	Assiut University- Faculty of Science Frist Semester- Final Exam 2025-2026 Geology Department	Level : (3) Date: 2/1/2026 Time: 3 h	
Course Title: Rock Mechanics and Structural Geology			Code: 340G
Instructors Prof. Dr. Moustafa Youssef; Dr. Hassan Abbas			
Important:	No. of pages : 3	No. Of questions : 9	Total Mark: 50 degree

PART I: ROCK MECHANICS *(17 marks)*

I) Label the correct sentence with true (T) and the incorrect one with false (F): (5 marks)

1- Confining pressure generally increases the strength of rocks.

2- The stress ellipsoid is a construction showing the complete variation in stress with direction.

3- Glacial loading is an example of body forces.

4- Isotropic stress means all three principal stresses are equal.

5- Effective stress is reduced by pore fluid pressure.

II) Explain longitudinal and volumetric strain. (4 marks)

III) Write on the three stages of rock deformation. (4 marks)

IV) Discuss the effect of confining pressure on rock deformation. (4 marks)

PART II: Structural Geology *(33 marks)*

Try to Illustrate your answers with suitable drawings when possible وضح اجابتك بالرسم كلما أمكن

ANSWER THE FOLLOWING TWO QUESTIONS:

I. Using suitable diagrams, explain the Anderson's theory of stress distribution and faulting. *(6 marks)*

II. Choose the correct answer for the following statements, and then rewrite in your answer paper *(6 marks)*

1. **..... is a fault rock consisting of loose or loosely bound angular rock fragments often in a gouge matrix.** *(1 mark)*
   Mylonite - Fault breccia - Pseudotachylite

2. **On a listric fault the hanging-wall block rotates around an axis that is .....**
   a- parallel to the fault surface
   b- perpendicular to the fault surface
   c- oblique to the fault surface *(1 mark)*

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3. .....is a term used to indicate the direction of movement and rotation that occurred during deformation
Vergence - Simple shear - Rake - Enveloping surface *(1 mark)*

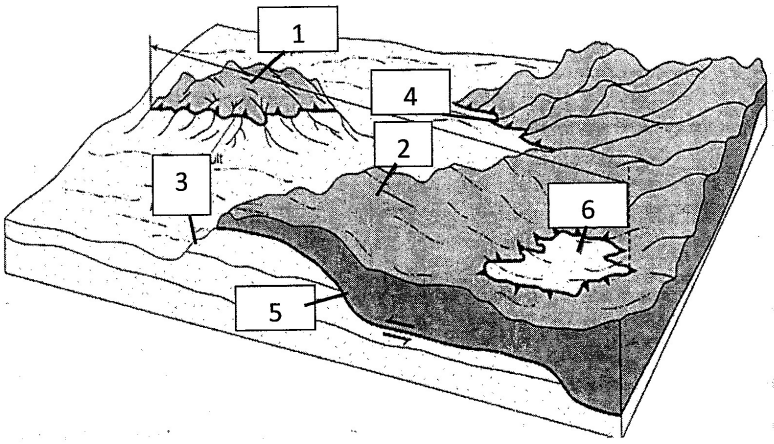
4- In similar folds ..... *(1 mark)*
a- maintain constant layer thickness across the folded surface.
b- the layer thickness parallel to the axial surface remains constant.
c- inter-limb angles are equal.

5- The angle between fold limbs in the profile plane is called the ..... *(1 mark)*
interlimb angle - true dip angle – vergence angle

6. Kink folds are small folds that are characterized by ..... *(1 mark)*
a) irregular and isolated fold structures
b) straight limbs and sharp hinges
c)with only one tilted limb

ANSWER THREE OF THE FOLLOWING QUESTIONS:

III. Write the proper name corresponding to each of the boxes in the following figure : *(7 marks)*



1)..... 2)..... 3).....

4)..... 5)..... 6).....

باقي الأسئلة في الصفحة التالية

IV - **Write short notes on :** *(7 marks)*

1. **Field criteria of faults.**
2. **Listric faults.**
3. **Parasitic folds .**

V. **Salt diapirs are considered one of the main structural styles of high geologic importance; explain their mode of formation , the associated geologic structures and their economic importance.** *(7 marks)*

VI. **Explain how folds may develop as an indirect result of shearing stress.** *(7 marks)*

End of Exam

Best Wishes and Good Luck....

Prof. Dr. Mostafa Youssef & Dr. Hassan Abbas

كلية العلوم
جامعة أسيوط

امتحان طلاب المستوى الثالث (كيمياء وجيولوجيا)
مقرر (٣٤٥ ج) مبادئ الجيولوجيا التركيبية

الزمن : ٢ ساعة — ١٢ يناير ٢٠٢٦م

PRINCIPALS OF STRUCTURAL GEOLOGY

(50 marks)

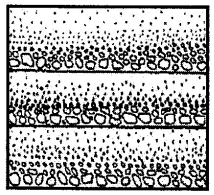
Try to illustrate your answers with suitable drawings when possible

i. Briefly answer TWO ONLY of the following questions: *(14marks)*

1. Describe the factors, that affect the mechanical behavior of rocks.
2. What is the difference between pure shear and simple shear?
3. The different types of movements along the faults. Give examples.

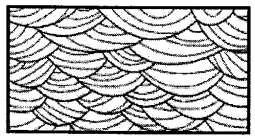
II- Choose the correct answer for the following statements and THEN rewrite in your answer paper. *(16 marks)*

4. In the opposite figure you can see .....



a. Tabular Cross bed
b. Oscillatory Ripple Marks
c. Graded Bedding

5. In the opposite figure you can see .....



a. Tabular Cross bed
b. Trough Cross bed
c. None of them

6. Rock units recover their original shape after the stress is released in folding.
a. Fracture strain. **b.** Plastic strain. **c.** Elastic strain.

7. What behaviors are typical of rocks that are deeply buried?
a. Brittle and elastic.
b. Ductile and elastic.
c. Ductile and plastic.

8- Structures that result from the motion in sediments before they lithified into a rock; not a result of tectonic activity is known as.....
a. Nontectonic structures **b.** Deformational structures **c.** Primary structures

9- The line of maximum curvature in a fold is known as:
a. Crest.
b. Axis.
c. Hinge.

10- Drag folds:
a. Occur within the competent beds.
b. Within the incompetent beds are overlain by competent beds.
c. When vertical stresses act on horizontal beds.

11. **Release joints is generally**
   a. parallel to compressive force.
   b. parallel to fold axes.
   c. None of the above

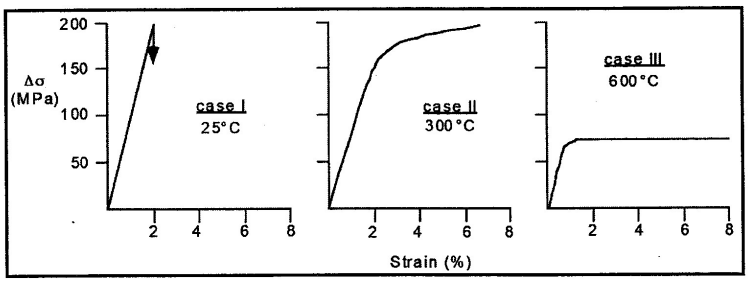
III- Match the following: *(total 10marks)*

And then explain that by Illustrations: *(5+5)*

12. Hade	**a.** Vertical dip slip component.
13. Throw.	**b.** the angle of the hanging wall slip-vector measured in the fault plane.
14. Heave.	**c.** Angle between fault plane and vertical plane.
15. Net slip.	**d.** Horizontal dip slip component.
16-Rake.	**e.** Total displacement

IV- 17. Below are three hypothetical stress strain curves. *(6 marks)*

Compare and describe the deformation mechanism(s) for each case (I, II and III).



VI- True or False? Circle the correct answer *(4 marks)*

18. Vertical faults have a footwall in downthrow side and hanging wall in upthrow side. **True or False?**

19. Non-tectonic structures mean deformation of rock by external factors not coming from the deep ground. **True or False?**

20. In a Paraconformity the planes above and below the gap are parallel and there is no evidence of erosion. **True or False?**

21. Stress and strain are the same thing. **True or False?**

GOOD LUCK

Prof. Dr. Ahmed R. El Younsy

12/1/2026

	Assiut University- Faculty of Science Frist Semester- Final Exam 2025-2026 Geology Department	Level : (3) Date: 2/1/2026 Time: 3 h	كلية العلوم جامعة أسيوط
Course Title: Rock Mechanics and Structural Geology			Code: 340G
Instructors Prof. Dr. Moustafa Youssef; Dr. Hassan Abbas			
Important:	No. of pages : 3	No. Of questions : 9	Total Mark: 50 degree

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III) Write on the three stages of rock deformation. **(4 marks)**

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   c- oblique to the fault surface ***(1 mark)***

باقي الأسئلة في الصفحة التالية

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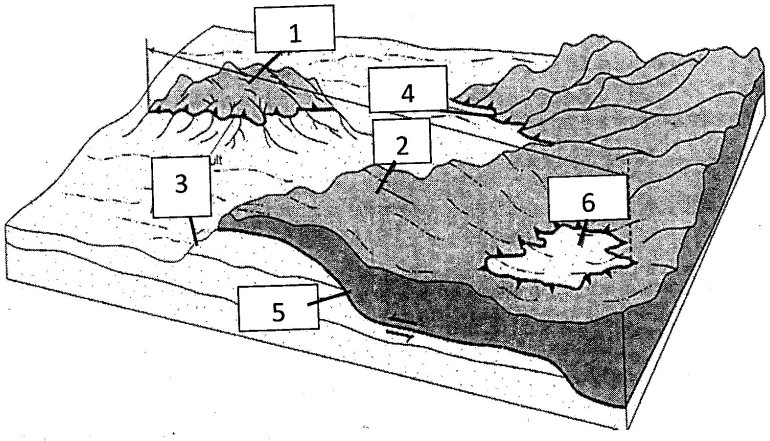

1)..... 2)..... 3).....

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باقي الأسئلة في الصفحة التالية

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End of Exam

Best Wishes and Good Luck....

Prof. Dr. Mostafa Youssef & Dr. Hassan Abbas

Assiut University
Faculty of science
Geology Department

Date: January, 2026
Time allowed: 2 hour

First semester exam in igneous rocks (333G)
Students: 3nd year geology

(PART-I)

Answer the following questions: **(24 Marks)**

1-A- Viscosity is one of the most important physical properties of magmas? What physical and chemical factors are important in controlling viscosity? (5 Marks)

1-B- Mass of basic rock has pyroxene falling in acidic melt during crystallization of biotite – what happen to rock and melt? (5 Marks)

1-C- Fractional crystallization is one of the processes responsible for the diversity of igneous rock types. Discuss this statement? (4 Marks)

2-A- Comment on the following:- (6 Marks)

- **Presence of euhedral and anhedral crystals in the same rock sample.**
- **Presence of corona texture in basic rocks, while perthitic texture in acidic rocks.**
- **It is possible or not to find granitic and porphyritic textures at the same rock sample.**

2-B- Define the following expressions:- (4 Marks)

- **Solidus and liquids curve**
- **Eutectic point and Eutectic line**

(PART-II)

Chosse the correct answer A, B, C or D (two marks for each): ..... Comment (26 Marks)

1. Submarine basaltic lava usually present as _____ lava flow.
   A) Pillow B) Blocky C) pahoehoe D) Aa
2. Two igneous rocks having the same chemical composition but different texture will have _____
   A) same name B) different name
   C) different cooling history D) no relation in between
3. What is the difference between plagioclase type in granite and gabbro?
   A) Grain size B) Chemical composition C) Shape of crystal D) Texture
4. What type of silicate minerals on the discontinuous side of the reaction series crystallize at the highest temperatures?
   A) Sheet silicates B) Single chain silicates
   C) Isolated tetrahedral silicates D) Framework silicates
5. Alkali feldspars in granite represents by _____
   A) Sanidine B) Anorthoclase C) Orthoclase D) Orthoclase and microcline

10

6. A porphyritic igneous rock contains phenocrysts of olivine and calcium-rich plagioclase in an aphanitic groundmass. This is a _____?
   A) andesite porphyry
   B) gabbro porphyry
   C) basalt porphyry
   D) rhyolite porphyry
7. The relation between the thickness of oceanic crust and continental crust _____
   A) oceanic crust less than continental crust
   B) the same
   C) more than
   D) sometimes different
8. According to Bowen's reaction series, which of the following pairs of phases are likely to be incompatible?
   A) quartz and alkali feldspar
   B) Ca-Plagioclase and olivine
   C) quartz and olivine
   D) Na-plagioclase and amphibole
9. Which of the following is a concordant intrusive rock?
   A) dike B) sill C) stock D) batholith
10. The presence of phenocrysts in an igneous rocks indicate_____
   A) a lava cooling on the surface of the Earth
   B) violent, explosive volcanic eruption
   C) a magma cooling slowing in the subsurface
   D) two phases of cooling, one fast and one slow
11. The presence of xenoliths in igneous rocks is indicative of _____
   A) Magma mixing
   B) Fractional crystallization
   C) Assimilation
   D) Magma differentiation
12. Unusual composition of igneous rock sample is the result of _____
   A) assimilation
   B) magma mixing
   C) fractional crystallization
   D) gaseous transfer
13. In the field, how can a sill be distinguished from a lava flow?
   A) a sill is generally coarser-grained than a lava flow
   B) the rocks above and below a sill will show evidence of heating but only the rocks below a lava flow will show evidence of heating
   C) sills generally do not have vesicles; lava flows generally have vesicles
   D) all of these

بالتوفيق والنجاح

ملاحظة:
الإمتحان الشفوي عقب الإمتحان النظري مباشرة في مكتب أ.د/ حسين عزيز

Geology Department **Faculty of Science** **Assiut University**		**Time: 2 Hours** **January, 2026** **1st Semester Exam**

First Semester Final Examination
Subject: Diagenesis and Marine Geology (323G)
Students: 3rd Year of Geology
January (2025-2026)

First part: Diagenesis (25 marks)

Question one: Write on the following points (10 marks).

- Diagenetic stages and events.
- Compaction and pressure dissolution.
- Effect of depth and temperature on sandstones.
- Major regimes of carbonate diagenesis.
- Diagenesis-Metamorphism transition.

Question two: Write the scientific definition for the following expressions (5 marks).

- Diagenesis.
- Cementation.
- Poikilotopic cement.
- Calcite compensation depth (CCD).
- Geodes

Question three: Choose the correct answer (10 marks).

- .....Refers to the earliest stage of diagenesis, which takes place at very shallow depths.
  a- eogenesis b- mesogenesis c- telogenesis d- all of them
- .....is the process in which new mineral phases are crystallized in the sediment or rock during diagenesis.
  a- authogenesis b- compaction c- solution d- cementation

During diagenesis silica cement precipitate from .....solution which pH .....
a- alkaline - > 7 b- alkaline - < 7 c- acidic - > 7 d- acidic - < 7

- The physical and biological activities that occur at or near the sediment surface cause the sediment to become mixed.
  a- authogenesis b- compaction c- solution d- bioturbation
- One of the diagentic structures is described as regular, rounded precipitates that form around a nucleus.
  a. nodules b- geodes c- concretion d- Leisegang banding
- The most common type of carbonate cement in sandstone rock is.....
  a. siderite b- ankerite c- dolomite d- calcite

باقى الاسئلة فى الصفحة التالية

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- Solubility of carbonates minerals decrease with .....
  a. increasing temperature b- decreasing temperature
  c- increasing pressure d- non of them
- Porosity in sandstone enhanced by.....
  a- cementation b- compaction c- dissolution d- recrystallization
- Calcite and ..... are polymorphs of CaCO3.
  a- quartz b- pyrite c- dolomite d- aragonite
- Smectite is one of clay minerals with increasing burial it is replaced by.....
  a- quartz b- pyrite c- illite d- aragonite

****

Good Luck ***Dr. Fatma Dardir***

Geology Department **Faculty of Science** **Assiut University**		**Time: 2 Hours** **January, 2026** **1st Semester Exam**

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****

Good Luck ***Dr. Fatma Dardir***

Part Two: Marine Geology (25 marks)

1. Choose the correct answer (5 marks)

A. How did the first researchers determine ocean depth (1 mark)

1. They reflected light into the depth.
2. Rope and lead weights.
3. They attached to a large fish and released it.
4. None of the above.

B. Manganese nodules are considered to be.....(1 mark)

1. Hydrogenous sediments.
2. Lithogenous sediments.
3. Biogenous sediments.
4. Cosmogenous sediment.
5. All of them.

C. New ocean crust is created at.....and recycled at.....(1 mark)

1. Trenches, abyssal plain.
2. The continental margin, deep ocean trenches.
3. The mid-ocean ridge, subduction zones.
4. Subsea volcanoes, the mid-ocean ridge.
5. Subduction zones, trenches.

D. Groups of marine life includes.....(1mark)

1. Plankton.
2. Nekton.
3. Benthos.
4. Both (a) and (b).
5. All of them.

E. For the following questions uses either continental (C) or oceanic (O) crust (1mark).

1. Composed of granite.....
2. Forms thick crustal plates.....
3. Relatively dense rocks.....
4. Composed of basalt.....
5. Rests isostatically at higher elevations.....

****

2. True or False (5 marks)

1. On Earth, one of the five large bodies of water separating the continents is called an ocean (1 mark).

A. True B. False

2. On average, continental rocks are denser than the rocks of the oceanic crust (1 mark).

A. True B. False

3. The deepest parts of the seafloor tend to be the youngest oceanic crust (1 mark).

A. True B. False

باقى الاسئلة فى الصفحة التالية

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4. The graded bedding found in turbidity sediments usually shows mud on the bottom of the layer followed by silt in the middle and then sand at the top of the layer (1 mark).

A. True B. False

5. The oceanic lithosphere is generated at divergent plate boundaries, whereas continental lithosphere is generated at convergent plate boundaries (1mark).

A. True B. False

****

3. Write in detail on the following items (5 marks)

1. Benthic life on the sea floor (1 mark).
2. What is a turbidite? How and where does it form (1 mark).
3. Discuss the concept of "Carbonate Compensation Depth" (1 mark).
4. Describe the process of subduction in your own words. What causes subduction to happen (1mark).
5. Mid-Ocean ridge (1mark).

****

4. Why (اذكر السبب) (5 marks)

A. Around the hydrothermal vents, how and why so much life could exist at such a great depth (1 mark).

B. One crustal plate sinks below the other (1 mark).

C. At the base of the continental slope a pronounced rise of the ocean floor is recorded (1 mark).

D. In deeper water the solution of carbonate sediments increases rapidly (1mark).

E. Why are there so few marine species (1 mark).

****

5. Fill in the spaces with appropriate words (5 marks)

A. .....is the study of everything in the sea that has characteristics of life, from viruses to whales (1 mark).

B. In 9th century AD, ... invent compass (1 mark).

C. Transform plate boundaries occur where two plates are ..... past each other (1 mark).

D. Huge quantities of sediment are carried along the bottom in turbid suspension by underwater avalanches known as ..... (1 mark).

E. .....include all animals capable of moving independently of the ocean currents by swimming or other means of propulsion. They are capable not only of determining their own positions within the ocean but also, in many cases, of long migrations (1 mark).

****

Good luck

Prof. Dr. Abdalla M. El Ayyat

Assiut University
Faculty of Science
Geology Department

Special Courses 305 G (Ophiolites)

Date: 10 / 2 / 2026 Time: 2 Hours

Answer only four questions starting with the first:

1- Write short notes on the generalized schematic morphology of an oceanic subduction zone.

2- Mention the main differences between continental and oceanic crust.

3- Write brief notes on the ideal lithologic and mineral compositions of the ophiolite sequence.

4- Compare between the models given for the formation of marginal seas.

5- Mention the main characters of rifts.

❋❋❋❋❋

Good Luck

Prof. Dr. Ali A. Khudier

جامعة أسيوط – كلية العلوم
قسم الجيولوجيا

الفصل الدراسي الأول
يناير ٢٠٢٦

G327: Sedimentology & Depositional Systems

Part 1: Sedimentology (25 Marks)

Answer five questions only:

1. a. What is the difference between a paraconglomerate and an orthoconglomerate?
   b. What is the difference between a polymictic conglomerate and an oligomictic conglomerate?
   c. What is a petromict conglomerate?

(5 Marks)

2. a. What are lithic sandstones? Mention their main characteristics.
   b. What are arkosic in sandstones? Mention their main characteristics.
   c. Which of the following is more sorted and mature:
   quartz arenite
   greywacke

(5 Marks)

3. a. What common minerals constitute the typical "heavy mineral" suite of sandstones?
   (name four minerals)
   b. What is a "provenance" study in sedimentary petrology?

(5 Marks)

4. a. What is the difference between "claystone" "siltstone" "mudstone" and "shale"?
   b. Mudstones are mainly composed of quartz, feldspars, and .....
   c. What are the names for the clay mineral existed in the mudstone rocks?

(5 Marks)

5. a. What is the difference between a laminae and bed?
   b. Mention the types of cross-bedding. (illustrate with drawing).
   c. What is a graded bed? Mention the two types of the graded bedding.

(5 Marks)

	Assiut University- Faculty of Science Frist Semester- Final Exam 2025-2026 Geology Department	Program: Geophysics Level : (3) Date: 17/1/2026 Time: 2 h	
Course Title: Environmental Geophysics			Code: 353G
Instructors: Assoc. Prof. Dr. Haby Salaheldin Mohamed			
Important:	No. of pages 1	No. Of questions 2	Total Mark:50 degree

Answer the following question

First Question

A1: Complete the missing answer

1) Normal Moveout defined as..... and on a t-x diagram, the Normal Moveout (NMO) produces .....
2) Environmental geophysical aims to..... and.....
3) The best method to determine the water table is.....while ..... consider the best method to detect dissolved salts and sinkholes.
4) Migration collapses the hyperbola back into .....
5) Reflection of energy from a small sphere produces .....
6) The best methods can be used to find the water table, water quality and abandoned mine shafts are respectively.....,.....and.....
7) If a layer has a lower velocity than the one above. There can be no.....and .....
8) Ambiguity in electric sounding interpretation may be.....and.....
9) Choice of the best electrode array depend to.....and.....
10) Migration intended to deal with.....and.....

B2: Put (√) or (X) with Error correction

1) Seismic refraction surveys give information about velocity structure.
2) Reciprocal time is the travel time along the refractor from one shot point to another shot point.
3) If a layer has a lower velocity than the one above, there can be no critical refraction but will be refracted segment on the t-x diagram.
4) Folded subsurface layers produce diffraction waves in seismic survey.
5) A hidden-layer problem is encountered when seismic-refraction surveys are conducted in areas where the surface of the ground is frozen.
6) The resistivity of soil depends on closeness of packing and pressure.
7) Microgravity requires preserving all of the precision possible in the measurements and analysis so that small objects can be detected.

Second Question

A2: Compare between

a) The dipping and curved reflectors? **With drawing**
b) Electrical profiling and Electrical imaging
c) Bouguer anomaly map and Reduce to pole (RTP) map

B2: Several common geologic situations which can produce confusing travel-time curves in seismic refraction method!

Interpret that by drawing

C3: Mention some limitations in the interpretation of sounding data (VES).

End of Exam

Best Wishes **Assoc. Prof. Dr. Haby Salaheldin**

Δ Remember ■Understand •Apply ◊Analysis *Evaluate ◯Create