بسم الله الرحمن الرحيم

University of Assiut
Faculty of Science
Department of Geology

3rd Level Examination for Geology, Geophysics and Geochemistry students
In Field Geology (306G)

Time: Two Hours **50 Marks** **May, 2019**

ملحوظة هامة: الأمتحان يتكون من صفحتين

Answer the following questions:

First Question (15 Marks)

1- Choose the correct answer: (10 Marks, one Mark for each)

i- The layered arrangement in sedimentary rocks is called
a) Mud cracks b) Stratification c) Rain prints d) Cross bedding

ii- Ripple marks caused by flow of water or wind in random directions.
a) Symmetrical ripples b) Asymmetrical ripples
c) Interference ripples d) All of these

iii- Lamination is structure formed in which type of sedimentary rocks?
a) Fine grained b) Medium grained c) Coarse grained d) Non of these

iv- Graded bedding occurs due to which phenomenon?
a) Wind settling b) Erosion c) Gravitational settling d) Loading

v- Which of the following does not provide evidence of shallow water environment?
a) Lamination b) Rain prints c) Ripple marks d) Mud cracks

vi- A rock that is formed at the earth's surface is?
a) Laccolith b) Dike c) Sill e- Flow

vii- Igneous rock that forms from lava on Earth's surface
a) Organic rock b) Intrusive rock c) Extrusive rock d) Clastic rock

viii- Igneous intrusions that cut across a set of rock strata must be.....that set of rock
a) younger than b) older than c) the same age as d) Non of these

ix- Metamorphic rock forms as a result of .....
a) Heat and pressure b) The cooling of magma
c) Compaction of sediments d) The melting of rock

x- Which of the following is not part of the formation of an angular unconformity?
a) Erosion b) Tilting c) Marine transgression d) Metamorphisn

2- Define only two of the following terms: (5 Marks)

i- Stratigraphic section ii- Conformable contact iii- Plutenic igneous rocks

Second Question (15 Marks)

1- Describe the uses of only three of the following instruments:

a) Steel chain b) GPS c) Theodolites d) Level (7 Marks)

2- Define only four of the following geologic structures, illustrating your answer by drawing:

a) Pahoehoe b) Vesicles c) Concretion d) Boring e) Flame structure (8 Marks)

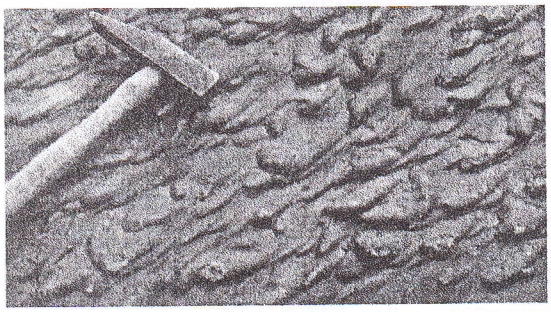
Third Questioin (20 Marks)

1- Redraw the showing geological photographs in a table and compare between them according to the following statements: (10 Marks)

a) Name and type of the geological structure

b) The formation of each one

c) The gological implication of each one

1	2
	

2- Explain the following statements: (10 Marks)

a) The phases of geological mapping.

b) The fault criteria.

GOOD LUCK

Prof. Dr. Nageh A. Obaidalla

Assiut University *Faculty of Science* *Geology Department*		*Time: 2 hours* *June 2019* *Second Semester Exam.*

Subject: Sedimentary Environments and Sedimentary Basins (335 G)

Answer the following questions: *(50 Marks)*

1. *Answer only <u>ONE</u> question of the following* ***illustrating your answer with drawings:*** *(5 Marks)*
   - *A. What is the difference between active sedimentary basin and active rifting?*
   - *B. What is the difference between pre-depositional primary sedimentary structures (erosional structures) and pre-depositional sedimentary basin?*

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2. *Write on the different types of sedimentary cycles, illustrating your answer with drawings.* *(5 Marks)*
3. *Grain size and sorting are among the main textural parameters applied in environmental interpretation, write on these mentioning two specific sedimentary environments.* *(5 Marks)*
4. *What is aeolian sandstone used for?* *(5 Marks)*
5. *Define the following:* *(5 Marks)*
   - *Fluvial discharge* - *Delta progradation*
   - *Passive rifting* - *Tsunami*
6. *Compare between the neritic and pelagic sediments.* *(5 Marks)*
7. *Write short notes on the tectonic classification of sedimentary basins?* *(5 Marks)*

8. *Jurassic – Cretaceous sediments of Sinai hosted many industrial materials, choose THREE of them illustrating their corresponding environmental settings.* *(5 Marks)*

9. *Which of the following is true and which is false, correct the false ones:* *(10 Marks)*

( ) *Delta forms only where rivers enter Gulfs*
( ) *Trace fossils are important for specific environmental interpretation*
( ) *Miocene sediments of the Red Sea of Egypt are related to rifting mechanisms*
( ) *Coarsening upward is a prominent feature characterizes the deltaic sequence of Egypt*
( ) *Drainage area and climate are the main factors controlling alluvial fan size*
( ) *Trough cross – bedding is the main primary sedimentary structure characterizing fluvial sediments*
( ) *Iron ores of Egypt were accumulated in marine environment*
( ) *El Gindi basin was formed due to rifting process*
( ) *Paleoclimate can be reconstructed from environmental interpretation*
( ) *Eustatic sea-level changes affect the size and shape of sedimentary basins*

Ezzat A. Ahmed *Good Luck*

Assiut University -Faculty of Science Geology Department		جامعة أسـيوط -كلية العلوم قسم الجيولوجيا

2nd Semester- Final Examination Course No. PG332 (Organic Geochemistry)
Third year Students (Petroleum Program) Date: June, 2019
Time allowed: Two hours

Examiner: Prof. Dr. Mamdouh F. Soliman

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Answer only four from the following: 12.5 marks for each question

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1- The organic matter in marine sediments consists of biochemically stable residual materials and particulate remains of organisms.
Discuss briefly the Factors that affect preservation of these remains?

2- **Write On:**

A- Kerogen Classification

B- A-The peatification stage of coal evolution

C- Carbon cycle

3- Process of hydrocarbon generation involves three stages of organic matter alteration (Diagenesis, Catagenesis and Metagenesis).
Discuss the Evolution of organic matter alteration with increasing depth/temperature through these stages?

4- **What is the Rock-Eval pyrolysis**

5- **Write On:**

A- Unconventional Natural Gas

B- Organic macerals of source rocks evaluation

انتهت الأسئلة
مع أطيب الأمنيات بالتوفيق
أ.د/ ممدوح فراج سليمان

Assiut University
Faculty of Science
Geology Department

جامعة أسيوط
كلية العلوم
قسم الجيولوجيا

Final Exam in Electrical Prospection Course (G358)
(50 marks total)

June 2019 Time: 2 hours

ملحوظة: لن يتم تصحيح الاسئلة الزائدة عن المطلوب

A) Answer the following: *(Ten marks each)*

1) With the help of drawing write on the basic theory of induced polarization (IP) method and electromagnetic (EM) method
2) Explain four different methods for estimating the depth in ground penetrating method

B) Answer only five of the following: *(Six marks each)*

1) Different methods for data acquisition in GPR
2) Parameters that control the IP phenomena
3) The classifications of electrometric method
4) The source mechanisms of induced polarization effects
5) Different parameters that control the propagation of EM waves in the subsurface geologic media using GPR
6) The very low frequency tilt angle measurements
7) Advantages and limitations of electromagnetic method relative to DC resistivity
8) Measuring units for induced polarization method in the time and frequency domains

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End of Questions *GOOD LUCK*

Course Instructor Prof. Dr. Gamal Zidan AbdelAal

(كل عام وأنتم بخير)

جامعة أسيوط
كلية العلـــوم-قسم الجيولوجيا

امتحان طلاب المستوى الثالث (ساعات معتمدة)
مقرر (٣٤٠ ج) ميكانيكا الصخور وجيولوجيا تركيبية

يونيو ٢٠١٩ | الدرجة الكلية (٥٠ درجة) | الزمن : ٣ ساعات

PART I: ROCK MECHANICS *(15 marks)*

Write short notes on the following:

1-Types of stress (2 Marks)

2-Inhomogeneous strain (5 Marks)

Indicate by the sign (✓) or (×) and correct the mistaken one (8 Marks)

1-Massive sandstone can be stronger than highly fractured granite ( )

2-Poorly cemented sandstone will be weaker than a well-cemented sandstone ( )

3-Cataclasiss is a mechanism that operates under low to moderate temperatures, low confining pressure ( )

4-Recovery mechanisms is dislocation processes to proceed to large strains ( ).

5-Lower temperature magmas have lower viscosity than higher temperature magmas ( ).

6-High viscosity magmas flow does not produce much pyroclastic material ( ).

7-At lower pressure (great depths), rocks deform ductilely ( ).

8-When deformed slowly, rocks deform brittlely ( ).

GOOD LUCK

Prof .Dr. Mohammed A. Hassan

باقى الأسئلة فى الصفحة التالية

PART II: STRUCTURAL GEOLOGY (35 marks)

ANSWER THE FOLLOWING TWO QUESTIONS:

Try to Illustrate your answers with suitable drawings when possible

I. Choose the correct answer for the following statements, and then rewrite in your answer paper (6 MARKS)

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

Mylonite - *Fault breccias* - *Pseudotachylite*

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

3. .....is a term used to indicate the direction of movement and rotation that occurred during deformation

Vergence - *Simple shear* - *Rake* - *Enveloping surface* *(1 mark)*

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

5- The angle between fold limbs in the profile plane is called the ..... *(1 mark)*

interlimb angle - true dip angle – vergence angle

6- In faulting, the horizontal component of dip separation is called..... *(1 mark)*

Throw - Heave - dip slip

II. Salt diapirs are considered one of the main structural styles of high geologic importance; explain their mode of formation , the associated geologic structures and their economic importance. *(9marks)*

ANSWER ONLY FOUR OF THE FOLLOWING QUESTIONS:

III. Define and illustrate by drawings:

Overturned folds – Monoclines - Listric faults -

Strike Oblique slip normal fault - Pull-apart basin *(5 marks)*

IV- Write short notes on field criteria of faults . (5 marks)

V. Using suitable diagrams, explain the Anderson's theory of stress distribution and faulting. (5 marks)

VI. Write on the structural make up of the Gulf of Suez and the main characteristics of different basins of the Gulf. (5 marks)

VII. Explain how folds may develop as an indirect result of shearing stress. (5 marks)

GOOD LUCK

Prof. Dr. Moustafa M. Youssef

جامعة أسيوط
كلية العلـــوم-قسم الجيولوجيا

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

١٢- يونيو ٢٠١٩م الزمن : ٢ ساعة

PRINCIPALS OF STRUCTURAL GEOLOGY

(50 marks)

Try to illustrate your answers with suitable drawings when possible

ANSWER THE FOLLOWING FOUR QUESTIONS:

I- Choose the correct answer for the following statements *(5marks)*

1- **Vertical faults:**

a. have a footwall in downthrow side and hanging wall in upthrow side.
b. have a hanging Wall in downthrow side and foot wall in downthrow side.
c. have neither a footwall nor a hanging wall.
d. All the statements are wrong.

2- **Drag folds:**

a. Occur within the competent beds.
b. Within the competent beds.
c. Within the incompetent beds are overlain by competent beds.
d. When vertical stresses act on horizontal beds.
a. Ductile

3- **When tensile stress is applied axially on a circular rod its**

a. diameter decreases **b.** length increases **c.** volume decreases

Which of the above are true?

1. Only (a) **2.** Only (b) **3.** (a)& (b) **4.** All of the above

4- **The ability of the material to deform without breaking is called**

a. Elasticity **b.** Plasticity **c.** Creep None of these

5- **Compared to a fault, the rocks along a joint**

a. have experienced no appreciable displacement.
b. are intensely deformed.
c. are metamorphosed.

II - Write short notes on TWO ONLY: *(14 marks)*

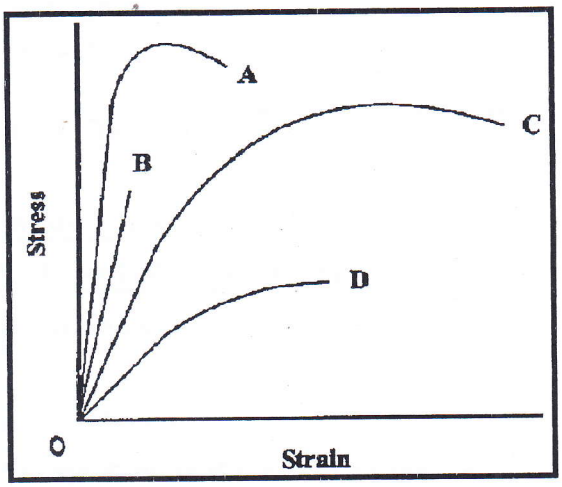
1-Discuss, with examples, the difference between primary and secondary rock structure (examples are required).
2- The different types rock strains.
3- Non-Tectonic Structures.

III- Compare between TWO ONLY: *(14 marks)*

1. Dilation and distortion.
2. Different kinds of unconformities.
3. Parasitic folds and kink bands.

باقى الأسئلة فى الصفحة الثانية

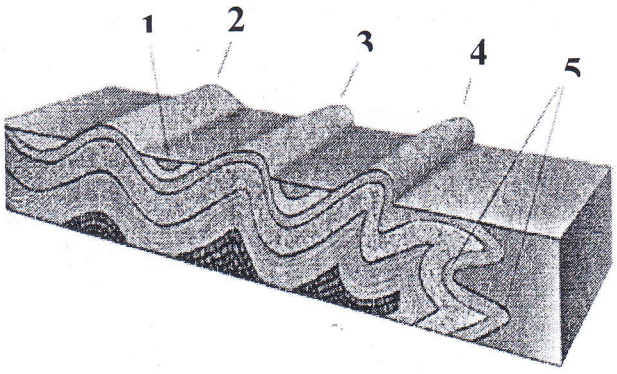
IV-Look at the figure showing stress- strain diagram for four rock materials (A, B.C&D) and answer the questions. *(5marks)*



1. Which rock material is most elastic, why?
2. Which rock material is most ductile, why?
3. Which rock material is most brittle, why?
4. Which rock material is strongest and stiffest, why?
5. Which rock material breaks before the others (C or D), why?

V- Using the figures below and answer the following:

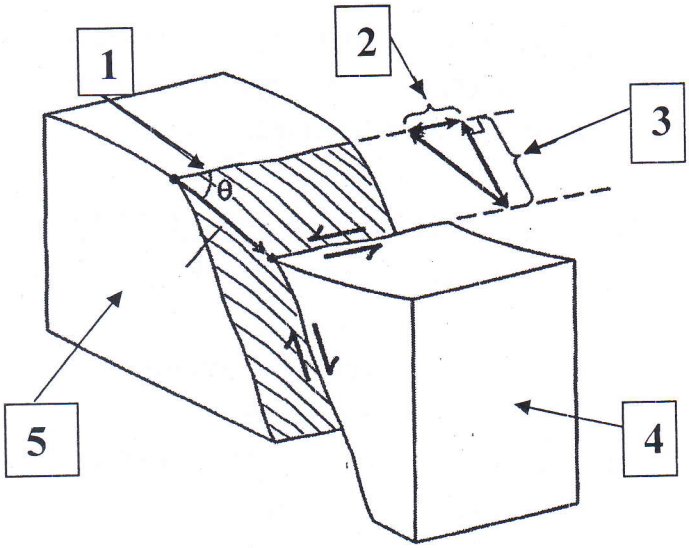
A- Write the name of each fold type *(6 marks)*



1) .....
2) .....
3) .....
4) .....
5) .....

6) Discuss the differences between 3 & 4

B- Show the different fault-slip components in the blank rectangles *(6 marks)*



1) .....
2) .....
3) .....
4) .....
5) .....

6) What is the type of the fault?

GOOD LUCK

Pro. Dr. Ahmed R. El Younsy

Assiut University
Faculty of science
Geology Department

Date: June, 2019
Time allowed: 2 hours

Final Examination

Subject: Course No. G 336(metamorphic rocks)

Students: 3rd year Geology (credit system)

Figures must be drawn whenever possible:-

Answer this question: -

In an area elongate syenitic and granitic bodies penetrate through a shallow depth (about 2 km) at their liquidus temperature into pelitic sediments, if the calculated temperatures at distance 100 meter are 530 and 480°C, respectively.

A- Calculate:-

1- The thickness of these igneous bodies.

2- The temperatures at distance equal to $\frac{1}{2}$ D.

B- By drawing show the maximum temperature attained in rocks adjacent to these igneous bodies and calculate the period of time during which the maximum temperature of the country rock is sustained if the D equals 100 meters.

Answer only THREE of the following questions:

1- A. Define the term (metamorphic facies). Some of these facies are often associated with restricted tectonic setting, or named after specific index minerals or fabrics, explain with examples.

B. A granitic intrusion has intruded into previously unmetamorphosed calcareous and pelitic sediments. Show the various metamorphic zones by mineral reaction equations.

2- A. Different rock types have suffered from regional metamorphism ONLY. Mention the differences between the obtained products, with examples.

B. Explain the formation of these minerals: Zoisite – Alm – Garnet – Cordierite and Staurolite by mineral reaction equations.

أنظر خلفه

3- A. What type of metamorphism can produce these rocks and what are their parent rocks? Gneiss – Eclogite – Serpentinite – Hornfels – Phyllonite.

B. Discuss the following:

1. Important changes in rocks during metamorphic process – give examples.
2. Fundamental principles that govern the mineral assemblages in metamorphic rocks.
3. The main features indicating the change from greenschist facies to amphibolite facies.

4- A. Draw pressure and temperature axes then show the position of aluminosilicate (Al_2SiO_5) polymorphs and explain how each phase can change into another.

B. Define the geological processes and explain the relations between them:- Diagenesis – Metamorphism – Partial melting.

GOOD LUCK

Assiut University

Faculty of science

Geology Department

Date: May 2019

Time allowed:2 Hours

Total Marks: 50 Marks

Special Course 305G (Ophiolite)

Answer only four questions from the followings starting with the first one. (Use drawings when possible)

1- Write briefly on the lithologies of the ideal sequence of ophiolites. (14 Marks)

2- Summarize briefly the main tectonic structures associated with the region of subduction zone. (12 Marks)

3- Compare between the oceanic crust and the continental crust. (12 Marks)

4- Compare between the sequential events dealing with evolution of aulacogens and plate margins. (12 Marks)

5- Define the term marginal sea and display the different models explaining its formation (12 Marks)

Good luck

Prof. Dr. Ali A. Khudeir

Geology Department
Faculty of Sciences
Assiut University

Second Term Exam
Special course (Diagenesis & Marine Geology) (305 G)
May 2019
Time: Two Hours

Part One: Diagenesis (25 Marks)

Answer the following questions:

The first question: Choose the correct answer (9 marks)

1. Overburden pressure typically results in what physical change to sediments during diagenesis?
   a) Solution b) Quartz overgrowth c) Compaction d) Replacement
2. The action of burrowing organisms in loose sediment is termed.....
   a) Bioturbation b) Dissolution c) Recrystallization d) Conslidation
3. Late-stage changes occurring during or following uplift; dissolution, replacement, oxidation
   a) Eogenesis b) Mesogenesis c) Telogenesis d) Deformation
4. Precipitation of minerals (often quartz or calcite) in pore spaces or on grain surfaces is called.....
   a) Cementation b) Lithification c) Authigenesis d) Neomorphism
5. Which of the following trends would favor a shift from calcite to silica precipitation during diagenesis?
   a) Increasing pH b) Increasing Eh c) Decreasing Eh d)Decreasing pH
6. Macroscopic features include all the followings except.....
   a) Geode b) Nodules c) Drusy d) Concretions

The second question: Discuss in brief only TWO of the followings (8 marks)

1. The importance of feldspar to the smectite-illite transition during burial diagenesis.
2. The occurrence of anhydrite in most ancient evaporite deposits not gypsum.
3. The grain fraction gives an indication of the extent of compaction.

The third question: Write only TWO of the followings (8 marks)

1. The major differences between siliciclastic and carbonate diagenesis.
2. The influence of diagenesis in porosity and permeability.
3. Diagenesis in the meteoric regime.

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With my best wishes *Dr. Abdelhamid M. Salman*

انظر خلفه – باقى الاسئلة فى الصفحات التالية

Second part: Marine Geology (25 marks)

Answer the following questions

The first question: choose the correct answer (15 marks):

1. A technique that uses sound waves to measure the depth of the ocean floor is……..
a. dredging. **b.** sonar. **c.** SCUBA. **d.** weighted lines. **e.** all of these.

2. As a wave nears shore, the wave height increases and the wavelength
a. decreases. **b.** increases. **c.** stays the same. **d.** doubles.

3. According to the Theory of Plate Tectonics, new oceanic crust is formed at……..boundaries, and recycled back to the mantle at…….boundaries.
a. convergent, divergent. **b.** transform, convergent.
c. passive, active. **d.** divergent, convergent.

4. Calcium carbonate oozes may be the dominant sediment type……..
a. on the abyssal plains.
b. below surface waters that have high diatom populations.
c. only above the carbonate compensation depth (CCD).
d. mainly below surface waters that are low in nutrients.

5. On passive margins, sediments carried by turbidity currents mostly settle out onto which marine province……..
a. continental shelf. **b.** continental slope.
c. continental rise. **d.** abyssal plain.

6. At a passive plate boundary between oceanic and continental crust, which plate will be subducted……?
a. oceanic. **b.** continental. **c.** neither. **d.** the older plate. **e.** all of these.

7. Land-based evidence for plate tectonics can be seen in……
a. the distribution of *Glossopteris* flora and fauna.
b. evidence of ancient glaciation. **c.** the lineation of mountain ranges.
d. the correlation of rocks in now widely separated continents.
e. all of these

أنظر خلفه - بقية الأسئلة في الصفحة التالية

8. The mid-ocean ridges are.....

a. subduction zones. **b.** transform or lateral plate boundaries.
c. divergent plate boundaries. **d.** convergent plate boundaries.
e. none of these.

9. The transition between the shelf and the deep seafloor is.....

a. the littoral zone. **b.** the continental slope and rise.
c. the abyssal plain. **d.** the mid-ocean ridge.
e. none of these.

10. A feature that rises out of the ocean floor and are flat-topped seamounts are called.....

a. ridges. **b.** island arcs. **c.** guyots.
d. abyssal hills. **e.** none of these.

11. The biogenic oozes on the seafloor mostly consist of.....

a. boulders and cobbles from glaciers oozing off the land.
b. bones and teeth of bottom-dwelling fishes.
c. fine muds washed down the continental slope to the seafloor.
d. microscopic hard parts of single-celled surface living organisms.
e. none of these.

12. Underlying the unconsolidated sediments of the seafloor are.....

a. basalt pillows and basement rocks. **b.** granite crust.
c. glacial deposits left from the Ice Age.
d. ancient remnants of continental crust. **e.** none of these.

13. Carbonate sediments are rare in deep sea sediments because.....

a. the organisms providing shells do not live in the deep sea.
b. the abundance of muds and clays cover the carbonate shells.
c. the carbonate shells dissolve in deep water.
d. the organisms do not live beyond the edge of the continental shelf.
e. none of these.

14. Large volumes of bottom sediments may be transported long distances by.....

a. storm waves. **b.** icebergs. **c.** tidal action.
d. turbidity currents. **e.** all of these.

أنظر خلفه - بقية الأسئلة في الصفحة التالية

15. Which of the following is generated in place, on the spot where we find them.....?

a. terrigenous sediments. **b.** biogenous sediments.
c. hydrogenous (or authigenic) sediments.
d. cosmogenous sediments. **e.** none of these.

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The second question: True or False (5 marks):

a. During the process of coral reef formation, the first step is called an atoll.
b. Ocean sediments are thickest at mid-ocean ridges.
c. A sloping area which lies between shoreline and continental slope is known as trenches.
d. Radiolarians and diatoms are both examples of calcareous oozes in the deepest parts of the ocean.
e. Convergence between continental and oceanic plates is responsible for the formation of mid-ocean ridges.

****

The third question: Discuss in detail the following items; illustrate your answer with drawings (5 marks):

a. carbonate compensation depth (CCD).
b. turbidity currents.
c. coral reef development.

****

Good luck ***Dr. Abdalla El Ayyat***

Geology Department
Faculty of Sciences
Assiut University

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With my best wishes *Dr. Abdelhamid M. Salman*

انظر خلفه – باقى الاسئلة فى الصفحات التالية

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أنظر خلفه - بقية الأسئلة في الصفحة التالية

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10. A feature that rises out of the ocean floor and are flat-topped seamounts are called.....

a. ridges. **b.** island arcs. **c.** guyots.
d. abyssal hills. **e.** none of these.

11. The biogenic oozes on the seafloor mostly consist of.....

a. boulders and cobbles from glaciers oozing off the land.
b. bones and teeth of bottom-dwelling fishes.
c. fine muds washed down the continental slope to the seafloor.
d. microscopic hard parts of single-celled surface living organisms.
e. none of these.

12. Underlying the unconsolidated sediments of the seafloor are.....

a. basalt pillows and basement rocks. **b.** granite crust.
c. glacial deposits left from the Ice Age.
d. ancient remnants of continental crust. **e.** none of these.

13. Carbonate sediments are rare in deep sea sediments because.....

a. the organisms providing shells do not live in the deep sea.
b. the abundance of muds and clays cover the carbonate shells.
c. the carbonate shells dissolve in deep water.
d. the organisms do not live beyond the edge of the continental shelf.
e. none of these.

14. Large volumes of bottom sediments may be transported long distances by.....

a. storm waves. **b.** icebergs. **c.** tidal action.
d. turbidity currents. **e.** all of these.

أنظر خلفه - بقية الأسئلة في الصفحة التالية

15. Which of the following is generated in place, on the spot where we find them.....?

a. terrigenous sediments. **b.** biogenous sediments.
c. hydrogenous (or authigenic) sediments.
d. cosmogenous sediments. **e.** none of these.

****

<u>The second question:</u> True or False (5 marks):

a. During the process of coral reef formation, the first step is called an atoll.
b. Ocean sediments are thickest at mid-ocean ridges.
c. A sloping area which lies between shoreline and continental slope is known as trenches.
d. Radiolarians and diatoms are both examples of calcareous oozes in the deepest parts of the ocean.
e. Convergence between continental and oceanic plates is responsible for the formation of mid-ocean ridges.

****

<u>The third question:</u> Discuss in detail the following items; illustrate your answer with drawings (5 marks):

a. carbonate compensation depth (CCD).
b. turbidity currents.
c. coral reef development.

****

Good luck ***Dr. Abdalla El Ayyat***

جامعة أسيوط
كلية العلوم – قسم الجيولوجيا
شعبتى كيمياء – جيولوجيا والجيوفيزياء (المستوى الثالث)
امتحان مادة: مبادئ علم الصخور (٣٢٤ج)

الفصل الدراسى الثانى
الزمن: ثلاث ساعات

Part One: Igneous and Metamorphic Rocks (Prof. Galal El-Habaak)

Answer the following questions (33M)

Q1(10 M)

Compare between five of the following

a. Shoshonite and lamproite
b. Explosive eruption and effusive eruption
c. Pegmatitic texture and glassy texture
d. Felsic igneous rocks and mafic igneous rocks
e. Foliated and non-foliated rocks
f. Contact metamorphism and shock metamorphism

Q2 (8 M)

Write on four of the following

a. Vesicles and amygdules
b. Volcanic hazards
c. Submarine volcanism
d. Factors affecting melting of minerals
e. Juvenile fragments and accidental fragments

Q3 (8 M)

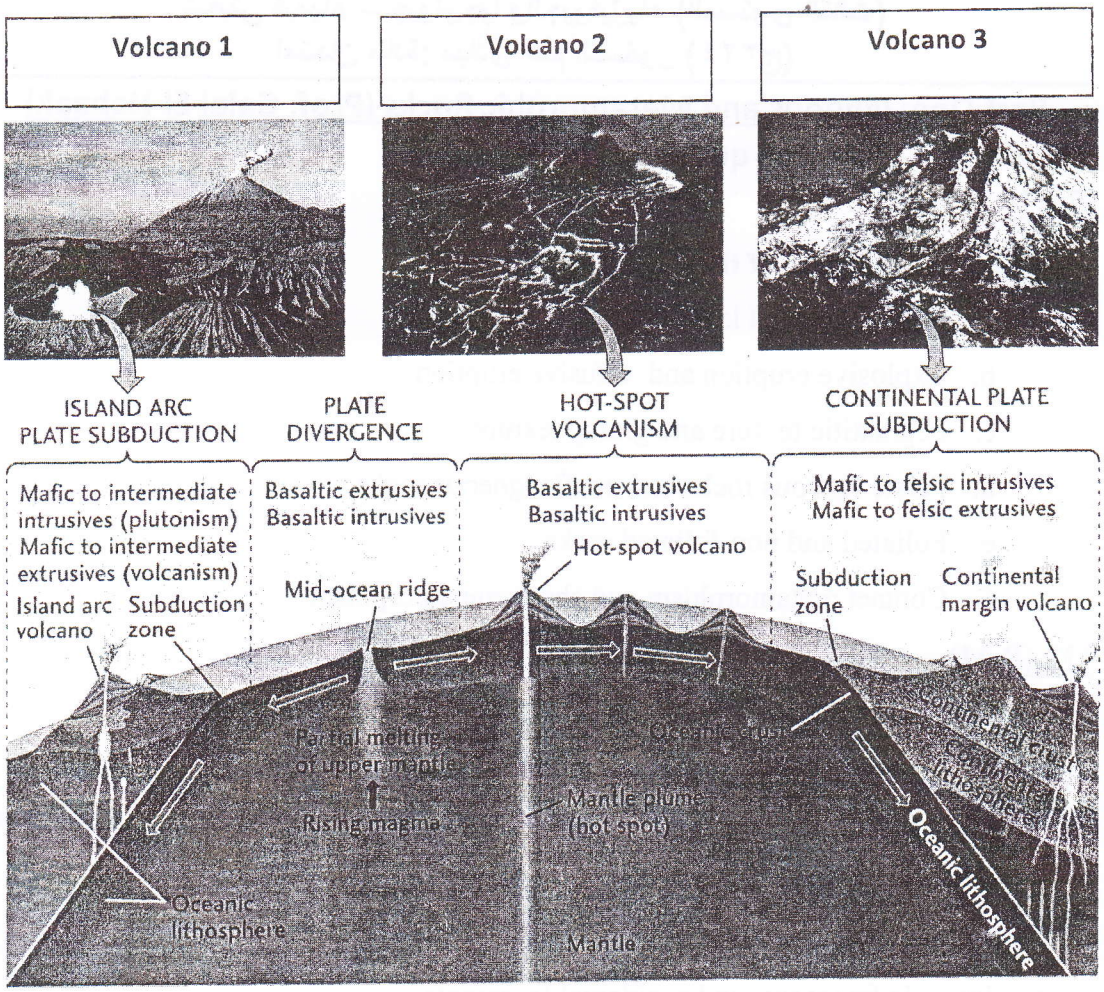
Complete the following sentences

a. During metamorphism, magma and friction make ..... while collisions and gravity produce .....
b. The agents of metamorphism include:
c. During metamorphism, compressive stress causes ..... while shearing causes .....
d. Viscosity of Magmas and Lavas depends upon.....

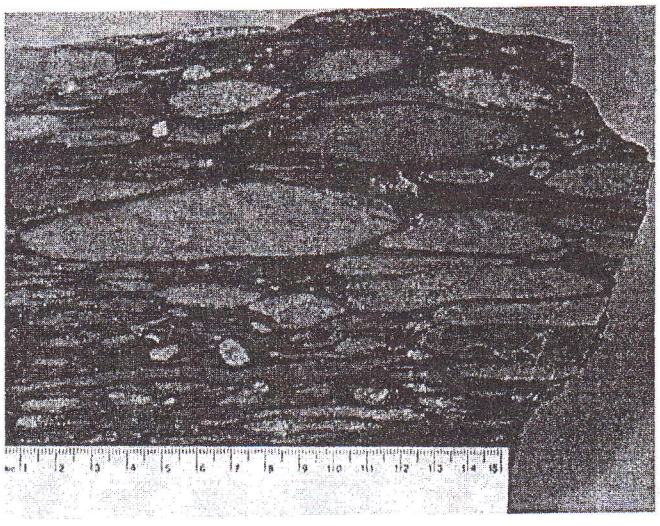
e- Parent rock	f- Equivalent metamorphic rock
Sandstone →	
Limestone →	
Shale →	
Granite →	

Q4 (7 M)

a- Define the type of volcanoes no 1,2, and 3 with examples



b- Comment on this figure



Part two: Sedimentary rocks (Prof. Mahmoud Essa) (17 Marks)

Answer the FOLLOWING QUESTION (إجبارى): (5 Marks)

Indicate by the mark (X) or (√) and correct the incorrect sentences:

1) Porosity refers to the volume of void space (available to contain fluid or air) in a sediment or sedimentary rock ( ).
2) Layers of Mg-O/OH in a clay mineral are referred to as brucite layers ( ).
3) Lithic fragments provide the most specific information about sandstone provenance ( ).
4) Sphericity is a description of how angular the edges of a particle are ( ).
5) Aragonite is stable at surface temperatures and pressures ( ).
6) The better sorted a sediment is the greater its permeability ( ).
7) Carbonate cements precipitate from acid solutions, pH < 7 ( ).
8) Texture is the overall appearance of a particle ( ).
9) Arkoses are mainly composed of quartz grains with matrix less than 15% ( ).
10) Extraformational conglomerates are derived from outside the depositional basin ( )

Answer ONLY ONE from the following:

I- The First Question (12 Marks)

A) Define each of the following: (4 Marks)

i) Roundness ii) Sphericity

iii) Porosity iv) Permeability

B) Write on the Classification of sandstones (3 Marks)

C) Write on the evaporites and their economic importance. (5 Marks)

II- The Second Question (12 Marks)

Write on the following:

A) Dunham classification of limestones. (3 Marks)

B) The major diagenetic processes in limestones. (6 Marks)

C) Carbonate cementation in sandstones. (3 Marks)

Good luck

Prof. Galal El-Habaak *Prof. Dr. Mahmoud A. Essa*

Environmental Geochemistry G330

Final Exam

Assiut University
Faculty of Science
Geology Department

Date :18th of June 2019
Time allowed : two hours
Total points : 50
No. of Pages 5

Answer the following questions

1) Mention all types of the nonrenewable energies.

2) What are the two types of Natural gas?

3) What's meant by Biomass.

4) What do you know about "Geothermal Energy"

5) What are the problems with "Marine Energy"

Examiner: Prof. Dr. Mervat A. Elhaddad

6) How many types of hazardous waste could be found in the environment?

7) What is the importance and benefits of waste recycling

8) How paper waste is recycled

9) What are the effects of waste and poor waste disposal?

10) What are the "economic effects" of recycling?

Answer only <u>ten questions</u> from this part:

1) What are the kind of emitted radiation when radioactive decay takes place?

2) How is the radioactivity measured?

3) What is the difference between Dose & Exposure in radioactivity?

4) What are the Naturally Occurring Radioactive Materials (NORM)?

5) What are the main contributors of the "Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM)"

6) What do you know about the extraction of Gold Using cyanide solution (Merrill-Crowe process) .

7) Why cyanide is difficult to analyze ?

8) Write about the Toxicity of Cyanide.

9) What are the chemical processes responsible for reducing the toxicity of cyanide?

10) What are the heavy metals of concern in environmental geochemistry?

11) What is the natural origin of Mercury in the environment?

Answer only ten questions from this part:

1) What are the major , significant and minor sources of Mercury pollution?

2) What are the natural sources of Lead? Where by man-made?

3) In which form Lead is found in mineralogy and in solution?

4) What are the isotopic tracers of Lead?

5) Why do we care about Arsenic in groundwater

6) Does As correlate with other elements?

7) What are the sources of As?

8) At what depth arsenic is at highest levels in underground wells?

9) Are microbes involved in Arsenic pollution?

10) What are the species of Arsenic in geochemistry?

11) What is the relation of As to Fe in underground water wells?

Answer only ten questions from this part

1) Comment : "Cement production can cause environmental problems"

2) Environmentally describe the Cement Kilns.

3) Write what do you know about Wet and Dry Process Kilns

4) What are the types of Fuel used in Cement Kilns?

5) What do you know about "Dioxins and furans"

6) How are dioxins created?

7) Mention the Pollutants Released by Cement Kilns

8) Are "Test Burns" reliable in Cement production? Why?

9) What are the beneficial uses of solid waste of Cement?

10) What's in Cement Kiln Dust?

Examiner: Prof. Dr. Mervat A. Elhaddad

11) "Cement Kiln Dust More Toxic when Burning Hazardous Waste" Explain

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