بسم الله الرحمن الرحيم

جامعة أسيوط
كلية العلوم
قسم الجيولوجيا

Assiut University
Faculty of science
Geology Department

إمتحان المستوى الرابع (جيولوجيا البترول)

مقرر 405 ج ب (جيولوجية مصر والإحتمالات البترولية)

Course GP405 (Geology of Egypt and Petroleum Potentialities)

Part I (PreCambrian) 10 Markes

ملحوظة هامة: الأمتحان يتكون من أربع صفحات

Question 1:

Summarize briefly the types of the cratons exposed in the Nubian Shield and the nature of their mutual contact.

Part II (Paleozoic and Mesozoic) 10 Marks

Question 2:

1- Write in a time table the Paleozoic rock units in Egypt. (6 Marks)

2- Answer *ONLY ONE* question of the following:

i- Correlate the Cenomanian rocks by drawing a cross section from Siani to Bahariya Oasis. (4 Marks)

ii- Describe the early Cretaceous rocks at north and south Sinai illustrating your answer by drawing a cross section. (4 Marks)

Part III (Cenozoic) 20 Marks

Answer *ONLY TWO* questions of the following:

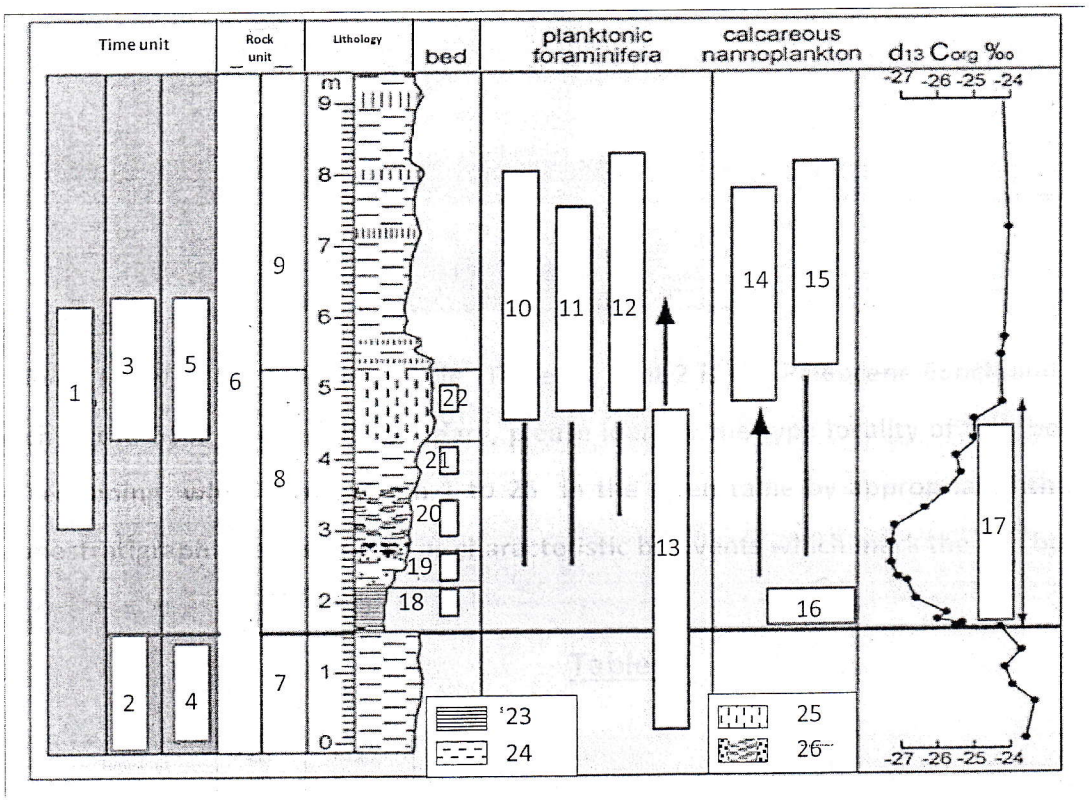
Question 3: (10 Marks)

Identify the major paleogeographic and paleoenvironmental events and their absolute ages which took place in Egypt during the Oligocene-Pliocene and which gave rise to the present geological and geomorphological landmarks of Egypt.

Question 4

A- If you know in the following table (Table A) that 2 is the Paleocene Epoch and 3 is the Eocene Epoch in the GSSP of the P/E boundary, please identify the type locality of this boundary , and fill the remaining white spaces from 1 to 26 in the given table by appropriate litho- , chemo- and chronostratigraphic terms as well as characteristic bioevents which mark the this boundary.

Table A



B- Look to the following map (Map B) and define:

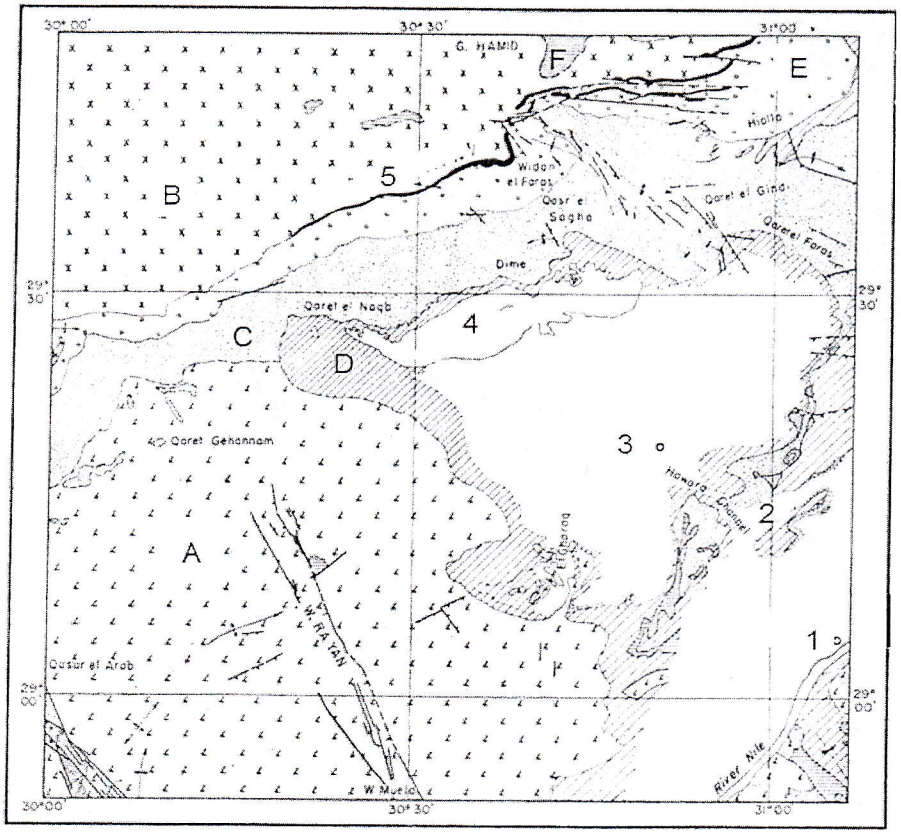
i- The name of district

ii- The names of rock units which are given in the map in letters from A to F

iii- The names of the geographic sites given in numbers from 1 to 5

(1)

Map B



Question 5

A- Construct the subsurface stratigraphic sequence which is supposed to be logged in wells drilled at the following localities:

i- The western plateau of Assiut

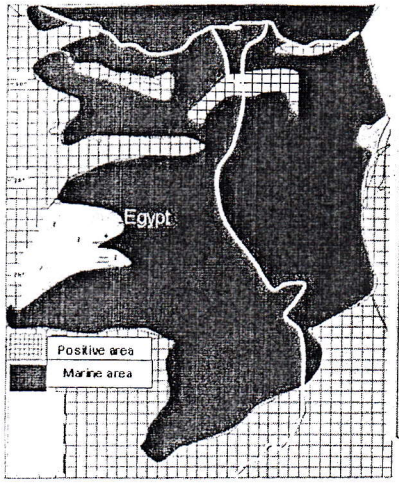
ii- The Aswan district

iii- The northern Red Sea

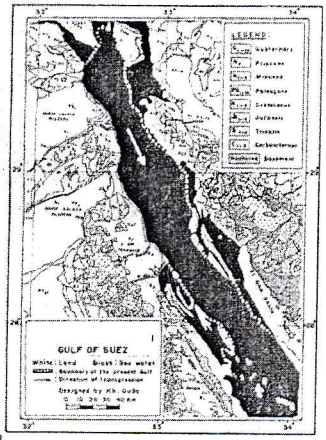
iv- The Great Sand Sea

B- Look to the following paleogeographic maps and define the Period, Epoch and Absolute age during whichthe Egyptian land was submerged in a way such as in figures A, B, C, D and E

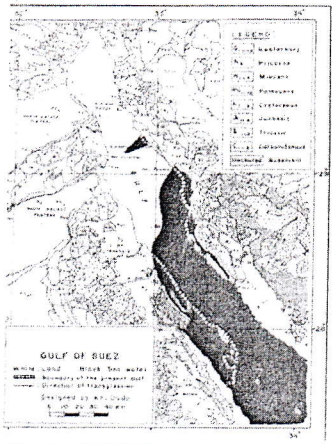
A



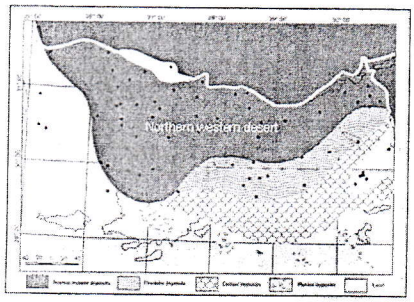
C

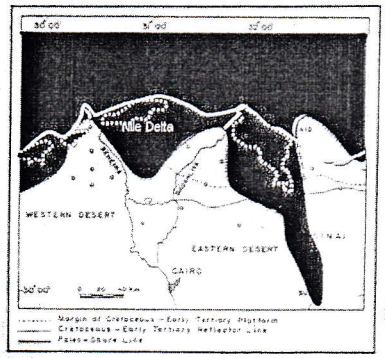


D



B





E

Part IV (Petroleum potentialities) 10 Marks

Question 6

A- Give short notes about the following items:

i- The difference between crude oil, natural gas and condensates

ii- The quantity of Production of crude oil and condensates in Egypt during 2008-2009

iii- The volume of production of natural gas in Egypt during 2008-2009

iv- 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

B- Define 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 as given by the USGS.

تمت الأسئلة مع أطيب الأمنيات بالتوفيق

ا.د/ خالد عبدالقادر عوده ا.د/ على عبدالقادر خضير ا.د/ ناجح عبدالرحمن عبيدالله

(١)

Assiut University
Faculty of Science
Geology Department

جامعة أسيوط
كلية العلوم
قسم الجيولوجيا

Final Exam
Sequence stratigraphy

May 2, 2015	G 420	Total marks 25	Time: One hour

Give your answer on these pages, drawings when possible are mandatory.

1. Choose the correct answer of the following: (6 marks)

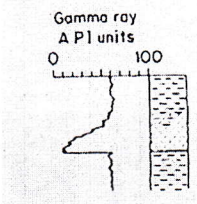
1) **Type 1 sequence is composed of**
   A. Transgressive, highstand and lowstand systems tracts
   B. Shelf margin, transgressive and highstand systems tracts
   C. Lowstand, transgressive and highstand systems tracts

2) **A sequence boundary is an**
   A. Unconformity
   B. Correlative conformity
   C. Erosion surface and time gap
   D. Above all

3) **Parasequences are difficult to identify in ..... environment**
   A. Coastal plain
   B. Deltaic
   C. Fluvial
   D. Tidal
   E. Shelf

4) **..... is measured between the sea-surface and the local moving datum**
   A. Base level
   B. Accommodation
   C. Sea-level
   D. All of these

5) **The gamma log motif in this figure represents**

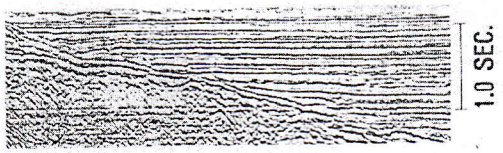


   A. An upward fining sand : shale sequence with an abrupt base
   B. Thinly interbedded sand and shale
   C. An upward coarsening profile with an abrupt upper sand
   D. Shale contact; a uniform sand with abrupt upper and lower contacts

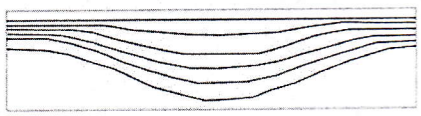
6) **Types of complex internal configuration are**
   A. Oblique - shingled - sigmoid
   B. Deformed – hummocky – mounded
   C. Parallel – subparallel – divergent

7) **Diastem is equal**
   A. Long hiatus
   B. Short hiatus
   C. Short hiatus with or without erosion
   D. A minor paraconformity

8) **Reflection term in this figure is**
   A. Toplap
   B. Downlap
   C. Onlap
   D. Offlap



9) **Channel fill patern in this graph is**
   A. Mound onlap
   B. Divergent
   C. Prograded
   D. Onlap



10) **Forced regression is occuring when the**
   A. Rising of base level
   B. Falling base level irrespective of the sediment supply
   C. Shoreline is forced to regress by the falling base level
   D. B and C together

11) **If the platform break and downlap planes are divergent-convergent, the basin architecture is**
   A. Strat shallowing then deepening upward
   B. Shallowing upward only
   C. Deepening upward only
   D. Strat deepening then shallowing upward

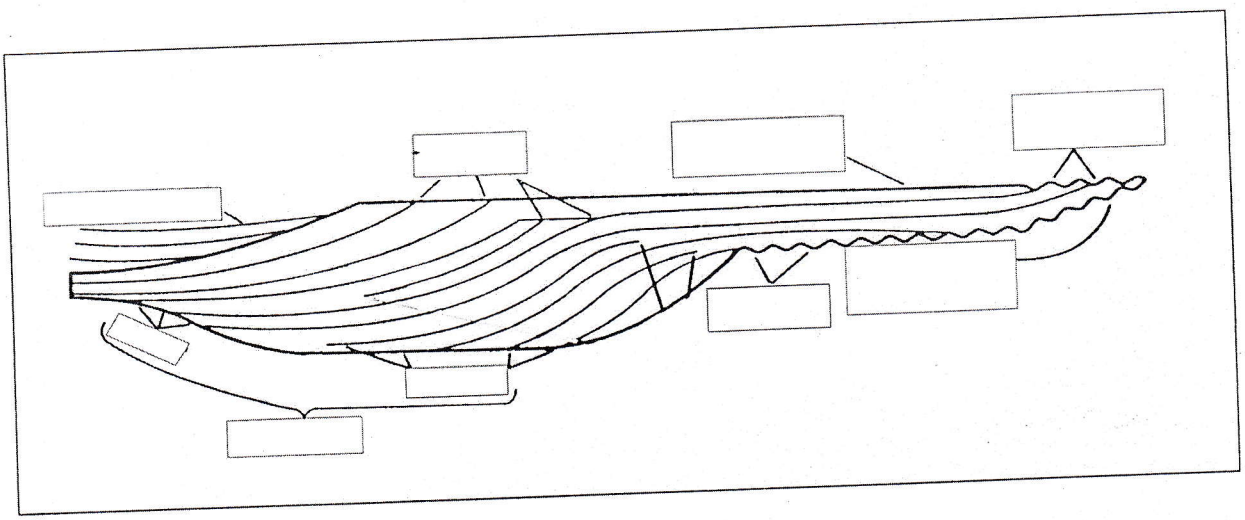
12) **MFS separates between**
   A. Prograding stacking patterns above from retrograding stacking patterns below
   B. Prograding stacking patterns above from aggrading stacking patterns below
   C. Prograding stacking patterns below from retrograding stacking patterns above

(3)

2. Complete the following sentences: (4 marks)

1. Transgressive surface is ----------
2. Relative sea-level rises due to ----------
3. Prograding configuration pattern is caused by ----------
4. ---------- indicated a relative stillstand of sea-level
5. Divergent reflectors suggest ---------- in depositional rate or progressive ---------- of a depositional surface
6. Lapout and truncation are terms describe ----------
7. Offlap is ----------
8. When sediment supply is less than the rate of creation of topset accommodation volume, this is characterized of ----------

3. Write down the terms that are marked by the boxes in the following sketch. (3 marks)



(14)

4. Compare between ONLY ONE of the following: **(3 marks)**

A. Type 1 and Type 2 sequence boundaries.
B. Normal regression and forced regression.

(5)

5. Discuss ONLY THREE of the following: **(9 marks)**

A. Types of parasequence sets.
B. Stratal patterns in Type 1 sequences. (إجباري)
C. Types and causes of stratigraphic cycles.
D. Criteria of recognition of sequence boundaries.

A. Types of parasequence sets.

(6)

B. Stratal patterns in Type 1 sequences.

(7)

C. Types and causes of stratigraphic cycles.

D. Criteria of recognition of sequence boundaries.

Best wishes

Dr. Mohamed ELHossainy

Prof. Dr. Emad Ramzy Philobbus

(Time: 2 Hours)

Sunday 07-06-2015

Geology Department, Faculty of Science,

Assiut University

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Examination for Fourth Year Students of Faculty of Science in

Geological Map of Egypt (Course, 410G)

Write Briefly on the Following Topics:

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

(2) The areal distribution & types of Rocks of the Basement Complex in Egypt.

(3) The Nubian Sandstone in Egypt and its: (a) Nomenclature, (b) Stratigraphic setting, (c) Age, (d) Areal Distribution, (e) Economic importance.

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

(5) The Name of Rock Units in Egypt of the: (1) Upper Cretaceous, (2) Paleocene, (3) Eocene & (4) Miocene.

(6) The tectonic Events and development of the: 1) Red Sea, Gulf of Suez & Nile Valley, 2) Syrian Arc System.

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Good Luck

Assiut University - Faculty of Science
Geology Department

جامعة أسيوط - كلية العلوم
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Final Examination, Geostatistical Methods in Geophysics

Jun. 2015	Geost. Methods (456G)	50 Points	Time: 2 Hours

I. Answer only three of the following *(use illustrations)* ..... (21 points)

A)- Describe the Variogram model and its components, and give four model examples

B)- Compare between the Inverse Distance Weighting and the Spline interpolation method

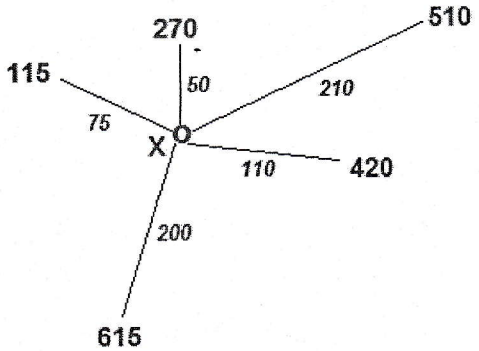
C)- Discuss the classification of interpolation procedures

D)- Discuss in details the Kriging interpolation method

II. Answer the following question ..... (7 points)

The given Figure represents the values and distances of some points (in meters).

Calculate the value of point "X" using interpolation method "inverse distance weighting" for power 1 and power 2.



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

In the following dataset, calculate:

the Mean, Median, Mode, Root Mean Squared, Variance, Standard Deviation, Kurtosis and Skewness

199	60	214	246	147	50	49	179	245	50	193	303	211	212	240
190	360	296	292	180	301	128	57	50	278	130	50	238	240	275

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

1. A key difference of geostatistics from conventional statistics is that geostatistics uses the .....of every measurement:

a. direction
b. mean
c. altitude
d. spatial location

2. The covariance is designed so that its value is..... the units in which the two measurement variables are expressed

a. independent of
b. less than
c. dependant of
d. greater than

3. the correlogram is a ..... function of the distance

a. decreasing
b. changeable
c. flexible
d. increasing

4. A survey that includes every member of population is called:

a. Sample survey
b. Census
c. Representative sample
d. Member survey

5. .....is concerned with obtaining summary measures to describe a set of data

a. Theoretical statistics
b. Inferential Statistics
c. Applied statistics
d. Descriptive Statistics

6. A characteristic under study that assumes different values for different elements is called:

a. Observation
b. Sample
c. Variable
d. Element

7. The main objective of geostatistics is the characterization of spatial systems that are:

a. common
b. incompletely known
c. well defined
d. completely known

8. Geostatistics is a study of phenomena that vary in.....

a. time
b. space
c. both a and b
d. none of the above

9. a variance value of zero indicates that all values within a set of numbers are:

a. equal to zero
b. > zero
c. < zero
d. identical

10. Given two variables, when small values of one variable tend to be associated with large values of the other, this refers to:

a. negative correlation
b. positive correlation
c. no correlation
d. unrelated

11. An Estimation of a variable at an unmeasured location from observed values at surrounding locations is:

a. Interpolation
b. Variogram
c. Statistics
d. Correlation

12. The variogram is a function of :

a. distance
b. direction
c. both a and b
d. none of the above

Best wishes
Dr. Ahmed Seif

Assiut University - Faculty of Science
Geology Department

جامعة أسيوط - كلية العلوم
قسم الجيولوجيا

Final Examination, Hydrogeology 1

Jun. 2015	Hydrogeology 1 (460G)	25 Points	Time: 1 Hour

Answer the following questions

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

A water well is a hole excavated in the earth to obtain groundwater, on the light of this sentence, describe well construction processes covering the following items: *(use illustrations to support your answer)*

A)- Methods for constructing shallow wells

B)- Methods for drilling deep wells

C)- Well completion

D)- Well development

II. Answer only three of the following with drawings only ..... (6 points)

A)- Draw a contour map describing a losing stream

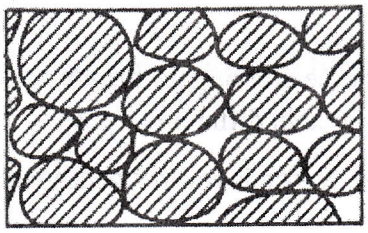
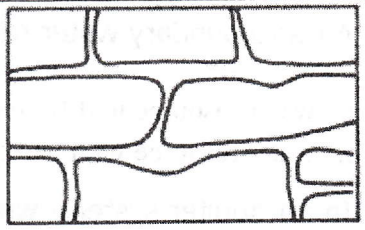
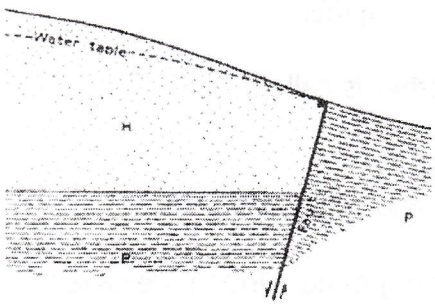
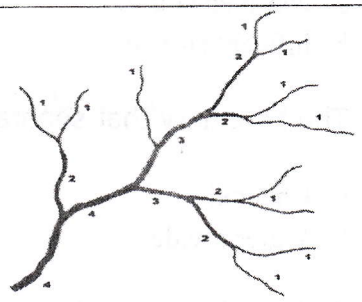
B)- Illustrate the Darcy equipment that used to calculate flow rate in the lab

C)- Draw a graph representing the relation between median grain size and water storage properties (porosity, specific yield and specific retention) of clay, silt, sand and gravel

D)- Describe with drawings the different kinds of heterogeneity

(14)

III. What are these illustrations and equations stand for? ..... (3 points)

	$\frac{\partial^2 h}{\partial x^2}+\frac{\partial^2 h}{\partial y^2}+\frac{\partial^2 h}{\partial z^2}=\frac{S}{T}\frac{\partial h}{\partial t}$	 .....
	$\frac{\partial^2 h}{\partial x^2}+\frac{\partial^2 h}{\partial y^2}+\frac{\partial^2 h}{\partial z^2}=0$	 .....

IV. Complete the missing words in the following ..... (3 points)

A)- .....is that portion of subsurface water that can be collected with wells.

B)- ..... is related to the connectedness of the void spaces and to the grain size of the rock.

C)- .....is the amount of water that is released from storage per unit volume of an aquifer per unit change in head.

D)- An area from which all precipitation flows to a single stream or set of streams refers to .....

E)- The volume of the non-renewable groundwater in Egypt is estimated with ..... Billion m^3

F)- Groundwater that discharges into a stream is termed .....

(5)

V. Choose the correct answer of the following: ..... (5 points)

1. A transboundary water resource refers to:

   a. water resource in different aquifers
   b. water resource with bad quality
   c. water resource crossing political borders
   d. water resource in different basins

2. In an Aquifer system, when the water table is lower than the water level in an adjacent stream, this aquifer is called:

   a. confined aquifer
   b. influent stream
   c. gaining stream
   d. effluent aquifer

3. The boundary that separates drainage basins from each other is called:

   a. Channel
   b. Water divide
   c. Stream
   d. None of the above

4. Springs that formed at low lands when water table cuts the ground surface are called:

   a. Contact springs
   b. Low land springs
   c. Depression springs
   d. Fault springs

5. The seepage velocity in a given aquifer depends mainly on:

   a. Transmissivity
   b. The effective porosity
   c. The total porosity
   d. Grain size

6. A water well that drilled in a confined aquifer and produces water naturally is called:

   a. Water table well
   b. Artesian well
   c. Peizometric well
   d. Flowing artesian well

7. In a confined aquifer, the storage parameter is defined by:

   a. Storativity
   b. Specific yield
   c. Porosity
   d. Hydraulic conductivity

8. The water that runs on ground surface after rainfall is described by:,

   a. Infiltration
   b. Percolation
   c. Subsurface flow
   d. Runoff

In a given aquifer, two wells were drilled, the water level at both wells was 85 m. Given that the seepage velocity of water between the two wells is 8 m/d, the hydraulic conductivity for this aquifer is 40 m/d and the effective porosity is 10%, answer the following questions.

9. What is the distance between the two wells?

a. 100 m
b. 150 m
c. 250 m
d. None of the above

10. What would be the distance between the two wells if the water level is increased in one of the wells by 5 meters:

a. 100 m
b. 150 m
c. 250 m
d. None of the above

Best wishes

Dr. Ahmed Seif

بسم الله الرحمن الرحيم

جامعة أسيوط
كلية العلوم - قسم الجيولوجيا

امتحان التحريرى لطلاب كلية العلوم المستوى الرابع (جيولوجيا)
المادة: جيولوجية مصر (415 ج)
Geology of Egypt (415 G)

دور يونيو 2015/2014م الدرجة: 50 درجة الزمن: ثلاث ساعات

ملحوظة: الأمتحان يتكون من صفحتين

Part one (10 Marks)

Answer the following question:

1- Summing up the diagnostic features of the granitoid rocks exposed in the Eastern Desert, especially with regard to the composition and the tectonic setting. (10 Marks)

Part two (10 Marks)

Answer the following question:

2- A) Write on the Cambrian sediments in Egypt. (6 Marks)

B) Give reasons for only two: (4 Marks)

i- The variations in the thickness of the Paleozoic sediments in Egypt. (2 Marks)

ii- The difficult in the differentiation of the Paleozoic sequences at Gilf Kebir Plateau. (2 Marks)

iii- The restricted occurrence of Paleozoic deposits in Egypt. (2 Marks)

Part three (20 Marks)

Answer only two questions from the following:

3) A: Describe briefly in a time table the chronostratigraphy, lithostratigraphy, chemostratigraphy and bio-events of the base of Ypresian Stage as given in its GSSP at Dababiya. (5 Marks)

B: Define the most important geologic differences between the Northern and Southern Gulf of Suez. (5 Marks)

4) Define the major paleogeographic and paleoenvironmental events and their absolute age which took place in Egypt during the Oligocene-Pliocene and which gave rise to the present geologic map of Egypt. (10 Marks)

5) Compare and correlate the Eocene-Oligocene rock units and their equivalent time units in the Western Desert, Eastern Desert, Cairo-Giza, NW Fayum and Sinai. (10 Marks)

Part four (10 Marks)

Answer the following question: (10 Marks)

6- A) Write on only one: (3.5 Marks)

i- Types of gabbroic rocks in Egypt.

ii- Ophiolite sequence in Wadi Ghadir.

6- B) Write the rock units of the Carboniferous System in Egypt. (2.5 Marks)

6- C) Select from list B the equivalent rock units to those of list A and re-arrange the units of list A in ascending order according to the age. (4 Marks)

List A	List B
Garra Formation	Mahmiya-Abu Had-Thebes units
Kiseiba Formation	Um Mahara Formation
Marmarica (Al-Jaghbub) Formation	Syatin Formation
Belayim Formation	Birket Qarun-Qasr El Sagha Formation
Kareem Formation	Qusier-Duwi-Dakhla Formation
South Gharib Formation	Abu Dabbab Formation
Dabaa Formation	Tarawan-Hanadi units
Dungul Formation	Sidi Salem Formation
	Rudeis Formation

Good Luck!

Prof. Dr. Khaled A. Ouda *Prof. Dr.Ali A. Khoudier*

Prof. Dr. Nageh A. Obaidalla

تنبيه هام: الامتحان الشفوى بعد الامتحان التحريرى مباشرة

Assiut University *Faculty of Science* *Geology Department*	**Final Exam** **Second Semester 2014-2015** *Date:* 30/5/2015	
Time: 2 hrs	*Subject: Well logging (GP459) for Petroleum Geology Group Students*	*Total 50 marks*

مطلوب تسليم ورقة الاسئلة مع كراسة الاجابة

Answer the following questions:

1) Define the following terms: *(5 marks)*

Formation resistivity factor, BHT, R_o, Parasite currents, S_{xo} , R_{mf}

2) Illustrate shortly how well logs can help in detecting THREE ONLY of the following: *(9 marks)*

a) Gas, oil & water zones.
b) Sand & Shale beds.
c) Breakouts and washouts.
d) Facies of clastic rocks.

3) True (T) or False (F) : (4 marks)

a) SP log to give a deviation away from the shale line, only a porous and permeable layer must be present. ( )
b) The porosity of the flushed zone is larger than that of the non-invaded zone. ( )
c) The shale index of GR log will give very low clay content in a clean formation with high radioactivity. ( )
d) Cross-plot of K and Th concentrations allows identification of Clay minerals. ( )

4) Explain THREE ONLY of the following: (9 marks)

a) How to estimate annular borehole volume using caliper log?
b) How can hydrocarbon source rocks be identified using resistivity (Rt), gamma ray (GR) and bulk density (ρ_b) log data?
c) The origins of SP log.
d) Both Gamma Ray and Neutron Logs utilize "radiation", but in very different ways. Explain by presenting the principles, tools and two main applications of each.

بقية الأسئلة فى الصفحة التالية

5) Complete the following sentences: (8 marks)

a)Thermal variations in bore holes are mainly due to ....
b) Formation resistivity is affected by ....
c) Environmental factors influencing well logs are ....
d) Focusing of resistivity tools aims at ....

6) Show by drawing <u>THREE ONLY</u> of the following, with writing data on the sketch: (9 marks)

a) Induction logging tool.
b) The components of logging cable and its functions.
c) The borehole environment at mud Invasion zone.
d) Electrode configuration, typical short & long spacings, measuring point and relation for ΔV estimation, in the normal and lateral resistivity tools.

7) Put (√) inside the brackets against the correct answer(s): (6 marks)

1) The effect of the presence of shale and gas on the Neutron tool is:
   a) Similar effect, each causing the tool to read high porosities. ( )
   b) Opposite effect, shale causing the tool to read high and gas causing it to read low porosities. ( )
   c) Similar effect, each causing the tool to read low porosities. ( )

2) Which of the following indicate that a rock is permeable?
   a) Low gamma-ray. ( )
   b) SP deflection. ( )
   c) Low resistivity. ( )
   d) High porosity. ( )

3) Which of the following can cause the resistivity of a rock to increase?
   a) An increase in connate water resistivity. ( )
   b) A decrease in tortuosity. ( )
   c) A decrease in formation porosity. ( )
   d) An increase in water saturation. ( )

4) Induction logs when used minimize the influences of
   a) The borehole. ( ) b) The surrounding formations. ( )
   c) The invaded zone. ( ) d) All of these. ( ) e) None of these. ( )

5) Depth of mud filtrate invasion depends on:
   a) Difference between mud pressure and formation pressure and permeability. ( )
   b) Difference between mud pressure and bottom hole flowing pressure and formation permeability. ( )
   c) Drilling rate and Difference between mud pressure formation pressure. ( )

<<>>><<>>><<>>>>>>>>>>>>> نهاية الأسئلة >><<<<<>>><<<<<<<<<<<<<

Good Luck !! *<u>Examiner:</u> Prof. Dr. Awad A. A. Omran*

جامعة أسيوط

كلية العلوم-قسم الجيولوجيا

امتحان طلاب المستوى الرابع (ساعات معتمدة)

مقرر (٤٤٥ ج) جيولوجيا تصويرية واستشعار عن بعد

يونيو ٢٠١٥ | الدرجة الكلية (٥٠ درجة) | الزمن : ساعتان

PART I. PHOTOGEOLOGY (25 Marks)

ANSWER THE FOLLOWING QUESTION **(7 marks)**

1. Most photo-geologic studies are designed to compile geologic maps showing lithologic units and structures.

   Give the most important factors which affect the photographic appearance of a rock

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

2. Discuss scale variations and differences in parallax on vertical aerial photographs . **(6 marks)**
3. Internal and external drainage patterns are considered as important tools of photo-geologic interpretation. Discuss **(6 marks)**
4. Compare and contrast between photo-geologic characteristics of the following pairs: **(6 marks)**
   a. extrusive and intrusive igneous rocks
   b. Sandstones and Shales.
   c. Horizontal and inclined interbedded sedimentary sequence
5. Explain how differential erosion is considered the first key to bedrock identification and interpretation on aerial photographs. **(6 marks)**

Prof.Dr. Moustafa M. Youssef

GOOD LUCK

PART II. Remote Sensing (25 Marks)

Answer ONE question ONLY of the following:

1. Give short notes about :
   - Interaction mechanism between EMR and matter.
   - Spectral reflectance curves
   - Landsat orbit paths
   - Image structure
   - Lineaments
   - Ratio images

2. Write what you know about the role of remote sensing techniques in detecting:
   - Gossan deposits
   - Sedimentary uranium deposits.

Prof.Dr. Mohamed Habib

Good Luck !!

(1)

Assiut University
Faculty of Science
Geology Department

جامعـــــة أسيوط
كلية العلوم – قسم الجيولوجيا

2 nd Semester Final Written Exam, 2015

for Geology Students

Course: 414 G (Palaeoecology and Biostratigraphy) Time allowed: **two hours**

I: Palaeoecology

Question no. 1: Which of the following statements is correct or wrong? (6 marks)

1- In palaeoecology, most of the organisms, even the abundant taxa, are completely and well preserved.

2- Explanation of a complex ecosystem is simplified by presenting only the most important parameters.

3- Necrolysis means decomposition of organism upon death but biostratinomy represents the sedimantational history of the fossil.

4- Selective degradation may cause the final assemblage investigated by the palaeoceologist to be quite different from the original living assemblage.

5- Not every organism that ever lived could become part of the fossil record.

6- For the vast majority of organisms, biostratinomic destruction is total.

Question no. 2: Write on **Three only** of the following: (15 marks)

1- Main sources of data (Databases) in palaeoecology reconstructions.

2- Methodological uniformitarianism in paleoecology, with reference to the methodological approach.

3- Taphonomic processes.

4- Operational base in palaeoecology.

5- Differential preservation.

Question no. 3:

Ecology/palaeoecology is the science of studying the interaction of organisms with one another and with the physical environment; discuss this statement. (4 marks)

---------- **Examiner: Prof. Magdy S. Mahmoud,** ----------

See next page

II: Biostratigraphy

Answer the following questions:

First question (10 Marks).

1- **Define the geologic age of the given index fossils (4 marks).**

2- **Arrange these ages from older to younger (3 marks).**

3- **Could you infer any stratigraphic hiatus, explain? (3 marks).**

G. calcarata, A. africana, A. mayroensis, Rotalipora spp., D. asymetrica, Gl. pseudomenardii

Second question (8 Marks; 4 marks each).

1- **Define two only of the following stage boundaries:**

Danian/Selandian – Paleocene/Eocene – Cretaceous/Paleogene

2- **Discuss two only of the following:**

A. Abundance and Assemblag zones. B. Endemism and Pandemism.

C- Mass Extinction.

Third question (7 Marks).

A. Choose the correct answer:

1- **Calcareous nannofossil species *Thoracosphera operculata* is the best example for..... Zone**

a. Taxon Range b. Abundance c. Lineage d. Assemblage

2- **..... consider one of the most important Paleozoic rock-forming fossils**

a. Trilobite b. Fusulinid foraminifera c. Tetracoralla d. Eurypterids

3- **Coccolithophorids one of the most important biostratigraphic tool which first appeared in .....**

a. Early Jurassic b. Late Cretaceous c. Early Cenozoic d. Late Triassic

4- **Ammonites are very useful in the biostratigraphy of..... Era**

a. Cenozoic b. Paleozoic c. Mesozoic d. Archean

B. Complete the following sentence:

1- **Graptolites, one of the Paleozoic index fossils which become extinct in..... period and commonly found in..... rock.**

2- **..... Zone is very useful for time correlation and often referred to correlation by.....**

3- **Archaeocyatha is first appearing in..... and consider..... builders.**

Examiner: Dr. Amr Abdel-sabour, good luck

Assiut University
Faculty of Science
Geology Department

Final exam 2015
Total marks: 25

G 420 Sedimentary Basins

Answer the following question:

1- a. What is a sedimentary basin? (3 marks)
b. what is a depocenter? (3 marks)
c. what is a basin axis? (3 marks)

Answer the two questions only from the following:

2- Write a brief account on the stages of rift basins evolution (8 marks)

3- a. Mention the basins in the subduction-related settings. (4 marks)
b. Describe briefly the sedimentary-fill in the forearc basins. (4 marks)

4- A. What is a rift basin? (4 marks)
b. Why rifts are important? (4 marks)

Assiut University Faculty of Science

Geology Department

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

Total Marks 50

June 2015 Time allowed :2hours

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- 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 only five important Egyptian gold bearing localities and give their average gold content (grade, g/t) (12 Marks)

B- What are the main steps you should follows for establishment of a mine operation project? What are the main factors you must take in your consideration for evaluating the potentiality of an ore body? What are the different factors involved in localization and/or precipitation of an ore deposits? (8 Marks)

Answer Only TWO Questions from the following

Question No.2 (Total 15 Marks)

A-What criteria you should look for and used as evidences of metasomatic origin of certain ore deposit? What are the perquisites for this important process? What are the common characteristic features of porphyry copper mineralization? What is your explanation for the rarity or absence of copper porphyry deposits in Egypt? Where are the most suggestive sites of exploration for this ore in Egypt? (9 Marks)

B- In short notes, illustrate how can you distinguish between:
1-S-type and I-type granites; 2 Simple and the Complex pegmatite; 3- False and True and gossans & 4-Podiform Chromite and layered Chromite. (6 Marks)

(Continued Overleaf)

(2)

Question No.3 (Total 15 Marks)

A-What are the types of alteration haloes that are commonly used as criteria for prospection for hydrothermal ore deposits? What criteria you should investigate to distinguish between fissure filling types and replacement types hydrothermal ore deposits ? What are the common fissure filling hydrothermal deposits forms? (10 Marks)

B- Evaporates are formed from different types of water, What are these types? What are the requirements for the formation of marine brine? And What are the paragenetic sequences of an evaporate assemblages from a sea water brines? From Where the Egyptian natural evaporates wealth resource comes? (5 Marks)

Question No.4 (Total 15 Marks)

A- In Egypt, there are some important economic ore deposits which are genetically resulted from metamorphic processes, What are these deposits? Where these deposits do occur? Discuss briefly its common uses. (5 Marks)

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

C- The tectonic settings of Egyptian terrain posses a close relation to different ore forming processes. What are the main metallogenic deposits in Egypt which are spatially related to the crustal growth of the Egyptian Shield? (5 Marks)

و بالتوفيق

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

Geology Department Faculty of Science Assiut University Third and Forth levels		Second Term Examination Oil Shale and Clay minerals (425 GP) May, 2015 Two Hours

Answer the following questions:

The first question: (10 Marks)

Answer **Ten** only of the following:

Mark each statement as true (✓) or false (×).**correct the false ones**.

1. ( ) Shale Oil is similar to crude oil.
2. ( ) Organic matter produced within the immediate water body is called allochthonous.
3. ( ) The resistance of organic matter depends on sediment accumulation rate.
4. ( ) Organic matter has high H/C and low O/C ratios.
5. ( ) Oxygen content in Anoxic depositional conditions equals 0.1 mg/L
6. ( ) Aquatic organisms such as algae and phytoplankton are better quality- kerogen producers.
7. ( ) Liptinites have higher H/C ratios than exinites.
8. ( ) Catagenesis cause rearangment of kerogen molecules [more ordered and compact structures]
9. ( ) Oil Shale deposits formed in shallow seas are much thicker compared with those accumulated in large lake basin deposits.
10. ( ) The most important Oil Shale deposits in the world are of Cretaceous age.
11. ( ) The term kerogen describes the organic matter in Oil Shale that yielded oil upon retorting.

باقي الأسئلة في خلف الورقة

The second question: (5 Marks)

Define **Five** only of the following:

(a) Carbon preference index (CPI) - (b) Pyrolysis - (c) Bitumen

(d) Grade of Oil Shale - (e) Carbon residue

(f) Vitrinite reflectance

The third question: (8 Marks)

Discuss in details the formation and thermal maturity of kerogen.

The forth question: (8 Marks)

Write on Hutton's (1991) classification of organic – rich sedimentary rocks.

The fifth question: (5 Marks)

Answer **one** only of the following:

1- Influential factors of retorting of Oil Shale.

2- Mining processes of Oil Shale.

The sixth question: (5 Marks)

Discuss the application of illite/smectite Geotherometer in hydrocarbon-bearing rocks illustrating your answer with drawing.

The seventh question: (9 Marks)

Write on the kerogen types in terms of their chemical properties, biological origins and depositional settings illustrating your answer with examples in particular of the Oil Shale of Egypt.

Ezzat Abdallah Ahmed GOOD LUCK

Assiut University Faculty of Science

Geology Department

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

Total Marks 50

June 2015 Time allowed :2hours

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- 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 only five important Egyptian gold bearing localities and give their average gold content (grade, g/t) (12 Marks)

B- What are the main steps you should follows for establishment of a mine operation project? What are the main factors you must take in your consideration for evaluating the potentiality of an ore body? What are the different factors involved in localization and/or precipitation of an ore deposits? (8 Marks)

Answer Only TWO Questions from the following

Question No.2 (Total 15 Marks)

A-What criteria you should look for and used as evidences of metasomatic origin of certain ore deposit? What are the perquisites for this important process? What are the common characteristic features of porphyry copper mineralization? What is your explanation for the rarity or absence of ~~cop~~per porphyry deposits in Egypt? Where are the most suggestive sites of exploration for this ore in Egypt? (9 Marks)

B- In short notes, illustrate how can you distinguish between:
1-S-type and I-type granites; 2 Simple and the Complex pegmatite; 3- False and True and gossans & 4-Podiform Chromite and layered Chromite. (6 Marks)

(Continued Overleaf)

Question No.3 (Total 15 Marks)

A-What are the types of alteration haloes that are commonly used as criteria for prospection for hydrothermal ore deposits? What criteria you should investigate to distinguish between fissure filling types and replacement types hydrothermal ore deposits ? What are the common fissure filling hydrothermal deposits forms? (10 Marks)

B- Evaporates are formed from different types of water, What are these types? What are the requirements for the formation of marine brine? And What are the paragenetic sequences of an evaporate assemblages from a sea water brines? From Where the Egyptian natural evaporates wealth resource comes? (5 Marks)

Question No.4 (Total 15 Marks)

A- In Egypt, there are some important economic ore deposits which are genetically resulted from metamorphic processes, What are these deposits? Where these deposits do occur? Discuss briefly its common uses. (5 Marks)

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

C- The tectonic settings of Egyptian terrain posses a close relation to different ore forming processes. What are the main metallogenic deposits in Egypt which are spatially related to the crustal growth of the Egyptian Shield? (5 Marks)

و بالتوفيق

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

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Assiut University *Faculty of Science* *Geology Department*	**Final Exam** **Second Semester 2014-2015** *Date:* 15/6/2015	
Time: 2 hrs	*Subject: Well logging and Structural Analysis (G444) for Geology Group Students*	*Total 50 marks*

مطلوب تسليم ورقة الاسئلة مع كراسة الاجابة

Part I - Well Logging (25 marks)

1) Describe TWO ONLY of the following: *(3 marks)*

Gamma scintillation detector, Formation resistivity factor, Induction logging tool.

2) Demonstrate shortly the role of well logs in TWO ONLY of the following: *(4 marks)*

a) Detecting facies of clastic rocks.
b) Identification of clay minerals.
c) Discovering breakout and washout features.

3) True (T) or False (F) : *(1½ marks)*

a) SP log gives a deviation away from the shale line only due to presence of porous and permeable layers. ( )
b) Depth of mud filtrate invasion in high porosity formation is greater than that in low porosity one. ( )
c) The shale index of GR log will give very low clay content in a clean formation with high radioactivity. ( )

4) Explain FOUR ONLY of the following, with the help of drawing sketches as you can: *(10 marks)*

a) The components of logging cable and its functions.
b) The borehole environment at mud Invasion zone.
c) Comparison between normal and lateral resistivity tools, showing electrode configuration, spacings, measuring point and resistivity estimation relation.
d) Estimation of annular borehole volume using caliper log.
e) The origins of SP log.

5) Complete the following sentences: *(4½ marks)*

a)Thermal variations in bore holes are mainly due to ....

b) Environmental factors influencing well logs are ....

c) Focusing of resistivity tools aims at ....

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6) Put (√) inside the brackets against the correct answer(s): (2 marks)

1) The effect of shale and hydrocarbon on the resistivity tool is:
   a) Similar effect, each causing the tool to read high resistivity. ( )
   b) Opposite effect, shale causing the tool to read low and hydrocarbon causing it to read high resistivity. ( )
   c) Similar effect, each causing the tool to read low resistivity. ( )

2) Which of the following indicate that a rock is permeable?
   a) Low gamma-ray. ( )
   b) SP deflection. ( )
   c) Low resistivity. ( )
   d) High porosity. ( )

3) Which of the following can cause the resistivity of a rock to increase?
   a) An increase in connate water resistivity. ( )
   b) A decrease in tortuosity. ( )
   c) A decrease in formation porosity. ( )
   d) An increase in water saturation. ( )

4) Induction logs when used minimize the effect of
   a) The borehole. ( ) b) The surrounding formations. ( )
   c) The invaded zone. ( ) d) All of these. ( ) e) None of these. ( )

Part II - Structural Analysis (25 marks)

Write Short Notes on <u>ONLY THREE</u> from the following:

1. Shear zone.
2. Secondary foliations.
3. Lineations.
4. Evidence of shear zone.

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Good Luck !!

<u>Examiner:</u> Prof. Dr. Awad A. A. Omran
Prof. Dr. Mohamed A. Hassan

Assiut University
Faculty of Science
Geology Department

جامعة أسيوط
كلية العلوم
قسم الجيولوجيا

Final Exam

Seismic and sequence stratigraphy (Petroleum Geology, The fourth level)

June, 2015	GP 426	Total marks 50	Time: 2 hours

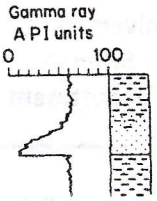
Note: support your answer by drawings.

1. Choose the correct answer of the following: **(8 marks)**

1) **Progradational reflection patterns represent**
   A. Unstratified internal configuration
   B. Stratified internal configuration
   C. Divergent internal configuration
2) **Stratal patterns are classified into**
   A. Unconformity and synsedimentary stratal discontinuities
   B. Plans, internal patterns and stratal discontinuities
   C. Internal geometries and plans
3) **Lapout is**
   A. Apparent truncation
   B. Onlap, downlap and toplap
   C. Onlap and downlap only
   D. Toplap and downlap only
4) **Sequence development is controlled by**
   A. Relative sea-level change only
   B. Water depth and global eustasy
   C. Global eustasy only
   D. All of these
5) **Sequence boundary is ---------- the forced regression.**
   A. Over
   B. It
   C. Below
   D. A and B together
6) **In a retrogradational parasequence set older parasequence tend to be ---------- younger parasequence in the set.**
   A. Thinner than
   B. Thicker than
   C. Not change significantly
   D. Not all of these

(2)

7) **The gamma log motif in this figure represents**



A. An upward fining sand : shale sequence with an abrupt base
B. Thinly interbedded sand and shale
C. An upward coarsening profile with an abrupt upper sand
D. Shale contact; a uniform sand with abrupt upper and lower contacts

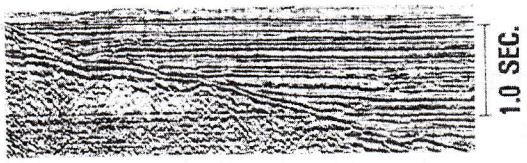
8) **Diastem is equal**

A. Long hiatus
B. Short hiatus
C. Short hiatus with or without erosion
D. A minor paraconformity

9) **MFS separates between**

A. Prograding stacking patterns above from retrograding stacking patterns below
B. Prograding stacking patterns above from aggrading stacking patterns below
C. Prograding stacking patterns below from retrograding stacking patterns above

10) **Reflection term in this figure is**



A. Toplap
B. Downlap
C. Onlap
D. Offlap

11) **Forced regression is occuring when the**

A. Rising of base level
B. Falling base level irrespective of the sediment supply
C. Shoreline is forced to regress by the falling base level
D. B and C together

12) **If the platform break and downlap planes are divergent-convergent, the basin architecture is**

A. Strat shallowing then deepening upward
B. Shallowing upward only
C. Deepening upward only
D. Strat deepening then shallowing upward

13) **Type 1 sequence is composed of**

A. Transgressive, highstand and lowstand systems tracts
B. Shelf margin, transgressive and highstand systems tracts
C. Lowstand, transgressive and highstand systems tracts

14) **Channel fill patern in this graph is**

A. Mound onlap
B. Divergent
C. Prograded
D. Onlap

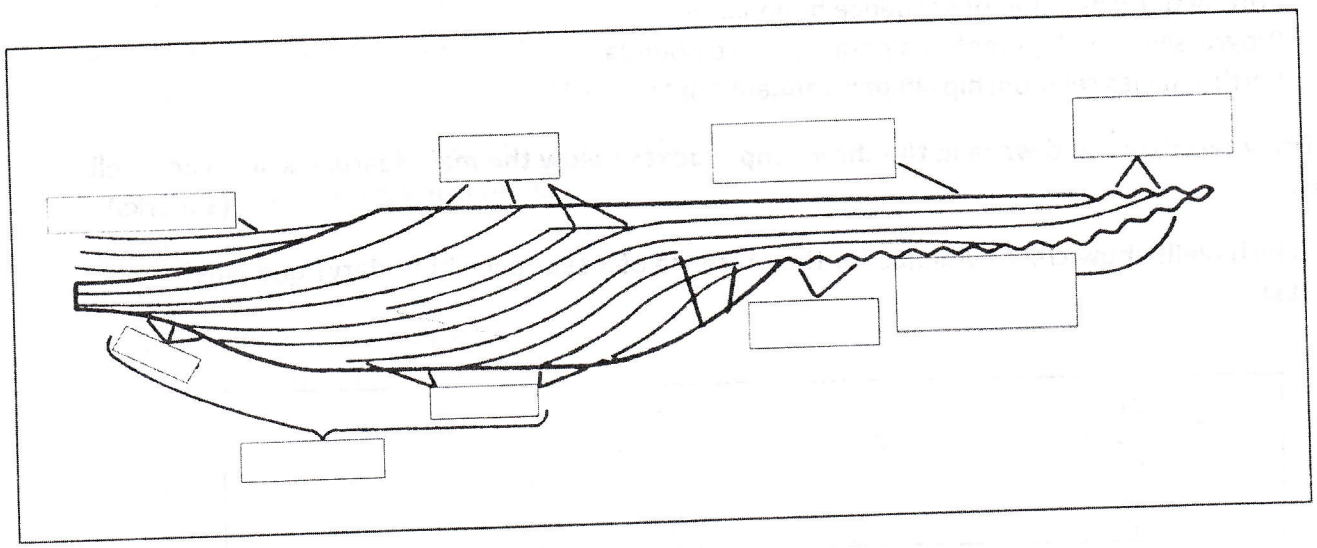
15) A sequence boundary is an

A. Unconformity
B. Correlative conformity
C. Erosion surface and time gap
D. Above all

16) Coastal toplap indicates a relative ---------- of sea-level.

A. Fall
B. Balanced
C. Rise
D. A and B together

2. Draw this sketch and write down the terms that are marked by the boxes in it. **(5 marks)**



(7 marks)

3. Complete the following sentences:

1. When the rate of creation of topset accommodation volume is more than sediment supply, this is characterized of ----------
2. Relative sea-level rises due to ----------
3. Prograding configuration pattern is caused by ----------
4. Transgressive surface is ----------
5. ---------- indicated a relative stillstand of sea-level
6. Divergent reflectors suggest ---------- in depositional rate or progressive ---------- of a depositional surface

(4)

7. Offlap is ----------

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4. Compare between ONLY ONE of the following: **(5 marks)**

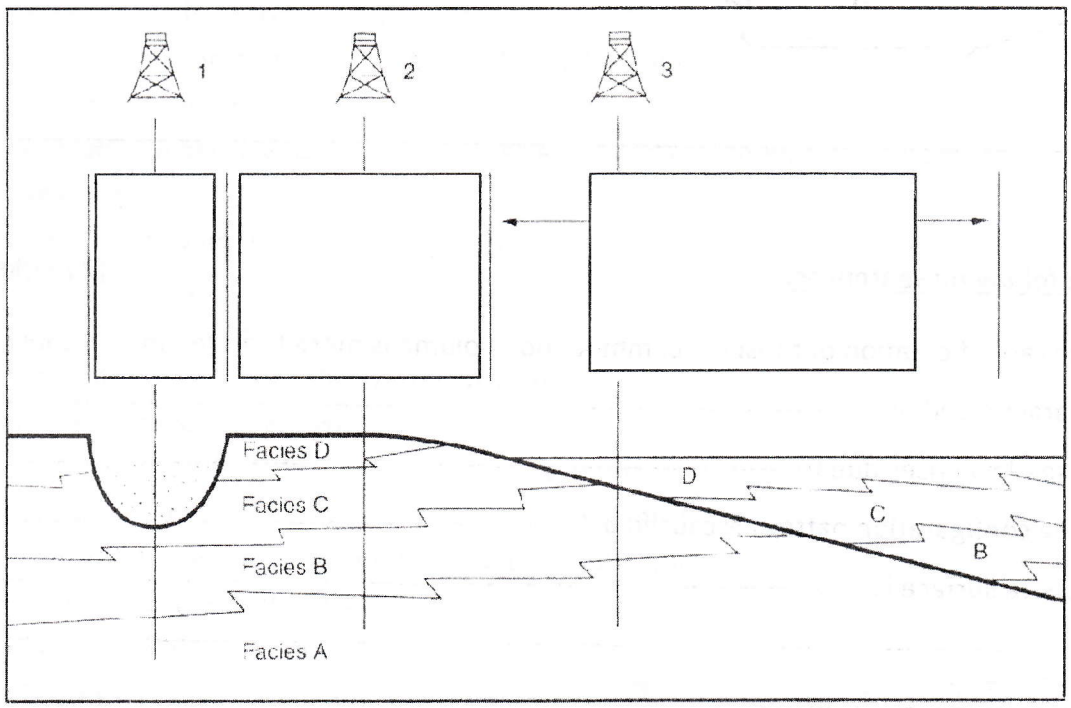
A. Type 1 and Type 2 sequence boundaries.
B. Normal regression and forced regression.

5. Discuss ONLY FIVE of the following: **(20 marks)**

A. Basin different types of the internal geometry relationships between (PB) and (DL).
B. Stratal patterns in Type 1 sequences. (إجباري)
C. Types and causes of stratigraphic cycles.
D. Criteria of recognition of sequence boundaries.
E. Progressive development of a parasequence boundary.
F. Vertical facies relationships in parasequence sets.

6. A) Draw this figure and write in the three empty boxes below the main feature which each well shows. **(3 marks)**

B) Which wells show clear evidence for the presence of a sequence boundary? and why? (2 marks)



Best wishes

Dr. Mohamed ELHossainy

Assiut University Faculty of Science Geology Dept		جامعة أسيوط كلية العلوم قسم الجيولوجيا

Final Exam of Environmental Geology (402GP)
For 4th year students- 2014-2015
June , 8 , 2015

Time: Two Hours **Total marks: 50** **Examiner : Prof. Mamdouh Farrag Soliman**

I- (Questions 1-30, One mark for each); Select the letter (A, B,C, D, or E) of the choice that BEST answers the question. Each question has ONLY one correct answer

1-A Comets is

A- the glowing trail of hot gas and vaporized debris left by a solid object heated by friction

B- called a meteoroid and will fall to the Earth as meteorite.

C- An icy body and spend most of its time in the outer Solar System

2-The planets formed nearest to the sun contained mainly

A. high-temperature materials; metallic iron and a few minerals with very high melting temperatures, with little water or gas.

B. low-temperature minerals, including some that contain water locked within their crystal structures.

C. nearly all of the materials are still condensed materials like methane and ammonia

D. All above

3-The early earth was very different from what is today.

A. It was having a huge ocean larger than the modern oceans

B. Dense materials, like metallic iron, tended to sink toward the surface of the earth.

C. It was differentiated into two major compositional zones: the central Core; and the surrounding Mantel

D. It was having a surface, probably resembling the barren, cratered surface of the moon.

E. None of the above

4-In the closed system;

A. the boundaries permit the exchange of energy, and matter, with its surroundings.

B. No exchange for both matter and energy across the boundaries.

C. An example of a closed system is an oven,

D. Rain falling on an island is a simple example of a closed system.

5-As a result of weathering,

A. the Earth's lithosphere is broken up into a series of enormous rocky plates.

B. the Earth has cooled off more slowly than the others

C. the Earth is covered by an irregular blanket of loose rock debris, or regolith.

6. The two major kinds of sedimentary rock are chemical and .....

A- citibank

B- clastic

C- precipitated (from solution)

D- volcanic

E- . metamorphic

7. Strike-slip faults are often found at transform and ..... plate boundaries.

A- continent-to-continent

B- mid-ocean ridge

C- paper

D- hot-spot

E- convergent plate

8- Active volcanoes are

A. volcano with no historic record however show evidence of geologically recent activity

B. observed in eruption during historic time

C- volcano with no historic record and no evidence of geologically recent activity

9- Basaltic composition magmas are produced

A- at tectonic plate settings where partially melted asthenosphere rises to the surface.

B- From a partial melt of oceanic crust along subduction zones.

C- From a partial melting of continental lithosphere occurs

10- Which magma of the following rocks are less viscous

A- Rhyolitic/Granitic magma b- Andesitic/intermediate magma C- basaltic magma

11. Rocks that crystallize slowly from melts are known as ..... rocks.

A. metamorphic B- dumb C- clastic D- volcanic E- plutonic

12- The magmas with high viscosity produce

A- Violent nature of the eruption
B- Quite explosive nature of the eruption
C- Both

13-Plate tectonics cause many of the physical features that we see on earth today like volcanoes and earthquakes, but also other geologic features like:

A-Physical weathering B-faults. C-Rivers D-Sedimentary rocks

14- When rocks pass from a ductile state to a brittle state, the rocks may break along a surface called a fault. The sudden release of stored strain energy causes

A- A Floodplain B- wind storm C-sea level rise D-An earthquake.

15. The mechanism describing how rocks deform and move along a fault before, during, and after an earthquake is known as the ..... theory.

16- Surface waves spread outward from the ....to the Earth's surface

A- epicenter B- Focus C- Both

17-Secondary Wave (S wave): Transverse wave ; travels and move material:

A. perpendicular to the wave movement

B. in a rolling دحرجة and swaying تمايل motion, so that the earth moves in different directions.

C. in an elliptical path opposite the direction of wave motion

18-Most earthquakes are deep focus

A- True B- False

19-At convergent boundaries, compressional forces produce shallow- to deep-focus quakes along

A- reverse faults B- normal faults C- strike-slip faults

20-FALL –is

A- a free vertical drop of material from a cliff or steep slope.

B- a block rotation / tipping

C- a mass sliding along well-defined failure surface

D- all above

21-Rotational Slide (Slump) is

A-slope collapse along a basal, concave upward rupture surface, with subsequent downslope movement and backward rotation of the slump block

B-free vertical drop of material from a cliff or steep slope.

C- Translational / Planar Slide

(4)

22- Debris flow involves the downslope movement of regolith whose consistency is:

A- coarser than that of sand

B- finer than that of sand

C- is a type of a slurry flow

D- A and C

23- What is more rapid?

A- Creep flow

B- Earth flow

24-Effluents that cause the depletion of dissolved oxygen in a water body are said to

A. a biochemical oxygen demand, or BOD

B. aerobic environment

C. sewage

25-<u>The heavy metals</u> that can contaminate the surface water include :

A-..... B- .....

C-..... D-.....

26-A lake situated in granitic bedrock is more susceptible to ..... than *a* lake situated in limestone

A- Acidification B- Alkalinization C-neutralization

27- If water contaminated with sewage passes through sediment or rock with large pores, such as coarse gravel or cavernous limestone, it can travel long distances and

A- remain polluted B- become purified

28- The Most toxic part of petroleum when oil spill occurred is..... why?

A- aliphatic compounds .....

B- aromatic compounds .....

29-Dispersants are chemical solvents used as clean-up method for oil spill.

A- They act like soap to break up large oil slicks into small pieces which spread throughout the ocean

B- They eliminate oil completely

C- They facilitate the removal of the oil by causing it to concentrate in thicker layers on the surface of the water

30-Booms

a- Contain chemical solvents used as clean-up method for oil spill

b- reduce the surface tension between the oil and water

c- are oil absorbents

d- All above

e- Non from above

II- (Questions 31-42, Two marks for each); <u>Answer only 10 from the following</u> :

31-What are the current applications of Such information.

A- The appearance of Cyanobacteria and single-celled blue-green algae

.....

B- appearance of marine animals with shells

.....

C- The development of organisms with backbone - the fish –

.....

D- modern rational (العقلاني) humans (Homo sapiens) developed only about half a million years ago.

.....

32-There are <u>three</u> main sources from which energy flows into the Earth system- Mention them?

A-.....

B-.....

C-.....

(6)

33-The fact that the Earth is a closed system has <u>two important implications</u> for environmental geology, explain that?

34- Angle of Repose- .....

.....

35-Write on mitigation of earthquake risk?

36- Liquefaction is a .....

37- What are the causes of floods?

38-Structural controls on slides or falls are

A- .....

B- .....

C- .....

D- .....

39-The triggering events influence slope stability are

A-.....

B-.....

C-.....

.....

40- Steep Slope Remediation Techniques involve:

A-.....

B-.....

C-.....

.....

41-Contaminants in surface water come primarily from:

A-.....

B-.....

C-.....

.....

42- The Clean-up Methods of Oil spill are:

A-.....

B-.....

C-.....

D-.....

Good Luck -- Prof. Dr. Mamdouh Farrag Soliman