

Credit hour system - First semester - Final Examination 18/1/2020

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 (9M)

- What are the factors governing of selecting a site for dam?
- Explain the engineering significance of hardness of rock?

Answer two only of the following questions

Q1 (8 M)

- Write briefly on the rock mass properties?
- Mention the factors affecting slope stability?

Q2 (8 M)

- Discuss the engineering significance of rock color
- Describe the effect of geological structures to tunnel excavation?

Q3 (8 M)

- What are the forces acting on dam?
- Define the term "mass wasting" and mention the important types of mass wasting?

Part (2) Mining Geology Exam (25 M)

- 1- A- Mention the factors that determine the economic feasibility of the ore ?(5 M)
- 2- Mention the advantages extraction operation exposed by surface mining quarrying?
(5 M)
- 3- Mention the importance of mining development ?(5 M)
- 4- Describe with aid of sketch: ?(10 M)
 - a- Equidistance spacing method.
 - b- Triangular grouping method

إنتهت الأسئلة وبالتوفيق

أ.د/ جمال يحيى - قسم هندسة التعدين والفلزات

أ.د/ جلال حامد الحباك - قسم الجيولوجيا

بسم الله الرحمن الرحيم

جامعة أسيوط

كلية العلوم - قسم الجيولوجيا

امتحان التحريرى للمستوى الرابع بكلية العلوم شعبة الجيولوجيا والكيمياء

المادة: خريطة مصر الجيولوجية (٤١٠ ج)

(Geologic Map of Egypt (410 G)

الزمن: ساعتان

الدرجة: ٥٠ درجة

دور يناير ٢٠١٩/٢٠٢٠ م

Answer the following questions:

First Question: (20 Marks)

- 1) Compare in a stratigraphic table between the distribution of the rocks units of following:
 - i- The Lower (Early) Cretaceous at north and south Sinai.
 - ii- The Eocene at Fayoum and Nile Valley.
- 2) Write a brief essay on two only of the rocks of the following geologic times, following, explaining their important:
 - i- The Precambrian rocks.
 - ii- The Oligocene rocks
 - iii- The Jurassic rocks.
- 3) In a stratigraphic table define the different rock units of the surface Paleozoic sequences in Egypt.

Second Question: (15 Marks)

- 1- Discuss the economic and scientific important of the Eocene rocks in Egypt.
- 2- Discriminate between the Neogene (Miocene & Pliocene) rock units at Gulf of Suez and Nile Delta.
- 3- Sketch the the subsurface stratigraphic sequence of the Lower (Early) Cretaceous strata in north Western Desert.

Third Question: (15 Marks)

- 1- Define the geologic age and the stratigraphic relationship for five only of the following rock units:
 - i- Abu Ballas & Sabaya
 - ii- Maghrabi & Taref
 - iii- Abu Raash & Hafhauf
 - iv- Timsah & Um Barmil
 - v- Halal & Raha
 - vi- Desouky & Dhiffah
- 2- Write the geologic age of the following rock units, explaining the important of every one: i- Duwi Formation ii- Nukhul Formation iii- Bahariya Formation iv- Nubia Sand Stone v- Tarawan Formation

Good Luck!

Prof. Dr. Nageh A. Obaidalla

Part I - WELL LOGGING (25 marks)

Answer the following questions:

- 1 - Define FOUR ONLY of the following terms: (4 marks)
Geothermal gradient - Electron density - SSP - Hydrogen index - Irreducible water saturation
- 2 - Show with diagrams ONE of the following: (3 marks)
a) Neutron logging tool. b) Gamma-ray scintillation detector.
- 3 - Explain how well logs used in THREE ONLY of the following (9 marks):
a) Type of clay minerals detection, b) Hydrocarbon source and non-source rocks discrimination,
c) Lithology identification from caliper, d) Conditions and relations used for permeability prediction.
- 4 - Put (✓) inside the brackets against the correct answer(s): (3 marks):
- i) Which of the following indicate that a rock is permeable?
a) Low gamma-ray. () b) SP deflection. ()
c) Low resistivity. () d) High porosity. ()
- ii) The effect of shale and gas on the neutron tool is:
a) Similar effect, each causing the tool to read high porosity. ()
b) Opposite effect, shale causing the tool to read low and gas causing it to read high porosity. ()
c) Similar effect, each causing the tool to read low porosity. ()
d) Opposite effect, shale causing the tool to read high and gas causing it to read low porosity. ()
- iii) Which of the following can cause the resistivity of a rock to decrease?
a) An increase in formation water salinity. () b) A decrease in tortuosity. ()
c) An increase in formation porosity. () d) A decrease in water saturation. ()
e) An increase of temperature. ()
- 5 - Illustrate shortly TWO ONLY of the following (6 marks):
a) Electrochemical origin of SP in wells, b) Composition and functions of logging cable,
c) Gamma-ray log shape as facies indicator.

Part II -PETROPHYSICS (25 Marks)

I. Define the following :

(5 marks)

Salinity – Hardness – Poisson's ratio – Cleavage – Bulk modulus

II. Write on FOUR ONLY of the following:

(20 marks)

- 1- The resistivity of clay and types of Conductivity.
- 2- Absolute permeability and Initial Oil
- 3- Porosity on Carbonate rocks and Kozeny correlation
- 4- Factors affected on Resistivity and Quartzose sediment
- 5- Factors affecting on the magnitude of Permeability and Initial Gas
- 6- Oil – water system and the resistivity of shale

[illegible][illegible]



First Semester, Fourth Level Final Examination

Time: 1 hours	Total marks: 25	GPR (G453)	January, 2020
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Part One: GPR (25 marks)

QUESTION 1: Choose the correct answer:

(15 marks)

- In common-mid-point GPR survey the most important controlling parameter is.....
a) Antenna separation b) offset from object c) travel time
- Radar tomography as one of the transillumination measurements is similar to
a) Common mid-point b) common offset c) wide angle velocity
- The most commonly used antenna orientation is
a) PR-EF b) PR-BD c) PR-XP
- GPR system with low transmitter frequency can produce
a) Low attenuation b) short wavelength c) low resolution
- Soil with high dielectric constant strongly cause
a) High electrical conductivity b) slow propagation velocity c) short penetration depth
-describes the ability of a material to pass free electric charges under the influence of an applied field.
a) Dielectric permittivity b) electric conductivity c) magnetic permeability
-plays no role in the electromagnetic energy behavior.
a) Dielectric permittivity b) electric conductivity c) magnetic permeability
- The dielectric constant of sediments is governed by its.....
a) Iron and iron oxides content b) water content c) clay content
- The frequency- dependent properties that control the behavior of electromagnetic energy in a medium are dielectric permittivity, electrical conductivity, and magnetic permeability.
a) True b) False
- Soil with high electrical conductivity cause
a) Reflect EM waves b) Refract EW waves c) Transmit EW waves
- When transmitter frequency is high, so that the signal attenuation is high.
a) True b) False
- When dielectric constant of a soil is very high, so that the signal attenuation is high.
a) True b) False
- If the antenna center frequency is 200 MHz, then the sampling interval is
a) 0.833 ns b) 0.733 ns c) 0.633 ns
- The station spacing in a GPR survey is strongly dependent on
a) Dielectric constant and frequency b) Dielectric constant and depth c) Dielectric constant and velocity
- The GPR survey grid and coordinate system is strongly dependent on
a) Double the wavelength b) half of the wavelength c) quarter of the wavelength

QUESTION 2: Answer all the below questions:

(5 marks)

- Describe in detail three different GPR system field arrangements.
- Discuss in detail the fundamental steps for any reflection GPR survey design.

(5 marks)

End of questions

GOOD LUCK

Dr. Mostafa Thabet



First Semester, Fourth Level Final Examination

Time: 1 hour	Total marks: 25	Paleomagnetism (G453)	January, 2020
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Answer the following questions

A. Put a check mark (✓) or wrong (X) with correction.

(10 marks)

1. Magnetic dip or magnetic inclination varies at different points on the Earth's surface with positive and negative values in the southern and northern hemisphere, respectively ()
2. According to geocentric axial dipole (GAD) model the magnetic inclination (I) is related to geographic latitude (λ) by this formula:
 $\tan I = \tan \lambda$ ()
3. Paramagnetic solids contain atoms with atomic magnetic moments and interaction between adjacent atomic moments ()
4. Saturation magnetization of magnetite decreases with increasing temperature and become zero at the Curie temperature which is 580°C .
5. The Ti-rich end member Ulvospinel (Fe_2TiO_4) Néel temperature is -153°C where it changes from ferromagnetic to paramagnetic ()
6. Formation of magnetic domains increases the magnetostatic energy because the percent of surface covered by magnetic charges is reduced
7. Stable single domain particles have less magnetic relaxation time than those in multidomain particles ()
8. Thermoremanent magnetism (TRM) is a natural remanent magnetization (NRM) produced by cooling from above the Curie temperature (T_c) in the presence of a magnetic field ()
9. Alternating field demagnetization technique can be applied on rocks containing hematite particles ()
10. In Fisher statistics, the confidence limit for the calculated paleomagnetic mean directions is determined by k parameter ()

B. Choose the correct answer

(5 marks)

1. Geomagnetic secular variation refers to changes in the.....of the Earth's magnetic field on time scales of about a year or more.
 - a. Direction
 - b. Intensity
 - c. Both a and b
2. Magnetic declination, the angle from geographic north to horizontal component, ranges from to

- a. 0 to 360 degree
- b. 0 to 90 degree
- c. -90 to + 90 degree

3. is the solid solution series formed between two end members magnetite (Fe_3O_4) and Ulvospinel (Fe_2TiO_4)

- a. Titanohematite
- b. Titanomagnetite
- c. Pseudobrookite

4. Factor(s) govern(s) the magnetic grains to form magnetic domains is (are).....

- a. Grain type
- b. Grain shape
- c. Saturation magnetization
- d. Both a and b
- e. Both b and c

5. is the temperature at which magnetic grains acquire its remanent magnetization

- a. Blocking temperature
- b. Unblocking temperature
- c. Curie temperature

C. Fill in the blankets

(5 marks)

1. The procedure for thermal demagnetization involves heating a specimen to an elevated temperature, then cooling to room temperature in.....magnetic field

2. Results of progressive demagnetization experiments are displayed ondiagram from which both directional and intensity data can be displayed.

3. is one of the types of natural remanent magnetizations acquired during deposition and lithification of sedimentary rocks.

4. During the course of paleomagnetic sampling, the.....and..... must be determined and noted for the core sample before cutting it from the rock unit.

5. α_{95} Indicates that we are 95% certain that..... lies within α_{95} of the calculated mean direction.

D. Answer on *only* one of the two following two questions

(5 marks)

1. Write on: (1) composition; (2) magnetic properties; and (3) curie temperature range of the Titanomagnetite series. Strengthen your illustrations with drawings.

2. Consider a synthetic sample composed of 5% by volume dispersed magnetite particles in a diamagnetic matrix. Illustrate (with drawings) the hysteresis loop resulted from this sample, and explain (briefly) the main magnetic parameters of this loop.

End of Questions

Good luck.....Dr. Ahmed Nasser Mahgoub

Assiut University
Faculty of Science
Department of Geology



Date: Jan. 2020
Time allowed: two hours

Final exam

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

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Part I Petroleum Geology (25 Marks)

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

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

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

- a-
b-
c-
d-
e-

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

- a-
b-
c-

- 3- Petroleum system is completed by elements and processes:-

The elements are,, and

Whereas, the processes are,, and

- 4- Post discovery reserve calculation of the discovered reservoir can be calculated from the following equation:-

$$\text{Recoverable oil (bbl)} = \frac{7758 V \phi (1 - S_w) R}{FVF}$$

Where:-

V is

Φ is

S_w is
 R is and
 FVF is

5- After drilling and testing of hydrocarbon reservoirs, the production can be carried out by:-

- a-
- b-
- c-

6- In Gulf of Suez region there are aboutoil fields, the common ones are,, and The main clastic reservoir rocks in these fields are, formation, formation, and formation which belonging to Lower Miocene age. Whereas, the source rocks areformation, which belonging to Paleocene and formation which belonging to Cenomanian age

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

- 1- At catagenesis zone of petroleum generation, the produced hydrocarbon is mainly:-
 - a- Gas
 - b- Oil
 - c- Immature hydrocarbons
- 2- Secondary migration of hydrocarbons is generally carried out in :-
 - a- The source rocks
 - b- The reservoir rocks
 - c- Metagenesis zone of petroleum generation.
- 3- Most of hydrocarbon reserves all over the world are generally occurred in:-
 - a- Regions of high tectonic and sedimentation
 - b- Regions of high tectonic and low sedimentation
 - c- Regions of low tectonic and high sedimentation
- 4- The inclined gas-oil contact or oil-water contact are generally combined with:-
 - a- Hydrodynamic traps at the crest of anticline
 - b- Stratigraphic traps associated with unconformity
 - c- Stratigraphic traps non associated with unconformity
- 5- Petroleum quality is measured by API%, The Egyptian petroleum especially that occurred in western desert region has:-
 - a- High API %
 - b- Low API%
 - c- Moderate API%

- 6- The amount of hydrocarbon generation depends on:-
 - a- Amount of the organic matter in oxidizing conditions
 - b- Amount of organic matter in reduction conditions
 - c- Presence of capillary pressure
- 7- Compound traps are generally a combined with:-
 - a- Structures and sedimentation
 - b- Structures and unconformities
 - c- Structures and sealing rocks

III- What is the differences with illustration between only four of the following: - (6 Marks, 1.5 Mark each)

- 1- Primary and secondary migrations of hydrocarbon with supporting evidences of both
- 2- High and low API petroleum with examples of the produced countries as well as commercial units of oil and gas.
- 3- Stratigraphic traps associated with unconformities and that non associated with unconformities
- 4- Convention and non-convention sources of hydrocarbon.
- 5- Diapiric and structure traps

Part II Hydrogeology (25 Marks)

Answer only two of the following questions:

1. Discuss with drawing: (12.5Mark)
 - a. Biological characters of groundwater.
 - b. Compare between the saturated and unsaturated zones.
 - c. Agricultural uses of groundwater.
2. Give an account with drawing on: (12.5Mark)
 - a. The different types of groundwater aquifers.
 - b. The groundwater aquifer characteristics.
 - c. Water bearing formations.
3. Write short notes on the following: (12.5Mark)
 - a. The major and minor dissolved constituents in the groundwater
 - b. Specific yield and retention.
 - c. The main benefits from a grain size distribution curve in the aquifer material.

=====Best wishes=====



First Semester Final Examination
Students: B.Sc. Students (Geology and Geology-Chemistry)

Subject: Course No. G433 (Geochemistry)
Date: Jan., 20, 2020

II- Geochemistry of sediments

Time allowed: one hour

Examiner: Prof. Dr. Mamdouh F. Soliman

الامتحان في أربع صفحات

اكتب أجابك في نفس ورق الأسئلة

Write your answers in the same sheets

Select or write the correct answer for the following: (25 marks, Questions 1-15 one mark for each)

1-Comets are composed of:

- A. carbonaceous bodies
C. gas and ice

- B. silicate bodies
D. B above

E. A and B above

2-Mention five minerals composed of lithophile elements

3- Which one of the following is NOT typical of "chalcophile elements?"

- A. They are found in reduced environments
B. They are sulfates
C. They are enriched in euxenic conditions

4-In the Earth's crust, the following elements are usually trace elements:

- A. Si, Mg, Al, Fe
B. Ti, Mn, P, C,
C. Zn, Ni, Cu, V

5-Trace elements are classified according to their behavior in magmatic system to:

- A. Lithophiles, chalcophiles, and siderophiles
B. Compatible and incompatible
C. Transition metals, PGE, REE,
D. All above E. None above.

6-In chemical weathering, alkaline water with pH 8-15 possesses a

- A. Intermediate decomposition action
B. Strong decomposition action
C. decomposition rate depends on the difference between the pH of the solution and the pH of the pure water.
D. Rather weak decomposition action

7- Write by the chemical equation the extensive dissolution of the mineral fayalite in nature?

8- The soluble salts in water include

- A. All carbonates, sulfides, oxides
- B. barium sulfate and Ca sulfate
- C. All chlorides, bromides and iodides

9- Write by the chemical equation the relationship between hematite and goethite

.....

.....

10- At lower values of pH (below 5), the solubility of quartz is:

- A. Decreases
- B. Increases
- C. Stable

11- Ferrous bicarbonate is readily soluble, but in the presence of molecular oxygen, it is oxidized and iron-carbonate precipitates.

Correct the wrong in above statement by chemical equation.

.....

.....

.....

12- The oxidate substances are characterized by the following, EXCEPT:

- A. They are Laterites and Bauxites
- B. They are composed mainly of iron and manganese hydro-oxides
- C. They are formed from material transported in ionic or colloidal solution
- D. They entirely composed of amorphous materials

13- The more carbon dioxide there is in water results in:

- A. the more quartz will dissolve.
- B. the more calcite will dissolve.
- C. Both

14- In Oxidic environments

- A. abundant organic matter is preserved in the sediments
- B. Fe and Mn occur as soluble ions
- C. interstitial waters of the sediments contain measurable dissolved oxygen

15- In Sulphidic (euxenic) environments, the diagenetic sequence has reached the stage at which the bacterial reduction of dissolved sulphate takes place with production of H_2S .

The H_2S would react with the chalcophile elements to produce sulfides.

Give three examples

A.

B.

C.

19-Compare between Bauxites and Laterites

(3marks)

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 2020

الإمتحان مكون من أربعة صفحات

Part I (PreCambrian) 10 Marks

Answer the following question

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

1-A: Outline the lab and field evidence led to consider the large serpentinite rocks as allochthonous masses.

1-B: Write briefly on the different efforts used on the classifications of the Egyptian Granites.

Part II (Cambrian to L. Cretaceous) 10 Marks

Answer the following question

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

1- A) In a stratigraphic table compare between the Paleozoic rocks at Gilf El Kebir Plateau and northern Western Desert. (4 Marks)

1- B) Give reasons:

i- The restricted occurrence of marine Triassic rocks in the northeastern part of Egypt. (1 Marks)

ii- The difficulty in the determining the geologic age of the Paleozoic rocks. (1 Marks)

1- C) Discuss the lithostratigraphy of the Lower (Early) Cretaceous rocks at south Egypt and northern Western Desert. (4 Marks)

Part III (Upper Cretaceous to Quaternary) 20 Marks

Answer TWO Questions of the following:

Question 3: (10 Marks)

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 4: (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 (10 Marks)

Question 5 (A- B): (10 Marks)

5-A: Select from list B the equivalent rock units to those of list A, and re-arrange the units of list A in stratigraphic order according to their ages. (5 Marks)

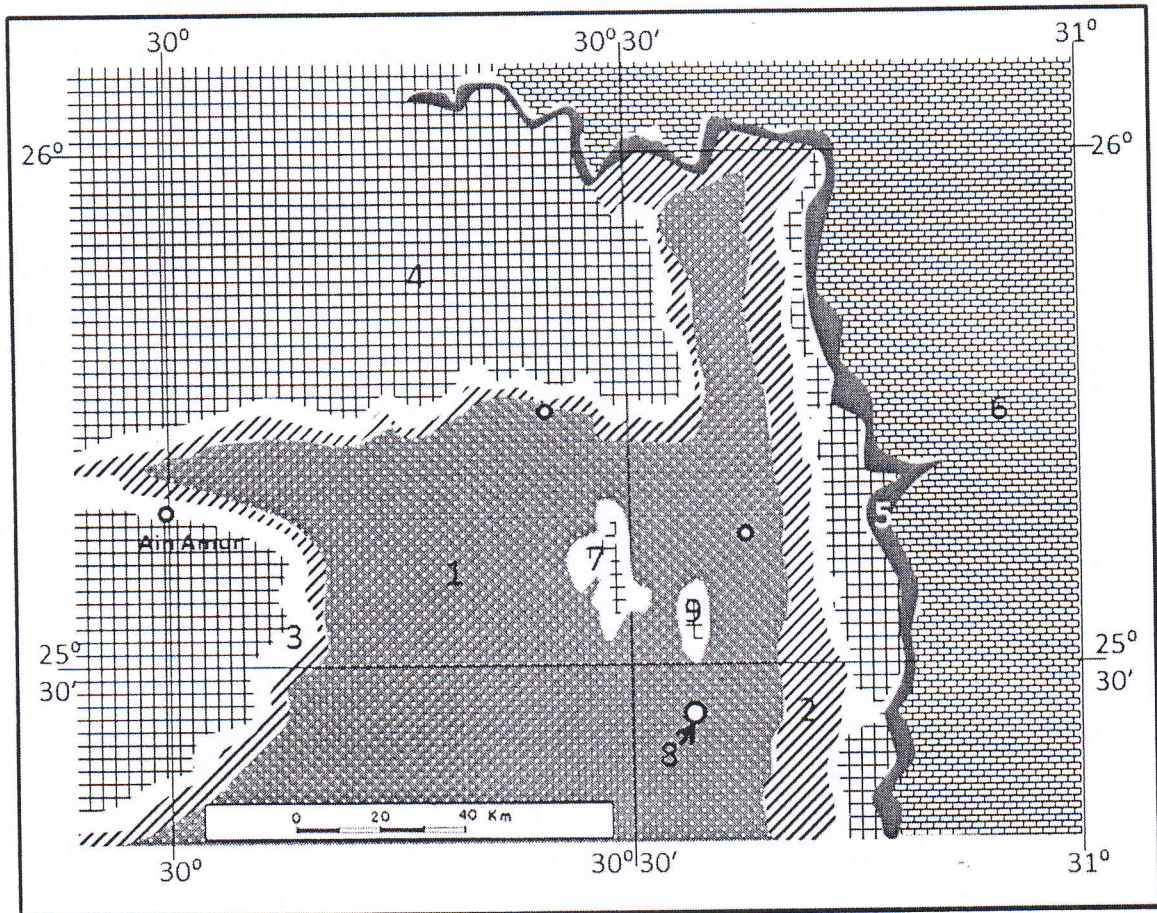
List A

Belayim Formation
Kiseiba Formation
Dabaa Formation
Garra Formation
Birket Qarun Formation
Mamura Formation
Ryan Formation
Tanka Formation
Bir El Tamsah Formation
Kareem Formation

List B

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

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



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

Answer the following question:

Question 6 (A-C)

6-A: Write briefly on THREE of the following concepts (3.5 Marks)

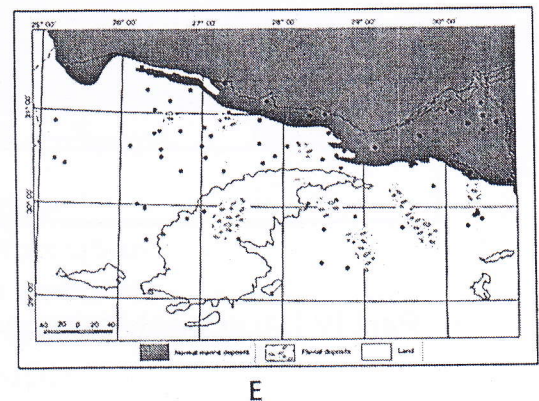
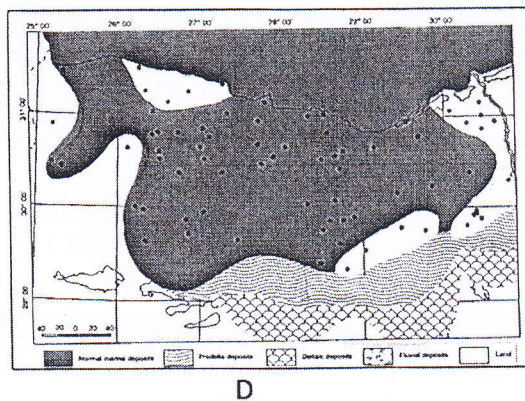
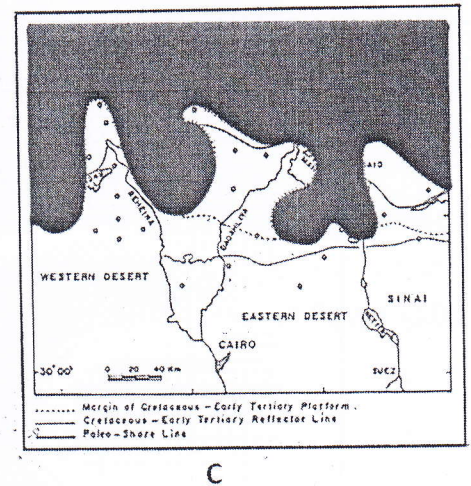
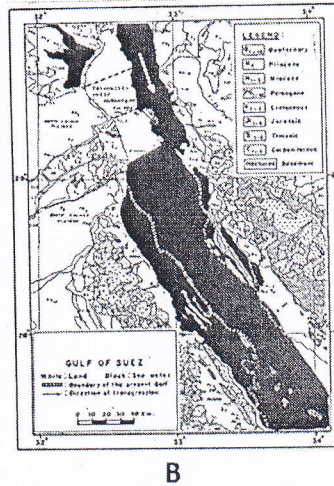
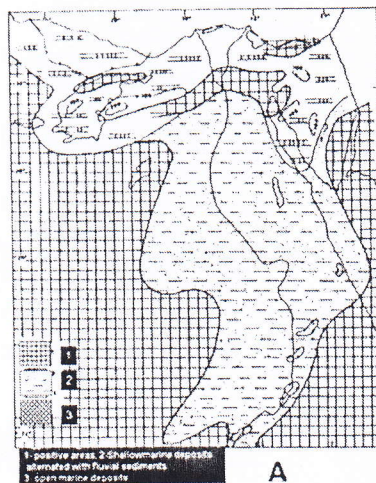
- i) Eastern Desert - Midyan terranes, ii) Sol Hamed-Yanbu suture, iii) Western arc or oceanic terranes, iv) Najd faults.

6-B: Answer only ONE of the following questions:

i) Write the subsurface rock units of the Jurassic System at northern Western Desert. (2.5 Marks)

ii) Correlate between the Cenomanian rocks at north and south Sinai. (2.5 Marks)

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



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

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

Time: Two Hours (50 degree) 9- Jan. , 2020

PART-I: Sedimentary Basins (25 degree)

Answer the following questions:

- 1- a. What is a sedimentary basin? (5 marks)
b. Mention the terminology used to describe basins prior to the development of the theory of Plate Tectonics?
- 2- a. What are the basins caused by plate divergence? (5 marks)
b. What is the economic significance of aulacogens basins?
- 3- a. What is the strike slip basin? (5 marks)
b. Write a brief account on the sedimentary fill of the strike- slip basin.
- 4- Choose the correct answer (5 marks)
The forearc basins are:
 - Strike-Slip/Transform fault basins
 - Basins related to subduction
- 5- Describe briefly the sedimentary fill of forearc basins basin (5 marks)

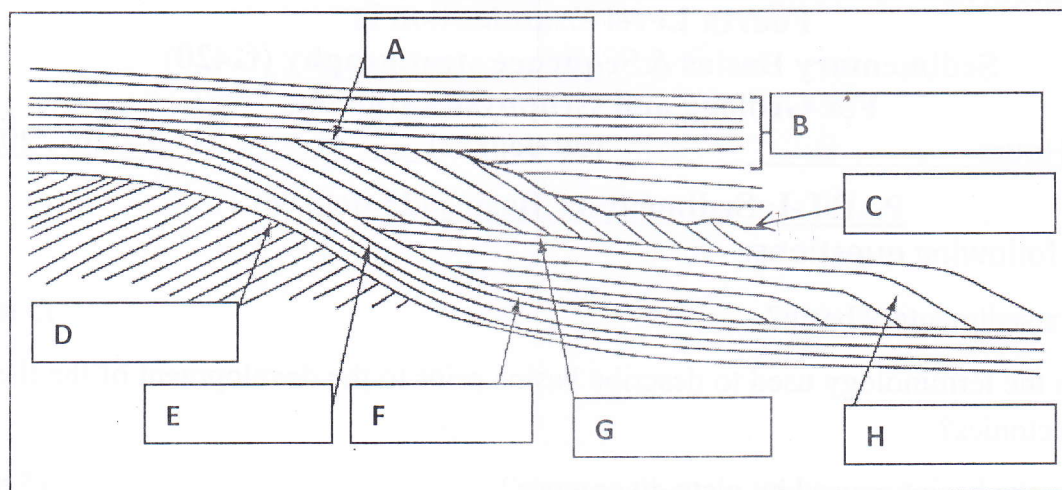
PART-II: Sequence Stratigraphy (25 degree)

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

- A). Write on, and differentiate between TWO ONLY of the following: (15 marks)**
1. What is a parasequence and how are the bounding surfaces recognized? And how does the vertical stacking pattern of parasequences allow for the recognition of systems tracts?
 2. What are the durations of the first and second-order stratigraphic cycles and what are their respective hypothesized causes?
 3. The difference between retrogradational and progradational stratal pattern in response to sea level changes and sediment flux.
- B). 4- Provide short definitions of FOUR terms of the following and explain why they are important in sequence stratigraphy: (6marks)**
- a) Type 1 and Type 2 sequence boundary.
 - b) Coastal onlap.
 - c) Base level.
 - d) Maximum Flooding Surfaces (MFS).
 - e) Sequence stratigraphic seismic surfaces.

تكملة الامتحان بظهر الورقة (صفحة ٢)

C). 5 - Identify the different types of seismic reflections and terminations given in the following figure (Write in the eight empty boxes, from A to H). (4marks)



GOOD LUCK

Prof. Dr. Mohamed Ahmed Soliman

Prof. Dr. Ahmed-Reda El Younsy

جامعة اسيوط
كلية العلوم- قسم الجيولوجيا
امتحان مادة ميكروسكوبية وبتروولوجية الخامات (٤٣١ ج)
العام الدراسي ٢٠٢٠/٢٠١٩

الزمن ساعتان

المستوى الرابع (جيولوجيا)

Answer FOUR questions only of the following (50M)

Q1 (12.5 M)

- Write on the anisotropy and polarization colors?
- Compare between cumulus and intercumulus textures?

Q2 (12.5 M)

- Write on the measurement of hardness of ores?
- Explain the estimation of the pressure of formation of a mineral or a mineral assemblage?

Q3 (12.5 M)

- Write on the paragenetic sequence and zoning?
- Discuss the importance of reflection pleochroism with examples?

Q4 (12.5 M)

- Compare between exsolution textures and color changes as quantitative and qualitative tools for the estimation of geothermometry?
- Why sphalerite can be seen to have much lower reflectance than neighboring pyrite?

Q5 (12.5 M)

- What are the factors affecting internal reflections?
- Mention the degrees of bireflectance intensity with examples?

جامعة اسيوط
كلية العلوم- قسم الجيولوجيا
امتحان مادة الخامات الاقتصادية (٤٣٤ ج)
٢٠٢٠/٢٠١٩

الزمن ساعتان

المستوى الرابع (جيولوجيا)

Answer FOUR questions only of the following (50M)

Q1 (12.5 M)

Compare between:

- i- Syngenetic and epigenetic mineral deposits?
- ii- Hypothermal and epithermal mineral deposits?

Q2 (12.5 M)

- i- Discuss the various mechanisms of the formation of gold deposits?
- ii- Compare between metasomatic and metamorphic mineral deposits?

Q3 (12.5 M)

- i- Mention the common types and properties of asbestos?
- ii- Discuss the formation of massive sulfide deposits and copper-nickel-sulfide association?

Q4 (12.5 M)

- i- Compare between early and late magmatic deposits?
- ii- Write on the geology and general characteristics of Platinum-Group Elements (PGE)?

Q5 (12.5 M)

- i- Compare between placers deposits and residual mineral deposits with examples?
- ii- Write on the stratabound deposits?