

Geology Department Faculty of Science Assiut University		قسم الجيولوجيا كلية العلوم جامعة أسيوط
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Second Semester Final Examination
Geology Students, 2nd Level
(Vertebrate Paleontology and Origin of Species)

June 2026	G216	50 Marks	Time: 2 hours
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Part 1: Vertebrate Paleontology (25 degree)

Answer the following questions.

Q1: Write the scientific term in the front of following sentence (5 marks; 1 mark each)

1. Sites characterized by a high concentration of fossils, but without exceptional soft-tissue preservation.
2. microscopic organisms, tooth-like in shape, and considered as remains of a group of primitive chordates.
3. A group of fishes which evolved into all tetrapods.
4. A group of reptiles which is usually termed mammal-like reptiles.
5. The study of all of what happens to organisms after death

Q2: Answer the following questions (15 marks)

A. Write on the following

1. Classification of fishes. (3 marks)
2. The Egyptian mammals of the Fayum. (4 marks)

B. Explain the following statements

1. The transition of amphibians from water to land was not an easy task, Explain (3 marks).
2. Egypt is known as the Land of Dinosaurs. (5 marks)

Q3: Choose the correct answer (5 marks, 1 mark each)

- 1- Which of the following organisms is mentioned as an example from the Burgess Shale?
A) *Archaeopteryx* B) *Pikaia* C) *Trilobite*
- 2- What is the famous placoderm that lived during the Late Devonian.
A) *Hemicyclaspis* B) *holosteans* C) *Dunkleosteus*
- 3- *Tiktaalik* is significant because it shows evidence of;
A) Intermediate limb structure B) Flight adaptation C) Endothermy
- 4- Archosaurs belong to:
A) Synapsids B) Diapsids C) Amphibians
- 5- What is the oldest known bird fossil in the geological record
A) *Archaeopteryx* B) *Ichthyornithiformes* C) *Gastornis*

continue.....

Part TWO: Origin of Species (25 marks)

Answer the following questions

1- State whether the following statements are correct or wrong and correct the wrong one: (5 marks; 1 mark each)

- A- In statistic, population means all individuals of a species interact with one another to maintain a homogenous gee pool.
- B- Development of a new species by anagenesis means growing of new species from a parent species that still exists.
- C- Homologous structures are organs differ in structure but often similar in function.
- D- Dominance indices are heavily weighted towards the commonest species, but it can be used to indicate species diversity.
- E- Ecological isolation means that two species live in different habitats have a good chance of interaction.

2- Define Four Only of the following: (8 marks; 2 marks each)

- A- Deductive statistics, B- Hybrid sterility, C- Species richness, D- Prokaryotes,
- E- Ecological isolation, F- Genetic drift.

3- Write briefly on Three Only of the following: (12 marks; 4 marks each)

- A- Prezygotic reproductive isolation.
- B- Difference between the Shannon-Wiener index and Simpson index.
- C- Evidence of species evolution.
- D- Adaptive radiation as a mean of allopatric speciation (with drawings).

End of Part Two

Examiner: Prof. Dr. Amr S. Deaf

Good Luck

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Geology Department	Program: Second level Level : (2) Date: 23/5/2026 Time: 2 h	
Course Title: Fundamentals of Geophysics		Code: 250 G	
Instructors: Assoc. Prof. Mostafa Thabet			
Important:	No. of pages 4	No. Of questions 1	Total Mark:50 degree

First Question: choose the correct answer (a, b, c, or d). (1 mark for each point)

- Which type of conduction occurs in insulators that contain no free electrons?
a) Dielectric conduction b) Electronic conduction c) Electrolytic conduction d) Ionic conduction
- In an electrolyte, positive ions move.....
a) Opposite to the electric field b) In the direction of the electric field c) Randomly with no net direction
d) Perpendicular to the field
- Self-potential anomalies across sulphide orebodies are invariably.....
a) Negative b) Positive c) Zero d) Alternating
- Vertical electrical sounding (VES) aims to observe.....
a) Horizontal resistivity changes b) Self-potential polarity
c) Magnetic anomalies d) Variation of resistivity with depth
- If the current electrodes are close together ($L \ll d$) over a two-layer earth with $\rho_1 > \rho_2$, the measured apparent resistivity will be close to.....
a) ρ_1 b) ρ_2 c) Average of ρ_1 and ρ_2 d) Zero
- When the upper layer is more resistive than the lower layer, increasing electrode spacing causes apparent resistivity to.....
a) Decrease b) Increase c) Stay constant d) Oscillate
- The resistivity contrast between layers is conveniently expressed by the.....
a) Saturation index b) Dielectric constant c) Porosity d) k-factor
- A type H curve shows.....
a) A minimum then increase b) A maximum then decrease c) Continuous increase d) Continuous decrease
- A type Q curve indicates.....
a) Resistivity increases with depth b) Resistivity is highest in the middle
c) Resistivity decreases with depth d) Resistivity is lowest in the middle
- Matching observed and theoretical resistivity curves is called.....
a) Differentiation b) Stacking c) Fourier transform d) 1D inversion
- The resistivity of igneous rocks that contain no water can be.....
a) Very high b) Very low c) Negative d) Zero
- Telluric currents vary with time but change slowly within.....
a) A mineralized vein b) A fault zone c) A homogeneous region d) The atmosphere
- In VES with Schlumberger, the array midpoint is kept fixed while increasing.....
a) Potential electrode spacing only b) Current electrode spacing
c) Dipole orientation d) Number of electrodes

△ Remember ■ Understand ● Apply ◇ Analysis * Evaluate ○ Create

14. If the upper layer is a better conductor than the lower layer, the apparent resistivity curve will.....
 a) Fall then rise (type H) b) Rise continuously (type A)
 c) Rise then fall (type K) d) Fall continuously (type Q)
15. The self-potential associated with an orebody is called its.....
 a) Redox potential b) Zeta potential c) Streaming potential d) Mineralization potential
16. In the electrochemical SP mechanism, electrons flow from.....
 a) Deep to shallow part of orebody b) Shallow to deep part of orebody
 c) Host rock into orebody d) Electrode to voltmeter
17. Equipotential surfaces in SP surveying are.....
 a) Parallel to the orebody b) Normal to the electric field lines
 c) Always horizontal d) Always vertical
18. The gravity increases from the equator to the pole due to the Earth's rotation and flattening.....
 a) By about 0.5 mGal b) By roughly 5300 mGal c) By about 53,000 mGal d) By roughly 5.3 mGal
19. is the "true" physical shape of the Earth's gravity, represented by the mean sea level extended across continents.
 a) The Reference Spheroid b) The Ellipsoid c) The Geoid d) The Topographic Surface
20. A hill or mountain whose center of gravity is outside the ellipsoid causes of geoid undulation.
 a) A negative undulation b) A zero undulation c) A positive undulation d) No undulation
21. In a drift correction graph, typically assumed about the drift between tie-backs to the base station for most surveys.
 a) It is linear b) It is exponential c) It is non-linear d) It is zero
22. Raising a gravity meter by 1 meter decreases the measured gravity value by, according to the Elevation (Free Air) correction.
 a) 0.3086 mGal b) 3.086 mGal c) 0.031 mGal d) 308.6 mGal
23. The effect of terrain (a hill above the station or a valley below it)..... on the observed gravity value (g).
 a) It always increases g b) It always reduces g
 c) A hill increases g, a valley decreases g d) A hill decreases g, a valley increases g
24. The difference between the density of a subsurface body (σ) and the density of the surrounding rocks (σ_0) is called the.....
 a) Gravity anomaly b) Density contrast c) Bouguer density d) Specific gravity
25. A local deficit of mass beneath the ellipsoid will cause the geoid to be deflected _____ the ellipsoid.
 a) below b) above c) parallel to d) inside
26. In the context of terrain correction, the missing mass of a valley means that the measured gravity is _____ and the correction must be _____.
 a) increased; subtracted b) reduced; added c) reduced; subtracted d) increased; added
27. A gravity anomaly that results from a deep, large-scale density contrast is often called a.....
 a) Residual anomaly b) Bouguer anomaly c) Free-air anomaly d) Regional anomaly
28. In geomagnetism, inclination (I) is defined as the angle from the horizontal to the total field vector, ranging from -90° to +90°. What does a positive inclination indicate?
 a) The field vector is pointing downwards. b) The field vector is pointing upwards.
 c) The declination is eastward. d) The site is in the Southern Hemisphere.

Δ Remember ■ Understand ● Apply ◇ Analysis *Evaluate ○ Create

29. Declination (D) is the angle from.....
- Magnetic north to the horizontal component, positive clockwise.
 - Geographic north to the horizontal component, positive clockwise.
 - Geographic north to the total field vector.
 - The horizontal component to the total field vector.
30. Local magnetic anomalies caused by crustal geology are typically what fraction of the total field?
- About the same order of magnitude.
 - One order of magnitude larger.
 - At least two orders of magnitude smaller.
 - They are always several thousand nT.
31. The magnetic moment per unit volume of a material is called its.....
- Magnetic induction
 - Magnetic susceptibility
 - Magnetization
 - Magnetic permeability
32. The relationship between magnetic induction (B), magnetizing field (H), and magnetization (M) in a material is given by.....
- $B = \mu_0 (H - M)$
 - $H = \mu_0 (B + M)$
 - $B = \mu_0 (H + M)$
 - $M = \mu_0 (B + H)$
33. If a material has a small positive magnetic susceptibility (k), it is termed.....
- Paramagnetic
 - Ferromagnetic
 - Diamagnetic
 - Ferrimagnetic
34. A material that gives rise to its own magnetic field even in the absence of an externally applied field possesses.....
- High susceptibility
 - Induced magnetization
 - Remanent magnetization
 - A diamagnetic property
35. A magnetic gradiometer measures.....
- The absolute strength of the magnetic field.
 - The difference in the magnetic field between two closely spaced sensors.
 - The direction of the magnetic field.
 - The magnetic susceptibility of the ground.
36. The sensitivity of a gradiometer (the smallest measurable gradient) can be improved by.....
- Decreasing the sensor spacing and using a less sensitive magnetometer.
 - Increasing the sensor spacing and using a more sensitive magnetometer.
 - Using only one sensor.
 - Measuring the horizontal gradient instead of the vertical.
37. If an arrow representing the ancient magnetic field direction in a rock sample points 'up' relative to the horizon, in which hemisphere did it likely form?
- Southern Hemisphere
 - Northern Hemisphere
 - At the equator
 - At the geographic north pole
38. A key characteristic of a magnetic anomaly that allows estimation of depth to the source is its.....
- Amplitude
 - Polarity (positive or negative)
 - Wavelength or width
 - Asymmetry
39. A magnetic anomaly over a vertical-sided body, like a dike, can be separated into two distinct anomalies by a gradiometer. This demonstrates the gradiometer's ability to act as a.....
- Magnetometer
 - Device for measuring susceptibility
 - Source of magnetic noise
 - Filter that increases resolution
40. What is the effect of increasing the depth to a magnetic source on its measured anomaly?
- The anomaly becomes broader and smoother.
 - The anomaly becomes narrower and sharper.
 - The amplitude of the anomaly increases.
 - The anomaly reverses its polarity.

41. In the half-width rule for a simple anomaly at the magnetic equator, the relationship between half-width and depth can be different. For a N-S striking cylinder at the equator, it acts as a.....
 a) Dipole source b) Monopole source c) Line of dipoles d) Magnetic pole
42. Different types of seismic waves are primarily characterized by their.....
 a) Amplitude b) Frequency c) Particle motion d) Velocity
43. The observation that S-waves from earthquakes create a "shadow" on the side of the Earth opposite the source led to the discovery that the Earth's outer core is.....
 a) Solid b) Liquid c) Gaseous d) A vacuum
44. In a homogeneous medium, the shape of a seismic wavefront is.....
 a) Planar b) Elliptical c) Distorted d) Spherical
45. A ray is an arrow that is _____ to the wavefront and indicates the _____ of travel.
 a) Parallel; direction b) Perpendicular; direction c) Parallel; speed d) Perpendicular; speed
46. According to Snell's Law, as presented, the ratio of the sine of the angle of incidence to the sine of the angle of refraction is equal to.....
 a) The density contrast b) The amplitude ratio c) The frequency ratio d) The velocity ratio (V_2/V_1)
47. Critical refraction occurs when the angle of refraction (r) equals.....
 a) 0 degrees b) 45 degrees c) 90 degrees d) 180 degrees
48. The particle motion of a P-wave relative to its propagation direction is.....
 a) Transverse b) Perpendicular c) Parallel d) Orbital
49. The concept that every point on a wavefront acts as a new source is known as.....
 a) Huygens' Principle b) Reciprocity c) Snell's Law d) Fermat's Principle
50. The primary difference between a ray and a wavefront is that a wavefront is a surface of constant _____, while a ray indicates the direction of _____.
 a) time; particle motion b) phase; travel c) amplitude; energy d) velocity; propagation

End of Exam

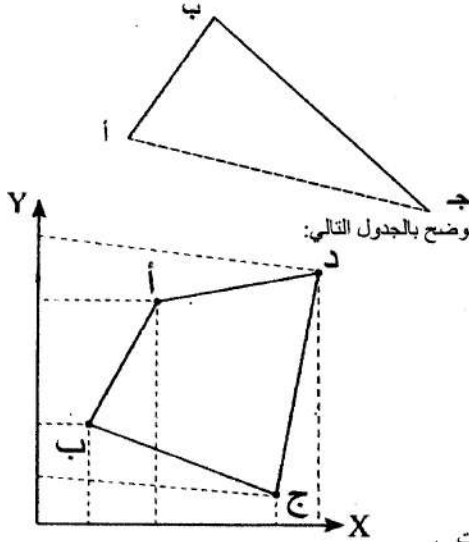
Best Wishes Assoc. Prof. Dr. Mostafa Thabet



اجب عن جميع الاسئلة التالية، قم بفرض أي قيم لازمة للحل ان لزم الامر.

السؤال الأول:

- اذكر الاحتياطات اللازمة عند اختيار وتثبيت نقاط التراس.
- عند قياس مساحة قطعة الأرض الموضحة بالشكل التالي تم قياس طول الخط أب فكان ٣٩٤,٦٢ متر، والخط ب ج فكان ٨٤١,٢٩ متر. وذلك بواسطة شريط طوله الحقيقي ٣٨,٩٤ متر.
أما الضلع الثالث فتعذر قياسه ولذلك تم قياس الانحراف الخلفي للضلع أب فكان ٣٠° ٢٤١' والانحراف الأمامي للضلع ب ج فكان ٤٠° ١١٨'. احسب مساحة قطعة الأرض الحقيقية على الطبيعة بالفدان والقيراط والسهم.



٣- لقطعة الأرض الموضحة في الشكل، اذا كانت مركبات الاضلاع كما هو موضح بالجدول التالي:

الضلع	المركبات بالمتر	
	ΔX	ΔY
أ ب	١٨ -	٤٥ -
ب ج	٩١	١٦ -
ج د	١٢	٨٣
د أ	٨٥ -	٢٢ -

اذا كانت احداثيات نقطة أ هي (٥٠٠, ٥٠٠)

- المطلوب: - احسب احداثيات باقي النقاط في جدول مناسب
- احسب مساحة الشكل بطريقة الاحداثيات او بطريقة المركبات

السؤال الثاني:

- عرف الميزانية مع ذكر اهم تطبيقاتها.
- اذكر الانواع المختلفة لاجهزة الميزان مع توضيح مقدار دقة كل نوع.
- أخذت القراءات التالية عند عمل ميزانية على محور طريق، فكانت:
٠,٩٤ / ٢,٢٠ / ٢,١٥ / ١,٦٣ / ١,٣١ / ٣,٢٤ / ١,١٤ / ٢,١٨ / ٠,٤٨ / ١,٧٤ / ١,٢٥ / ١,٥٤ / ١,٨٢ / ١,٣٧ / ١,٠٧ / ٢,٦٣ / ٣,٠٥ / ٢,٩٥ / ١,٣٢ /
فاذا كانت القراءات الثالثة والعاشره مقدمات، والقراءات السادسة والرابعة عشر مؤخرات، والنقطة الثالثة عشر نقطة دوران. أوجد مناسيب النقط المختلفة إذا كانت النقطة الرابعة روبير منسوبه (٣٥,٠٠) متر فوق سطح البحر. ثم حقق النتائج حسابيا.

٤- رصدت الانحرافات التالية على المضلع أ ب ج د و فكانت كما بالجدول:

الضلع	الانحراف الأمامي	الانحراف الخلفي
أ ب	٢٠° ٢٤٢'	١٠° ٦١'
ب ج	٣٠° ١٥٤'	٢٠° ٣٣٤'
ج د	١٣° ١٠٤'	١٠° ٢٨٦'
د و	١٥° ٢٩'	١٠° ٢٠٩'
و أ	١٣° ٣٠٢'	١٤° ١٢٣'

- المطلوب: أ- صحح الانحرافات للمضلع باستخدام الطريقة التقريبية.
- ب- احسب طول الضلع ب د وذلك اذا كان طول الضلع أ ب = ٣٤٥ متر والضلع ب ج = ٢٨٠ متر

انتهت الأسئلة

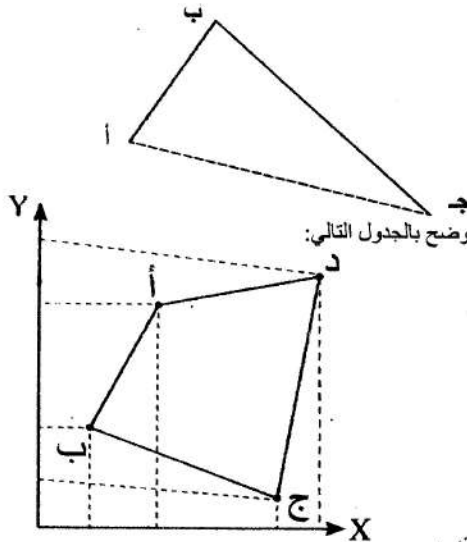
د. محمد أحمد بشير

اجب عن جميع الاسئلة التالية، قم بفرض أي قيم لازمة للحل ان لزم الامر.

السؤال الاول:

- ١- اذكر الاحتياطات اللازمة عند اختيار وتثبيت نقاط الترافس.
- ٢- عند قياس مساحة قطعة الأرض الموضحة بالشكل التالي تم قياس طول الخط أب فكان ٣٩٤,٦٢ متر، والخط ب ج فكان ٨٤١,٢٩ متر. وذلك بواسطة شريط طوله الحقيقي ٣٨,٩٤ متر.

أما الصلح الثالث فتعذر قياسه ولذلك تم قياس الانحراف الخلفي للصلح
أب فكان ٣٠. ٢٤١ والانحراف الامامي للصلح ب ج فكان
٤٠. ١١٨. احسب مساحة قطعة الارض الحقيقية على الطبيعة
بالفدان والقيراط والسهم.



المركبات بالمتر		الضلع
ΔY	ΔX	
٤٥ -	١٨ -	أ ب
١٦ -	٩١	ب ج
٨٣	١٢	ج د
٢٢ -	٨٥ -	د أ

إذا كانت احداثيات نقطة أ هي (٥٠٠ ، ٥٠٠)

- احسب احداثيات باقي النقاط في جدول مناسب
- احسب مساحة الشكل بطريقة الاحداثيات او بطريقة المركبات

السؤال الثاني:

- ١- عرف الميزانية مع ذكر اهم تطبيقاتها.
- ٢- اذكر الانواع المختلفة لاجهزة الميزان مع توضيح مقدار دقة كل نوع.
- ٣- اخذت القراءات التالية عند عمل ميزانية على محور طريق، فكانت:
- ٠,٩٤ / ٢,٢٠ / ٢,١٥ / ١,٦٣ / ١,٣١ / ٣,٢٤ / ١,١٤ / ٢,١٨ / ٠,٤٨ / ١,٧٤ / ١,٢٥ / ١,٥٤ / ١,٨٢ / ١,٣٧ / ١,٠٧ / ٢,٦٣ / ٣,٠٥ / ٢,٩٥ / ١,٣٢ /
- فإذا كانت القراءات الثالثة والعاشرة مقدمات، والقراءات السادسة والرابعة عشر مؤخرات، والنقطة الثالثة عشر نقطة دوران. أوجد مناسب النقط المختلفة إذا كانت النقطة الرابعة رويبر منسوبه (٣٥,٠٠) متر فوق سطح البحر. ثم حقق النتائج حسابيا.

٤- رصدت الانحرافات التالية على المضلع أ ب ج د و فكانت كما بالجدول:

الاضلاع	الاحتراف الأمامي	الاحتراف الخلفي
أ ب	١٢٠ ٠٢٤٢	١١٠ ٠٦١
ب ج	٣٠٠ ٠١٥٤	١٢٠ ٠٣٣٤
ج د	١٣٠ ٠١٠٤	١٠٠ ٠٢٨٦
د و	١٥٠ ٠٢٩	١٠٠ ٠٢٠٩
و أ	١٣٠ ٠٣٠٢	١٤٠ ٠١٢٣

- المطلوب: أ- صحح الانحرافات للمضلع باستخدام الطريقة التقريبية.
 ب- احسب طول الضلع ب د وذلك إذا كان طول الضلع أ ب = ٣٤٥ متر والضلع ب ج = ٢٨٠ متر

انتهت الأسئلة

د. محمد أحمد بشير

Assiut University Faculty of Science-Geology Dept		جامعة أسيوط كلية العلوم- قسم الجيولوجيا
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Crystallography (G233)

Time: Two Hours

Jau., 2026

Total Marks (50)

Answer the following questions (30 Marks):

- 1-Sterographic projection of the Trapezohedra form in $m\bar{3}m$ class (5 Marks)
- 2-Sterographic projection of the second order bipyramidal form in $4/m\bar{m}m$ class (5 Marks)
- 3-Sterographic projection of the A-dome form in mmm class (5 Marks)
- 4-Sterographic projection of the B-dome form in $2/m$ class (5 Marks)
- 5-Sterographic projection of the diploid form in $3m$ class (5 Marks)
- 6-Sterographic projection of the tetragonal bisphenoid form in $4\bar{2}m$ class (5 Marks)

7-Indicate by the sign (✓) or (×): (10 Marks)

- 1-All system contain pinacoid ()
- 2-Rhombohedral present in hexagonal ()
- 3-Tetragonal system contain 6 planes and one four axis ()
- 4-Monoclinic system contains two planes ()
- 5 Pyramid is closed form ()
- 6-Prism is open form ()
- 7-Scalenohedron is closed form ()
- 8-Cube is closed form ()
- 9-A dome is parallel to a axis ()
- 10-Pidon has one face ()

8-Choose the correct answer of the following (10 Marks)

- 11-Prism form is: a-open b-closed c-both
- 12-First order prism has miller index: a-110 b-100 c-hko
- 13-Ditetragonal prism has miller index: a-110 b-100 c-hko
- 14-Bipyramid is: a-open b-closed c-compound
- 15-Ditetragonal bipyramid has: a-12 faces b-8 faces c-16 faces
- 16-Trapezohedron is: a-closed form b-open form c-both
- 17-Scalenohedron is: a-closed form b-open form c-both
- 18-Second order prism has miller index: a-110 b-100 c-hko
- 19-Miller index of octahedron: a-110 b-100 c-111
- 20-Pasal pinchoid has miller index: a-010 b-100 c-001

	Assiut University – Faculty of Science Second Semester – Final Exam 2025-2026 Geology Department	Program: Geology, Geophysics, Geology- Chemistry Date: 15/5/2026 Time: 2h	
Course Title: Stratigraphy		Code: G210	
Instructors: Prof. Dr. Magdy S. Mahmoud & Prof. Dr. Amr S. Deaf			
Important:	No. of pages: 1	No. of questions: 5	Total Mark: 50 degree

Answer the following questions:

Q1: Choose if the following statements are true (✓) or false (X) (10 degrees; one degree each)

- 1- Lithostratigraphy deals with fossil correlation.
- 2- Stage boundaries are defined on the basis of global events.
- 3- Radioactive isotopes are used as a good and precise tool in geochronology.
- 4- The principle of lateral continuity states that rock layers were deposited initially inclined.
- 5- Abundance zones can be correlated on a global scale.
- 6- Stable carbon isotope values are useful in determining stage boundaries.
- 7- Fossils can infer absolute ages of rocks.
- 8- A "Group" can be subdivided into formations.
- 9- Within a given sedimentary basin, a lithostratigraphic unit can be diachronous.
- 10- Correlation of rock units is a main target of stratigraphy.

Q2: Chose the correct answer; A, B, C or D (5 degrees; one degree each)

- 1- When a stratotype is being damaged geologists should look for a
A- holostratotype B- lectostratotype C- parastratotype D- neostratotype
- 2- Stratigraphy is a branch of geology that is interested in studying:
A- Sedimentary rock layers B- Distribution of layers in time and space
C- Correlation of rock units D- all of them
- 3- If a mass extinction exists in a given rock succession this means that this succession is
A- totally unfossiliferous B- marine in origin C- incomplete D- complete
- 4- In astronomical dating (cyclostratigraphy), stratigraphers adjust time of rock layers; this procedure is termed
A- calibration B- tuning C- isotope dating D- seismic correlation
- 5- The principle of cross-cutting relationships states that an intrusive rock is:
A- younger than the layers it cuts B- of the same age of the layer it cuts
C- older than the layers it cuts D- None of them

Q3: Write in detail on the following: (15 degrees; 5 degrees each)

- A-Taxon Range Zone B- Disconformity C- Low of superposition

Q4: Compare between: (10 degrees; 5 degrees each)

- A- Rock units and Time rock units B- Absolute ages and relative dating

Q5: Define the following: (10 degrees; 5 degrees each)

- A- Uniformitarianism and catastrophism B- Angular unconformity

إنتهت الأسئلة مع أطيب الأمنيات بالتوفيق

Assiut University

Faculty of Science-Geology Dept



جامعة أسيوط

كلية العلوم - قسم الجيولوجيا

Crystallography and optical mineralogy(G234)

Time: Two Hours

Mau., 2026

Total Marks (50)

Answer the following questions (25 Marks):

1-Sterographic projection of the following forms:

First order prism, Ditetragonal prism and Second order bipyramidal in tetragonal system. (10 Marks)

2-Sterographic projection of the following forms:

Prism, A-dome, and bipyramidal in monoclinic system. (10 Marks)

3-Sterographic projection of the following forms:

Cube, and octahedron in cubic system (5 Marks)

Choose the correct answer of the following

1-Types of extinction is

a-parallel b-oblique c-symmetrical d-all of these

2-The limit between the various orders of interference color is

a-red b-green c-blue

3-The limit between the various orders of interference color is

a-violet b-yellow c-white

4-The interference colour depend on

a-thickness b- birefringence c-orientation d-all of these

5-Mineral have wave (undulose) extinction is

a-biotite b-quartz c-muscovite d-all of these

6-Mineral have zoning is

a-biotite b-allanite c-muscovite d-all of these

7-Mineral have zoning is

a-orthoclase b-hornblende c-andesine d-all of these

8-Mineral have zoning is

a-augite b-zircon c-phlogopite d-all of these

9-Mineral have zoning is

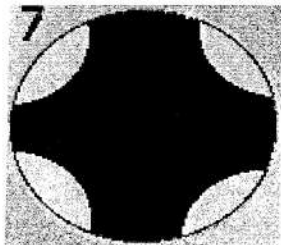
a-fayalite b-plagioclase c-hypersthene d-all of these

10-Mineral have high relief is

a-biotite b-fluorite c-muscovite d-all of these

11-Mineral have high relief is

- a-biotite b-sphene c-muscovite d-all of these
- 12-Refractive index of Canada Balsam is
a-1.54 b-1.65 c-1.44
- 13-Refractive index of garnet mineral is
a-1.77 b-1.66 c-1.88
- 14-Refractive index of halite mineral
a-1.54 b-1.66 c-1.88
- 15-Cross-hatching occur in
a-hornblende b-plagioclase c-orthoclase d-all of these
- 16-Mineral show two set of cleavage is
a-biotite b-hornblende c-mica d-all of these
- 17-Mineral show two set of cleavage is
a-muscovite b-pyroxene c-olivine d-all of these
- 18-Mineral show one set of cleavage is
a-biotite b-augite c-albite d-all of these
- 19-Mineral without of cleavage is
a-quartz b-hornblende c-augite d-all of these
- 20-Mineral without of cleavage is
a-apatite b-hornblende c-olivine d-all of these
- 21-Polysynthetic or albite twins occur in
a-olivine b-plagioclase c-orthoclase d-all of these
- 22-Mineral show rhombohedral cleavage is
a-calcite b-gypsum c-halite d-all of these
- 23-Mineral show parting (Y-cracks) cleavage is
a-olivine b-gypsum c-halite d-all of these
- 24-The most characteristic mineral twins are
a-feldspar b-biotite c-muscovite d-all of these
- 25-Type of the interference figure in the figure is



a-Flash figures

b-isotropic figures c-anisotropic figures

Assiut University Faculty of Science-Geology Dept		جامعة أسيوط كلية العلوم- قسم الجيولوجيا
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Crystallography (G233)

Time: Two Hours

Mau., 2026

Total Marks (50)

Answer the following questions (20 Marks):

1-Sterographic projection of the following forms:

First order prism, Second order prism, Ditetragonal prism and
Second order bipyramidal in tetragonal system. (10 Marks)

2-Sterographic projection of the following forms:

Prism, A-dome, B-dome and bipyramidal in monoclinic system.
(10 Marks)

3-Indicate by the sign (✓) or (×): (15 Marks)

- 1-All system contains a-dome form
- 2-All system contains b-dome form
- 3- The Hexagonal system ($a = b = c$) ($\alpha = \beta = \gamma = 90^\circ$)
- 4- The Triclinic System ($a \neq b \neq c$) ($\alpha \neq \beta \neq \gamma = 90^\circ$)
- 5- The Monoclinic System ($a \neq b \neq c$) ($\alpha = \gamma \neq \beta = 90^\circ$)
- 6- The Cubic System ($a = b = c$) ($\alpha = \beta = \gamma = 90^\circ$)
- 7- The Tetragonal System ($a = b \neq c$) ($\alpha = \beta \neq \gamma = 90^\circ$)
- 8- The Trigonal System ($a_1 = a_2 = a_3 \neq c$) ($\alpha = \beta = \gamma \neq 120^\circ$)
- 9- Most crystals have a plane of symmetry
- 10 -Interfacial angle is the angle between two faces of a crystal
- 11-Planes of symmetry are often referred to as mirror image planes
- 12-Cube and octahedron forms are compound crystal
- 13-Pyramid and prism forms are compound crystal
- 14-Cube and basal pinacoid forms are compound crystal
- 15-Prism is form of 3 faces in hexagonal system

4-Choose the correct answer of the following (15 Marks)

16-Cube is forms

a-special

b-open

c-general

17-Octahedron is forms

a-special

b-open

c-general

- 18-The a-dome is.....
a-special form b-open form c-general
- 19-The number of symmetry elements in hexagonal is
a-13 b-14 c-15
- 20-Bipramidal in orthorhombic are forms
a-special b-open c-general
- 21-Bipramidal in general is forms
a-special b-open c-general
- 22- Orthorhombic is a System
a-Dimetric b- Trimetric c- Isometric
- 23-Domes are found in..... system
a-Dimetric b- Trimetric c- Isometric
- 24-Which system has 2 equal axes
a-Tetragonal b- Orthorhombic c- Cubic
- 25-(100) is the index of.....
a-Pinacoid b-Tetragonal prism c-Both
- 26-(101) is the index of Order bipyramidal
a-first b-second c-third
- 27-Prism are forms
a-closed b-open c-general
- 28-Hexagonal prism may be found in.....system
a-Hexagonal b-Trigonal c-Both
- 29-Rhombododecahedron may be found in.....system
a-Cubic b-Trigonal d-Both
- 30-The cube is characterized by3-fold
a-2 b-3 c-4

Part Two hydrogeology (25 marks)

Answer the first question and two only of the remanent questions

1) Define five only of the following terms: (5 marks)

- a. Hygroscopic coefficient
- b. Moisture equivalent
- c. transmissivity coefficient
- d. Storage coefficient
- e. Radius of influence
- f. Steady flow

2) Write on Darcy's law for groundwater flow and its validity and limits to be used

(10 marks)

3) Groundwater springs: types and the factors controlling their discharges

(10 marks)

4) The vertical distribution of the groundwater under the ground surface

(10 marks)

Good luck

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Geology Department	Level : (2) Date: 14/ May/2026 Time: 2 h	 كلية العلوم جامعة أسيوط
Course Title: Geographic Information System (GIS)		Code: 210G	
Instructors: Dr. Hassan Abbas			
Important:	No. of pages 1	No. Of questions 8	Total Mark: 50 degree

Answer the following Queastions:

I) Choose the correct answer:

(10 Marks)

1- Who defined GIS as a decision support system?

- A) Tomlinson B) Burrough C) Cowen D) NCGIA

2- Which activity is NOT part of GIS processing?

- A) Capture B) Storage C) Analysis D) Animation design

3- Digitizing refers to:

- A) Printing maps B) Data capture C) Data analysis D) Data storage

4- Topological space focuses on:

- A) Distance B) Shape C) Connectivity D) Color

5- GIS views the Earth as:

- A) A cube B) A flat surface C) A 3D sphere D) A plane only

II) Write on GIS components.

(7 Marks)

III) Differentiate between points, lines, and polygons.

(6 Marks)

IV) Explain why map projections cause distortion.

(5 Marks)

V) Discuss disadvantages of raster data models.

(5 Marks)

VI) Discuss equal-area and conformal projections.

(6 Marks)

VII) Discuss the common topological errors in vector data.

(5 Marks)

VIII) Explain true north, magnetic north, and grid north.

(6 Marks)

Best Wishes....

Dr. Hassan Abbas

Optical Mineralogy (235 G)

I-Indicate by the sign (✓) or (×) (15 marks):

- 1-There are one optic axis of biaxial minerals ()
- 2-Biaxial minerals are cubic, monoclinic or triclinic ()
- 3-Isotropic mineral do give interference figures ()
- 4-Refractive index (N) of Canada balsam is 1.74 ()
- 5-Pyroxene has one cleavages ()
- 6-Amphiboles have two cleavages ()
- 7-Olivine has a parting ()
- 8-Pleochrism is the chance of color. ()
- 9-Isotropic sections are always cubic. ()
- 10-The indicatrix of cubic crystals is a sphere ()
- 11-Extinction of uniaxial crystal is parallel ()
- 12-Twinkling is the change of grain boundaries ()
- 13-Dimetric crystals are optically uniaxial ()
- 14-Double refraction is characteristic for calcite ()
- 15-Biotite has one cleavage ()

2-Choose the correct answer of the following (15 marks):

- 16-Refractive index of garnet mineral is
a-1.77 b-1.66 c-1.88
- 17-Refractive index of halite mineral
a-1.54 b-1.66 c-1.88
- 18-Refractive index of fluorite mineral is
a-1.43 b-1.66 c-1.88
- 19-The most characteristic mineral twins are
a-feldspar b-biotite c- hornblende
- 20-Biaxial minerals have
a-Two optic axis directions b-One optic axis direction
c-no optic axis direction
- 21-Mineral show rhombohedral cleavage is
a-calcite b-gypsum c-halite
- 22-parting occur in
a-olivine b-plagioclase c-orthoclase
- 23-The limit between the various orders of interference color is
a-red b-green c-blue
- 24-Mineral show two set of cleavage is
a-muscovite b- c-olivine c-pyroxene
- 25-Cross-hatching occur in
a-hornblende b-plagioclase c-microcline
- 26-A simple twin occur in

a-hornblende b-plagioclase c-orthoclase

27-Polysynthetic or albite twins occur in

a-olivine b-orthoclase c-plagioclase

28-Uniaxial minerals have

a-Two optic axis directions b-no optic axis direction

c-One optic axis direction

29-Isotropic minerals have

a-Two optic axis directions b-One optic axis directions

c-no optic axis direction

30-The interference colour depend on

a-thickness b-orientation c-both

3-Short notes on (20 marks):

1-What the flash figures

(5 marks)

2-Write on double refraction

(5 marks)

3-What the meaning of extinction

(5 marks)

4-What the meaning of twinning

(5 marks)

Final Exam of Rock Forming Minerals (course G 230)

June 2026

Assiut University
Geology Department

Faculty of Science
Time Allowed: 2 Hours

A. Answer the following questions (every item= 1.5 points):

1. What is the difference between hexagonal and cubic closest packing?
2. What is the structure of biotite and write the steps of its formation?
3. What is the structure of Talc and write the steps of its formation?
4. What is the structure of clintonite and write the steps of its formation?
5. What is the structure of serpentine and write the steps of its formation?
6. What is the difference between pyroxene and pyroxenoid group minerals?
7. What is the pyroxene mineral bearing lithium (Li)?
8. Draw the silicate structure of $(\text{Si}_2\text{O}_5)^{2-}$
9. Draw the silicate structure of $(\text{Si}_4\text{O}_{11})^{6-}$
10. Draw the silicate structure of $(\text{Si}_4\text{O}_{12})^{8-}$
11. Draw the silicate structure of $(\text{Si}_2\text{O}_6)^{4-}$
12. Draw the structure of ferrosillite mineral in pyroxene group.
13. Draw the structure of diopside mineral in pyroxene group.

B. Fill the spaces with scientific terms (every item= 1.5 points)

14. Orthosilicate minerals are characterized by the presence of many gemstones due to
.....
15. Crankshaft-like chains are found in
16. Aluminium silicate group minerals $(\text{Al AlO SiO}_4)^{\uparrow}$ are represented by, and
17. The polymorphism is
18.are examples of sorosilicate minerals.
19. Solid solutions are a wide spread in minerals for example.....
.....

20. Low temperature quartz is known asand high temperature quartz is known as.....; example of high pressure quartz
.....

C. Write short notes about the following topics (every item= 5 points):

21. How octahedral and tetrahedral sheets form the structure of sheet silicates (answer with drawing)

22. Formation of TOT I-beam structure in pyroxenes (answer with drawing)

23. Formation of TOT - strips structure in amphiboles (answer with drawing)

24. Bowen's reaction series

Good Luck

20. Low temperature quartz is known asand high temperature quartz is known as.....; example of high pressure quartz
.....

C. Write short notes about the following topics (every item= 5 points):

21. How octahedral and tetrahedral sheets form the structure of sheet silicates (answer with drawing)

22. Formation of TOT I-beam structure in pyroxenes (answer with drawing)

23. Formation of TOT - strips structure in amphiboles (answer with drawing)

24. Bowen's reaction series

Good Luck

Sedimentary basin analysis (25 marks)

Question no. 1: Choose the correct answer (5 marks)

1. A sedimentary basin is (1 mark)

- A. a plain area in the Earth's crust, of tectonic origin, in which sediments are eroded.
- 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. all of the above.

2. Rift basin is (1 mark)

- 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. uplifted area on the top of a mountain-building area.
- D. both (a) and (b).
- E. none of the above.

3. Aulacogen is (1 mark)

- A. special kinds of rifts, often referred to as failed rift that is presumably the failed arms of a triple-point junction.
- B. One arm of a triplet spreading rift system is believed to stop spreading after a few million years.
- C. The third, unsuccessful arm of the triple junction stops spreading.
- D. both (a) and (c).
- E. none of the above.
- G. all of the above.

4. The depocenter is the part of the basin with..... (1 mark):

- A. the thickest sedimentary fill.
- B. no sedimentary fill.
- C. the modest sedimentary fill.
- D. mixed carbonate/siliciclastic sedimentary fill.
- E. the shallowest sedimentary fill.
- F. both (A) and (D).
- G. none of the above.

5 Basins are separated from another by..... (1 mark):

- A. raised linear areas.
- B. fault scarps.
- C. depressions.
- D. plane surface areas.
- E. both A and D.
- F. all the above.

Question no. 2: True or false (5 marks)

A. basin relief can be eroded mechanically on a regional scale in two very important ways: thermally or flexurally, or by a combination of those two effects (1 mark).

B. a sedimentary basin has an axis, a line connecting the highest structural points of the basin; the axis of trough may plunge (1 mark).

C. a rift is a normal fault bounded basin that develops during compression of continental lithosphere (1 mark).

D. paleocurrent analysis is a technique used to determine, the flow direction at ancient currents that transported sediment into and within a depositional basin, which reflects the local or regional paleoslopes (1 mark).

E. the essential element of the sedimentary basin is tectonic creation of relief, to provide both a source of sediment and a relatively low place for the deposition of that sediment (1 mark).

Question no 3: Fill in the spaces with appropriate geological terms (5 marks)

A.....is a technique used to determine, the flow direction at ancient currents that transported sediment into and within a depositional basin, which reflects the local or regional paleoslopes (1 mark).

B..... is large trough like or basin like down warping of the crust in which thick sedimentary and volcanic rocks accumulated (1 mark).

C.....is a map that shows by means of contour lines the thickness of a given formation or rock unit (1 mark).

D..... are special kinds of rifts, often referred to as failed rifts that are presumably the failed arms of a triple-point junction (1 mark).

E.is a geophysical analysis technique used to quantitatively estimate the depth that the basement would be in the absence of sediment and water loading (1 mark).

Question no. 4: Write in-detail on the following items (10 marks)

A. Tectonics and basin filling (2 marks).

B. Paleocurrent analysis and paleocurrent maps (2 marks).

C. Basins formed by strike-slip/transform fault (2 marks).

D. Formation of sedimentary basins by thermal way (2 marks).

E. Basin shapes (2 marks).

Best wishes

Dr. Abdalla El Ayyat

	Assiut University- Faculty of Science Second Semester-Final Exam 2025-2026 Geology Department	Program: Chemistry / Geology Level: (3) Date: 2/6/2026 Time: 2 h	 كلية العلوم جامعة أسيوط
Course Title: Depositional Sedimentary Environments and Sedimentary Basins		Code: G 335	
Instructor: Prof Dr. Ezzat A. Ahmed			
Important:	No. of pages 1	No. of questions 9	Total Mark: 50 degree

Answer the following questions:

1. Write brief notes on the main characteristics of the meandering river system. (5 Marks)
2. Aeolian sediments are transported in different ways, write on these. (6 Marks)
3. Many processes are responsible for the formation of sedimentary basins, mention these. (5 Marks)
4. Answer only ONE question of the following: (10 Marks)
 - A- The depositional environments are affected mainly by specific parameters, mention these.
 - B- Mention the main types and characteristics of delta subenvironments.
5. Rift valley is formed due to successive stages, explain these illustrating your answer with drawings. (6 Marks)
6. Write on the main characteristics of neritic sediments, illustrate your answer with examples from the sedimentary package of Egypt. (5 Marks)
7. Sedimentary cycle interval is defined by the variation of some features, mention these. (3 Marks)
8. Some types of sedimentary basins are associated with subduction plate boundaries, mention these. (4 Marks)
9. Define the following: (6 Marks)
 - Hurricanes
 - Strongly deformed sedimentary basins
 - Pull-apart basins

Good luck

Ezzat A. Ahmed



Answer the following questions

Q1: Mark the correct and the wrong statements, and correct the wrong (10 marks: 2 marks each)

- 1- Dinoflagellates are classified using the International Code of Zoological Nomenclature (ICZN) as protozoans.
- 2- Fossil spore and pollen grains share more or less the same morphological features except that of wall structure, type, and position of aperture.
- 3- External molds preserve ornamental details of surface patterns.
- 4- Treatment of clay samples using sodium hexametaphosphate $[(NaPO_3)_6]$ provides more palynologically-productive residue than the acid treatment.
- 5- Mesophragm is a single wall surrounds an internal cavity called autocoel.

Q2: Chose the correct answer (5 marks: 1 mark each)

- 1- Alteration of fossil body parts may include:
a- Recrystallization b- Replacement c- Petrification d- All of them
- 2- Artificial classification of angiosperm pollen grains involves:
a- Monoporate pollen b- Tricolporate pollen c- Inaperturate d- All of them
- 3- Trace fossils are represented for example by:
a- Shells b- Burrows c- Bones d- Leaf imprints e- All of them
- 4- Grains in uniplanar pollen tetrad can take arrangements of:
a- Linear b- Rhomboidal c- T-shaped tetrads d- Tetragonal e- All of them
- 5- In the Kofoid's tabulation system, 1a stands for:
a- 1st precingular plate b- 1st posterior intercalary plate
c- 1st anterior intercalary plate d- 1st Sulcal plate

Q3: Define Only Five of the following (10 marks: 2 marks each)

Gastroliths, autophragm, necrolysis, spores, coprolites, internal cast, dinoflagellate.

Q4: Write briefly on Only TWO of the following: (25marks:12.5 marks each)

- 1- Cingulum configuration and cyst wall layers in dinoflagellate cysts (with drawings).
- 2- Preservation of fossils body by alterations.
- 3- Standard palynological processing technique in brief.

End of Exam

Examiner: Prof. Amr S. Deaf

Good Luck