

- 2- Knowing whether a fossil is older or younger than another fossil is
- | | |
|--------------------|--------------------|
| A- Absolute Dating | B- Relative Dating |
| C- both of them | D- None of them |
- 3- Geologic processes that occur today are similar to those that occurred in the past.
- | | |
|----------------------|------------------|
| A- Uniformitarianism | B- Catastrophism |
| C- Correlation | D- Superposition |
- 4- The relative positions of continents in the past can be determined in part using which lines of evidence?
- A- the position of ancient mountain ranges.
 - B- the degree of similarity in fossil species between two places.
 - C- the distribution of climate indicators such as coral reefs, coal beds, and evaporite deposits.
 - D- all of the above.
- 5- The abrupt lateral changes in the sedimentary rocks are related to
- | | |
|--------------------------|-----------------------|
| A- Environmental factors | B- structural factors |
| C- Both of these | D- none of these |

II- Write brief notes on:-

- A- Pan – African event
- B- Cratons and Shields
- C- Ophiolitic mélange

Fourth Question: (10 Marks)

- Compare between the Dokhan Volcanics and Hammamat sediments in the Eastern Desert of Egypt. (10 Marks)

Fifth Question: (10 Marks)

- Discuss briefly the ideal metamorphic ophiolite sequence in Egypt, giving examples. (10 Marks)

Good Luck !
Prof. Dr. Nageh A. Obaidalla

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Geology Department	Program: Special Geology & Geophysics Level: (4) Date: 20/5/2026 Time: 2 h	
Course Title: Economic Geology		Code: 434G	
Instructors: Prof. Dr. Galal El-Habaak			
Important:	No. of pages 4	No. of questions: Two parts	Total Mark: 50 degrees

Answer the following questions

Part I: Multiple Choice Questions (25 Marks)

Select the most appropriate answer (1 Mark each):

على الطالب رسم جدول في كراسة الإجابة، يُسجل فيه رقم السؤال والحرف المقابل للإجابة الصحيحة فقط (a, b, c, or d).
 (يُرجى عدم إعادة كتابة نص الإجابة داخل الجدول، والاكتفاء فقط بكتابة رمز الإجابة)

1. A mineral resource is classified as an "Ore" if it: a) Contains any amount of metallic elements. b) Consists entirely of silicate minerals. c) Can be extracted legally and at an economic profit. d) Is distributed uniformly throughout the Earth's crust.
2. The unwanted or non-economic minerals that occur alongside ore minerals in a deposit are termed: a) Gangue. b) Reserves. c) Placers. d) Skarns.
3. Early magmatic deposits formed by gravitational settling of early-formed crystals in a magma chamber are typical of: a) Porphyry copper deposits. b) Hydrothermal quartz veins. c) Supergene enrichment zones. d) Bushveld-type Chromite layers.
4. Which of the following processes is responsible for the formation of "Immiscible Sulfide Droplets" in mafic magmas? a) High-temperature hydrothermal leaching. b) Magmatic segregation where a sulfur-rich liquid separates from a silicate melt. c) Surface weathering and oxidation. d) Regional metamorphism of organic shales.
5. Porphyry deposits are characteristically associated with which tectonic setting and rock type? a) Mid- Ocean ridges and basaltic flows. b) Stable cratons and komatiites. c) Subduction zones and calc-alkaline porphyritic intrusions (felsic to intermediate). d) Extensional rifts and evaporite basins.
6. The typical hydrothermal alteration zone found at the core of a classic porphyry copper deposit is characterized by K-feldspar and biotite, and is known as: a) Potassic alteration. b) Argillic alteration. c) Propylitic alteration. d) Phyllic alteration.

7. During the very late stages of granitic magma crystallization, water and incompatible elements concentrate to form coarse-grained rocks rich in rare minerals called: a) Basalts. b) Peridotites. c) Rhyolites. d) Pegmatites.
8. Skarn deposits are formed primarily by contact metamorphism and metasomatism when an igneous intrusion reacts with: a) Sandstones. b) Carbonate rocks (Limestone or Dolostone). c) Basaltic lava flows. d) Granitic gneisses.
9. The Platinum-Group Elements (PGE) are highly "siderophile" and "chalcophile," meaning they have a strong affinity for: a) Silicates and water. b) Oxygen and halogens. c) Carbonates and phosphates. d) Iron and sulfur.
10. Volcanogenic Massive Sulfide (VMS) deposits are formed on or near the seafloor primarily associated with: a) Underwater hydrothermal vents (Black smokers) at mid-ocean ridges. b) Continental desert sand dunes. c) Shallow meteoric groundwater evaporation. d) High-grade regional metamorphic gneisses.
11. Which mineral property allows heavy minerals like Gold, Tin (Cassiterite), and Ilmenite to concentrate in placer deposits? a) High solubility in river water. b) High specific gravity and resistance to chemical weathering. c) Low melting point. d) Fibrous crystal habit.
12. Banded Iron Formations (BIFs), such as the Lake Superior type, are sedimentary deposits that formed primarily during: a) The Cenozoic era, through volcanic ash accumulation. b) Modern river delta precipitation. c) The Precambrian era, due to the rise of oxygen in the atmosphere and oceans. d) High-grade contact metasomatism.
13. Secondary Enrichment (or Supergene enrichment) occurs when downward-percolating groundwater: a) Heats up near a magma chamber to form hydrothermal fluids. b) Cools the crystalline rocks to cause magmatic segregation. c) Directly deposits placer minerals in stream beds. d) Leaches metals from the upper oxidized zone and reprecipitates them below the water table.
14. The target zone of supergene enrichment where secondary copper sulfides like chalcocite form is located: a) In the gossan cap at the surface. b) Deep within the unweathered potassic core. c) Exclusively within modern soil horizons. d) Just below the water table in the reducing (hypogene) zone.
15. The most common type of asbestos mineral utilized commercially, belonging to the serpentine group, is: a) Crocidolite. b) Amosite. c) Chrysotile. d) Tremolite.

16. Hydrothermal mineral deposits are most commonly formed when hot, metal-rich solutions enter a cooler environment, causing the metals to: a) Precipitate from the solution (e.g., gold in quartz veins). b) Dissolve completely into the wall rocks. c) Evaporate instantly into the atmosphere. d) Turn into immiscible liquid sulfide droplets.
17. Which of the following mineral deposits is formed primarily through chemical precipitation and intense evaporation in restricted water basins? a) Porphyry copper complexes. b) Stratiform chromite layers. c) Epithermal gold veins. d) Gypsum and Halite.
18. The highest grade of coal, characterized by the highest carbon content and density, formed under intense metamorphic pressure and temperature, is: a) Peat. b) Anthracite. c) Lignite. d) Bituminous.
19. The term "Stockwork," frequently observed in porphyry copper deposits, refers to: a) A massive, single tabular vein of quartz. b) The mechanical sorting of grains in a river. c) A network of dense, interconnecting micro-veinlets carrying ore minerals. d) The extraction machinery used in underground mining.
20. Which of the following is considered a precious gem mineral belonging to the beryl family? a) Emerald. b) Ruby. c) Sapphire. d) Diamond.
21. Kimberlite pipes are volcanic features that are primary geological sources for: a) Platinum-group elements. b) Hydrothermal silver veins. c) Diamonds. d) Disseminated gold ores.
22. The concentration factor of a mineral resource measures: a) The total tonnage of ore available in a mine. b) The depth of the mineralized zone beneath the surface. c) The percentage of gangue minerals relative to the ore. d) The ratio of the ore's grade necessary for economic mining to its average crustal abundance.
23. Hydrothermal deposits formed at shallow depths and low temperatures (50 C to 200 C), often distal to the igneous source, are classified as: a) Epithermal. b) Hypothermal. c) Mesothermal. d) Pyrometasomatic.
24. "Gossan" is a geologic term describing: a) A high-grade magmatic nickel ore. b) An iron-rich, oxidized weathered rock capping an underlying sulfide deposit. c) A specific texture found only in pegmatites. d) A type of placer gravel rich in gemstones.
25. The primary and most economically important copper ore mineral found in the hypogene zone of classic porphyry deposits is: a) Malachite. b) Azurite. c) Chalcopyrite. d) Chrysocolla.

Part II: Essay Questions (25 Marks)

Answer ONLY FIVE (5) questions out of the following SEVEEN (7) (5 Marks each):

1. Evaporites are crucial non-metallic sedimentary deposits. Explain the paleoclimatic and tectonic conditions necessary to form thick sequences of Gypsum and Halite, and highlight their economic significance in modern industries.
2. Compare and contrast in detail between banded iron formations (BIFs) and ironstones. Your comparison should clearly highlight differences in their geological age (Precambrian vs. Phanerozoic), mineralogy, and primary sedimentary environments of deposition.
3. Discuss the mechanisms of Early Magmatic Deposits. Focus heavily on how fractional crystallization and gravitational settling lead to the formation of stratiform chromite layers, citing the Bushveld Igneous Complex as a case study.
4. Explain the concept of Magmatic Liquid Immiscibility (Late Magmatic segregation). Describe how a sulfur-saturated mafic magma separates into silicate and sulfide liquids, and how this process concentrates Platinum-Group Elements (PGE) and Nickel-Copper sulfides.
5. Placer Deposits represent a key sedimentary concentration mechanism. Discuss the specific physical properties (such as specific gravity and chemical durability) required for minerals to form placers, and describe three distinct environments where they accumulate.
6. Outline the progressive metamorphic stages of coal formation (from Peat to Anthracite), explaining how carbon content changes.
7. Briefly classify Asbestos minerals into their two main groups and state why their physical structure presents severe environmental and health occupational hazards.

End of Exam

Best Wishes

Prof. Dr. Galal Hamed El Habaak

Geology Department Faculty of Sciences Assiut University Second level		Second Term Examination Ore genesis (438 G) Jun, 2026 Two Hours
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Ore forming processes (438g)

A. Choose the correct answer from (a, b, c, d) of the following:

1. Lithophile elements are typically found associated with igneous rocks of
 (a) basic (b) ultrabasic (c) felsic (d) intermediate composition
2. Porphyry type deposits are spatially and genetically associated with rocks of
 (a) ultrabasic (b) basic (c) felsic to intermediate (d) sedimentary
3. In the porphyry type deposits Cu, Au, are derived from
 (a) mafic mantle (b) felsic crustal (c) mixing of crustal and mantle (d) sedimentary rocks
4. The inner zone of the hydrothermal alterations related to porphyry type deposits is represented by
 (a) phyllic (b) potassic (c) propylitic (d) argilic alteration.
5. VMS deposits are derived via
 (a) magmatic fractionation (b) fluid immiscibility (c) hydrothermal solution
 (d) metamorphic process
6. The metal zonation of VMS is represented in the inner zone by
 (a) pyrite and chalcopyrite (b) pyrite- sphalerite - galena (c) sphalerite-galena-pyrite
 (d) chalcopyrite-sphalerite
7. The main factor controlling the placer deposits is
 (a) pressure (b) temperature (c) density (d) chemical composition.
8. Banded iron formation deposits produced as a result of
 (a) magmatic (b) hydrothermal (c) sedimentary process (d) metamorphic.
9. Mineral Deposits formed from hot aqueous fluids process are named
 (a) magmatic (b) residual (c) hydrothermal (d) skarn type deposits.
10. Bauxite and laterite are formed due to
 (a) residual (b) placer (c) magmatic processes (d) metamorphic process.
11. Pt—Cr Bushveld, South Africa deposits are formed via
 (a) fluid immiscibility (b) magmatic segregation (c) pegmatitic (d) residual process.
12. Cu – Ni deposits of Sudbury, Canada are formed via
 (a) fluid immiscibility (b) magmatic segregation (c) pegmatitic
 (d) mechanical weathering process.
13. Li, deposits of Kings Mtn. N.C. is deposited by
 (a) pegmatitic (b) immiscibility, (c) magmatic fractionation (d) hydrothermal process.
14. Skarn type deposits are formed via
 (a) magmatic (b) sedimentary (c) metasomatic (d) hydrothermal process.
15. Concentration of heavy minerals into placer is formed via
 (a) mechanical weathering (b) chemical precipitation (c) residual concentration
 (d) supergene enrichment

16. Ore deposits that form after their host rocks are
(a) epigenetic (b) pregenetic, (c) syngenetic (d) hypogene deposits.
17. Calcophile elements are typically found associated with igneous rocks of
(a) basic (b) ultrapotassic (c) felsic, (d) intermediate composition
18. Diamond deposits are spatially and genetically associated with rocks of
(a) kimberlite (b) gabbro (c) granite (d) sandstone
19. In the porphyry type deposits Mo and Sn are derived from
(a) mafic mantle (b) felsic crustal (c) mixing of crustal and mantle (d) sedimentary rocks
20. The inner zone of alteration of VMS is represented by
(a) sericitization (b) potassic (c) argillic (d) chloritization
21. Mineralization caused by descending hydrothermal solutions is referred to as
(a) Hypogene (b) Supergene (c) Hypothermal (d) skarn type.
22. Epithermal ore deposits are formed at temperatures between
(a) 50–200 °C (b) 200 – 400 (c) 400–600 °C (d) > 600 °C
23. Ore deposits formed by replacement of wall rocks adjacent to an intrusive body is named:
(a) contact metamorphism (b) skarn (c) metamorphosed (d) residual
24. Stratiform accumulations of sulfide minerals that precipitate from hydrothermal fluids in the seafloor volcanic is named:
(a) porphyry type (b) sedimentary exhalative (sedex) (c) VMS (d) supergene
25. Ore deposits that formed at the same time of the host rock are:
(a) epigenetic (b) pregenetic (c) syngenetic, (d) metallogenic
26. A region characterized by a particular assemblage of mineral deposit type is defined as:
(a) metallogenic epoch (b) metaltectic (c) metallogenic provinces, (d) metallogeny.
27. The concentrations or enrichment of economic minerals due to the effects of heat, pressure and fluids, and dynamic movements are called:
(a) magmatic (b) hydrothermal (c) replacement (d) metamorphic .
28. Talc and asbestos deposits are formed by regional metamorphism of:
(a) ultramafic rocks (b) diorite (c) granite (d) sandstone
29. Mineral deposits that were originally sedimentary rocks but subjected to metamorphism is:
(a) metamorphic (b) metamorphosed (c) metamorphogenic (d) contact metamorphism
30. Mineral deposits formed from fluids generated during pro-grade metamorphism of pelitic rocks by collecting water from the dehydration and devolatilization of sedimentary minerals is:
(a) contact metamorphism (b) metamorphogenic (c) metamorphic (d) metamorphosed
31. minerals deposits formed solely by reaction between host rock and hot igneous intrusion without fluid interactions is:
(a) contact metamorphism (b) metamorphogenic (c) metamorphic (d) metamorphosed
32. Mineral deposits formed where a felsic magma (granite/granodiorite) intrudes sedimentary rocks, particularly carbonate rocks is:
(a) skarn type (b) contact metamorphism (c) metamorphic (d) metamorphosed
33. Mineral deposits formed from secondary minerals by the action of descending rain water or groundwater, which typically occurs well below the water table is:
(a) hydrothermal (b) porphyry (c) VMS (d) supergene enrichment
34. Residual deposits are accumulations of valuable minerals by chemical weathering after the undesirable constituents of rocks have been removed is:

- (a) placers (b) residual (c) biochemical (d) hydrothermal
35. Mineral deposits formed due to various processes associated with magmatic activities are called:
(a) secondary (b) metamorphic (c) primary (d) supergene
36. Mineral deposits arising out the processes of weathering, and activities of several geological agents are called:
(a) secondary minerals (b) primary minerals (c) metamorphic minerals (d) hydrothermal
37. Magmatic deposits formed near the close of magmatic deposits are called:
(a) early (b) simultaneous (c) late (d) residual
38. In early magmatic process the simple crystallization of minerals without concentration is called:
(a) segregation (b) dissemination (c) injection (d) residual
39. The process by which mineral deposits formed towards the very end of consolidation of magma in which residual fraction is highly enriched with volatile constituents called:
(a) magmatic (b) residual (c) hydrothermal (d) pegmatitic
40. The most important mechanism responsible for the generation of both PGE-Ni-Cu layered intrusions and Ni-Cu sulfide deposits is:
(a) magmatic fractionation (b) transform faults (c) divergent plate (d) mantle partial melting
41. Important processes that may lead to sulfide saturation is:
(a) fractional crystallization (b) magma mixing (c) magmatic segregation (d) metasomatism
42. In hydrothermal solution, the source of heat may come from:
(a) magma (b) metamorphism (c) increase of temperature with depth (d) all of the three
43. Albitization alteration is caused due to:
(a) addition of K^+ (b) addition of Na^+ (c) addition of Ca^+ (d) addition of Fe^+
44. Carbondatization alteration is resulted due to:
(a) addition of Si and Al (b) Ca^+ and Mg^+ (c) C^+ and Ca^+ (d) Na^+ and K^+
45. Mineral deposits associated with subvolcanic intrusions with composition vary from diorite-granodiorite to high-silica granite is :
(a) volcanogenic massive sulphide (VMS) (b) magmatic (c) skarn (d) porphyry type
46. In arid regions where there is no flowing water, placers deposits created by the winnowing action of wind is called:
(a) alluvial (b) colluvial (c) Aeolian (d) fluvialite.
47. Mineral deposits that formed by the accumulation of the skeletal remains of organisms including plants, animals and micro-organisms are:
(a) Biogenic (b) placers (c) supergene (d) evaporates
48. deposits are concentrated by the leaching away of unwanted material and residual concentration of useful materials without any external contribution is:
(a) placers (b) laterites (c) supergene (d) evaporites
49. Roll front uranium deposits is formed via:
(a) residual (b) laterites (c) supergene enrichment (d) infiltration\
50. Roll front uranium deposits are formed in:
(a) oxidized medium (b) neutral (c) reduction medium (d) acidic medium

Best Wishes



Part I Well Logging (25 marks)

Answer the following questions

I- Fill the missing answers . (7.5 marks)

- 1- Mentioned some services of LWD and MWD: (2.5 marks)
 - a- LWD
 - i- _____
 - ii- _____
 - b- MWD
 - i- _____
 - ii- _____
- 2- The main differences between SP and SSP are:- (2.5 marks)
 - a- _____
 - b- _____
 - c- _____
- 3- The main differences between LLS and LLD resistivity logs are: (2.5 marks):
 - a- _____
 - b- _____
 - c- _____

II- Choose the correct answer and comment on your choice (10 marks)

- 1- The difference between bit size and calliper size is great in case of: (2.5 marks)
 - a- Dry friable sand formation
 - b- Dry silicified sand formation
 - c- Compacted limestone formation
- 2- The invasion zone characterization can be obtained from: (2.5 marks)
 - a- SP log
 - b- Resistivity logs
 - c- both a & b
- 3- Short and Long normal resistivity logs are used in . (2.5 marks)
 - a- Evaluation of reservoir water saturation
 - b- Evaluation of water salinity
 - c- Both a and b
- d- The normal and reverse deflections in SP curve are depending on: (2.5 marks)
 - a- The relation between R_{mf} and R_{mc}
 - b- The relation between R_{mf} and R_w
 - c- The relation between R_{xo} and R_t

III- Write about three only of the following:- (7.5 marks)

- 1- Application of resistivity logs. (2.5 marks)
- 2- Using of SP log in determination of R_w . (2.5 marks)
- 3- The combination SP and GR logs in sand and shale identification. (2.5 marks)
- 4- Application of GR log in shale volume estimation. (2.5 marks)

Part II Petrophysics (25 Marks)

I. Define FIVE ONLY of the following : (5 Marks)

Bulok modulus -- Poisson's ratio -- Cleavage - Hardness - Stress

Luster - Simple Matrix .

II. Write on TEN ONLY of the following: (20 Marks)

- | | |
|--|--------------------------------|
| 1- Initial Gas | 2-Absolute permeability . |
| 3- Kozeny Correlation | 4- Arkose Sediment. |
| 5- Factors affecting on Permeability | 6- Complex Matrix. |
| 1- Porosity on Carbonate rocks | 8- Types of Conductivity . |
| 9- Factors affecting on Porosity | 10- Oil-water system. |
| 11-The resistivity of Clay | 12- Porosity of Clastic rocks. |
| 13- Shale distribution effect on resistivity | 14- Initial Oil |



Final Exam of Statistical Methods
in Geophysics (G456)

2026

(50 mark)

Time: 2 Hours

Answer the following questions

الإجابة في نفس الورقة

The First Question (20 mark)

1. Write on data analysis exploratory.
2. What types of questions are of interest to geostatistics.
3. Define random sample
4. Compare between autocorrelation and correlation coefficient

The Second Question (20 mark)

Put (True) or (False) mark

1. Difference between classical statistics and geostatistics is that geostatistics uses the sampling location of every measurement .
2. Geostatistics is related to the earth sciences, e.g., hydrogeology, hydrology, meteorology, oceanography, geochemistry, geography, soil sciences, forestry, landscape ecology .
3. Measures of spread are represented by mean, median and mode.
4. Before formal analysis the data should be examined by displaying as histograms and Plotting.
5. Approximate interpolators are used when there is some uncertainty about the given surface values
6. From types of descriptive statistics are measures of central tendency.
7. Sampling methods may lead to counterproductive results, even with huge size of collected data .
8. Abrupt methods produce surfaces with a stepped appearance.
9. The spline method is best for gently varying surfaces, such as elevation, water table heights, or pollution concentrations.
10. The Inverse Distance Weighting interpolator assumes that each input point has a local influence that diminishes with distance.
11. Kriging is a very flexible girding method .
12. The interpolated surface generated by Minimum Curvature is analogous to a thin, linearly elastic plate passing through each of the data values, with a minimum amount of bending
13. Theoretical statistics deals with the development, derivation, and proof of statistical theorems, formulas, rules and laws .
14. Applied statistics involves the applications of those theorems, formulas, rules and laws to solve real-world problems.
15. Contour and grid methods are considered only to be functional surface representation .

16. Descriptive statistics consists of methods for organizing, displaying, and describing data by using tables, graphs and summary measures .
17. Inferential statistics consists of methods that use the sample results to help make decisions or predictions about a population.
18. There are two types of descriptive statistics such as Measures of Central Tendency and Measures of Dispersion or Variability .
19. Global interpolation method tends to produce smoother surfaces with less abrupt changes.
20. In Approximate Interpolation, the surface passes through all points whose values are known.

The Third Question (10 mark)

Choose the correct answer

- 1- Data collected on different elements at the same point in time or for the same period of time called (time series data – cross section data- Survey)
- 2- Geologic Unit thickness and ground elevation are called (continuous – discrete – qualitative) variables.
- 3- A measure of the dispersion of a set of data from its mean called (Standard deviation- Covariance - Kriging)
- 4- The correlation is between two values of the same variable at times X_i and X_{i+k} called (correlation coefficient – autocorrelation - Regression)
- 5- (Negative – positive - Zero) skewness indicates a distribution with an asymmetric tail extending toward more negative values
- 6- Large data sets for Skewness measure is (unreliable- more reliable - less reliable)
- 7- A survey that includes every member of population is called (census – data collection - Survey)
- 8- (Gradual – abrupt - Local) methods produce a smooth surface between sample points
- 9- (Local – Global- Point) methods apply a single mathematical function repeatedly to small subsets of the total set of observed data points and then link these regional surfaces to create a composite surface covering the whole study area
- 10- (Descriptive – Inferential - Theoretical) Statistics calculate a few numbers to represent all the data

Answer Sheet

Q1: Write on data analysis exploratory.

Q1: What types of questions are of interest to geostatistics.

Q1: What types of questions are of interest to geostatistics.

Q1: Define random sample

Q1: Compare between autocorrelation and correlation coefficient

Put the correct answer inside the table

Q2: Put (True) or (False) mark

No.	T or F	No.	T or F	No.	T or F	No.	T or F
1		6		11		16	
2		7		12		17	
3		8		13		18	
4		9		14		19	
5		10		15		20	

Q3: Choose the correct answer

No.	The correct choice	No.	The correct choice
1		6	
2		7	
3		8	
4		9	
5		10	

	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Geology Department	Program: Special geology Level : (4) Date: 2 / 1. / 2026 Time: 2 h	
Ore microscopy and Ore Petrology		Code: 431G	
Instructors Prof. Dr. Galal Hamed El Habak			
Important: 3	No. of pages 2	No. of questions: 50	Total Mark: 50 degree

Answer the following questions

Select the correct answer: (50 Marks)

- Opaque minerals are characterized in Plane Polarized Light (PPL) by:** A) Allowing light to pass through. B) Looking black regardless of orientation. C) Showing interference colors. D) Being easily identified in transmitted light.
- Which step is CRITICAL for good quantitative analysis (EMPA) to avoid X-ray errors?**
A) Carbonate removal with HCl. B) Vacuum impregnation. C) Polishing to a flat, unscratched surface. D) Sputter coating with Gold.
- For quantitative X-ray mapping, the coating material of choice is:** A) Gold. B) Gold-palladium alloy. C) Carbon. D) Silver paint.
- Reflectance (R%) is defined as the ratio of:** A) Absorbed light to incident light. B) Reflected light to incident light $\times 100$. C) Transmitted light to reflected light. D) Refracted light to absorbed light.
- Which mineral remains dark through 360° rotation under crossed polars?** A) Graphite. B) Covellite. C) Sphalerite. D) Molybdenite.
- In the Kalb light-line test, as the stage is lowered (distance increased), the line moves toward:**
A) The harder mineral. B) The softer mineral. C) The grain boundary. D) The objective lens.
- Triangular pits arranged in rows are a diagnostic physical property of:** A) Pyrite. B) Hematite. C) Galena. D) Magnetite.
- The change in reflectance intensity as the stage is rotated is called:** A) Reflection Pleochroism. B) Bireflectance. C) Anisotropy. D) Internal Reflection.
- "Oleander leaf" twins are characteristic of:** A) Marcasite. B) Chalcopyrite. C) Hematite. D) Galena.
- Internal reflections in Malachite appear:** A) Scarlet red. B) Green. C) Honey-brown. D) White.
- Which mineral shows strong Bireflectance?** A) Chalcopyrite. B) Pyrite. C) Molybdenite. D) Bornite.
- The reflectance of Sphalerite increases when its content of ____ increases:** A) Lead. B) Iron. C) Copper. D) Gold.
- Etching with dilute HNO₃ is used in cement clinker to visualize:** A) Hardness. B) Bireflectance. C) Mineral phases and grain boundaries. D) Internal reflections.
- Vickers and Brinell tests measure ____ hardness:** A) Polishing. B) Scratch. C) Indentation. D) Relative.
- "Polishing relief" occurs because:** A) Soft minerals are worn away faster than hard ones. B) All minerals polish at the same rate. C) Hard minerals are removed during cleaning. D) The sample is not flat.
- Internal reflections in Cuprite are:** A) Yellow. B) Green. C) Scarlet red. D) Blue.
- Large-scale features like folds and gneissic banding are called:** A) Textures. B) Structures. C) Fabrics. D) Inclusions.
- Primary textures are those formed:** A) After metamorphism. B) During weathering. C) At the time of rock formation. D) By descending meteoric waters.
- Which texture results from the settling of minerals in a crystallizing magma?** A) Exsolution. B) Cumulus. C) Colloform. D) Replacement.
- "Intercumulus" minerals usually crystallize:** A) First in the sequence. B) Late in the sequence, filling spaces. C) Only during metamorphism. D) By volcanic explosion.
- Exsolution textures indicate a cooling rate that is:** A) Extremely rapid (Quenching). B) Slow to intermediate. C) High temperature only. D) Independent of temperature.
- The replacement of Magnetite by Hematite along (111) planes is called:** A) Martitization. B) Serpentinization. C) Chloritization. D) Silicification.

23. "Sphalerite stars" in Chalcopyrite are an example of: A) Replacement. B) Exsolution. C) Deformational twinning. D) Weathering.
24. "Bird's eye" texture is characteristic of the alteration of: A) Galena. B) Pyrrhotite. C) Pyrite. D) Chalcopyrite.
25. Framboids are aggregates of particles shaped like: A) Stars. B) Spheres. C) Cubes. D) Needles.
26. Skeletal crystals are evidence of: A) Slow cooling. B) Rapid crystallization/cooling. C) High pressure deformation. D) Surface weathering.
27. Replacement is more common at: A) Low Temperature and Low Pressure. B) High Temperature and High Pressure. C) Surface conditions only. D) In open cavities only.
28. In replacement, "Caries" are surfaces that are: A) Convex towards the replacing mineral. B) Concave towards the replacing mineral. C) Perfectly straight. D) Only found in magmatic ores.
29. Euhedral crystals with "Double terminations" are a criterion for: A) Open space filling. B) Replacement. C) Rapid quenching. D) Sedimentation.
30. Colloform textures are common in: A) Magmatic cumulates. B) Open-space deposition (Hydrothermal). C) High-grade metamorphism. D) Deep mantle rocks.
31. "Comb structure" is a characteristic of: A) Replacement of limestone. B) Hydrothermal fluids in open fissures. C) Exsolution in sulfides. D) Deformation twinning.
32. The process of estimating the temperature of formation is: A) Geobarometry. B) Geothermometry. C) Paragenesis. D) Zoning.
33. Which mineral form indicates "Very Low" temperature? A) Pyritohedron Pyrite. B) Colloform Pyrite. C) Octahedron Pyrite. D) Cubic Pyrite.
34. Smoky quartz loses its color at approximately: A) 100°C. B) 250°C. C) 500°C. D) 900°C.
35. High temperature (Magmatic) mineral assemblages include: A) Cinnabar-Stibnite. B) Chromite-Olivine. C) Quartz-Galena. D) Goethite-Limonite.
36. "Pentlandite flames" are found within: A) Pyrite. B) Pyrrhotite. C) Chalcopyrite. D) Sphalerite.
37. What texture forms from rapid cooling in Basalt? A) Poikilitic. B) Skeletal. C) Cumulus. D) Oolitic.
38. Supergene minerals are formed by: A) Ascending hydrothermal waters. B) Descending meteoric waters. C) Magmatic segregation. D) Regional metamorphism.
39. "Poikiloblasts" are typical of: A) Weathering. B) Metamorphism. C) Open space filling. D) Volcanic ash.
40. The term "-blastic" refers to minerals of ____ origin: A) Igneous. B) Sedimentary. C) Metamorphic. D) Organic.
41. Cataclasis and Brecciation are textures resulting from: A) Cooling. B) Deformation. C) Exsolution. D) Solid-state diffusion.
42. Which is a "Quantitative" geothermometry method? A) Mineral Assemblage. B) Fluid Inclusions. C) Color changes in Fluorite. D) Crystal habit of Cassiterite.
43. Sphalerite color changes from black to yellow as: A) Temperature and Iron content decrease. B) Temperature and Iron content increase. C) It is replaced by Gold. D) It undergoes deformation.
44. Replacement is often identified by "Islands" that have: A) Different optical orientation. B) The same optical orientation as the host. C) No internal reflections. D) Framboidal shapes.
45. Which mineral replaces others preferentially according to the rules? A) Gangue replaces Ore. B) Sulfides replace Gangue. C) Oxides always replace Sulfides. D) Silicates never replace host rock.
46. Non-matching walls of a fracture indicate: A) Simple open space filling. B) Replacement working outward from a fissure. C) Exsolution. D) Cataclasis.
47. Fluorite loses its color at about: A) 50°C. B) 175°C. C) 400°C. D) 800°C.
48. Paragenesis refers to: A) The depth of the ore body. B) The sequence of mineral deposition. C) The chemical formula of the ore. D) The hardness of the mineral.
49. "Zoning" in minerals can be caused by: A) Changes in the rate of growth. B) Variations in chemical composition. C) Pauses in deposition. D) All of the above.
50. Which is a "Low Temperature" assemblage? A) Magnetite-Ilmenite. B) Cinnabar-Stibnite. C) Cassiterite-Topaz. D) Olivine-Chromite.

End of Exam

	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Geology Department	Program: Geology & Geophysics Level : (4) Date: 3/1/2026 Time: 2 h	
Course Title: Engineering Geology and Mining Geology		Code: 407G	
Instructors: Prof. Dr. Galal El Habaak & Prof. Dr. Gamal Yehia			
Important:	No. of pages : Three	No. of questions: Two parts	Total Mark: 50 degree

Part (1) – Engineering Geology (25 Marks)

Answer the following questions:

Select the correct answer: (one Mark for each)

- Engineering Geology is a hybrid science consisting mainly of:** (A) Physics and Chemistry (B) Biology and Geography (C) Geology and Civil Engineering
- A "Geologist" traditionally sees the earth as:** (A) Complex, heterogeneous, and anisotropic (B) Simple and uniform (C) Symmetrical
- "Risk" is a function of the product of:** (A) Probability of occurrence and potential loss (B) Speed and Time (C) Height and Weight
- The formula for Stress (σ) is:** (A) Mass / Volume (B) Force / Area (C) Force $\times$ Area
- Weathering generally _____ rock strength and hardness.** (A) Increases (B) Has no effect (C) Decreases
- Normal stress acts _____ to the surface.** (A) Perpendicular (B) Parallel (C) At 45 degrees
- Which particles are primarily larger than 4.75 mm?** (A) Silt (B) Coarse aggregate (C) Fine aggregate
- Granular soils achieve greater strength when they are:** (A) Uniformly sized (B) Wet (C) Well-graded (dense mixture)
- Petrographic analysis is used to identify:** (A) Deleterious (harmful) substances in rock (B) The price of stone (C) The weight of trucks
- "Riprap" consists of large stones used to control:** (A) Air pollution (B) Erosion (C) Noise
- Washed sieve analysis is used to determine the amount of material passing the:** (A) 4.75 mm sieve (B) 19 mm sieve (C) 75 μ m sieve
- Natural sand and gravel are often deposited in:** (A) River deposits and beaches (B) Volcanoes (C) Deep caves
- The stability of a slope is expressed by the ratio of resisting forces to:** (A) Friction (B) Driving forces (C) Gravity
- A slope is considered stable if the Safety Factor (SF) is:** (A) Less than 1 (B) Greater than 1 (C) Equal to 0
- "Slump" is a sliding movement along a:** (A) Vertical fall (B) Curved slip plane (C) Straight line
- Which of the following increases driving forces on a slope?** (A) Adding heavy buildings at the top (B) Removing water (C) Planting trees
- "Creep" is a type of mass wasting that is:** (A) Extremely fast (B) Very slow (C) Only in water
- Water reduces slope stability by:** (A) Increasing friction (B) Increasing pore water pressure and weight (C) Making the material dry
- ICOLD defines a "Big Dam" as having a height greater than:** (A) 5m (B) 15m (C) 50m

20. A "Gravity Dam" holds back water using its: (A) Arch shape (B) Steel cables (C) Sheer weight
21. Which dam is best for a narrow canyon with strong rock walls? (A) Arch Dam (B) Embankment Dam (C) Small Dam
22. The "Impervious Core" in an embankment dam is usually made of: (A) Sand (B) Clay (C) Concrete
23. "Rock Burst" is a violent failure that occurs in: (A) Soft clay (B) Wet sand (C) Hard, brittle rock under high stress
24. "Squeezing Ground" is typical in tunnels through: (A) Weak materials like clay or shale (B) Granite (C) Basalt
25. Which gas in tunnels is highly toxic and smells like rotten eggs? (A) CH₄ (B) H₂S (C) CO₂

Part (2) – Engineering Geology (25 Marks)

Q1: Mark correct (✓) or non-correct (x) (10 Marks)

- 1- Prospecting refers to the initial exploration, which is carried out from the surface
- 2- Vertical shaft established in the ore require significant maintenance.
- 3- If the ore is covered with a small thickness, the best is to use large drilling machines
- 4- Block caving mining Includes drilling holes underground, beneath the ore body.
- 5- Exploration, it is an advanced process of exploration by which the position of the ore body, the grade and quantity of the ore are determined.
- 6- Inclined shaft are used to raise ore from the mine to the surface and they are also used for entering and exiting it.
- 7- In-situ mining is the method of recovering minerals from earth without extracting
- 8- Gyratory crusher used for primary crushing and depends on pressure.
- 9- Mills are used for fine crushing of materials whose diameter does not exceed 20 mm.
- 10- Impact crusher used for secondary and tertiary crushing and relies on impact

Q2- Mention the Factors affecting the choice of concentration method? (5 Marks)

Q3- Mention the advantages extraction operations exposed by surface mining and quarrying? (5 Marks)

Q4- The following sampling results are taken along the drift of narrow tabular deposits. (5 Marks)

point	thick, in	Assay,%
1	40	20
2	50	25
3	55	22
4	50	21
5	45	23
6	43	24
7	45	20
8	55	19

Determine :

- 1) The Av. Assay.
- 2) The Av.thickness.

End of Exam

Best Wishes Prof. Dr. Galal El Habaak
Prof. Gamal yehia



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

Time: Two Hours

(50 degree Total)

May, 2026

PART-II: Sequence Stratigraphy (25 degree)

(Illustrate your answer by diagrams):

I - Answer TWO question ONLY of the following: **(10 marks)**

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

II - Choose the correct answer for the following statements **(12 marks)**

4. the movement of coastline landward in response to a transgression; can occur during sea level rise with low sediment flux
 - a. retrogradational
 - b. formation
 - c. progradational
 - d. accommodation
5. 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
 - d. Astroblemes and other allochthonous events that can have local and regional implications, resulting in unique traps
6. Bounding surfaces
 - a. Are subdividing surfaces of the sedimentary section and are commonly generated by the changing relative sea level.
 - b. Surfaces that never tie to rebounds due to isostasy and eustasy.
 - c. Are boundaries that never have to do with shales and TOC, and cannot be considered key indicators of the kitchen.
 - d. Are blurring surfaces that have to do with fracture patterns.
7. Stacking patterns include
 - a. Parasequence
 - b. Progradation
 - c. Retrogradation
 - d. Transgression
 - e. All of the above

8. 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

9. A highstand systems tract consists of

- a. All the transgressive deposits that accumulated after the onset of a relative sea-level fall and before the start of the next relative sea-level rise.
- b. Formed during the late stage of relative sea level rise and the beginning of sea level fall.
- 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.

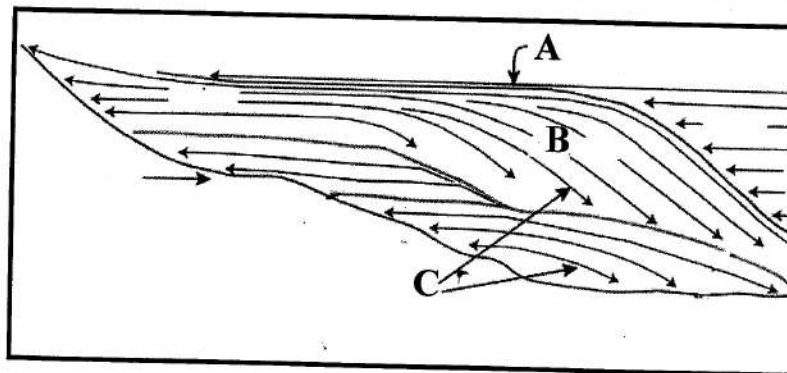
10. _____ formed when the transgressing sea reworks either the prior sequence boundary or the sediments that may have collected during the forced regression that may have followed the generation of that sequence boundary.

- a. Condensed sequences
- b. Ravinement erosion surface
- c. Contact metamorphosis
- d. Secondary dolomite mixed with sphalerite

11. 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

12. Identify the different types of seismic reflections and terminations given in the following figure. (3 marks)



A-

B-

C-

GOOD LUCK

Prof. Dr. Ahmed-Reda El Younsy

(23-May, 2026)

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Geology Department	Program: Special Geology & Geophysics Level: (4) Date: 20/5/2026 Time: 2 h	
Course Title: Economic Geology		Code: 434G	
Instructors: Prof. Dr. Galal El-Habaak			
Important:	No. of pages 4	No. of questions: Two parts	Total Mark: 50 degrees

Answer the following questions

Part I: Multiple Choice Questions (25 Marks)

Select the most appropriate answer (1 Mark each):

على الطالب رسم جدول في كراسة الإجابة، يُسجل فيه رقم السؤال والحرف المقابل للإجابة الصحيحة فقط (a, b, c, or d).
(يُرجى عدم إعادة كتابة نص الإجابة داخل الجدول، والاكتفاء فقط بكتابة رمز الإجابة)

1. A mineral resource is classified as an "Ore" if it: a) Contains any amount of metallic elements. b) Consists entirely of silicate minerals. c) Can be extracted legally and at an economic profit. d) Is distributed uniformly throughout the Earth's crust.
2. The unwanted or non-economic minerals that occur alongside ore minerals in a deposit are termed: a) Gangue. b) Reserves. c) Placers. d) Skarns.
3. Early magmatic deposits formed by gravitational settling of early-formed crystals in a magma chamber are typical of: a) Porphyry copper deposits. b) Hydrothermal quartz veins. c) Supergene enrichment zones. d) Bushveld-type Chromite layers.
4. Which of the following processes is responsible for the formation of "Immiscible Sulfide Droplets" in mafic magmas? a) High-temperature hydrothermal leaching. b) Magmatic segregation where a sulfur-rich liquid separates from a silicate melt. c) Surface weathering and oxidation. d) Regional metamorphism of organic shales.
5. Porphyry deposits are characteristically associated with which tectonic setting and rock type? a) Mid- Ocean ridges and basaltic flows. b) Stable cratons and komatiites. c) Subduction zones and calc-alkaline porphyritic intrusions (felsic to intermediate). d) Extensional rifts and evaporite basins.
6. The typical hydrothermal alteration zone found at the core of a classic porphyry copper deposit is characterized by K-feldspar and biotite, and is known as: a) Potassic alteration. b) Argillic alteration. c) Propylitic alteration. d) Phyllic alteration.

7. During the very late stages of granitic magma crystallization, water and incompatible elements concentrate to form coarse-grained rocks rich in rare minerals called: a) Basalts. b) Peridotites. c) Rhyolites. d) Pegmatites.
8. Skarn deposits are formed primarily by contact metamorphism and metasomatism when an igneous intrusion reacts with: a) Sandstones. b) Carbonate rocks (Limestone or Dolostone). c) Basaltic lava flows. d) Granitic gneisses.
9. The Platinum-Group Elements (PGE) are highly "siderophile" and "chalcophile," meaning they have a strong affinity for: a) Silicates and water. b) Oxygen and halogens. c) Carbonates and phosphates. d) Iron and sulfur.
10. Volcanogenic Massive Sulfide (VMS) deposits are formed on or near the seafloor primarily associated with: a) Underwater hydrothermal vents (Black smokers) at mid-ocean ridges. b) Continental desert sand dunes. c) Shallow meteoric groundwater evaporation. d) High-grade regional metamorphic gneisses.
11. Which mineral property allows heavy minerals like Gold, Tin (Cassiterite), and Ilmenite to concentrate in placer deposits? a) High solubility in river water. b) High specific gravity and resistance to chemical weathering. c) Low melting point. d) Fibrous crystal habit.
12. Banded Iron Formations (BIFs), such as the Lake Superior type, are sedimentary deposits that formed primarily during: a) The Cenozoic era, through volcanic ash accumulation. b) Modern river delta precipitation. c) The Precambrian era, due to the rise of oxygen in the atmosphere and oceans. d) High-grade contact metasomatism.
13. Secondary Enrichment (or Supergene enrichment) occurs when downward-percolating groundwater: a) Heats up near a magma chamber to form hydrothermal fluids. b) Cools the crystalline rocks to cause magmatic segregation. c) Directly deposits placer minerals in stream beds. d) Leaches metals from the upper oxidized zone and reprecipitates them below the water table.
14. The target zone of supergene enrichment where secondary copper sulfides like chalcocite form is located: a) In the gossan cap at the surface. b) Deep within the unweathered potassic core. c) Exclusively within modern soil horizons. d) Just below the water table in the reducing (hypogene) zone.
15. The most common type of asbestos mineral utilized commercially, belonging to the serpentine group, is: a) Crocidolite. b) Amosite. c) Chrysotile. d) Tremolite.

16. Hydrothermal mineral deposits are most commonly formed when hot, metal-rich solutions enter a cooler environment, causing the metals to: a) Precipitate from the solution (e.g., gold in quartz veins). b) Dissolve completely into the wall rocks. c) Evaporate instantly into the atmosphere. d) Turn into immiscible liquid sulfide droplets.
17. Which of the following mineral deposits is formed primarily through chemical precipitation and intense evaporation in restricted water basins? a) Porphyry copper complexes. b) Stratiform chromite layers. c) Epithermal gold veins. d) Gypsum and Halite.
18. The highest grade of coal, characterized by the highest carbon content and density, formed under intense metamorphic pressure and temperature, is: a) Peat. b) Anthracite. c) Lignite. d) Bituminous.
19. The term "Stockwork," frequently observed in porphyry copper deposits, refers to: a) A massive, single tabular vein of quartz. b) The mechanical sorting of grains in a river. c) A network of dense, interconnecting micro-veinlets carrying ore minerals. d) The extraction machinery used in underground mining.
20. Which of the following is considered a precious gem mineral belonging to the beryl family? a) Emerald. b) Ruby. c) Sapphire. d) Diamond.
21. Kimberlite pipes are volcanic features that are primary geological sources for: a) Platinum-group elements. b) Hydrothermal silver veins. c) Diamonds. d) Disseminated gold ores.
22. The concentration factor of a mineral resource measures: a) The total tonnage of ore available in a mine. b) The depth of the mineralized zone beneath the surface. c) The percentage of gangue minerals relative to the ore. d) The ratio of the ore's grade necessary for economic mining to its average crustal abundance.
23. Hydrothermal deposits formed at shallow depths and low temperatures (50 C to 200 C), often distal to the igneous source, are classified as: a) Epithermal. b) Hypothermal. c) Mesothermal. d) Pyrometasomatic.
24. "Gossan" is a geologic term describing: a) A high-grade magmatic nickel ore. b) An iron-rich, oxidized weathered rock capping an underlying sulfide deposit. c) A specific texture found only in pegmatites. d) A type of placer gravel rich in gemstones.
25. The primary and most economically important copper ore mineral found in the hypogene zone of classic porphyry deposits is: a) Malachite. b) Azurite. c) Chalcopyrite. d) Chrysocolla.

Part II: Essay Questions (25 Marks)

Answer ONLY FIVE (5) questions out of the following SEVEEN (7) (5 Marks each):

1. Evaporites are crucial non-metallic sedimentary deposits. Explain the paleoclimatic and tectonic conditions necessary to form thick sequences of Gypsum and Halite, and highlight their economic significance in modern industries.
2. Compare and contrast in detail between banded iron formations (BIFs) and ironstones. Your comparison should clearly highlight differences in their geological age (Precambrian vs. Phanerozoic), mineralogy, and primary sedimentary environments of deposition.
3. Discuss the mechanisms of Early Magmatic Deposits. Focus heavily on how fractional crystallization and gravitational settling lead to the formation of stratiform chromite layers, citing the Bushveld Igneous Complex as a case study.
4. Explain the concept of Magmatic Liquid Immiscibility (Late Magmatic segregation). Describe how a sulfur-saturated mafic magma separates into silicate and sulfide liquids, and how this process concentrates Platinum-Group Elements (PGE) and Nickel-Copper sulfides.
5. Placer Deposits represent a key sedimentary concentration mechanism. Discuss the specific physical properties (such as specific gravity and chemical durability) required for minerals to form placers, and describe three distinct environments where they accumulate.
6. Outline the progressive metamorphic stages of coal formation (from Peat to Anthracite), explaining how carbon content changes.
7. Briefly classify Asbestos minerals into their two main groups and state why their physical structure presents severe environmental and health occupational hazards.

End of Exam

Best Wishes

Prof. Dr. Galal Hamed El Habaak



Assiut University- Faculty of Science
First Semester- Final Exam 2025-2026
Geology Department

Program: Special
geology
Level : (4)
Date: 4/6/2026
Time: 2 h



Course Title: Mineral Exploration and Industrial Minerals and Rocks			Code: 435G
Instructors: Prof. Dr. Awad Abdel-Khalek Omran & Prof. Dr. Galal Hamed El Habaak			
Important:	No. of pages 3	No. of questions Two parts	Total Mark: 50 degree

Part (I) - MINERAL EXPLORATION (25 Marks)

I- Answer the following question: -

- 1- What are the differences between SP curves over buried vein bearing-pyrite situated below the groundwater table and that situated above groundwater table. (5 Marks)

II- Answer only two of the following questions:

- 1- Discuss the proper geophysical methods which give high accurate results in investigating iron-rich deposits. (10 Marks)
- 2- If you have Chromite ore body buried at depths ranging from 10 to 30 m below the ground surface (density about 4.5 g/cm^3) with spheroidal shape. Discuss how you can use the gravity method in estimating depth, mass and volume of this body. (10 marks)
- 3- Salt dome of hydrocarbon accumulation can be easily investigated by: (10 Marks)
 - a- Gravity method
 - b- Seismic reflection method
 - c- Both a & b

Comment on your choice and show how the depth to the salt can be estimated

Part (II) - INDUSTRIAL MINERALS AND ROCKS (25 Marks)

Multiple Choice Questions (25 Marks - 1 Mark each)

Instructions: Answer ALL the following questions. Choose the single best answer:

(على الطالب رسم جدول في كراسة الإجابة، يُسجل فيه رقم السؤال والحرف المقابل للإجابة الصحيحة فقط)
(يُرجى عدم إعادة كتابة نص السؤال أو نص الإجابة داخل الجدول، والاكتفاء فقط بكتابة رمز الإجابة)

1. Two primary diagnostic industrial properties for Silica Sand are: a) High water solubility and low melting point. b) High plasticity and high cation exchange capacity. c) Extremely heat durable and chemical stack resistance. d) Perfectly fibrous habit and strong acidic reaction.
2. Paper uses fibers to provide strength. From which component do the smoothness and reflective properties come? a) The mineral filler added to the pulp. b) The unbleached organic cellulose fibers. c) Concentrated acidic fluids used during pressing. d) Synthetic liquid polymer coatings applied later.
3. Which industrial mineral filler dominates the paper market and specifically provides the brightness to the surface of the paper sheets? a) Barite b) Talc c) Wollastonite d) Kaolin
4. Each functional filler has a specific purpose in paper. What is the clear role of adding Talc to the paper mix? a) To increase the paper sheet's specific gravity to 4.5. b) To help prevent clumping of wood fibers. c) To act as a primary fire-retardant agent. d) To adsorb massive quantities of expensive binder oils.
5. Which specific functional filler is added to paper matrices because it releases a lot of water at low temperatures, making the final paper more fire-retardant? a) Titanium Dioxide b) Amorphous silicates c) Pyrophyllite d) Alumina Tri-hydrate.

6. In Paint and Ceramics filler applications, which mineral provides great whiteness but is noted to be more expensive? a) Wollastonite b) Titanium Dioxide c) Pyrophyllite d) Ground Powdered Calcium Carbonate
7. Wollastonite has an outstanding property that makes it highly useful in ceramic and paint mixtures. Upon heating, it provides: a) Complete structural collapse and volume loss. b) Massive release of carbon dioxide gas. c) Permanent expansion on heating. d) Immediate transformation into a low-viscosity liquid flux.
8. In the Plastics and Polymers sector, what is the dominant mineral material utilized as a ground powdered filler? a) Ground powdered calcium carbonate b) Calcined clay c) Ground Talc d) Barite
9. Which ground filler is described as soft, provides very smooth surfaces, and uniquely makes it easier to get plastic products out of molds like a lubricant? a) Calcined clay b) Barite c) Ground Talc d) Silica sand
10. Why is Calcined Clay specifically favored as an engineered mineral filler? a) Because it exhibits a very high specific gravity of 4.5. b) Because it expands permanently upon mild heating. c) Because it contains high percentages of raw metallic iron. d) Because it absorbs plasticizers well.
11. Titanium Dioxide minerals are added to plastic composites to provide two core functional properties. These properties are: a) Whiteness and UV resistance. b) High moisture absorption and low melting factors. c) Fibrous lubrication and structural clumping reduction. d) High oil absorbance and acid generation.
12. Pyrophyllite is structurally and physically similar to talc, serving many identical industrial applications. Chemically, however, pyrophyllite is distinguished from talc by containing: a) Calcium instead of Iron. b) Aluminium instead of Magnesium c) Carbonate groups instead of silicate sheets d) Higher concentration of Sodium and Potassium
13. Which of the following volcanic materials contains hydrated natural glass that expands dramatically (pops like popcorn) when rapidly heated to high temperatures, creating an ultra-lightweight thermal insulator? a) Perlite b) Vermiculite c) Diatomite d) Pumice
14. Which of the following sequences correctly illustrates the progressive geological stages of coal formation and increasing rank with depth and temperature? a) Anthracite, then Bituminous, then Lignite, then Peat. b) Lignite, then Peat, then Anthracite, then Bituminous. c) Peat, then Anthracite, then Lignite, then Bituminous. d) Peat, then Lignite, then Bituminous, then Anthracite
15. Silica Sand exhibits outstanding technical and thermal properties that make it an irreplaceable raw material for which group of major industrial sectors? a) Nuclear fuel rods and structural lightweight expanded aggregates. b) Glass manufacturing and foundry industries. c) Heavy-medium gravity separation and organic plasticizer synthesis. d) Paper pulp bleaching and agricultural soil acidification.
16. The refractory and ceramic industries demand minerals that maintain structural integrity at extreme temperatures. Which group of aluminosilicate minerals is specifically utilized for manufacturing high-temperature kiln linings and spark plugs due to their high thermal stability? a) Talc, Pyrophyllite, and Wollastonite. b) Halite, Sylvite, and Fluorite. c) Sillimanite, Kyanite, and Andalusite. d) Bentonite, Illite, and Sepiolite.
17. For the manufacturing of high-quality glass containers and fiberglass, the chemical purity of Silica Sand is strictly regulated. Which detrimental impurity must be kept at absolute minimum levels (often <0.03%) to avoid unwanted green tinting? a) Aluminum Oxide. b) Calcium Oxide. c) Potassium Oxide. d) Iron Oxide.
18. Diamond, Garnet, and Corundum are industrial minerals heavily utilized in the abrasives industry. What determines the selection of Garnet over Quartz for high-pressure waterjet cutting and sandblasting? a) Lower specific gravity and superior water solubility. b) Perfect rhombohedral cleavage that creates

- smooth, blunt surfaces. c) Higher Mohs hardness (7.5 - 8.0) and sub-conchoidal, sharp-edged fracture mechanics. d) High thermal expansion that causes grains to shatter upon impact.
19. Which industrial mineral is utilized in water treatment plants and swimming pools to purify water by removing impurities down to 0.1 micron without the use of filtration chemicals? a) Barite. b) Diatomite. c) Wollastonite. d) Perlite.
20. Lithium is an essential economic element primarily utilized in the manufacturing of high-energy batteries for: a) Heavy industrial solar cell panels. b) Traditional lead-acid generator units. c) Nuclear power plant cooling systems. d) Electric vehicles and modern electronic devices.
21. Limestone plays a vital environmental role. It is used in air quality control to neutralize sulfur oxides from industrial stock gases, and in water treatment to: a) Increase the amount of dangerous toxic bacteria. b) Remove phosphorus and nitrogen, control odor, and kill bacteria. c) Melt the filtration framework at low temperatures. d) Lower the pH to turn water highly acidic.
22. Which of the following groups represents the core criteria typically evaluated during industrial filler selection? a) Cation exchange capacity, volcanic glass index, and magnetic susceptibility. b) Cost, hardness, particle size and shape, color, refractive index, and chemical properties. c) Thixotropic properties, geographic altitude, and biological activity. d) Radioactive decay rate, cleavage angles, and hydraulic conductivity.
23. Which group of industrial materials or elements is utilized in recycling operations within permanent magnets for the separation of metals from other wastes? a) Alumina Tri-hydrate. b) Rare Earths. c) Wollastonite. Minerals. d) Amorphous silicates
24. Which of the following groups of industrial minerals and rocks is primarily utilized in agricultural applications for soil conditioning, fertilizers, and moisture retention? a) Phosphates, Perlite, Vermiculite, and Dolomite. b) Barite, Fluorite, and Lead-bearing ores. c) Titanium Dioxide, Wollastonite, and Calcined Clay. d) Diamond, Garnet, and Structural Corundum.
25. Traditional applications of Graphite utilize its excellent thermal/electrical conductivity and reinforcement properties for which group of industries? a) Paper bleaching and water acidification. b) Potable water softening and acid rain neutralization. c) Steelmaking, refractories (high-temp. liners), batteries, and lubricants. d) Cosmetic whiteners and plastic mold lubrication only.

End of Exam

Prof. Dr. Awad Abdel-Khalek Omran

Prof. Dr. Galal Hamed El Habaak

	Assiut University- Faculty of Science First Semester- Final Exam 2025-2026 Geology Department	Program: Special geology Level : (4) Date: 29/12/2025 Time: 2 h	
Course Title: Mineral Exploration and Industrial Minerals & Rocks		Code: 435G	
Instructors: Prof. Dr. Awad Abdel-Khalek Omran & Prof. Dr. Galal Hamed El Habak			
Important: 3	No. of pages	No. of questions: Two parts	Total Mark: 50 degree

Part (1) - MINERAL PROSPECTING (25 Marks)

Answer the following questions (Clarify your answer with suitable graphs):

Q1- Select the correct answer: (5 Marks)

- 1- What is an indicator of the likely existence of mineral deposits at depth?
 - A. Ancient mining techniques.
 - B. Shear zones.
 - C. Lineament patterns.
 - D. Surface weathering of metallic deposits.
- 2- Which instruments are used for mapping at large scales in prospecting purposes?
 - A. Aerial photographs and satellite images.
 - B. Rock/soil sampling tools.
 - C. GPS survey instruments and theodolite.
 - D. Drill holes and mine workings.
- 3- What is essential for the long- and short-term purposes of any type of mineral prospecting project?
 - A. Chemical analytical laboratory.
 - B. Accurate topographic map.
 - C. Field operation techniques.
 - D. Geological mapping.
- 4- After digital processing of satellite images, extraction of geological information for mineral prospecting is carried out by:
 - A. Professional geologist.
 - B. Applying Spectral and photogeological approaches.
 - C. Utilizing GPS technology.
 - D. Using electronic total stations.
- 5- Which of the following is NOT an important role of remote sensing (RS) in mineral prospecting?
 - A. Determine ore deposits depth and geometry.
 - B. Reduce the cost of exploration.
 - C. Cover large amounts of land surface
 - D. Isolate potential ore bearing provinces.

Q2- Demonstrate briefly FIVE ONLY of the following items: (3 Marks for each)

- i. The three main issues which geochemical prospecting methods are based on.
- ii. Role of magnetic method in detecting mineral ores directly and indirectly indicating the targeting ores in each case.
- iii. Geological guides for ore prospecting.
- iv. Measured parameters, units, tool name and anomaly causes in gravity methods of prospecting for mineral deposits.
- v. Important factors for planning a successful geophysical prospecting project.
- vi. Type of mineral ores that can be located using both active and passive well logging methods.
- vii. Geochemical sampling methods applied in mineral prospecting processes giving examples of ore deposits located by each selected method.

The remaining questions are on the next page

Q3 - Put (T) for true sentence or (F) for false sentence: (5 Marks)

- 1- For recognizing K, U and Th rich mineral deposits, RGB methods are used in radioactive prospecting ().
- 2- Remote sensing measures magnetic susceptibility to detect the depth and geometry of mineral ores ().
- 3- Geochemical prospecting is employed to determine the chemical compositions and concentrations of deep underground minerals ().
- 4- The disseminated mineral deposits can be explored by seismic methods ().
- 5- Passive geophysical techniques are utilized to measure changes in natural fields in a specific area for the purpose of mineral prospecting ().

Part (I1) - INDUSTRIAL MINERALS AND ROCKS (25 Marks)

Answer the following questions:

Select the correct answer: (one Mark for each)

1. Which of the following are industrial uses of talc?
A) Cosmetics, B) Paint, C) Lubricants, D) Fertilizer
- 2.. Which of the following are characteristics of industrial minerals?
A) Widely distributed, B) High economic value, C) Often require complex refining, D) Used for metals production
- 3.. Minerals important for glass production include:
A) Quartz, B) Feldspar, C) Talc, D) Gypsum
- 4.. Which of the following are major applications of limestone?
A) Cement production, B) Soil stabilization, C) Paint production, D) Electronics
5. Which of the following minerals are considered critical for green technologies?
A) Beryllium, B) Aluminum, C) Quartz, D) Graphite
6. Minerals used in ceramics include:
A) Kaolin, B) Feldspar, C) Pyrophyllite, D) Halite
7. Minerals used for air quality control in industrial processes include:
A) Zeolites, B) Asbestos, C) Perlite, D) Graphite
8. Minerals that react with hydrochloric acid include:
A) Calcite, B) Dolomite, C) Quartz, D) Halite
9. Which of the following minerals are magnetic?
A) Magnetite, B) Hematite, C) Pyrite D) Iron metal
10. Minerals used in lightweight concrete or plaster include:
A) Perlite, B) Vermiculite, C) Barite, D) Talc
11. Which minerals are important in steelmaking?
A) Bentonite, B) Limestone, C) Quartz, D) Dolomite
12. Which of the following minerals are used for water treatment?
A) Diatomite, B) Zeolites, C) Halite, D) Talc,

13. Minerals used in agriculture include:

A) Phosphates, B) Borates, C) Clays, D) Graphite

14. Minerals used in drilling mud include:

A) Barite, B) Bentonite, C) Talc, D) Graphite

15. Minerals used in paper coating for glossiness include:

A) Kaolin, B) Calcium carbonate, C) Talc, D) Barite

16. Minerals used as lubricants include:

A) Graphite, B) Talc, C) Mica, D) Quartz

17. Minerals used in lithium-ion batteries include:

A) Graphite, B) Lithium minerals, C) Bauxite, D) Platinum

18. Green technologies that use industrial minerals include:

A) Solar panels, B) Wind turbines, C) Gasoline engines, D) Electric vehicles

19. Minerals commonly used in hybrid and electric car batteries include:

A) Lithium minerals, B) Graphite, C) Talc, D) Platinum

20. Minerals used in semiconductor and electronics industries include:

A) Silicon, B) Graphite, C) Bauxite, D) Lithium

21. Minerals that help in air pollution control include:

A) Zeolites, B) Bauxite, C) Barite, D) Dolomite

22. Minerals used in lubricants include:

A) Graphite, B) Talc, C) Mica, D) Garnet

23. Minerals that are used as fillers in plastics include:

A) Calcium carbonate, B) Talc, C) Kaolin, D) Graphite

24. Minerals used for energy storage and batteries include:

A) Lithium minerals, B) Graphite, C) Platinum, D) Bauxite

25. Which mineral is used to prevent oil caking in plastics and explosives?

A) Diatomite, B) Talc, C) Kaolin, D) Calcium carbonate

End of Exam

**Best Wishes Prof. Dr. Awad Abdel-Khalek Omran
Prof. Dr. Galal Hamed El Habak**

Assiut University
Faculty of Science
Geology Dept

جامعة أسيوط
كلية العلوم
قسم الجيولوجيا

Final Exam. In Radiometric & Geothermal Course (G452)
for Fourth year Students (Geophysics Group)
May, 2026 (50 marks) Time: 2 hours

- 1- Define the following : (10 marks)
Heat flow - Half-life - Curie - Element - Thermal distribution - Roentgen -
Beta particle - Isotopes - Thermal conductivity - Aprobe - Gamma ray -

- 2- Complete SIX ONLY of the Following : (10 marks)

- 1- Radiation is energy in the form of travel from
- 2- Potassium is a common
- 3- Zircon is the most common mineral used for
- 4- Tritium has half- life of about years
- 5- The C14 method has used for dating.....
- 6- Alpha particle is
- 7- Argon produced by the decay of

- 3- Write on THREE ONLY of the following : (20 marks)

1. Causes of Local Variation in Temperature
2. Geologic Events dated by Radiometric method
3. The importance of studying the radioactivity of rocks and minerals
4. Thermal measurements have provided regional and local information

- 4- Complete SIX ONLY of the following : (10 marks)

1. The Oceanic crust is and has lower
2. The temperature increases with depth.....
3. Rubidium has two half-life times , ...
4. Thermal conductivity controlled by , ...
5. The quantity of thermal energy that the earth is losing
6. The Continental crust is and has higher
7. The greater the depth the greatest of and the lowest.....

=====Good Luck=====

Dr. Mohamed Fekry Khalil

	Assiut University- Faculty of Science Second Semester- Final Exam 2025-2026 Geology Department	Program: Special geology Level: (4) Date: 14/5/2026 Time: 2 h	 كلية العلوم جامعة أسيوط
Course Title: Geoarchaeology		Code: 458G	
Instructors: Prof. Dr. Galal El-Habaak			
Important:	No. of pages 2	No. of questions: Two parts	Total Mark: 50 degrees

Answer the following questions

Part I: Multiple Choice Questions (25 Marks)

Select the most appropriate answer (1 Mark each):

- على الطالب رسم جدول في كراسة الإجابة، يُسجل فيه رقم السؤال والحرف المقابل للإجابة الصحيحة فقط (a, b, c, or d).
 (يُرجى عدم إعادة كتابة نص الإجابة داخل الجدول، والاكتفاء فقط بكتابة رمز الإجابة)
- Regarding the Turin Papyrus Map (1150 B.C.), which of the following is true? a) Its orientation is North at the top. b) Its orientation is South at the top and pink color represents crystalline rocks. c) It depicts a 15 km stretch of the Nile Delta. d) It was used primarily for agricultural planning.
 - Understanding Prehistory is a puzzle because there are no written records; therefore, archaeologists often: a) Find all answers in ancient books. b) Make inferences or guesses based on artifacts like grinding equipment. c) Use daily diaries left by prehistoric people. d) Rely on digital archives from that era.
 - The durability of a building stone is a property of maximum importance, determined by: a) Price, Location, and Transport. b) Structures, Texture, and Mineral Composition. c) Size, Shape, and Storage conditions. d) Colour, Aesthetic appeal, and Weight.
 - Seasoning of stones involves exposing the stone to open air for 6 to 12 months to: a) Make it softer for easier carving. b) Make it hard and compact. c) Change its chemical formula to silicate. d) Increase its water absorption capacity.
 - Which stone is commonly used as a roofing material for ordinary constructions? a) Granite. b) Slate. c) Marble. d) Basalt.
 - The most common geochemical method used in archaeological site prospecting is: a) Carbon isotope dating. b) Soil phosphate analysis. c) Magnetic susceptibility mapping. d) Potassium-Argon spectrometry.
 - Phosphates stay fixed to soil particles for thousands of years because: a) They are highly soluble in rainwater. b) They do not leach easily after organic decomposition. c) They are metallic elements resistant to oxidation. d) They are only found in ancient volcanic ash.
 - The technique used to distinguish between natural and anthropogenic (man-made) soils is: a) X-ray diffraction (XRD). b) ICP (Inductively Coupled Plasma) spectrometry. c) Fire-setting and quenching. d) Petrographic thin-sectioning only.
 - The Nabta Playa area in the Western Desert was heavily populated during Neolithic times due to: a) The discovery of gold mines. b) The presence of more than twenty water lakes or playas formed during wet phases. c) Its proximity to the Mediterranean Sea. d) The abundance of high-quality marble for building.
 - The physical context of an archaeological site has four major components, which are: a) Cost, Colour, Durability, and Location. b) Morphology, Soils, Stratigraphy, and Biota. c) Tools, Pottery, Gold, and Manuscripts. d) Erosion, Weathering, Heat, and Pressure.
 - Local Limestone was the primary material of choice for building: a) New Kingdom temples. b) Old Kingdom pyramids. c) Modern industrial dams. d) Roman period harbors.
 - The main quarry for ancient Egyptian Sandstone (New Kingdom choice) was: a) Tura quarries. b) Gebel el-Silsila. c) Aswan granite quarries. d) Faiyum basalt quarries.
 - In ancient masonry, Mortar was primarily a mixture of: a) Crushed granite and water. b) Gypsum or lime with sand and water. c) Pure bitumen and straw. d) Powdered marble and oil.

14. The Widan el-Faras quarry in Faiyum is famous for producing: a) High-grade Gold veins. b) Basalt for temple pavements. c) Red Granite for obelisks. d) Fine white Alabaster.
15. Egyptian Alabaster is geologically defined as: a) Crystalline igneous rock. b) Chemical sedimentary rock (Calcite). c) High-grade metamorphic rock. d) Volcanic glass (Obsidian).
16. Gold occurrences in the Eastern Desert are mainly confined within: a) Limestone and shale beds. b) Quartz veins in the Arabian-Nubian Shield. c) Deep coal and peat seams. d) Modern coastal sand dunes.
17. To obtain reliable results in Archaeogeophysical exploration, it is recommended to: a) Use only one single methodology. b) Combine at least 2-3 methodologies (e.g., Magnetism and GPR). c) Rely solely on local folklore and stories. d) Use only chemical leaching techniques.
18. In the geoarchaeological case study of Wadi Kubbaniya (Northwest of Aswan), the most significant discovery was: a) A large collection of Roman coins. b) A well-preserved Late Paleolithic human skeleton. c) A set of iron smelting furnaces. d) Evidence of modern industrial activity.
19. The primary source of Hard Stones like Granite was: a) Giza plateau. b) Aswan region. c) Minya limestone cliffs. d) Cairo's Mokattam hills.
20. Quicklime is produced through the process of: a) Hydration (adding water). b) Calcination (heating limestone). c) Smelting metallic ores. d) Forging under high pressure.
21. Archaeometry includes dating methods, analytical methods for artifacts, and: a) Detecting forgeries. b) Building military forts. c) Mining for industrial coal. d) Modern urban planning.
22. The iron oxide mineral known as Red Ocher, used for cave paintings and pottery decoration since the Mousterian tradition, is: a) Magnetite. b) Hematite. c) Pyrite. d) Galena.
23. Ancient miners used Fire-setting to: a) Light the dark mines for workers. b) Crack hard rocks by heating and quenching. c) Cook meals for the mining labor. d) Melt gold inside the quartz veins.
24. The cost of a building stone depends upon: a) Availability, Workability, and Location. b) Only its aesthetic color. c) The age of the geological formation. d) The chemical composition of its trace elements.
25. The term that describes the contribution of Geological Sciences to Archaeology is: a) Archaeometry. b) Archaeogeology. c) Geochronology. d) Paleobotany.

Part II: Essay Questions (25 Marks)

Answer ONLY FIVE (5) questions out of the following EIGHT (8) (5 Marks each):

1. Discuss the three main factors governing the choice of building stones: Cost, Colour, and Durability.
2. Explain the scientific basis for using Soil Phosphate Mapping to locate ancient human activities.
3. Describe the role of the post-depositional environment in determining the preservation of archaeological features.
4. Define Pottery and discuss the geological difference between Primary and Secondary clay deposits.
5. Define Archaeological Geology and list five of its major applications in archaeological investigations.
6. Compare the specific uses of Granites/Marbles versus Sandstones/Limestones in ancient architecture.
7. Define Seasoning of stones and explain why it is essential for structural integrity.
8. Define Artifact Analysis and Provenance, and explain how Neolithic obsidian was used to trace ancient trade networks.

End of Exam

Best Wishes

Prof. Dr. Galal Hamed El Habaak

Assiut University		Date: May 2026
Faculty of Science		Time: 2 hours
Geology Department		Final exam

Petroleum Geology and hydrogeology (G460), 4th level, special geology, geology/chemistry and geophysics groups, Total 50 marks

Part One Petroleum Geology (25 marks)

I. First question:

(10marks)

A. Complete the following:

1. API gravity is used for
2. High organic productivity requires
3. Driving forces for migration are
4. Porosity of reservoir rock can be determined by
5. Northern Western Desert has many productive sedimentary basins like

B. Define the following:

1. Naphthenic oil
2. Excellent source rock
3. Transformation ratio
4. Thermal maturation
5. Water Drive production

II. Second question: (10marks)

Explain shortly the following:

1. Petroleum system elements and processes
2. Kerogen type I and kerogen type III
3. Diagenetic processes affect the porosity in sandstone reservoir
4. Stratigraphic and diapiric traps

III. Third question: (5marks)

Put (✓) or (x) for the following sentences:

1. Large amounts of petroleum can be produced during exploration stage
2. Lignin and lipids organic matter are highly resistant to decaying
3. A high-quality reservoir rock contains cul-de-sac and closed pores
4. Pinch out is example of structural trap
5. The Red Sea province has limited hydrocarbon exploration

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

جامعة أسيوط
كلية العلوم - قسم الجيولوجيا

امتحان التحريرى للمستوى الرابع بكلية العلوم شعبة الجيولوجيا والكيمياء

المادة: خريطة مصر الجيولوجية (٤١٠ ج)
(Geologic Map of Egypt (415 G)

الزمن: ثلاث ساعات

الدرجة: ٥٠ درجة

دور يناير ٢٠٢٥/٢٠٢٦ م

ملحوظة: الامتحان يتكون من صفتين

Answer the following questions:

First Question: (10 Marks)

- 1) Discriminate in a geologic time table between the Cenomanian rocks at both north and south Sinai. (5 Marks)
- 2) Give reasons: (3 Marks)
 - I- The restricted occurrence of marine Triassic rocks in the north eastern part of Egypt.
 - II- The economic and scientific important of Carboniferous rocks in Egypt.
 - III- The absence of Paleozoic rocks in the most parts of Egypt.
- 3) Write briefly an essay on the early Cretaceous rocks at south Western Desert of Egypt. (2 Marks)

Second Question: (10 Marks)

1. In a geologic time table trace and arrange the Nile Valley Eocene rock units from the Upper to Lower Egypt, explaining the economic important of these rocks. (5 Marks)
2. Construct a geologic time table for the Neogene (Miocene & Pliocene) rock units at Wadi Syaitain, Red Sea, discussing the economic important of rock units if present. (5 Marks)

Third Question: (10 Marks)

1. Sketch the subsurface stratigraphic sequence of the Paleozoic strata in north Western Desert. (5 Marks)

2. Write briefly on the distribution of the basement rocks on the Eastern Desert of Egypt. (5 Marks)

Fourth Question: (10 Marks)

- Compare between the Hammamat sediments and the forearc sediments in Egypt.

Fifth Question: (10 Marks)

- Write brief notes on the history of Calcalkaline granites in Egypt.

Good Luck !
Prof. Dr. Nageh A. Obaidalla

2. Write briefly on the distribution of the basement rocks on the Eastern Desert of Egypt. (5 Marks)

Fourth Question: (10 Marks)

- Compare between the Hammamat sediments and the forearc sediments in Egypt.

Fifth Question: (10 Marks)

- Write brief notes on the history of Calcalkaline granites in Egypt.

Good Luck !
Prof. Dr. Nageh A. Obaidalla

	Assiut University- Faculty of Science Geology Department Second Semester- Final Exam 2025-2026	Level : (4) Date: 5/June/2026 Time: 2h	 كلية العلوم جامعة أسيوط
Course Title: Photo-geology and Remote Sensing		Code: G 445	
Instructors: Prof. Dr.Moustafa M. Youssef			
Important:	No. of pages : 2	No. Of questions: 4	Total Mark: 50 Marks

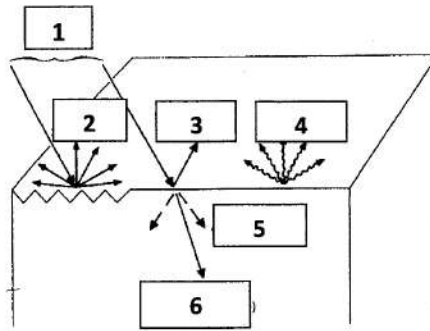
I. COMPLETE THE FOLLOWING SENTENCES : (10 marks)

1. The separation ability between objects of the sensor, which refers to the size of the smallest phenomenon that can be detected, is called.....
2. The orbit of the French satellite SPOT is repeated every.....
3. Satellites that see the same part of the Earth's surface at all times have orbits.
4. The Thermal infrared region extends from.....to.....micrometer.
5. The second and third generation of Landsat satellites orbit on height of approx. km.
6. Vertical aerial photographs are the pictures that are taken when the optical axis of the camera is.....
7. The land cover of oblique aerial photographs takes the form of
8. The second and third generation of Landsat satellites are distinguished by having revisit periods.....days.
9. Wave length intervals with high transmission are called and are used to acquire remote sensing images.
10. Landsat -8 images have multi spectral spatial resolutions m. panchromatic and m .other bands along a 185 km swath.

باقي الأسئلة على الصفحة التالية

II. The following figure shows the interaction processes between electromagnetic energy and matter, write the correct words in the boxes. (6 marks)

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....
- 6.....



III. Compare and contrast between Only Four of the following: (4 marks each)

1. Photographic and non-photographic Remote Sensing Systems.
2. Active and Passive sensors.
3. Geostationary and Near Polar satellite Orbits.
4. Spectral and spatial resolution of a Satellite sensor.
5. Cross-Track and Along Track Scanners.

IV. Write short notes on Three of the following (6 marks each)

- a. Microwave Remote Sensing
- b. Sun Synchronous Satellite Orbits .
- c. Thermal Remote Sensing.
- d. Generations of Landsat Satellites

GOOD LUCK!!

Prof.Dr. Moustafa M. Youssef

	Assiut University – Faculty of Science Second Semester – Final Exam 2025-2026 Geology Department	Program: Geology Date: 5/6/2026 Time: 2h	
Course Title: Palaeoecology & Biostratigraphy		Code: G414	
Instructors: Prof. Dr. Magdy S. Mahmoud			
Important:	No. of pages: 2	No. of questions: 5	Total Mark: 50 degree

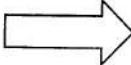
Answer the following questions:

Q1: Choose the correct answer; A, B, C or D (5 degrees; one degree each)

- 1- Selective degradation of organic-walled palynomorphs results from
A- increased surface salinity B- reduced chlorophyll-*a* concentration
C- increased bottom oxygen concentration D- decreased bottom temperatures
- 2- Comprehensive ecologic background on present-day organisms is necessary and required for a better understanding of
A- paleomagnetism B- lithostratigraphy C- paleoecology D- biostratigraphy
- 3- A is a temporarily applied name before a given taxon range zone can be formally established.
A- florizone B- overlap zone C- teil zone D- faunizone
- 4- Holocene dinoflagellates in present-day oceans respond to environmental gradients such as
A- sea surface temperatures and salinities B- bottom oxygen concentrations
C- chlorophyll-*a* concentrations D- all of them
- 5- Species that are used in global biostratigraphic correlation must
A- be rare but robust B- have preserved in a wide geographic areas
C- be long ranging D- be benthonic

Q2: Decide if the following is true (✓) or false (X) (10 degrees; one degree each)

- 1- Pollen and spore communities are used to restore paleovegetation and climate.
- 2- The "Partial Range Zone" is a zone that is characterized by the overlapping occurrence of more than one taxon.
- 3- Biostratigraphy is an alternative synonymous term of biogeochemistry.
- 4- Analogy is an operational base in biostratigraphic resolution.
- 5- The processes of fossil formation, from death of organisms until their final burial and preservation, are referred to as taphonomy.
- 6- Abundance zones refer to a bed or a group of beds which contain the maximum abundance of, for example, a pollen taxon.
- 7- Paleobiology is interested in the classification of rocks based on their fossil content.
- 8- Placing rocks and events into relative time orders and correlating them is called isotope stratigraphy.
- 9- An ecosystem refers to organisms and their controlling environmental gradients.
- 10- The last appearance of a given taxon refers to its time of evolutionary origin.

 **SEE BACK**

Q3: Write on THREE ONLY of the following: (15 degrees; 5 degrees each)

- A- Procedures of reliable biostratigraphic analysis
- B- Taphonomic processes
- C- Taxonomic uniformitarianism
- D- Geographic dispersal of organisms
- E- The community concept in paleoecology

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

- A- Autecology and synecology
- B- R-mode and Q-mode statistical analysis in paleoecology

Q5: Define the following: (10 degrees; 2.5 degrees each)

- A- Evolutionary paleoecology
- B- Species longevity
- C- Simplicity approach in paleoecology
- D- Bioerosion

_____ إنتهت الأسئلة مع أطيب الأمنيات بالتوفيق _____

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

جامعة أسيوط

كلية العلوم - قسم الجيولوجيا

امتحان التحريري للمستوى الرابع بكلية العلوم شعبتي الجيولوجيا والجيوفيزياء

المادة: جيولوجيا مصر (٤١٥ ج)

(Geology of Egypt (415 G)

الزمن: ثلاث ساعات

الدرجة: ٥٠ درجة

دور يناير ٢٠٢٥/٢٠٢٦ م

ملحوظة: الامتحان يتكون من صفحتين

Answer the following questions:

First Question: (10 Marks)

- 1- Correlate in a geologic time table the subsurface Miocene rock units at both the Nile Delta and Gulf of Suez regions and write the economic important for each one if present. (5 Marks)
- 2- Write an essay on the Oligocene rocks in Egypt. (2.5 Marks)
- 3- Discriminate between the Cenomanian rock units at south Sinai and south Western Desert. (2.5 Marks)

Second Question: (10 Marks)

- 1- Define the geologic age and the important of the following rock units (formations). (3 Marks)
A- Kharita B- Abu Roash C- Esna D- Masajid E- Halal F- Malha
- 2- Construct a geologic time table for the surface Paleozoic rock units in Egypt. (3.5 Marks)
- 3- In a geologic column, write on the Cretaceous rock units at the south Eastern Desert. (3.5 Marks)

Third Question: (10 Marks)

I- Choose the correct answer: (5 Marks)

- 1- Which of these would be good marker bed for dating in sedimentary sequence?
A- a widespread sandstone layer B- an index fossiliferous limestone
C- an calcareous shale D- none of these