Cours Instru Import	**Assiut University- Faculty of Science** **Frist Semester- Final Exam 2025-2026** **Geology Department**	**Program: Geophysics** **Level : (4)** **Date: 9/1/2026** **Time: 2 h**	
	Title: GPR and Paleomagnetism	**Code: G453**	
	ors: Assoc. Prof. Mostafa Thabet (Paleomagnetism)		
First Question: ch	**No. of pages 2**	**No. Of questions 2**	**Total Mark:25 degree**

1. A rock unit is a seq **se the correct answer (a, b, or c). (17 marks)**
   a) intrusive bodies
2. A typical ___ has a ne o f beds in a sedimentary sequence or ___ in an igneous complex.
   a) sample b) cooling units c) volcanic lav
3. If a ChRM was acqu prior to folding, 10 cm^3 ctions converge when the ___ is made.
   a) structural correction b) dip correction c) tectonic correction
4. A positive ___ test from an intraformational conglomerate provides strong evidence for a primary NRM.
   a) fold b) conglomerate c) reversals
5. Time intervals of geomagnetic polarity are referred to as ___ designation.
   a) Epoch b) CHRON c) Period
6. During progressive chemical demagnetization, the remaining NRM decreases in ___.
   a) stability b) coercivity c) intensity
7. One basic form of primary NRM is ___ remanent magnetization, formed by growth of ferromagnetic gra
   below the Curie temperature.
   a) thermos b) chemical c) viscous
8. ___ time is the time required for a remanence to decay.
   a) Blocki g b) Decay c) Relaxation
9. The ma etic poles are where the magnetic field ___ is ±90°.
   a) dec ation b) inclination c) azimuth
10. Ch directions "pass the fold test" if clustering ___ after structural correction.
    a) dec ses b) increases c) becomes random
11. For onglomerate test to pass, ChRM directions in clasts should be ___ distributed.
    a) con ently b) randomly c) grouped
12. Pa e of a conglomerate test provides strong evidence for ___.
    a) a dary origin b) stability c) reversals
13. Th is for the reversals test is that time-averaged field directions for opposite polarities differ by _
    a) 90 b) 180° c) 360°
14. If ity zones do ___ match across an unconformity, the lower magnetization is older than the eros
    even a) perfectly b) not c) partially
15. W ering commonly produces CRM by oxidizing magnetite to ___.
    a) goe b) maghemite c) hematite
16. ___ remanent magnetism is acquired during deposition and lithification.
    a) Chemical b) Detrital c) Viscous
17. ___ remanent magnetism is gradually acquired in weak fields.
    a) Anhysteretic b) Viscous c) Detrital
18. Chemical demagnetization is effective in removing ___ in red sediments.
    a) magnetite b) hematite c) goethite
19. Induced magnetization is a ___ process without memory.
    a) permanent b) reversible c) gradual

5. Mineralogy has a big influence on the mining technique chosen and the sequencing o operations. ( )
6. Tin and tungsten deposits are commonly associated with mafic rocks. ( )
7. Nonmetallic ores are a group of minerals such as salts, gypsum, and clay. ( )
8. Ore within the weathered cap of sulphide deposits is called 'gossan'. ( )
9. All of the very large bauxite deposits are formed during the Precambrian. ( )
10. The world's largest and richest lead and zinc deposits are stratabound. ( )
11. Chromite, magnetite and PGE are formed during the "Late" magmatic stage. ( )
12. Residual mineral deposits are substances concentrated by chemical weathering, such bauxite. ( )
13. Covellite and chalcocite are primary minerals. ( )
14. One of the largest nickel deposits ever found (New Caledonia) was formed by second enrichment. ( )
15. Intense chemical weathering, which forms residual deposits, is favored by a tropical climate. ( )
16. Gangue minerals are aggregates of minerals from which one or more minerals can be extracted profitably. ( )
17. Most placers are found in stream gravels that are geologically young. ( )
18. Iron ores formed as a result of metamorphism are called taconites. ( )
19. Mineral deposits formed from mid-ocean ridge volcanism are called volcanogenic ma sulfide (VMS). ( )
20. Only oil shale that produces 40 liters of oil per ton is worth mining. ( )

End of Exam

	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Geology Department	Program: Chemistry - Geology Level : (4) Date: 5/1/2026 Time: 2 h
Ore-Forming Processes		Code: 438G
Instructors Prof. Dr. Galal El Habaak		
Important:	No. of pages 2 / No. of questions: Two parts	Total Mark: 50 degree

I. Answer ONLY THREE (3) questions from the following (10 Marks each):

Question 1:

A) Define the following terms: (Mineral Deposit - Ore - Gangue).

B) Categorize Geological Resources into three main types, providing examples for e

Question 2:

A) Explain the process of "Early Magmatic" deposits and how magmatic segregatio occurs.

B) Discuss the formation of "Late Magmatic" sulfide deposits through liquid immis

Question 3:

A) Hydrothermal solutions originate from various sources. List at least five potentia sources of water for these solutions.

B) Differentiate between the three typical forms of hydrothermal deposits: (Veins, Replacements, and Disseminations).

Question 4:

A) Define "Asbestos" as a group of silicate minerals and describe its unique physica properties.

B) Explain the geological origin of "Chrysotile" asbestos and the process of its form

II. State whether the following statements are True (T) or False (F): (20 Marks)

1. Secondary enrichment helps a high-grade deposit to become a low-grade deposit. (
2. The world's principal deposits of chromite are in the Bushveld igneous complex in Africa. ( )
3. Borax and other boron minerals are mined from evaporite lake deposits. ( )
4. Nonmetallic minerals are those from which metals such as Cu, Au, Fe, & Zn can be

g- The depositional lateral changes in the sedimentary facies are related to .....

A- Environmental factors B- tectonic factors

C- Both of these D- none of these

h- Which sedimentary contacts refer mostly to conformable relationship between two rock units?

A- Intercalation B- Gradational C- both of them D- none of them

i- The sharp contact between two different sedimentary rock units mostly means ..... Contact.

A- Conformable B- unconformable C- fault D- all of these

j- The Cretaceous and Eocene sedimentary rocks at Bahariya Oasis are differing in .....

A- Economic important B- scientific important

C- Both of them D- none of them

2- Write the main characters of the Dakhan Volcanics. (5 Marks)

Fourth Question: (10 Marks)

Write brief notes on the tectonic evolution of the Egyptian basement from the view point of the geosynclinal concept.

Fifth Question: (10 Marks)

1- Mention in detail the main points of El-Gaby classification (1982) proposed for the Egyptian granites. (5 Marks)

2- Briefly note the main features of the Hammamat molasse sediments and the foreland sediments association. (5 Marks)

Good Luck

!

Prof. Dr. Ali A. Khudier *Prof. Dr. Nageh A. Obaidalla*

Third Question: (10 Marks)

1- Choose the correct answer: (5 Marks)

a- Strata/Stratum are/is a .....

A- Layer of or series of Layers of surface rocks

B- Layer of or series of Layers of subsurface rocks

C- Both of these D- none of these

b- Which process is involved when sedimentary rocks are arranged in layer?

A- Deposition B- Sedimentation C- Stratification D- All of these

c- Geological time periods are divided by.....

A- The appearance and disappearance of life forms.

B- An equal number of years. C- The amount of sediment.

D- All of these.

d- The correct stratigraphic order of syn-rift rock units at Red Sea region is.....

A- Nakheil, Ranga, Umm Mahara, Abu Dabab, Samh, Gaber, Shagra

B- Ranga, Nakhiel, Umm Mahara, Abu Dabab, Shagra, Gaber, Samh

C- Umm Mahara, Nakheil, Ranga, Abu Dabab, Samih, Gaber, Shagra

D- Nakheil, Umm Mahara, Abu Dabab, Ranga, Gaber, Samh, Shagra

e- Which modern continents were derived from Gondwanaland?

A- Africa, Antarctica, Australia, India, South America

B- Africa, Antarctica, Australia, North America, South America

C- Asia, Antarctica, Australia, Europe, South America

D- Asia, Antarctica, Australia, North America, South America

f- What was the largest continent at the end of the Paleozoic Era?

A- Gondowanaland B- Pangaea C- Laurasia D- Siberia

بسم الله الرحمن الرحيم

جامعة أسيوط
كلية العلوم - قسم الجيولوجيا
امتحان التحريرى للمستوى الرابع بكلية العلوم شعبتى الجيولوجيا والجيوفيزياء

المادة: جيولوجيا مصر (415ج)
(Geologic of Egypt (415 G)

دور يناير 2026/2025م الدرجة: 50 درجة الزمن: ثلاث ساعات

ملحوظة: الأمتحان يتكون من ثلاث صفحات

Answer the following questions:

First Question: (10 Marks)

1- Describe the Jurassic rock units in Egypt, mention the economic important if present. (3 Marks).

2- Correlate in a geologic time table the Eocene rock units at both the Fayum and Sinai regions and write the economic important for each one if present. (5 Marks)

3- Write in only one of the following: (2 Marks)
a- The Oligocene rocks in Egypt.
b- The Precambrian rocks and their economic important. (2 Marks)

Second Question: (10 Marks)

1- Define the geologic age and the important of the following rock units (formations). (5 Marks)
a- Naqb b- Bahariya c- Abu Madi d- Birkt Garoun e- Temsah

2- Write an essay on the Lower (Early) Cretaceous rocks in Egypt. (3 Marks)

3- In a stratigraphical table arrange the subsurface different Paleozoic rock units at the northern Western Desert. (2 Marks)

انظر خلف الصفحة .....

3. Iron dissolves in natural waters mainly as:

A. $FeCl_2$ B. $FeSO_4$ C. $Fe(HCO_3)_2$ D. Fe_2O_3

4-According to Goldschmidt, the three main phases of meteorites are:

A. Oxides, silicates, carbonates B. Iron, oxides, sulfates

C. Native iron, sulfides, silicates D. Iron, silicates, hydroxides

5. Hydrolysis reactions in silicate weathering typically result in the formation of:

A. Sulfuric acid B. Silicic acid C. Nitric acid D. Hydrochloric acid

6. High sedimentation rates generally lead to:

A. High oxygen content B. Low organic carbon preservation

C. Reducing conditions D. Strong diffusion with seawater

7. Which species dominates strongly reduced interstitial waters?

A. NO_3^- B. SO_4^{2-} C. O_2 D. CH_4

8. Which process produces nonradiogenic isotope variations?

A. Radioactive decay B. Exchange and kinetic reactions

C. Nuclear fission D. Cosmic ray interaction

9. During evaporation, which isotope is preferentially removed?

A. Heavy isotope B. Light isotope

C. Both equally D. No fractionation occurs

10. The Paleocene–Eocene Thermal Maximum (PETM) is marked by:

A. Positive $\delta^{13}C$ excursion B. Negative $\delta^{13}C$ and $\delta^{18}O$ shift

C. No isotope change D. Increase in $\delta^{18}O$ only

II- Answer only three from the following: (5 marks for each)

1. Describe in detail the formation, mineralogy, and geochemical significance of hydrolyzates, including laterites and bauxites.

2. Outline the progression of redox environments (oxic, post-oxic/non-sulphidic, sulphidic/euxinic, methanic) including characteristic phases/minerals?

3. Describe how carbon and oxygen isotope stratigraphy can be used to identify global climatic events such as the PETM

4-Complete the following reactions: (one mark for each)

4.1. $MnSiO_3 + 0.5O_2 + 2H_2O$ ==> .....

4.2. $4NaAlSi_3O_8 + 4H_2CO_3 + 18\ H_2O$ ===> .....

43. $H_2SO_4 + CaCO_3 + H_2O$ ===>.....

4.4. $PbS + 2H_2CO_3$ <===> .....

4.5. $Mg_2SiO_4 + 4H_2CO_3$ <===> .....

	Assiut University- Faculty of Science Frist Semester- Final Exam 2025-2026 Geology Department	Program: Geology and Geology/Chemistry Level : (4) Date: 16/1/2026 Time: 2 h
Course Title: Geochemistry		Code: G433
Instructors: Prof. Dr. Mohamed Abd El-Moneim and Prof. Dr. Mamdouh Soliman		
Important:	No. of pages 2	No. Of questions 10	Total Mark:50 degree

Part one: Geochemistry of Crystalline rocks

I- Choose the correct answer from A,B,C,D of the following: (5 marks)

1- The average chemical composition of the upper crust is similar to:
A) basalt- B) diorite- C) granodiorite- D) pyroxenite.

2- Iron meteorites provides a compositional model of the:
A) upper crust – B) lower mantle- C) upper mantle- D) core.

3- Rocks of Oceanic crust are depleted in ..... relative to upper crust.
[A) Lithophiles- B) calcophiles- C) sidrophiles- D) HREEs]

4- Rocks of lower crust are typically similar to metamorphic rocks of :
A) amphibolite – B) schist – C) serpentinite- D)granulites.

5- The chemical composition of the mantle is meets with the composition of:
A) gabbro- B) preidotites- C) andesite- D) dacite.

II- Answer the following Questions (20 marks, 5 marks for each)

1. Identify the following:
Compatible and un-compatible elements, Solid solution and exsolution, Radiogenic isotop

2. a. What are the chemical classification of magma?
2. b. What are the classification of granitic rocks based on Al_2O_3-content

3. Compare between stable and radiogenic isotopes

4. Discuss briefly the behavior of REEs in continental and oceanic crust rocks

Part Two: Geochemistry of sedimentary rocks

I- Select the correct answer. Indicate the letter of your choice on your answer sheet (10 marks)

1. Most large meteorites originate from:

جامعة أسيوط
كلية العلوم - قسم الجيولوجيا

بسم الله الرحمن الرحيم

امتحان التحريرى للمستوى الرابع بكلية العلوم شعبتة الجيوكيمياء

المادة: خريطة مصر الجيولوجية (410ج)

(Geologic Map of Egypt, 410 G)

دور يناير 2026/2025م الدرجة: 50 درجة الزمن:ساعتان

Answer the following questions:

First Question: (10 Marks)

Answer *only one* of the following:

1- Comprise between the geomorphological features between both the Western and Eastern deserts.

2- Write an essay on the rock units of the Paleozoic Ear.

Second Question: (10 Marks)

Write on the main morphology pattern of xenoliths occurring within autochthonous and intrusive granite types.

Third Question: (10 Marks)

Display short notes on both Dokhan volcanics and Hammamat sediments.

Fourth Question: (10 Marks)

Write brief notes on the on the Egyptian granite classification proposed by El-Gaby and Habib (1982).

Fifth Question: (10 Marks)

Mention the main differences between Hammamat molasse sediments and the foreland sediments.

Good Luck

Prof. Dr. Ali A. Khudier *Prof. Dr. Nageh A. Obaidalla*

Q2: Choose the correct answers from the following (a, b, c, d): (5 degre

1- Microresistivity logs are used to measure the resistivity of:

a - flushed zone. b - mud invasion zone. c - mud cake. d - all of th

2- If the conductivity (C) of a formation is 1500 mho/m, the resistivity (R) will be:

a - 0.15 Ω·m. b - 0.66 Ω·m. c - 0.82 Ω·m. d - 1.5

3- Hydrogen index (HI)

a - measures the electron density in the formation.

b - determines the degree of change in the particle size of the formation.

c - expresses the number of hydrogen atoms per unit volume.

d - is an indicator of neutron porosity.

4- The electrical conductivity of sandstone formation is due to:

a) The rock grains' ability to conduct electricity.

b) The pores between the rock grains.

c) The type of fluid filling the pores between the rock grains.

d) All of the above.

5- Focusd resistivity logs are used to reduce the effect of:

a) The mud-invaded zone. b) The resistivity of the surrounding forr
c) The mud cake. d) None of these.

Q3: Write the equations used in estimating FIVE ONLY of the following items, illustrating the meaning of all symboles used in each equation: (10 degree)

1- The relations of Formation resistivity factor (**F**) with resistivities and formation por (the two Archi's formulae).

2- Porosity from density (Φ_d), neutron (Φ_N) and sonic (Φ_s) logs.

3- Permeability (**K**) from resistivity logging.

4- Water saturation (S_w) and bulk water volume (**BVW**).

5- Hydrocarbon saturations [Total (**Sh**), Movable (Sh_{mov}) and Residual (Sh_{resd})].

6- Resistivity (**R**) from normal and lateral sonde configuration.

----------End of Exam----------

Best Wishes

Prof. Dr. Awad Abdel-Khalek

Dr. Mohamed Fikry Kha

Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Geology Department		Program: Geophysics Level : (4) Date: 15/1/2026 Time: 2 h
Course Title: Petrophysics and well logging		Code: 459G
Instructors: Prof. Dr. Awad Abdel-Khalek Omran – Dr. Mohamed Fikry Khalil		
Important:	No. of pages 2 / No. of questions 5	Total Mark: 50 degree

PART (I) - PETROPHYSICS (25 degree)

I. Define <u>FIVE ONLY</u> of the following : (5 degree)

Simple Matrix - Bulk modulus - Poisson's ratio - Cleavage - Salinity - Hard Stress - CEC .

II. Write on <u>FOUR ONLY</u> of the following: (20 degree)

1- Kozeny Correlation and Complex Matrix.
2- Initial Oil and Oil-water system.
3- Porosity on Carbonate rocks and Types of Conductivity.
4- Initial Gas and Absolute permeability.
5- Factors affecting on Permeability and Gray wacke sediment.
6- The resistivity of Clay and Porosity of Clastic rocks.

PART (II) - WELL LOGGING (25 degree)

Q1: Write short notes on <u>FOUR ONLY</u> of the following using diagrams: (10 degree)

1- The environmental factors affecting well log measurements, illustrating solutions of their effect.

2- Zones of mud invasion in a permeable zone and their corresponding resistivity symbols.

3- Passive and active open hole logging types, the measured parameter and units in each type.

4- The intervals which the well diameter is greater than the drilling bit size and the possible lithologies in these cases?

5- Sources of self potential in open borehole.

باقى الأسئلة فى الصفحة التالية

b- Depocenter of the basin
c- Onlap phenomena

44- Ratio, percentage and lithofacies maps are considered:-
a- Isopach maps
b- Facies maps
c- Structure contour maps

45- Contour distance in structure contour map depends on:-
a- Depth of the maped surface
b- Dip of the maped surface
c- Truncation of the maped surface

46- Regional isopach map is prepared to show:-
a- The paleoenvironment of member within the subsurface stratigraphic unit
b- The paleoenvironment of the subsurface stratigraphic unit
c- The local structures that affecting on the subsurface stratigraphic unit

47- The most accurate data used in subsurface sectioning and mapping are that given from:-
a- Core samples
b- Cut samples
c- Well logging

48- Paleotectonic maps are generally prepared to study:-
a- Tectonic phases allow over the tectonic history of an area
b- The last tectonic acting in the area
c- The tectonics which were act in a definite geologic age

49- Beds attitudes (strike & dip) and fault parameters can be determined from
a- subsurface stratigraphic cross section
b- Subsurface normal structural cross section
c- Subsurface schematic cross section

50- Repetition of layers during vertical drilling without definite changing in the repetition interval along the section in different wells indicts to:-
b- Reverse fault b- normal fault c- recumbent fold

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

34- Reverse 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- Repetition of contour lines within the fault zone area
- c- Repetition of only one or two contours in a very narrow area

35- 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 syncline

36- Nosing in the structure contour map with centre- ward increasing of contour values and similar contour distance in both sides denoting to:
- a- Asymmetric plunging anticline
- b- Symmetrical plunging syncline
- c- Symmetrical double plunging syncline

37- Intersection and irregularity in contours of ratio, percentage, isolith and isopach maps of time rock unit indicate to:-
- a- Regular sedimentation
- b- Erosion
- c- Migration of strand line

38- Syn-sedimentary subsidence in subsurface can be recognized by:
- a- Migration of maximum thickness of the subsurface layers toward the shore line
- b- Fixing of the maximum thickness of the subsurface layers in the depo-centre of the basin
- c- Migration of the maximum thickness of the subsurface layers toward the depo-centre of the basin

39- Uplift phenomena in subsurface can be recognized from preparing successive isopach maps of conformable rock units by:
- a- Upward regular migration of zero thickness toward the recent layers
- b- Upward regular migration of zero thickness toward the old layers
- c- Upward irregular migration of zero thickness toward the recent layers

40- Vertical drilling of horizontal layers, the drilled thickness is:-
- a- More than the true thickness of the drilled layers
- b- Less than the true thickness of the drilled layers
- c- Equal to the true thickness of the drilled layers

41- Directional drilling of horizontal layers, the drilled thickness is:-
- a- More than the true thickness of the drilled layers
- b- Less than the true thickness of the drilled layers
- c- Equal to the true thickness of the drilled layers

42- Bed and fault attitude can directly measure from:-
- a- Structure cross section
- b- Normal structure cross section
- c- Geophysical cross section

22- Isopach maps are more accurate than structure contour maps in defining structures especially faults.

23- Paleo-relief maps are considered structure contour maps for unconformity surfaces.

24- For studying the geologic and tectonic history of Egypt isopach and facies maps are constructed for the Egyptian sequence from the basement rocks to the Thebes formation

25- Offlap and onlap phenomena are recognized from isopach map of one reck unite.

II- Choose the correct answer A, B or C of the following and comment on your choice (25 Marks, one mark each)

26- Offlap phenomena in subsurface can be recognized from successive isopach maps by:
- a- Upward regular migration of zero thickness toward the recent layers
- b- Upward regular migration of zero thickness toward the old layers
- c- Upward irregular migration of zero thickness toward the recent layers

27- Concordance in contours of ratio, percentage, isolith and isopach maps for different facies of rock unit indicates to:-
- a- Regular sedimentation
- b- Discontinuities in sedimentation
- c- Migration of strand line

28- Beds attitudes (strike & dip) and fault parameters can be determined from
- a- subsurface stratigraphic cross section
- b- Subsurface normal structural cross section
- c- Subsurface schematic cross section

29- In isopach map, abrupt increasing of contours in the upthrow side of the fault plane in compared with in the downthrown side indicating to:-
- a- Normal growth faults
- b- Reverse growth faults
- c- Wrench growth faults

30- Repetition of layers during vertical drilling without definite changing in the repetition interval along the section in different wells indicts to:-

a- Reverse fault b- normal fault c- recumbent fold

31- Geochemical cross sections and fence diagrams are applied to:-
- a- Detect subsurface structures
- b- Detect the subsurface environments
- c- Lateral and vertical chemical variations of the rock components

32- Data derived from well sampling are:-
- a- Cores and cuts
- b- Porosity and permeability
- c- Rock seismic velocities

33- Subsurface mapping is applied for:-

Assiut University
Faculty of Science.
Department of Geology.

Date: Jan. 2026
Time allowed: Two Hours

Frist Semester Final Examination

Subject: Subsurface Geology (G409)
Student: Fourth level (all groups).

Total marks 50

Transfer the following points into you answer sheet and answer the following questions

I- Mark *(T) for true sentences or (F) for false* sentences and correct the false sentences (25 Marks, one mark each).

1. Local sources of subsurface data are generally include surface and subsurface sources. The surface sources such as borehole temperature, porosity and permeability of the reservoir rocks.
2. In structure contour map, normal faults of downthrown more than the thickness of the faulted bed, the contour lines at the location of the fault plane show reputation of contours.
3. In isopach map, reverse fault of downthrown more than the thickness of the faulted beds, the contour lines show fault gap.
4. The erosional surfaces between two rock units can defined from the isopach maps of the two units by alternative thick in the lower unit opposite thin in the upper unit.

6- The reference surface in constructing structure cross section and structure contour map is the main sea level.

7- In normal cross sections or fence diagrams the vertical scale is similar to the horizontal.

8- Structure contour maps can show the tectonic history of many tectonic phases..

9- Paleogeologic maps can used in reservoir evaluation.

10- For studying the paleotectonics, structure contour maps are used in conjunction with palinospastic maps.

11- Percentage maps are generally applied in defining the paleoenvironment.

12- Isopach maps are constructed by using the drilled thickness of the rock unit.

13- Isochore maps are constructed based on the true thickness of the rock unit.

14- Folding on the structure contour maps is identified by repetition of contour line along definite direction.

15- Nosing in contours with acute angle on the structure contour maps pointing to strike slip faults.

16- Missing of contours in a definite location on structure contour maps indicates normal fault of downthrow more the thickness of the faulted bed.

17- Isolith with isopach maps are generally used in defining the erosional surfaces.

18- France diagrams are considered 3D models

19- Fence diagrams are considered 3D viewer.

20- Symmetrical folds in case of structure contour maps are identified by un-equal contour spacing of the repeated contours along definite direction.

8. **The middle systems tract of both type 1 and type 2 sequences. one or more retrogradational Parasequence sets.**
   a. Transgressive lags.
   b. Shelf Margin Systems Tract.
   c. Transgressive Systems Tract

9. **Which of the following would result in increase in accommodation space?**
   a. Increase in relative sea level and increase in subsidence the same time.
   b. Decrease in relative sea level and uplift occurring at the same time.
   c. Increase in relative sea level and increased in sediment input at the same time.

10. **In sequence stratigraphy, what do you call the termination of more steeply dipping overlying strata against a surface or underlying stratum that have lower apparent dips?**
   a. Toplap
   b. onlap
   c. downlap

11. **Transgression is cause by**
   a. rise in relative sea level
   b. increased rate of subsidence
   c. decreased rate of sedimentation

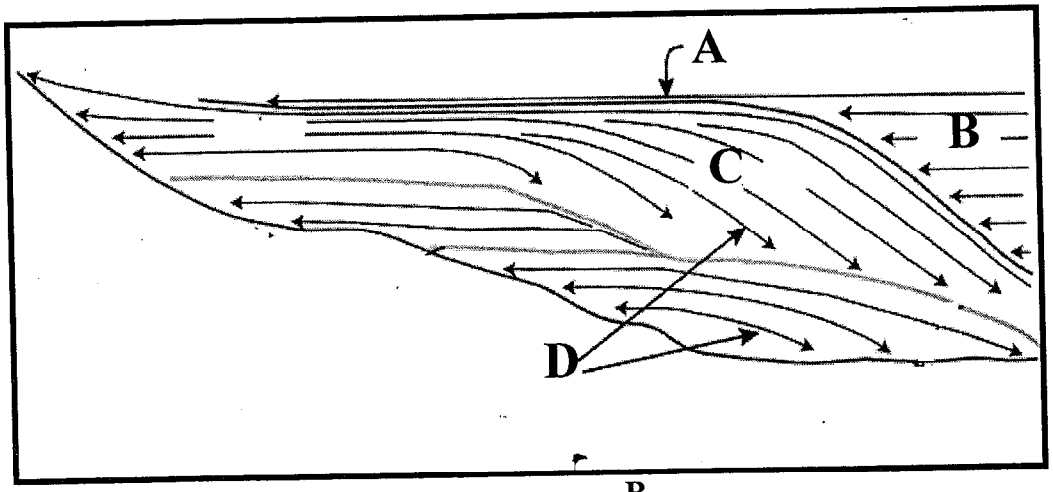
III- Complete the following: *(2 marks)*

12- Space available for sediment accumulation is known as .....

13- The main factors controlling global sea level change (eustasy) are:

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

IV- 14. Identify the different types of seismic reflections and terminations given in the following figure. *(4 marks)*



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

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

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

Prof. Dr. **Ahmed-Reda El Younsy** **(9- Janu, 2026)**

II - Chose the correct answer *(3mark)*

10. A trench is an elongated deep trough formed on the subducting oceanic plate. It represents the deepest sedimentary basin
    (A). True **(B). False**
11. Certain basins my show a complex history and therefore contain pre-tectonic as well as syn-tectonic or post-tectonic
    (A). True. **(B). False.**
12. **A sedimentary basin has an axis, a line connecting the lowest structural points of the basin; the axis of trough may plunge**
    (A). True. **(B). False.**

III- Fill in the spaces with suitable geologic terms *(2mark)*

13. ..... is the part of the basin with the thickest sedimentary fill
14. ..... is a failed arm of a three-armed rift system, two of whose arms continued to evolve to form ocean basins

PART-II: Sequence Stratigraphy (25 degree)

I- Answer THREE question ONLY of the following: *(12 marks)*

(Illustrate your answer by diagrams)

1. The relationship between seismic stratigraphy and seismic sequence stratigraphy?
2. The difference between retrogradational and progradational stratal pattern in response to sea level changes and sediment flux.
3. What is a Parasequence and how are the bounding surfaces recognized?
4. What factors influence relative sea level change? Which are dominant?

II- Choose the correct answer for the following statements *(7 marks)*

5. **A systems tract consists of** .....
   a. The regressive deposits that form when sediment accumulation rates exceed the rate of relative sea-level rise
   b. Genetically associated stratigraphic units that were deposited during specific phases of the relative sea-level cycle
   c. Tectonically active basins that adjoin each other

6. **A highstand systems tract consists of** .....
   a. and before the start of the next relative sea-level rise
   b. All the regression deposits that accumulated after the onset of a relative sea-level fall and before the start of the next relative sea-level rise
   c. Deposits that accumulate after the onset of relative a sea-level rise
   d. Deposits that contain characteristic transform fractures that often stream biogenetic fluids

7. **Sequence stratigraphy focuses on**
   a. Palaeoecological frameworks characterized by unique fossil assemblage
   b. The order in which the strata accumulated combined with depositional and erosional surface frameworks to interpret depositional settings
   c. Basin modeling and sea level

Fourth Level Examination in

Sedimentary Basins &Sequence stratigraphy (G420)

For Geology and Geophysics students

Time: Two Hours (50 degree) **9–Janu.-2025**

PART-I: Sedimentary Basins (25 degree)

I- Answer THREE question ONLY of the following: *(15 mark)*

1. what is meant by the term pre-depositional basin mean? Mention the characteristics of these basins.
2. What does "depocenter" mean?
3. How sedimentary basins are formed?
4. Genetic classification (Old) of sedimentary basins?

II- Chose the correct answer *(5mark)*

5. **A sedimentary basin is**
   a. a plain area in the Earth's crust, of tectonic origin, in which sediments accumulate.
   b. a low area in the Earth's crust, of tectonic origin, in which sediments accumulate.
   c. a place where uplift of the Earth's crust has allowed sediments to erode on top of a basement of igneous and metamorphic rocks.
   d. none of the above.
   e. both (a) and (b).
6. **Rift basin is**
   a. a normal fault bounded basin that develops during extension of continental lithosphere.
   b. elongate depression overlying a place where the lithosphere has ruptured in extension.
   c. none of the above.
   d. all of the above.
7. **According to their tectonic settings sedimentary basins are**
   a. variously termed arches, paleo highs, schwelle, axis of uplift, or positive areas.
   b. circular or more frequently elongate depressions, troughs, or embayments, but ofte they may have quite irregular boundaries.
   c. post-depositional, syn-depositional, or pre-depositional basins.
   d. both (a) and (b).
   e. none of the above.
   f. all of the above.
8. **Pull-apart basins are related to**:
   a. Subduction-related basins
   b. Strike-slip basins
   c. Collision-related basins
9. **Primary aspects of classification and evolution of sedimentary basins are**
   a. whether a basin is formed on an oceanic crust or on a continental crust.
   b. proximity of the basin to a plate boundary.
   c. the nature of the nearest plate boundary.
   d. both (a) and (c).
   e. all the above.

Part II – Hydrogeology (25 marks)

A) Define ONLY FIVE from the following terms: (10 Marks)

1- Specific retention
2- Hygroscopic coefficient
3- Moisture equivalent
4- Aquifuge materials
5- Wilting point
6- Hydrogeological unit
7- Groundwater aquifer

B) Discuss and explain ONLY THREE of the following: (15 Marks)

1- Groundwater wells, types and classifications (5Marks)
2- Types of groundwater aquifers (5Marks)
3- Unsaturated zone (5Marks)
4- The groundwater aquifer in the Nile Valley and Dalta (5Marks)
5- The Nubian Sandstone Aquifer in the Westen Desert (5Marks)

GOOD LUCK

A. Driving forces for migration includes ..... and .....

B. High organic productivity requires ....., ..., ... and .....

C. The Gulf of Suez province includes large oil fields like ....., ..., and .....

D. Hydrocarbons can be produced by....., ..., and .....

E. Oil can be generated from source rock at temperatures between ..... and .....

4- Illustrate the following : (5 Marks)

A. Paraffinic oil

B. Gas window

C. Critical moment

D. Diagenetic effects on Porosity loss

E. Petroleum system

5- Compare between the following: (5 Marks)

A. Kerogen type I and kerogen type III

B. Diapric traps and hydrodynamic traps

C. Conventional and non-conventional hydrocarbon resources

D. Primary porosity and secondary porosity

E. Lateral and vertical continunity index

	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Geology Department	Program: Geology/Chemistry Geophysics-Geology Level: (4) Date: 7/1/2026 Time: 2h	
Course Title: Hydrogeology and Petroleum Geology		Code: G460	
Instructors: Prof. Dr. Mahmoud Senosy - Prof. Dr. Abdelhay Farag - Dr. Dina Hamdy			
Important:	No. of pages 2	No. Of questions 3	Total Mark:50 degree

Petroleum Geology

1- Mark the write sentence by (√), the worng one by (X) and correct the wrong sentences with explanation: (2.5 Marks)

A. Viscous oil has low API and can be classified as a high-quality oil (_)

B. Preservation time usually starts after hydrocarbon generation and migration (_)

C. Good source rock must contain TOC restricted between 1 and 2 wt% (_)

D. One of the newly explored provinces in Egypt is the Komombo basin in Upper Egypt (_)

E. Excellent reservoir rock usually has 20%-25% porosity and 10-100md permeability (_)

2- Choose the correct answer: (2.5 Marks)

A. To make new oil discoveries, seismic studies are important during

a. exploration stage b. early development stage c. late development stage

B. Mature source rock can be obtained when the organic matter exposed to

a. high temperature in short time b. low temperature in long time c. both of them

C. Burial of organic matter and formation of kerogen occurred during

a. Diagenesis b. Catagenesis c. Metagenesis

D. The most accurate tool to detect porosity is

a. Well logging b. Thin sections c. Core sampling

E. Salt domes are good example for

a. Diapric traps b. Structural traps c. Stratigraphic traps

Answer Sheet

First Question

A1: Answer (T) for true sentences or (F) for false sentences (one mark each).

1	
2	
3	
4	
5	

B1: Complete the missing answer

1			
2			
3			
4			

Second Question

A2: Define the vertical resolution and horizontal resolution?

	Assiut University- Faculty of Science Frist Semester- Final Exam 2025-2026 Geology Department	Program: Geophysics Level : (4) Date: 9/1/2026 Time: 2 h	
Course Title: GPR and Paleomagnetic and Georadar			Code: 353G
Instructors: Assoc. Prof.Dr. Mostafa Thabet		Assoc. Prof. Dr. Haby Salaheldin Mohamed	
Important:	No. of pages 4	No. Of questions 2	Total Mark:50 degree

Part : Georadar (GPR)

(25 marks)

(الأجابه في نفس الورقه)

Answer the following question

First Question (15 marks)

A1: Answer (T) for true sentences or (F) for false sentences (one mark each).

1- The lower attenuation, the greater penetration distances.
2- Vertical resolution decreases as a function of depth since deeper traveling EM waves tend to have a lower dominant frequency due to the progressive loss of higher frequencies by absorption.
3- Signal attenuation is influenced strangely by electric conductivity at low frequencies.
4- Wide hyperbolas in a material with low dielectric constant, while narrow hyperbolas reflect material with high dielectric constant.
5- Migration is a procedure to transform surface-recorded GPR data into data with the subsurface heterogeneities located at the correct.

B1: Complete the missing answer

1- Short wave lengths are normally used for ....., long wavelengths are applied to.....
2- The electrical and magnetic properties of rocks, soils and fluids (natural materials) control the ..... and .....
3- Selection of antenna depends on 1-....., 2- ..... and 3- .....
4- Velocity Determination techniques: 1- ....., 2-..... and 3-.....

Second Question (10 marks)

A2: Define the vertical resolution and horizontal resolution? (3 marks)

B2: Describe three different GPR system field arrangements with drawing? (3 marks)

C2: Solve problems

1- If the GPR system operates at a frequency of 200 MHZ in a soil with electrical conductivity = 0.02s/m and dielectric permittivity = 9, **estimate the maximum penetration skin depth before signal attenuation** (2 marks)

2 - A GPR antenna has a central frequency of 400MHZ. **What is the vertical resolution in a material where the wave velocity is 0.1 m/ns?** (2 marks)

20. The NRM acquired during rock formation is ___ NRM.
a) secondary b) primary c) characteristi
21. TRM is produced by cooling from above the ___ temperature in a field.
a) blocking b) Curie c) Neel
TRM is the form acquired by most ___ rocks.
23. entary b) igneous c) superparamagnetism
a) fer
24. The res gh the Curie temperature changes magnetite from paramagnetism
a) perpendicular b) antiferromagnetism c) oblique
25. Non-hydrostatic stress i to the field direction.
a) shock remanence b) piezoremanent magnetization c) stress-induced VRM
26. The fundamental principle of demagnetization is that lower ___ c lates with secondary magnetization.
a) blocking temperature b) relaxation time c) intensity
27. The basis for thermal demagnetization is that secondary components reside in grains with low ___.
a) blocking temperatures b) relaxation time c) Curi e temperature
28. In thermal demagnetization, after heating, only grains with ___ blocking temperature s re ain magnetization.
a) low b) high c) interm diate
29. The baked contact test where the unheated sediment's magnetization is stable is the ___ c ntact test..
a) direct b) inverse c) positive
30. Agreement in ChRM between an igneous rock and ___ country rock suppo rts a primary NRM.
a) unbaked b) baked c) metamorp hosed
31. For much older country rock, ChRM in ___ country rock should differ from the igneous rock.
a) baked b) unbaked c) all
32. In the ___ model, the geocentric dipole is aligned with the rotation ax .
a) Axial Geocentric b) Geocentric Axial Dipole c) Dipole Axial
33. Remanent magnetization (Mr) is related to the Earth's magnetic field the ___.
a) present b) geological past c) core
34. Oceanic basalts are an example of rocks with high ___ ratios.
a) coercivity b) Königsberger (Qn) c) susceptibility

Second Question: choose ONLY one point to explain in detail. (8 marks)

a) The alternating field demagnetization process.
b) The baked contact test for igneous intrusion and sediments of similar age.
c) The Dipole Field Formula.

End of Exam