application of the GPR method.**
2. The propagation of the radiowave pulse is controlled by the relative dielectric permittivity among other factors. **Describe shortly the dielectric properties of Earth materials.**
3. There are three main modes of deployment of radar systems. **Describe these different modes of GPR data acquisition.**
4. Different factors may result in a decrease in signal strength as radiowaves propagate through subsurface media. **Describe briefly the different sources of radiowave energy loss and attenuation throughout the subsurface media.**

II. Fill in the gaps in the following sentences: (7.5 Marks)

1. mode of GPR data acquisition is when one antenna device is used as both transmitter and receiver, while mode is when two separate antennae are used with one serving as a transmitter and the other as a receiver.
2. The is defined as the depth when the original amplitude is reduced to 37% (1/e). The total path loss in the radiowave for a given distance is dependent on many factors, such as: and
3. The speed of radiowaves in any medium is dependent upon, and
4. In the wide-angle reflection and refraction or common-midpoint configurations, three types of waves may be identified, and
5. For applications, where depth penetration tends to be more important than very fine resolution, antenna with frequencies less than or equal to 500 MHz are usually used, while for applications, antenna with frequencies of 500 MHz and greater are used.

III. True (T) or False (F): (2.5 Marks)

1. Typically, within the range of GPR antenna frequencies, the lower the frequency of the pulse, the deeper the signal penetration and the higher image resolution. ()
2. Detectability of a subsurface feature depends upon contrast in electrical and magnetic properties, and the geometric relationship with the antenna. ()
3. Radar has been used for geological applications since the 1960s, especially in connection with the development of radio echosounding of polar ice sheets. ()
4. Vertical resolution is a measure of the ability to differentiate between two signals adjacent to each other in time. ()
5. The presence of water-filled pores increases the bulk dielectric permittivity from the value associated with the unsaturated state. ()

III. Write down the equations describing the following systems:
..... (6 points)

A)- Water Budget in a groundwater system

B)- General governing equation for steady-state, saturated, heterogeneous, anisotropic conditions

C)- General governing equation for transient, saturated homogeneous, and isotropic conditions

D)- Laplace's Equation for 2D aquifers

E)- Linear Advective Velocity

F)- Theis's Eqs (1935) for transient confined conditions

IV. Mark true or false for the following (correct the wrong one/s) (5 points)

A. The pressure head in an aquifer is increasing downward (.....)

B. Water level in a gaining stream is lower than water table (.....)

C. Aquifers with variable thickness are considered homogeneous (.....)

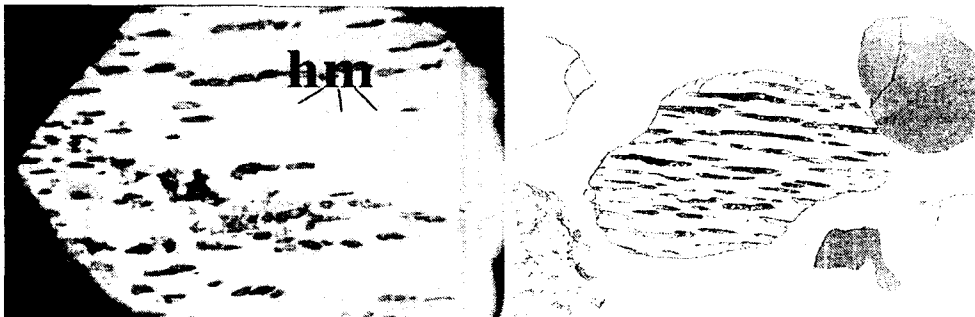
D. Specific yield for confined aquifers almost equals the effective porosity (.....)

E. Collins diagram can be used to estimate the groundwater origin (.....)

Best wishes

Dr. Ahmed Seif

- a) Is the texture suitable for recovering ores?
 - b) What are the cooling conditions at which textures in (a) and (b) photos were formed?
 - c) Mention the paragenetic sequence significance at photo (c)
 - d) What is the type of texture in figures (e) and (f)?
 - e) What are the metamorphic significances for photo (f)?
- 3) A. Mention the methods by which PGE transfer from the mantle into the crust (5 marks)
 B. Comment briefly on the following photos (5 marks)



- 4) A. Identify the following: hypogene alteration AND supergene alteration-primary fluid inclusions-epigenetic ore bodies- - concentration factors (4 marks)
 B. Identify **BIREFLECTANCE**, mention three minerals showing bireflectance properties. (3)
 C. Mention how can you determine the rotation sense (3 marks)
5. A. What is reflectance and what are the factors controlling it? (One mark)
 B. How can you differentiate between Covellite-gold-bornite minerals under a microscope? (1)
 C. Mention two isotropic minerals and two anisotropic minerals, and clearly by drawing how you can differentiate between them under a microscope using polarization figures? (3)
 D. Write in short about the genesis of Bushveld type chromite (5 marks)
6. A. Clearly with drawing the processes essential for the formation of PGE-Ni-Cu deposits (4)
 B. What are the types of alterations associated with porphyry type deposits (from bottom-inner zones to upper-outer zones) (3 marks)
 C. What are the main types of open space filling textures (3 marks)

With my best wishes

Prof. Mohamed Abdel-Moneim

II. Define only four of the following with drawings (8 points)

A)- Groundwater Pollution Risk

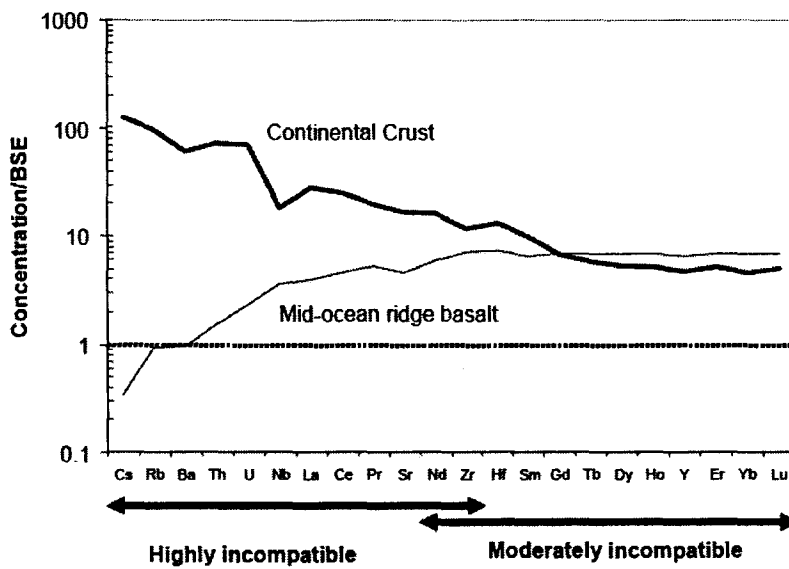
B)- Water Resources in Egypt

C)- Porosity

D)- Advection

E)- Perched Aquifer

21) In terms of elements compatibility, write down which elements are highly or moderately compatible in relation to the tectonics given above.



3-C: You have a subsurface structural model of the Nile Delta area from West to East in northern Egypt. Identify the geographic regions from A to D and Define the time units (Epoch and age) during which the rock units from 1 to 7 were deposited in the following Cross section.

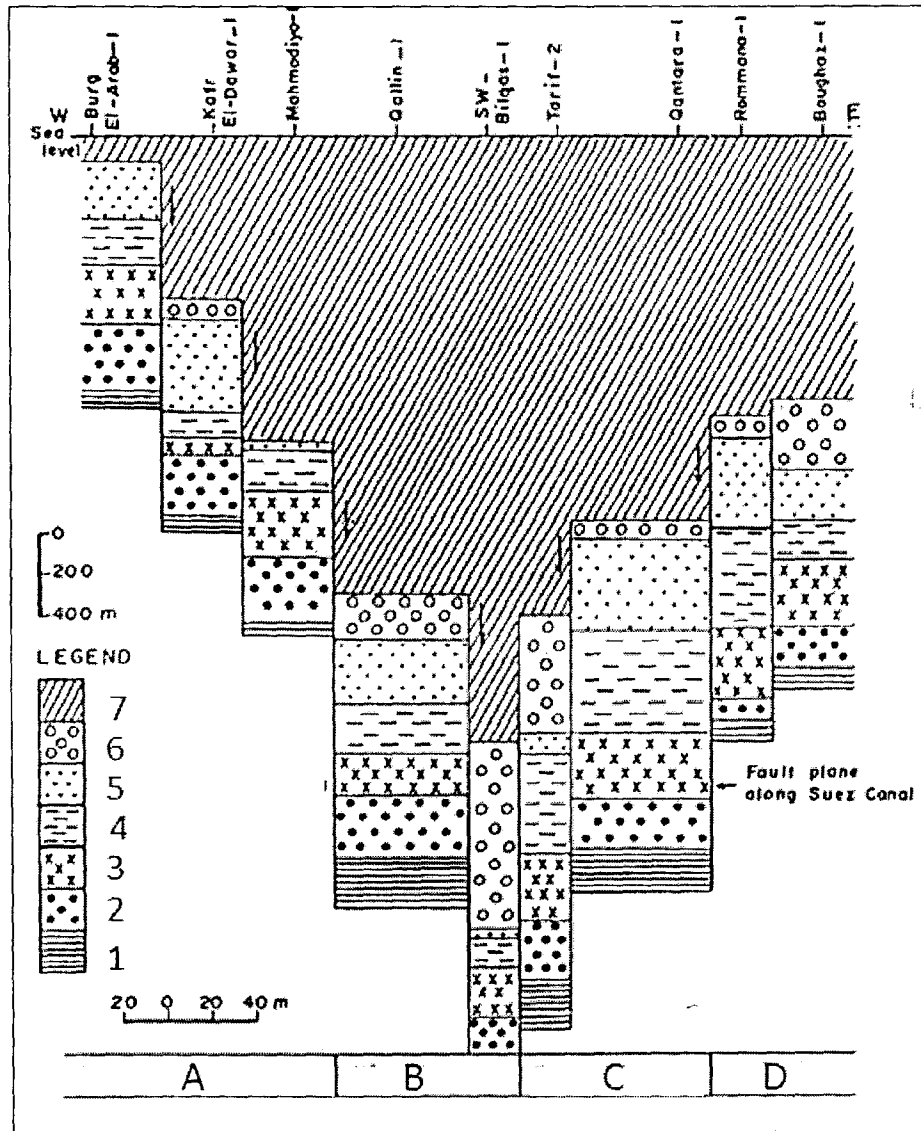


Fig. 3-C

Good Luck
Prof. Dr. Khaled Ouda

E. granite

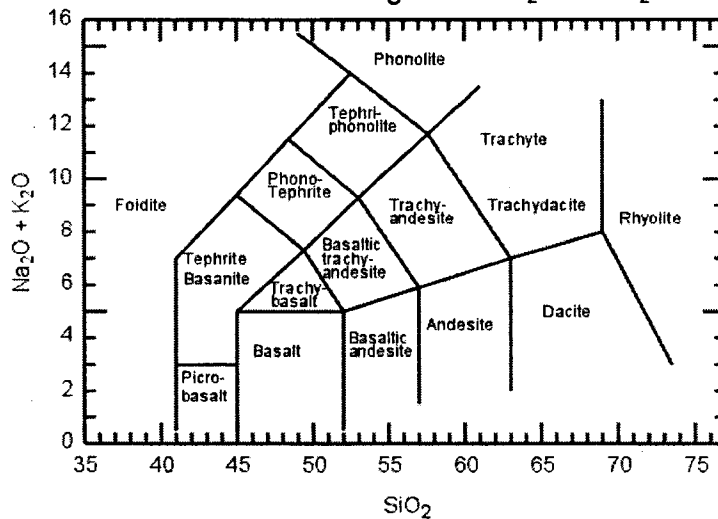
17) When, in a crystalline solid, one element substitutes for another, this is termed

- a) isomorphism
- b) solid solution
- c) pseudomorphism
- d) camouflage

18) From the isotopic systems that contribute to our understanding of mantle reservoirs are

- a. $\text{Os}^{187}/\text{Os}^{186}$,
- b. $\text{Pb}^{207}/\text{Pb}^{204}$
- c. $\text{Sr}^{87}/\text{Sr}^{86}$
- d. all the above

19) What is the name of the rock having 6% $\text{Na}_2\text{O} + \text{K}_2\text{O}$ and 48% SiO_2



Section 3: Longer Questions (these would be 3.5 points each)

20) Explain the term "compatible element" giving examples.

QUESTION 3 (A-C):

3-A: You have in the following figure a subsurface correlation chart along Line 3-3' extending from northwest to southeast across the Fayum Depression in the eastern part of the northern Western Desert (Black Arrow in the geographic map), Egypt. Define the time units (Era, Period or Epoch) of the rock units from 1 to 6 which are recovered in the given wells, and identify the name of encountered Basins and Uplift from A to C.

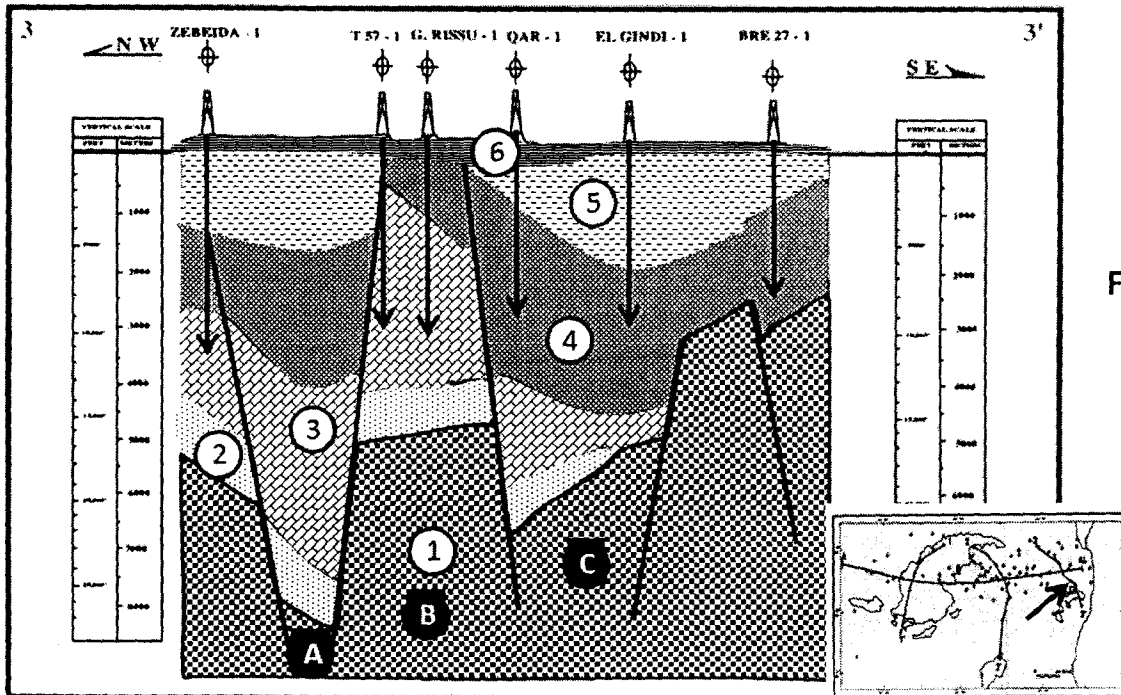


Fig. 3-A

3-B: You have in the following figure a subsurface stratigraphic correlation chart from Southwest to North east across the Beni Suef Oil field in the Nile Basin . Define the recovered rock units and their equivalent time units from 1 to 7

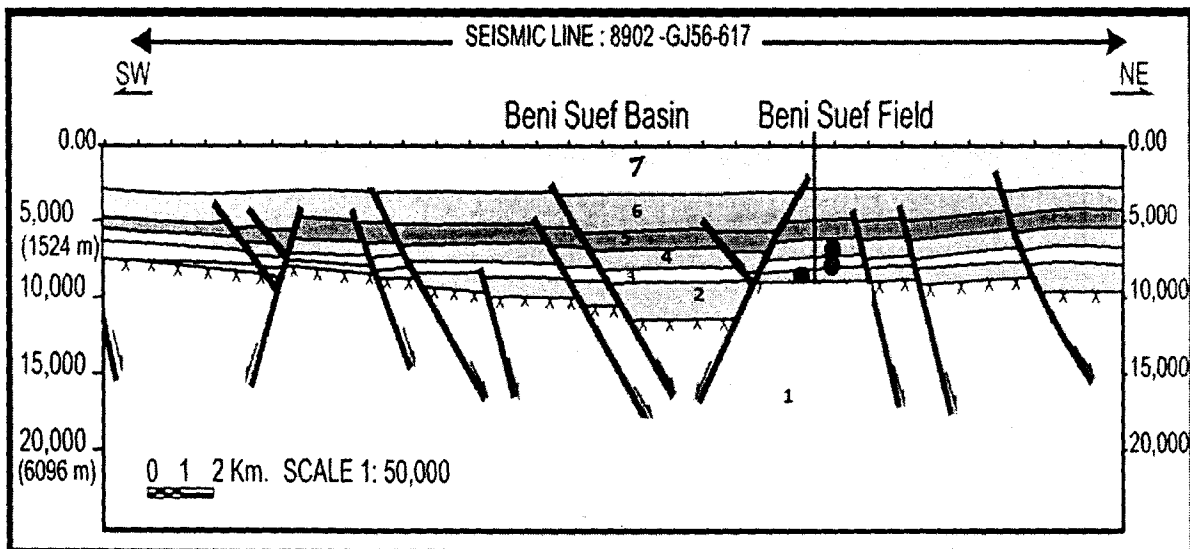


Fig. 3-B

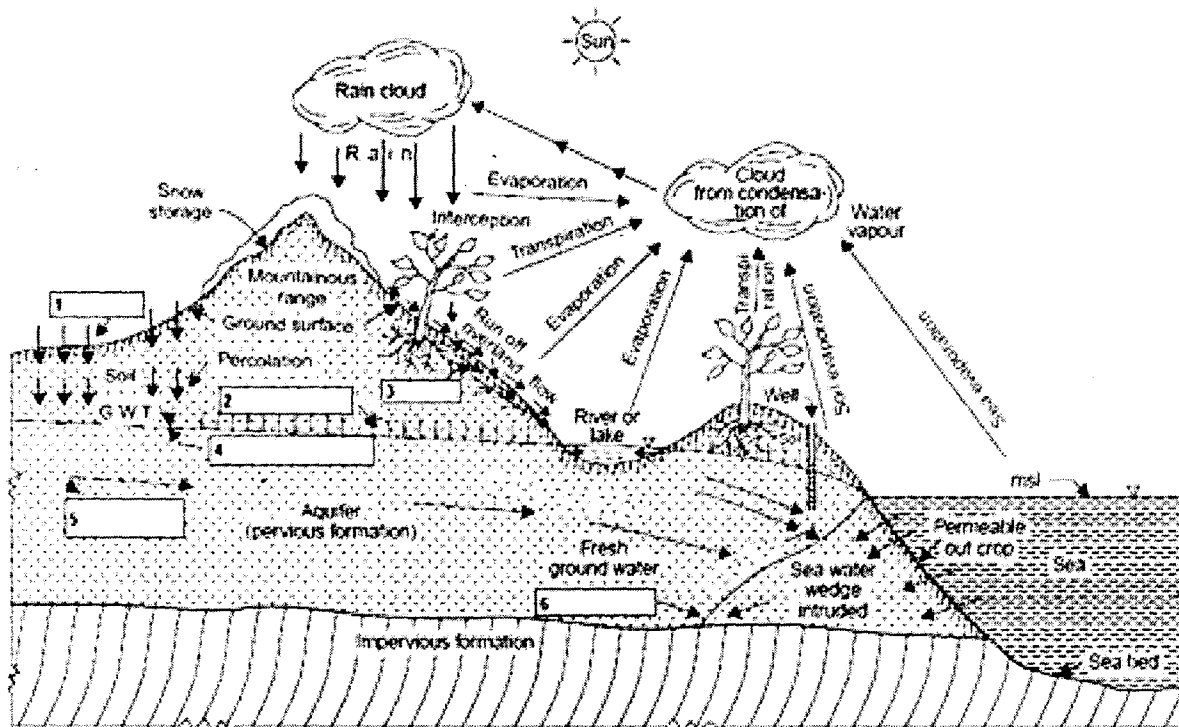


Final Examination, Hydrogeology 1

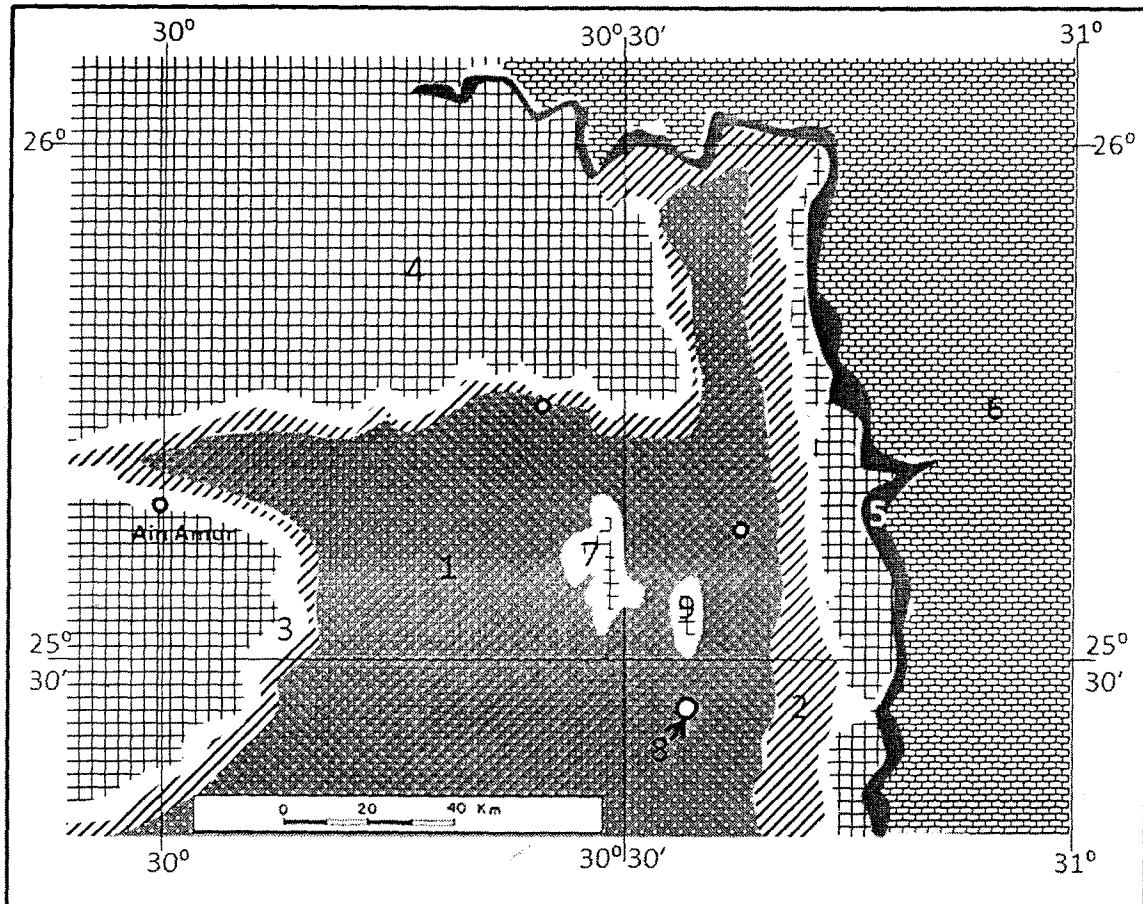
Jan. 20, 2016	Hydrogeology 1 (460G)	25 Points	Time: 1 Hour
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Answer the following questions,
 Give your answers on the same sheets.

I. Write down the terms that are marked by the boxes in the following sketch
 (6 points)



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: Is there a Pre-Pan-African infrastructure in the Egyptian basement? Discuss this debate giving the evidences for and against. (3.5 Marks)

6-B: Discuss the relationship between only FIVE of the following rock units:(2.5 Marks)

- | | |
|--|---------------------------------------|
| a- Six Hills and Abu Ballas formations | b- Wadi Natrun and Bahrein formations |
| C- Desouky and Dhiffah members | D- Abu Qada and Wata formations |
| E- Alamein and Kharita Merbers | F- Timsah and Um Barmil formations |

بسم الله الرحمن الرحيم

ASSIUT UNIVERSITY
FACULTY OF SCIENCE
GEOLOGY DEPARTMENT

جامعة أسيوط
كلية العلوم
قسم الجيولوجيا

الزمن: ساعة

إمتحان المستوى الرابع جيولوجيا البترول

دور يناير 2017

مقرر 427 ج ب (تحليل حوضى وأحواض ترسيب مصرية)

Part One: Sedimentary basins (25 marks)

Answer only 3 questions out of the following

Question One: True or False (8.25 marks):

- A. A sedimentary basin is a low area in the Earth's crust, of tectonic origin, in which sediments accumulate (1 mark).
- B. Basin modeling is a term broadly applied to a group of geological disciplines that can be used to analyze the formation and evolution of sedimentary basins (1 mark).
- C. Back-stripping is a geophysical analysis technique used to quantitatively estimate the depth that the basement would be in the absence of sediment and water loading (1 mark).
- D. In pre-depositional basins, rapid tectonic movements predate significant sediment accumulation and create a morphological basin, which is filled later by post tectonic sediments (1 mark).
- E. Sedimentary basins are separated from another by raised linear areas termed arches, paleo-highs, schwelle, or positive areas (1 mark).
- F. Embayments are basins that are not completely closed structurally, but which open out into a deeper area (1 mark).
- G. The axis of a basin is a line connecting the lowest structural points of the basin, as in a synclinal axis (1 mark).
- H. The essential element of the sedimentary basin is tectonic creation of relief, to provide both a source of sediment and a relatively low place for the deposition of that sediment (1.25 marks).

Question Two: Fill in the spaces with appropriate geological term (8.25 marks):

- A.a low area in the Earth's crust, of tectonic origin, in which sediments accumulate (1.5 marks).
- B..... is a geophysical analysis technique used to quantitatively estimate the depth that the basement would be in the absence of sediment and water loading (1.25 marks).
- C..... show by means of contour lines the thickness of a given formation or rock unit (1.5 marks).

Geology Department Faculty of Science Assiut University		Time: 2 H First Semester 2016/2017
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First Semester Final Examination –

Subject: Sandstone and carbonate reservoirs (PG 462)

Students: 4th Level of Petroleum Geology (50 Marks)

PART I: SANDSTONE RESERVOIR (25 Marks)

Answer the FIRST Question and Only ONE of the others:

I- The First Question (إجباري): (10 Marks):

Indicate by the mark (X) or (√) and correct the incorrect sentences:

- 1) The precipitation of clay minerals and zeolites in sandstone decreases its permeability and porosity ().
- 2) Burrowing and boring by organisms can increase the compaction of the sediment and usually destroys any laminations or bedding ().
- 3) Where clay rims are thick, they may inhibit later cementation and so preserve porosity ().
- 4) Absolute porosity is the percentage of interconnected void space with respect to the bulk volume ().
- 5) Permeability measures the ability of fluids to flow through rock ().
- 6) For authigenic feldspar, alkaline pore waters rich in Na^+ or K^+ , Al^{3+} and Si^{4+} are necessary ().
- 7) Pyrite is commonly altered to goethite/limonite on surface weathering ().
- 8) The late precipitation of calcite inhibits later quartz overgrowth formation and feldspar alteration to clays ().
- 9) The precipitation of clay rims usually is the latest diagenetic event, often post-dating quartz overgrowths or calcite cementation ().
- 10) Fracture porosity is a form of secondary porosity generated by tectonic fracturing of the rock ().

II- The Second Question (إختياري): (15 Marks)

Write on the following:

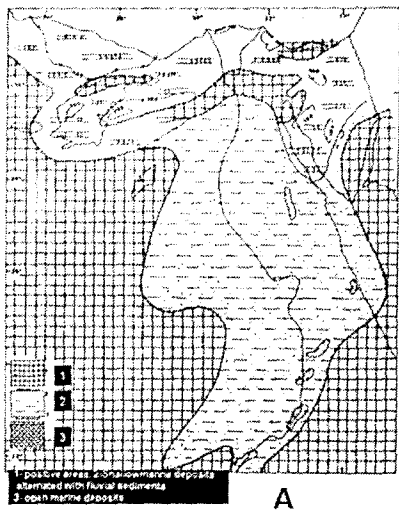
- i) The factors controlling the heterogeneity (non-uniformity) in sandstone reservoirs. (4 marks)
- ii) Compaction and pressure dissolution in sandstones. (5 marks)
- iii) Composition and classification of sandstones. (6 marks)

III- The Third Question (إختياري): (15 Marks)

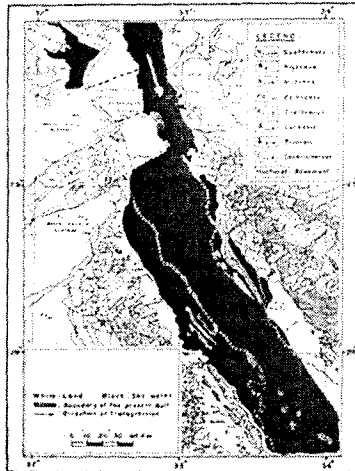
Write on the following:

- i) Compare briefly between the following: (8 marks)
 - a) Reservoir rock and Source rock.
 - b) Absolute porosity and effective porosity.
 - c) Poikilotopic calcite crystals and drusy calcite spar cements in sandstones.
 - d) Intergranular porosity and Intragranular porosity.
- ii) Silica and carbonate cementation in sandstones. (7 marks)

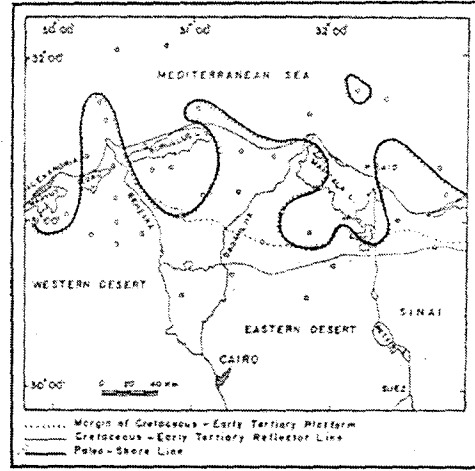
6-C: Look to the following paleogeographic maps and define the Period, Epoch and Absolute age during which the Egyptian land was submerged in a way such as in figures A, B, C, D and E. (4.0 Marks)



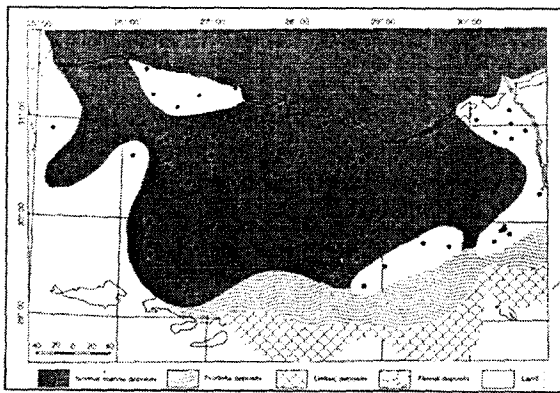
A



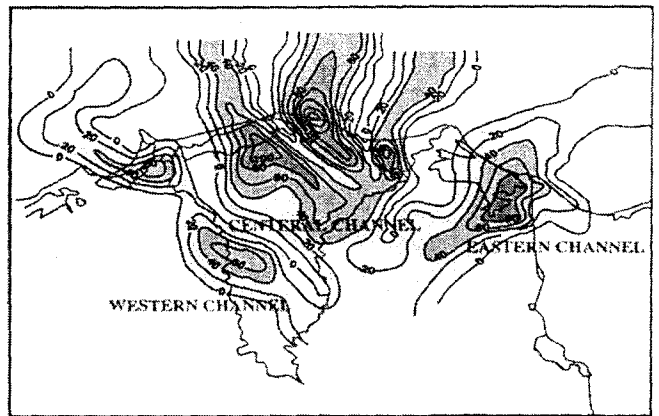
B



C



D



E

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

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Assiut University
Faculty of Science
Geology Department

إمتحان المستوى الرابع (شعبة جيولوجيا البترول)
مقرر 405 ج ب (جيولوجية مصر والإحتمالات البترولية)

Course 405 PG (Geology of Egypt)

الزمن : ساعتان

الدرجة: 50 درجة

دور يناير 2017

ملحوظة: الإمتحان يقع في ثلاث صفحات

Part I (PreCambrian) 10 Markes

Question 1(A-B):

Write on the following items:

1-A: Summarize briefly the main phases of the organic cycle in the light of the geosynclinals concept. (5 Marks)

1-B: Write short notes on the common ore mineral associating with the metamorphosed ultramafic rocks. (5 Marks)

Part II (Cambrian to L. Cretaceous) 10 Marks

Question 2(A-B) :

2-A: Compare and correlate in a chronostratigraphic table the Carboniferous and Permian rocks in northern and southern Western Desert. (6 Marks)

2-B: Write the geologic age and the type locality of ONLY FOUR of the following rock units: (4 Marks)

Abu Roash Formation – Shifah Formation – Khareita Member - Alamein Member
- Abu Qada Formation.

- 6- Which of the following indicate that a rock is permeable?
 - a- Low gamma-ray
 - b- SP deflection
 - c- Low resistivity

- 7- When gas replaces oil in a clean sandstone, Density-Neutron log separation:
(2 marks)
 - a- Increases
 - b- Decreases
 - b- Remains the same.

- 8- Which of the following is correct with respect to the effect of the presence of shale and gas on the Compensated Neutron tool?
 - a- They have the similar effects, each causing the tool to read high porosities.
 - b- They have similar effects, each causing the tool to read low porosities.
 - c- They have opposite effects, shale causing the tool to read high and gas causing it to read low porosities

- 9- Which is more effect in sonic log accuracy:--
 - a- Bottom Hole Temperature (BHT)
 - b- Cyclic noise
 - c- Thickness of the mud cack

- 10- Shale volume can determined independent to the relation between R_{mf} & R_w from:- (mentioned the equation).
 - a- Resistivity logs
 - b- Self Potential (SP) log
 - c- Gamma ray log

- 11- From density and Neutron logs, lithology identification can be carried out from analysis of:-
 - a- Density log only
 - b- Neutron log only
 - c- Combination between both Density and Neutron logs

III- Write on **Only Five** of the following:- (illustrate your answer).

(15 marks, three marks each)

- 1- Five important applications of temperature log.
- 2- Factors effect on Sonic log.
- 3- Identification of gas, oil and water bearing formations from Resistivity logs and estimation of water and hydrocarbon saturation.
- 4- Five important applications of Sonic log.
- 5- Applications of Gamma ray logs in detection of radioactive sources and defining the hydrocarbon zones.
- 6- Estimation of rock porosity from Sonic, Density and Neutron logs.

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

Credit hour system - First semester - Final Examination 13/1/2017

Geology and Geophysics Programs

Engineering Geology and Mining Geology (G 407)

Fourth Level

Allowed time 2 hour

Part (1) Engineering Geology Exam (25 M)

Answer the following question (10M اجبارى)

Compare between:

- Fault and folds to tunnel excavation
- Earthflow and Creep
- ASTM and DIN
- Large (Big) dam and Small dam
- Role of both earth materials and water on the rockslide
- Environmental impacts of construction phase of dams and environmental impacts of reservoirs

Answer Two Only of the following (15M)

Q1(7.5 M)

- Write briefly on the classification of dams according to the statical design of dam body with emphasizes on the engineering geological studies for the dam construction?
- Explain the various types of forces on slopes and factors affecting slope stability?

Q2 (7.5 M)

- Define the term "mass wasting" and mention the important types of mass wasting?
- Write on the importance of strength and stress of rocks?

Q3 (7.5 M)

- Mention the engineering characteristics of rocks and explain the types and gradations of aggregates?
- Describe the effect of geological structures to tunnel excavation?

Part (2) Mining Geology Exam

Answer the following questions (25 M)

Q1(5 M)

Mention the factors that determine the economic feasibility of the ore?

Q2(5 M)

Mention the advantages of extraction operations exposed by surface mining and quarrying?

Q3(10 M)

Define with aid of sketch Equidistant and irregular spacing sampling of ore deposits?

Q4(5 M)

Remember the common types of drilling bits?

انتهت الأسئلة وبالتوفيق

أ.د/ جمال يحيى - قسم هندسة التعدين والفلزات

أ.د/ جلال حامد الحباك - قسم الجيولوجيا

Part Two: Carbonate reservoirs (25 marks)
Answer only 3 questions

Question One: write in detail on the following items (8.25 marks):

- A. Differences between siliciclastic and carbonate rocks (4.25 marks).
- B. The effect of clastic sediment input on carbonate factory (4 marks).

Question Two: Fill in spaces with geologic terms (8.25 marks):

- A. are spherical, cylindrical or angular grains, composed of micro-crystalline carbonate, but with no internal structure (2 marks).
- B. The opposite of aggrading neomorphism is where large crystals of CaCO_3 are replaced by smaller calcite crystals (1.5 marks).
- C. would mix the sediment and gives a more isotropic character to the pore system (2 marks).
- D. is a variety of interparticle porosity where a broad platy grain has provided an umbrella for the area beneath, to protect it from filling with finer interstitial detritus as it settles (1.5 marks).
- E. Cementation in the intertidal zone produces cemented beach sands known as.....(1.25 marks).

Question Three: write in detail on the following items (8.25 marks):

- A. Non-skeletal grains in carbonate rocks (4.25 marks).
- B. The classification of Dunham for carbonate rocks (1962) (4 marks).

Question Four: True or false (8.25 marks):

- A. Carbonate muds are accumulating in many modern environments such as tidal flats, shallow lagoons and deep sea floor (1.25 marks).
- B. Micritization of skeletal grains by endolithic algae is a neomorphic process and results in a fine-grained mosaic (2 marks).
- C. Stylolites are thin seams of clay and insoluble material which mostly run parallel to bedding in a limestone or sandstone (1.5 marks).
- D. Dolomite may be replaced by calcite to produce a limestone again. This calcitization process is referred to as dedolomitization (1.5 marks).
- E. When calcite alters to dolomite, there is a 12.5% decrease in mineral volume and consequently an increase in pore space (2 marks).

انتهت الأسئلة

Dr. Abdalla El Ayyat

Dr. Mahmoud Essa

Part Two: PALEOMAGNETISM (25 Marks)

Answer the following first and second questions:

- 1. Filling in the blank. (5 Marks)**
1. The effect of non-hydrostatic stress in the presence of a magnetic field produce remanent magnetization that is called
 2. Curie temperature is....., whereas blocking temperature is.....
 3. Induced remanent magnetization is different from viscous remanent magnetization in
 4. The interactions between individual atomic magnetic moments in paramagnetic and diamagnetic materials are....., whereas in ferromagnetic materials are.....
 5. The paleomagnetic pole is....., while the virtual geomagnetic pole is.....
- 2. Put (True) or (False) at each point, and correct the (false) if present. (5 Marks)**
- a) Direction of magnetization does not change between igneous intrusion and granite of similar age in baked contact test.
 - b) In thermal demagnetization, there is no field being applied through the oven, only grains with higher Curie temperatures retain magnetization.
 - c) During progressive chemical demagnetization techniques, remaining NRM does not change in intensity but changes in direction.
 - d) Magnetization scatter does not change between igneous intrusion and sedimentary rocks of similar age.
 - e) Viscous remanent magnetization is acquired during exposure to small constant alternating magnetic field while the amplitude is decreasing to zero.

Answer ONLY ONE from the below questions:

- 3.**
- a) Discuss in detail the alternating field demagnetization process. (8 Marks)
 - b) Illustrate the baked contact test for igneous intrusion and sediments of similar age. (7 Marks)
- 4.**
- a) Derive the Dipole Field Formula. (8 Marks)
 - b) Illustrate the baked contact test for igneous intrusion and low stability older sediments. (7 Marks)

End of questions

GOOD LUCK

Dr. Mostafa Thabet and Dr. Rashad Sawires

بسم الله الرحمن الرحيم

جامعة أسيوط
كلية العلوم
قسم الجيولوجيا

Assiut University
Faculty of science
Geology Department

إمتحان المستوى الرابع (شعبتي الجيولوجيا والجيوفيزياء)

مقرر 415 ج (جيولوجية مصر)

Course 415 G (Geology of Egypt)

الزمن ثلاث ساعات

الدرجة: 50 درجة

دور يناير 2017

الإمتحان مكون من أربعة صفحات

Part I (PreCambrian) 10 Markes

Question 1 (A-B):

Write brief notes on the following items: (10 Marks)

1-A: The tectonic evolution of the main terranes building up the Arabian-Nubian shield. (5 Marks)

1-B: Fresh ultramafic-mafic rock group. (5 Marks)

Part II (Cambrian to L. Cretaceous) 10 Marks

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

2-A: Discuss and correlate the exposed Cenomanian rocks in Sinai and Western Desert. Illustrate your answer by drawing cross section. (6 Marks)

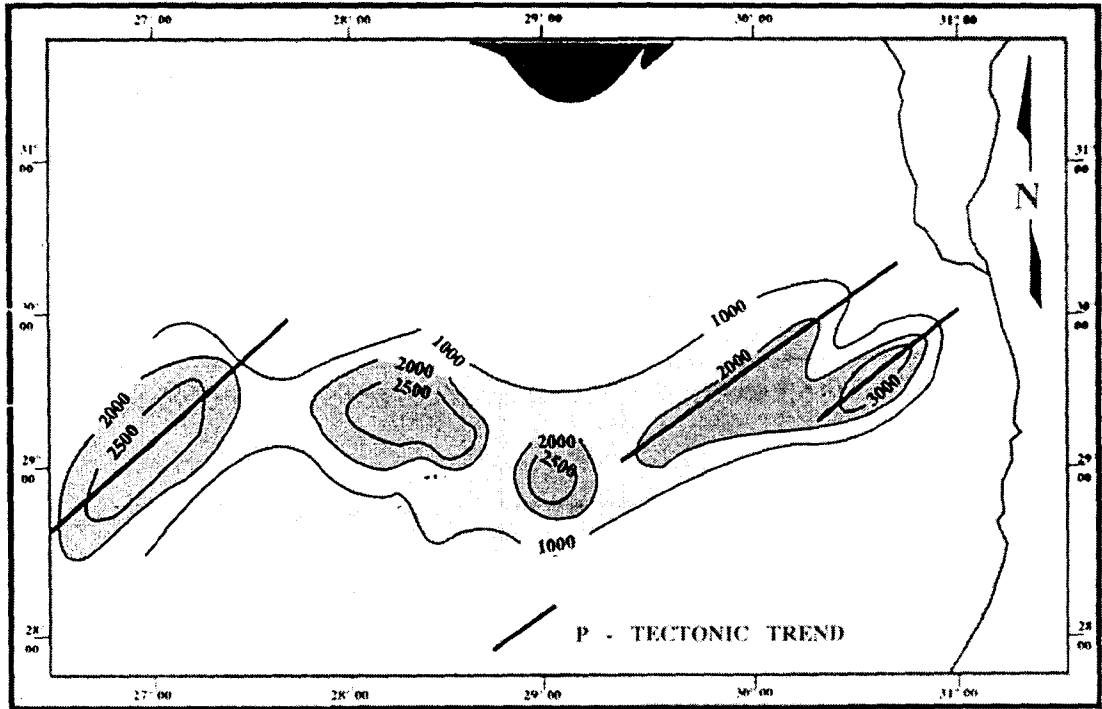
2-B: Answer only ONE QUESTION from the following: (4 Marks)

a) In a chronostratigraphic table write the different rock units of the Jurassic System. Illustrate the paleoenvironment conditions of these units.

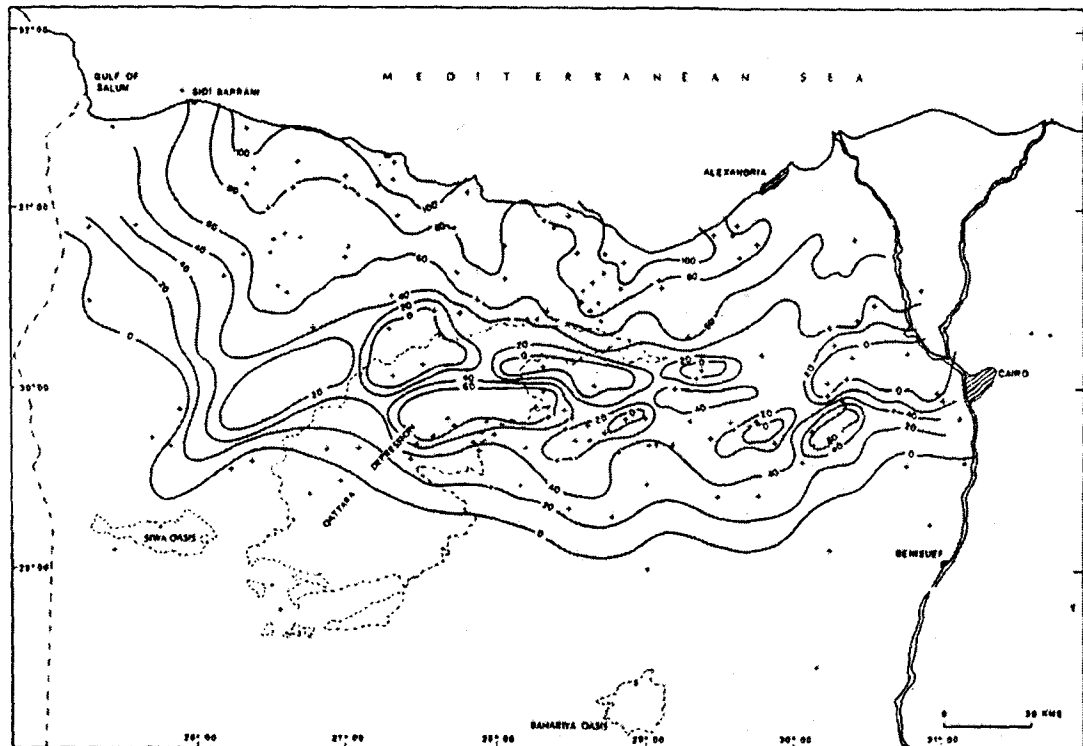
b) In a chronostratigraphic table correlate between the different rock units of the Carboniferous and Permian systems at Wadi Araba and Gebel Uweinat areas.

QUESTION 2 (A-D):

Identify the name, age, lithology and depositional environment of the subsurface rock units whose thickness and areal distribution in the northern Western Desert are given in the following isopach maps from A to D.



A



B

Part III (Upper Cretaceous to Quaternary) 20 Marks

Answer TWO Questions of the following:

Question 3:

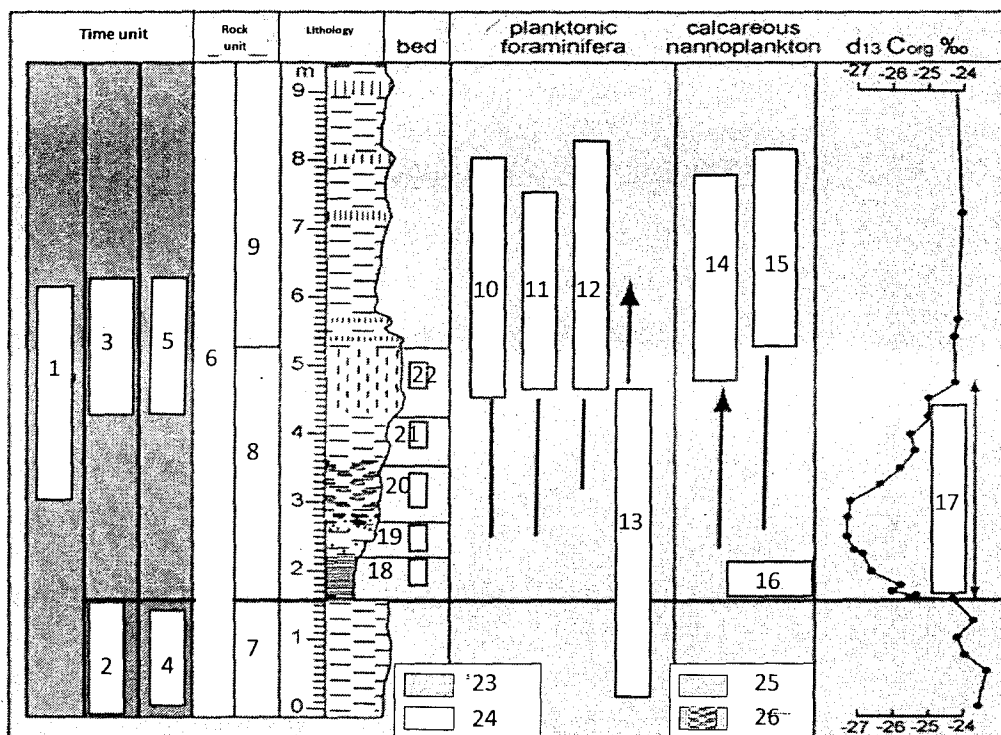
3: Define stratigraphically in a time table the different rock units of the Oligocene-Miocene Series in the Gulf of Suez region and correlate them with those of the northern onshore of the Red Sea coast. (10 Marks)

Question 4:

4: Correlate stratigraphically the Middle-Upper Eocene rock units in Fayoum , Cairo and Sinai. (10 Marks)

Question 5:

5: 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 this boundary. (10 Marks)



D. Basin relief can be created mechanically on a regional scale in two very important ways:
....., or by a combination of those two effects (2 marks).

E.....is a technique used to determine, the flow direction at ancient currents that transported sediment into and within a depositipnal basin, which reflects the local or regional paleoslopes (2 marks).

Question Three: Discuss in detail the following items (8.25 marks):

- A. Tectonics and basin filling (4.25 marks).
- B. Paleocurrent analysis and paleocurrent maps (4 marks).

Question Four: Discuss in detail the following items (8.25 marks):

- A. A back-stripping method of basin analysis (4 marks).
- B. Types of petroleum traps (4.25 marks).

Good luck

Dr. Abdalla El Ayyat

20-In Non-sulphidic (post-oxic, or suboxic) environments.
manganese oxides, iron oxides, and nitrate, are used as secondary oxidants,
re-arrange them in order of decreasing energy?
.....

21 -The euxinic environments include:

- A. The methanic environments
- B. The post-oxic environments
- C. The sulphidic environments

22-Just mention the factors that affect the preservation of organic matter in marine sediments.
.....
.....
.....
.....
.....
.....
.....

23-The evolution of coal is subjected to two processes; *peatification* and *coalification*
The Peatification process is

- A- involving physical and chemical changes in peat brought about by factors of time, increasing temperature, and increasing pressure
- B- begun by aerobic organisms and continued by anaerobic bacteria once conditions become red
- C- involving both

24- During precipitation, the vapor enriched in ^{16}O condensates

- A. Along the coast areas
- B. Inside the continent

25-There is an important and consistent decrease in $\delta^{13}\text{C}$ with depth of water

- A. True (why?)
- B. False (why?)

26-In an ocean with constant isotopic composition of the water, an increase in temperature of about 1°C corresponds to a decrease in $\delta^{18}\text{O}$ of about 4‰

- A. True
- B. False

انتهت الأسئلة
مع أطيب الأمنيات بالتوفيق
د/ ممدوح فراج سليمان

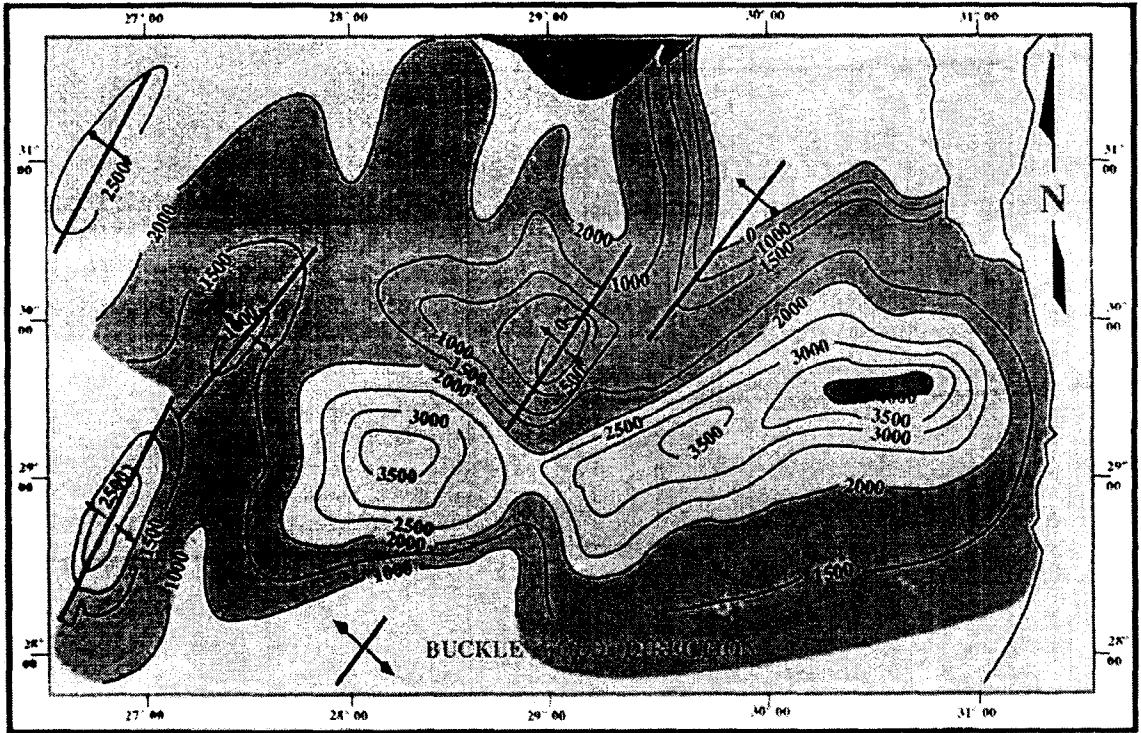
- b- Drifting the maximum contours from one map to other within the successive maps
 - c- Convergence of zero thickness in all successive layers
- 8- The salt-dome morphology and the related petroleum traps can be recognized and evaluated from:-
- a- Isopach maps of the layers surrounding and capping the salt upwelling
 - b- Structure contour of the layers surrounding and capping salt upwelling
 - c- Structure contour maps for layers surrounding and capping the salt upwelling and the associated faults in addition of isopach maps for the same layers
- 9- Normal fault of downthrown more than thickness of the down- faulted beds can be recognized from structure contour map by:-
- a- Presence of fault gap
 - b- Dense contour lines within the fault zone area
 - c- Repetition of only one or two contours in a very narrow area
- 10- Double nosing in the structure contour map with centre- ward decreasing of contour values and similar contour distance in both sides denoting to:-
- a- Asymmetric plunging syncline
 - b- Symmetrical plunging anticline
 - c- Symmetrical double plunging anticline
- 11- Irregularities and random distribution of contours in isopach maps of successive subsurface layers on a regional scale generally denoting to:-
- a- Interacratonic area
 - b- Geosynclinal area
 - c- Shelf area

II- On Only Five, discuss how you can recognize the following features from subsurface mapping. (Illustrate your answer). 15 Marks (3 marks each)

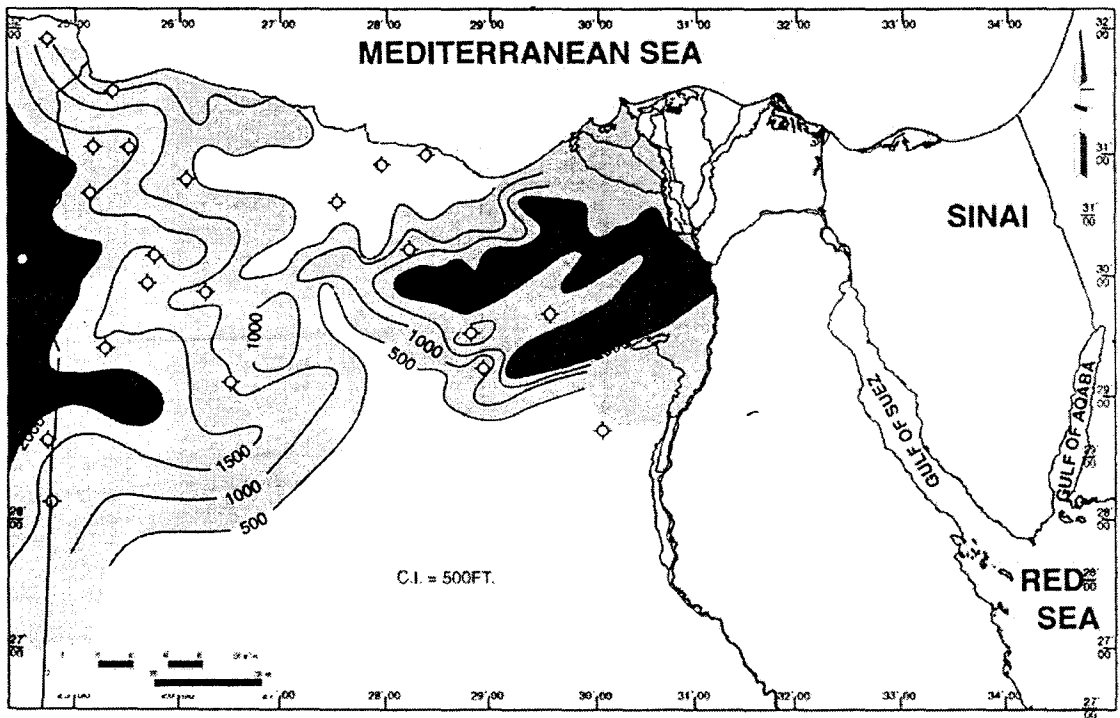
- 1- Erosion surface between two beds from isopach maps
- 2- Onlap and offlap phenomena from isopach maps
- 3- Wrench faults (strike and other parameters) from structure contour maps
- 4- Calculating TST from TVT in directional drilling of dipping layers
- 5- Estimating of oil or gas reserve from isopach maps and well logging
- 6- Defining pale environment from facies maps

III- What is the differences between only five of the following:- (Illustrate your answer). 10 Marks (2 marks each)

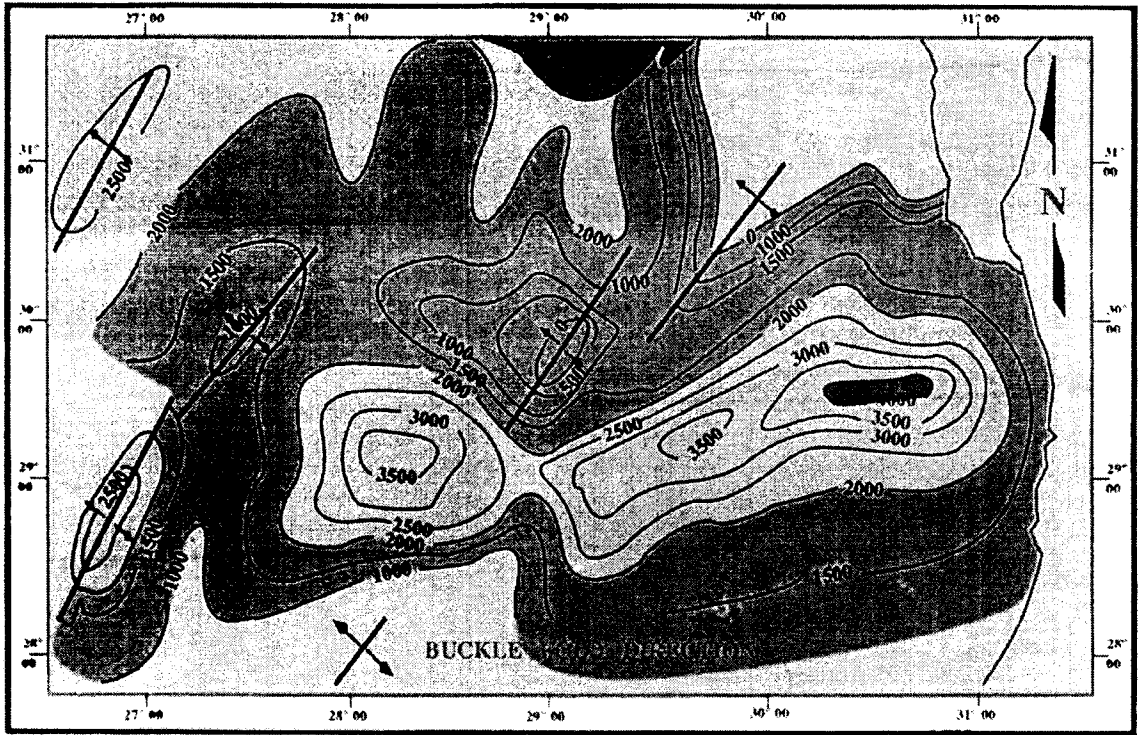
- 1- Normal and schematic cross section
- 2- Ratio and Percentage maps and its applications
- 3- Regional and local isopach maps
- 4- 2D geologic models and cross sections
- 5- Interpretive cross sections and normal cross sections
- 6- Contouring of bedding plane and contouring of fault plane.



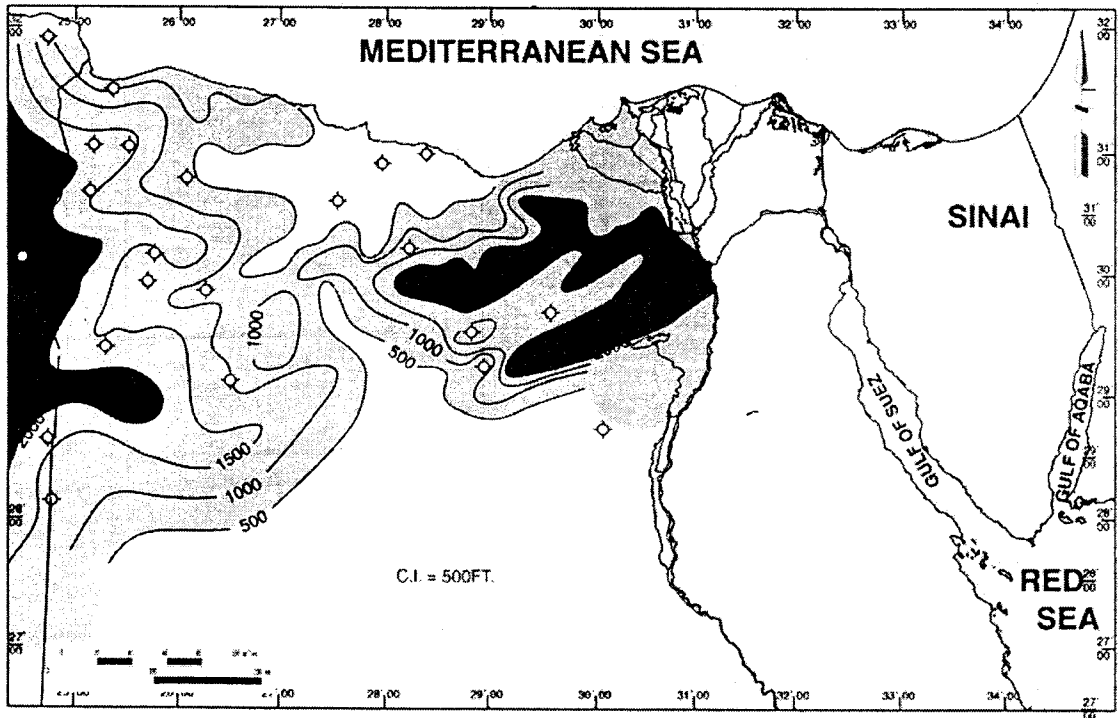
C



D



C



D



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

Time: Two Hours (50 degree) June, 2017

PART-I: Sedimentary Basins (25 degree)

Answer the following question:

- 1- a. Define the term sedimentary basin? (5 marks)
b. What does a basin axis mean? (2.5 marks)
c. What does a depocentre mean? (2.5 marks)

Answer three questions only from the following:

- 2- Choose the correct answer (5 marks)

Forearc basins are formed in:

- basins related to Subduction
- basins related to collision

3. What are the economic aspects of rift basins? (5 marks)

- 4- Choose the correct answer (5 marks)

a. Pull-apart basins are related to:

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

b. Describe briefly the sedimentary sequence in pull-apart basins

- 5- Write a brief account on the opening phase of the Wilson Cycle. (5 marks)

Illustrate your answer with drawing.

PART-II: Sequence Stratigraphy (25 degree)

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

- 1- Write on, and differentiate between **Three Only** of the following:

- a- What factors influence relative sea level change? Which are dominant? And how do these factors influence accommodation space? (5 marks)
b- Sketch out typical patterns generated by seismic reflectors (5 marks)
c- How do Type 1 and Type 2 boundaries form in response to the dominant factors influencing relative sea level? Define the difference between them. (5 marks)
d- How retrogradation is different from progradation? (5 marks)

- 2- Write on, and/or differentiate between **Two Only** of the following:

- a- Accommodation in relation to time and sediment supply. (5 marks)
b- Write on the differences between sequence boundaries (SB), maximum Flooding Surfaces (MFS) and marine Flooding Surfaces (5 marks)
c- Sequence and parasequence. (5 marks)



كلية العلوم - قسم الجيولوجيا



جامعة أسيوط

FINAL EXAM "GP 364"
STRUCTURAL STYLES IN PETROLEUM GEOLOGY

Time allowed: Two hours (50 marks) January 2017

Answer ONLY FIVE of the following questions:
Illustrate your answer when possible.

- I. Salt domes are the best known and most common diapirs:**
a- How the salt domes are formed? (5marks)
b- What is the economic importance of salt domes? (5 marks)
- II. Fold and Thrust belts are typical regions in most orogenic belts that form at subduction zones.**
Discuss the different types of subduction zones. (10 marks)
- III. A structural style is a group of structures that often occur together in a particular tectonic setting.**
Write a brief note on the characteristics of the primary structural styles. (10 marks)
- IV. Transpression and transtension can take place across a dominantly strike-slip fault. Explain this statement and give examples. (10 marks)**
- V. The Gulf of Suez rift is strongly segmented along its length with half-grabens of alternating polarity. The changes in fault polarity and position from segment to segment are taken up by broad accommodation zones. Explain. (10 marks)**
- VI. 1. Illustrate with diagrams the orientation of folds and faults in right simple shear zone. (5 marks)**
2. Compare between transfer faults and growth faults. (5 marks)
- VII. Write a concise account on The Levant Fault Zone (Aqaba-Dead Sea Fault) as one of the best examples of continental transform faults. (10 marks)**

GOOD LUCK !!

Prof.Dr. Moustrafa M. Youssef

Assiut University -Faculty of Science

Geology Department



جامعة أسيوط -كلية العلوم

قسم الجيولوجيا

First Semester Final Examination

Subject: Course No. G433

(Geochemistry)

Students: B.Sc. Students (Geology and Geology-Chemistry)

Date: Dec., 27, 2016

II- Geochemistry of sediments

Time allowed: one hour

Examiner: Prof. Dr. Mamdouh F. Soliman

=====

الامتحان في أربع صفحات

Write your answers in the same sheets

اكتب أجابتك في نفس ورق الأسئلة

Select or write the correct answer for the following : (25 marks, one mark for each)

1- Asteroids are generally rocky objects Found:

- A. in the inner Solar System
- B. in the outer Solar System
- C. In the earth's lithosphere

2-Mention five elements of biophiles

.....

3-Which one of the following is NOT typical of "Meteorites"

- A. Most stony meteorites are made up, in part, of small glassy spheres 1-2 mm in diameter
- B. They are composed of dark Mg and Fe- rich silicate minerals
- C. They contain some of volatile elements, such as C, H, and O, chemically combined into silicates
- D. They are composed of metallic iron and Nickel
- E. None of the above

4- Between pH5 and 9 alumina is almost:

- A. Soluble
- B. Insoluble
- C. Stable

5- The formation of kaolinite due to the hydrolyses of K-feldspar, in acidic rocks leads to:

- A. increase in the volume percent
- B. the exfoliation of-the acidic rocks
- C. formation of residual silica
- D. All of them

6-In the Earth's crust, the following elements are usually major elements:

- A. SiO₂, Al₂O₃, MgO
- B. TiO₂, MnO, P₂O₅
- C. ZnO, NiO, CuO



Final Exam

Subject: well logging (463 GP), 4th level (Petroleum geology Students),
Total 50 marks

Answer the following questions

- I- What are the differences between **Only Five** of the following?
(Illustrate your answer). (10 marks, two marks each)
- 1- Positive, negative and zero deflection in SP log
 - 2- Laterolog shallow (LLS) and Laterologdeep (LLD)
 - 3- Gamma ray normal (GRN) and Gamma ray spectrum (GRS) logging
 - 4- Flushed, invaded and uninvaded zones
 - 5- Natural Gamma ray logging and Gamma-Gamma logging
 - 6- Bedding plane, fault zone and unconformity plane on the Dipmeter logs
- II- Choose the correct answer and **comment on your choice** on **Only Ten** of the following:- (Illustrate your answer)
(20 marks, two marks each)
- 1- The difference between bit size and calliper size is great in case of: -
 - a- Dry friable sand formation
 - b- Dry silicified sand formation
 - c- Compacted limestone formation
 - 2- Annular borehole volume is calculated from:-
 - a- Self Potential (SP log)
 - b- Temperature log
 - c- Calliper log
 - 3- Which type of resistivity tool can be used in a well which has been drilled with oil-base mud?
 - a- Laterolog
 - b- Induction
 - c- Spherical laterolog
 - 4- The normal and reverse deflections in SP curve are depend on: (1.5 marks)
 - a- The relation between R_{mf} and R_{mc}
 - b- The relation between R_{mf} and R_w
 - c- The relation between R_{xo} and R_t
 - 5- Generally with resistivity tools the greater the spacing between the measuring electrodes the depth of investigation:-
 - a- Increase
 - b- Decrease
 - c- Not effected