



Answer the following questions

First question

(20 Mark)

a) How is GPR similar/different from seismic reflection in the following ways...

- Source/Receiver(s)?
- Travel time equations?
- Wave type? Wave velocity? Frequency? Wavelength? Penetration Depth?
- Stacking in GPR vs. seismic reflection?
- Causes a Reflection?

b) What is diffraction? What types of reflectors produce diffracted wave?

Second question

(15 Mark)

Discuss the following items

- a) Processing of GPR data
- b) Applications of Resistivity surveys in ground water studies
- c) caveats of seismic refraction

Third question

(15 Mark)

Write briefly on

- a) Costs for a gravity survey
- b) limiting factors for Vertical Electrical Sounding (VES)
- c) 2D Gravity and magnetic models

===== **Best wishes** =====



2nd Semester Final Written Exam, 2015-2016

Course: Organic geochemistry, PG332

Time Allowed: 2 Hrs

Answer the following questions

1- State whether the following statements are correct or wrong and correct the wrong one: (10 marks; 1 mark each)

- A- Photosynthesis is the most important source of primary production of organic matter.
- B- Evolution of carbon-rich fluids with increasing depth/temperature within the upper crust is principally controlled by pressure.
- C- Prokaryotes play the most important roles in converting chemical products of life into organic substances found in sediments and soils.
- D- Liptinitic organic matter is characterized by low Hydrogen index and is prone to produce gas if it is thermally mature.
- E- During catagenesis, methane is the only hydrocarbon released, and is often referred to as the dry gas zone.

2- Define Four Only of the following: (10 marks; 2 marks each)

- A- Oil window, B- Macronutrients, C- Cracking zone, D- Gross primary production,
- E- Source rock, F- Sour gas.

3- Choose the correct answer: (10 marks; 2 marks each)

- A- Steps of source rock evaluation involve the identification of:
 - 1- Type of OM 2- Amount of OM 3- Maturation of OM 4- All of them
- B- Major contributors of sedimentary organic matter in the geological past are:
 - 1- Phytoplanktons 2- Higher plant 3- Bacteria 4- Zooplankton 5- All of them
- C- Which of the pyrolysis-determined parameter stands for free hydrocarbon that can be volatilized out of rock without cracking?
 - 1- S_1 2- S_2 3- S_3 4- T_{max} 5- All of them
- D- Preserved lipid components found within bitumen in coals as well as kerogens are called:
 - 1- Kerogen 2- biomarkers 3- Brown coal 4- All of them
- E- Photosynthesis carried out by primary producers may be affected by:
 - 1- Temperature 2- Water 3- Light 4- Salinity 5- All of them

4- Write briefly on TWO Only of the following: (20 marks; 10 marks each)

- A- Classification of Kerogen.
- B- General conditions for formation of organic-rich sediments.
- C- Process of hydrocarbon generation.

Good luck

Examiner: Dr. Amr S. Deaf

بسم الله الرحمن الرحيم

جامعة أسيوط
كلية العلوم - قسم الجيولوجيا

امتحان التحريرى لطلاب كلية العلوم شعب الجيولوجيا والجيوفيزياء والجيوكيمياء

المادة: (G 306) (Field Geology)

الزمن: ساعتان

2016/2015م

الدرجة: 50 درجة

ملحوظة: الامتحان يتكون من صفحتين:

أجب عن الأسئلة الآتية: الرجاء توضيح الاجابة بالرسم كلما أمكن:

1- A: Write on three only of the following geological features: (9 Marks)

i- Ripple marks ii- Graded bedding iii- Lamination iv - Columnar jointing

1- B: Explain two only of the following concepts: (6 Marks)

i- Datum section ii- Nonconformity iii- Disconformity

2- A: By using your information about the field trip of Bahariya Oasis, outline in a stratigraphical section the Late Cretaceous geological rock units of the oasis.
(Scale not important) (4 Marks)

2- B: Mention two functions only for the following instruments: (4 Marks)

i- GPS ii- Total station iii- Compass iv- Level

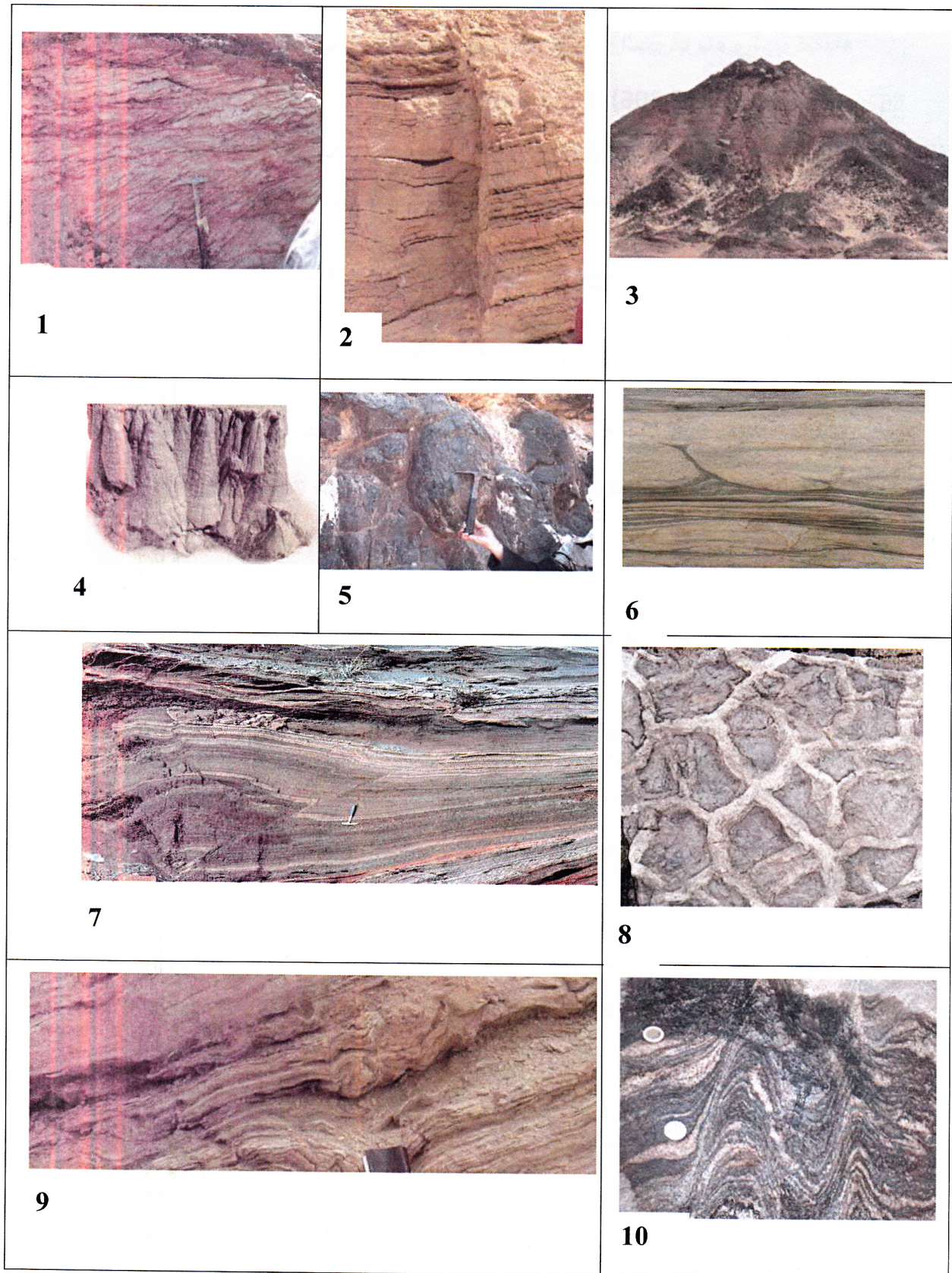
2- C: Compare between the following geological structures: (4 Marks)

i- Sill - dike ii- bahoehoe lava - Aa lava

2- D: Summarize the main criteria of the faults. (3 Marks)

انظر خلف الصفحة

3- Write the geological features of the underlying field photographs then discuss their geological significance.
(20 Marks)



Good Luck.

Prof. Dr. Nageh A. Obaidalla

Special course 305 G (Ophiolite)

Answer only three questions starting with the first one (use drawing when possible):-

- 1- Write short notes on the generalized schematic morphology of an oceanic subduction zone. **(20 marks)**

- 2- Compare between the stages of development of aulacogens and plate margins. **(15 marks)**

- 3- Mention the general characters, types and origins of rifts. **(15 marks)**

- 4- Write short notes about the different types of melange. **(15 marks)**

Good Luck

Prof. Dr. Ali Khudeir



Sep. 2016

Time: 2 Hours

Answer the following questions

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(20 Mark)

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- b) What is diffraction? What types of reflectors produce diffracted wave?

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(15 Mark)

Discuss the following items

- a) Processing of GPR data
- b) Applications of Resistivity surveys in ground water studies
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Third question

(15 Mark)

Write briefly on

- a) Costs for a gravity survey
- b) limiting factors for Vertical Electrical Sounding (VES)
- c) 2D Gravity and magnetic models

===== **Best wishes** =====



2nd Semester Final Written Exam, 2015-2016

Time Allowed: 2 Hrs

Course: Organic geochemistry, PG332

Answer the following questions

1- State whether the following statements are correct or wrong and correct the wrong one: (10 marks; 1 mark each)

- A- Photosynthesis is the most important source of primary production of organic matter.
- B- Evolution of carbon-rich fluids with increasing depth/temperature within the upper crust is principally controlled by pressure.
- C- Prokaryotes play the most important roles in converting chemical products of life into organic substances found in sediments and soils.
- D- Liptinitic organic matter is characterized by low Hydrogen index and is prone to produce gas if it is thermally mature.
- E- During catagenesis, methane is the only hydrocarbon released, and is often referred to as the dry gas zone.

2- Define Four Only of the following: (10 marks; 2 marks each)

- A- Oil window, B- Macronutrients, C- Cracking zone, D- Gross primary production, E- Source rock, F- Sour gas.

3- Choose the correct answer: (10 marks; 2 marks each)

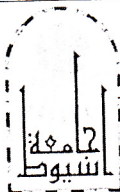
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4- Write briefly on TWO Only of the following: (20 marks; 10 marks each)

- A- Classification of Kerogen.
- B- General conditions for formation of organic-rich sediments.
- C- Process of hydrocarbon generation.

Good luck

Examiner: Dr. Amr S. Deaf

Geology Department Faculty of Sciences Assiut University		Second Term Examination Diagenesis & Marine Geology (305G) May 2016-Two Hours
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Part One: Diagenesis (25 Marks)

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Answer the following questions (25 Marks)

Which of the following is true and which is false: (8 Marks)

- () Mesogenesis refers to the earliest stage of diagenesis.
- () Petroleum generation is related mainly to catagenesis stage.
- () Dissolution and quartz cementation are the most important diagenetic controls of reservoir quality.
- () Kaolinite is replaced by illite and chlorite at higher temperatures and greater depths.
- () Karstification is related to epigenetic regime.
- () Dolomitization is a constructive diagenesis to form petroleum reservoir rocks.
- () Meteoric water diagenesis is characterized by low-Mg calcite.
- () Diagenetic processes acting in limestones and clay minerals are the same.

Answer only ONE question of the following: (3 Marks)

- Microbes play an important role in sediments diagenesis, *which type of the Cretaceous rocks show such impact in Egypt?*
.....
.....
.....
- Write brief account on the diagenetic processes of coastal Miocene evaporites of Egypt.
.....
.....
.....
- Diagenetic structures play an important role in mineralization, *explain this statement.* (2 Marks)
.....
.....
.....

- Write notes on only ONE question of the following: (7 Marks)
- Diagenetic processes.

.....

.....

.....

.....

.....

.....

.....

- Factors affecting diagenesis.

.....

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.....

- Diagenetic processes of sandstone are related mainly to its depositional settings, *mention these processes.* (5 Marks)

Marine sandstone	Fluvial sandstone	Aeolian sandstone	Diagenetic processes
.....			
.....			
.....			

=====

Prof. Dr. Ezzat Abdallah Ahmed

GOOD LUCK

باقى الاسئلة فى الصفحات التالية

انظر خلفه

بسم الله الرحمن الرحيم

جامعة أسيوط

كلية العلوم - قسم الجيولوجيا

امتحان التحريرى لطلاب كلية شعبة جيولوجيا البترول (الفصل الدراسى الصيفى)

المادة: (PG 304) (Field Technique and Mapping)

الزمن: ساعتان

٢٠١٦/٢٠١٥ م

الدرجة: ٥٠ درجة

ملحوظة: الامتحان يتكون من صفتين

Part One (25 Marks)

Answer the following questions using drawing when possible:

- 1- Briefly outline the main products of the volcanic eruptions.
(6 marks)
- 2- Compare between the following geological pairs: (9 Marks)
 - a- Schistose structure – Gneissose structure.
 - b- Primary foliation – Secondary foliation.
 - c- Slip cleavage – Fracture cleavage.
- 3- Review critically the various types of volcanoes. (10 Marks)

Part two (25 Marks)

السؤال الأول: (7 Marks)

- 1- Write on the following: (7.5 Marks)
 - i- Graded bed
 - ii- Types of rocks

السؤال الثانى: (7 Marks)

- 2- Compare between primary structure and tectonic structure,
illustrate your answer by examples.

السؤال الثالث: (7Marks)

- 3- Discuss one only of the following
 - i- Structure cross section
 - ii- Datum section

أنظر خلف الصفحة

السؤال الرابع (4 Marks)

4- Mention the uses of *two only* instruments of the following:

- i- GPS ii- Compass iii- Theodolite

انتهت الأسئلة مع اطيب الأمنيات بالنجاح والتفوق

أ.د/ ناجح عبدالرحمن عبيدالله

أ.د/ على عبدالقادر خضير

تنبيه هام: امتحان الشفوى بعد الانتهاء من امتحان التحريري مباشرة



Summer Semester Final Exam (2015/2016)

(Geology Program)

Time: 3 hours

Micropalaeontology and Historical Geology G 315

Part I: Micropalaeontology (30 degrees)

Question no. 1:

Write on **two** only of the following:

(10 degrees, 5 degrees each)

- a- Systematic position of Radiolaria.
- b- Palaeoecological significance of diatoms.
- c- Openings in pollen grains.

Question no. 2:

Answer **two** only of the following:

(10 degrees, 5 degrees each)

- a- Mention the main morphological characteristics of trilete spores.
- b- Compare between agglutinated and calcareous foraminifers.
- c- Write on life cycle of dinoflagellates.

Question no. 3:

Mark by (✓) or (X) and correct the wrong ones: *(10 degrees; 1 degree each)*

- a- Sexual reproduction produces fossil dinoflagellate cysts.
- b- Benthic foraminifera live floating in the marine water column.
- c- Coccolithophores live only in marine environments.
- d- Skeletons of all microfossils groups are calcareous.
- e- The "Class Ostracoda" is separated from other "Crustacea" by their laterally compressed body.
- f- The agglutinated foraminiferal tests are preserved in deep marine sediments.
- g- Microfossils can be rock-forming.
- h- Ostracod-like organisms (bivalved arthropods) are recorded from the Cambrian but true ostracods appeared by the advent of the Ordovician.
- i- Dinoflagellates cannot be used as indicators of eutrophication.
- i- Diatoms are commonly between 20-200 microns in diameter or length, although sometimes they can be up to 2 millimeters long.

Part II: Historical Geology (20 degrees)

Question no. 4:

Answer **three** only of the following:

(15 degrees, 5 degrees each)

- a- What are the main possible extinction hypotheses.
- b- Write on the Ediacaran-Cambrian life transition.
- c- Mention main views and ideas of historical geology.
- d- Compare between Cambrian and Ordovician fauna.

← أنظر خلفه (باقى الأسئلة)

Question no. 5:

Choose the correct answer:

(5 degrees, 1 degree each)

- a- The Cambrian was:
time of evolutionary diversification – time of first true life –
age of Trilobites– all of these
- b- Which of these is not a Paleozoic fossils:
Graptolites – Trilobites – Conifers - Ammonites
- c- Angiosperm plants appeared in:
Silurian – Carboniferous - Cretaceous – Paleocene
- d- Which of these is not time of mass-extinction event?
Late Ordovician – Late Permian – Late Jurassic –Late Cretaceous
- e- In historical geology we are concerned with:
changes in our planet - how and why past events happened –
implication for today's global ecosystems – all of these

_____ أنتهت الأسئلة _____

Examiner: Prof. Dr. Magdy S. Mahmoud (Geology Department)

Good Luck

Geology Department Faculty of Science Assiut University		Time: 2 Hours August 2016 Summer Course
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Summer Semester Examination
Sedimentary environments & sedimentary basins ((335G)
 Students: 3rd level of Geology, all branches

First part: Sedimentary environments (25 marks)

Answer only two questions out of the following. Extra answers will not be considered.

1. True or False (12.5 marks):

- Sedimentary environments can be defined and distinguished from other areas on the base of its physical, chemical and biological parameters (1.5 marks).
- Sedimentary environments of net erosion are typically terrestrial, and consist largely of the mountainous areas of the world (1.5 marks).
- On land, environments of equilibrium are represented by the great peneplains of the continental interiors (1.5 marks).
- A sedimentary environment may be a site of erosion, non-deposition, or deposition (1.5 marks).
- A sedimentary facies is a mass of sedimentary rock which can be defined and distinguished from others by its geometry, lithology, sedimentary structures, paleocurrent pattern, and fossils (1.5 marks).
- A meandering river system has a unidirectional current flow; marine tidal channels have bidirectional but aeolian environment has polydirectional current flow (1.5 marks).
- Fossils are the most useful tools in paleoenvironmental reconstructions. However their applications are highly limited in Precambrian rocks.
- Trace fossils are good environmental indicators because they are in situ features and they are not transported (2 marks).

2. Choose the correct answer (12.5 marks):

- A sedimentary facies is defined as (2.5 marks).....
- A. A mass of sedimentary rock which can be defined and distinguished from others by its geometry, lithology, sedimentary structures, paleocurrents, and fossils.
- B. A sedimentary facies is the product of a depositional environment, a special kind of sedimentary environment.
- C. A sedimentary facies is defined as any aerielly restricted part of a designated stratigraphic unit which exhibits characters significantly different from those of other parts of the unit.
- D. All the above.
- E. Both (b) and (c).
- F. None of the above.
- Trace fossils (biogenic sedimentary structures) are used as facies diagnosis because (2.5 marks):
- A. They undoubtedly occur in situ.
- B. Recent and ancient sediments show that various assemblages of trace fossils are specific to environments and have changed little through geological time.

بأى الأثلة فى الصفات التالية

C. It is not always easy to be sure that a fossil lived in or on the sediment in which it was buried. D. Both (a) and (b). E. None of the above.

• Which of the following features in a sedimentary rock can be used to interpret its depositional environment (2.5 marks):

A. Sedimentary structures. B. Types of fossils. C. The types of minerals.

D. The size, shape and surface texture of the sedimentary grains.

E. All of the above features.

F. Both (b) and (d).

• Continental environments include all of the following except (2.5 marks).....

A. Lake beds. B. River beds. C. Glacial deposits. D. Coral reefs. E. Alluvial fans.

• Which one of the following can NOT be determined from an understanding of the conditions under which sedimentary rocks form (2.5 marks)

1. Age of the rock.

2. Method and length of sediment transport.

3. Origin of the rock's component particles.

4. Environment of deposition.

3. Discuss in detail the following items (12.5 marks):

A. Paleocurrent patterns as a diagnostic defining parameter of a sedimentary facies (4.5 marks).

B. The three defining parameters of a sedimentary environment (4 marks).

C. Environments of deposition, erosion and equilibrium (4 marks).

Second part: Sedimentary basin analysis (25 marks)

Answer only two questions out of the following. Extra answers will not be considered

1. True or False (12.5 marks):

- Basin relief can be created mechanically on a regional scale thermally or flexurally, or by a combination of those two effects (1.5 marks).
- Basins are separated from another by raised linear areas termed arches, paleohighs, schwelle, axis of uplift, or positive areas (1.5 marks).
- Sedimentary basins range in size from as small as hundreds of meters to large parts of ocean basins (1.5 marks).
- Back-stripping is a geophysical analysis technique used to quantitatively estimate the depth that the basement would be in the absence of sediment and water loading (1.5 marks)
- A sedimentary basin has an axis, a line connecting the lowest structural points of the basin (1.5 marks)
- According to their tectonic settings sedimentary basins are post-depositional, syn-depositional, or pre-depositional basins (1.5 marks).
- In post-depositional basins, the deposition of sediments largely predates tectonic movements forming a basin structure (1.5 marks).
- A hydrocarbon trap is some kind of structural or stratigraphic feature of a rock into which oil or gas can easily migrate but from which it is difficult to escape (2 marks).

2. Choose the correct answer (12.5 marks):

- Basin analysis is a program of study that involves application of the following principles (1.5 marks):

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

الزمن : ٣ ساعات

الدرجة الكلية (٥٠ درجة)

يونيو ٢٠١٦

PART I: ROCK MECHANICS (15 marks)

WRITE SHORT NOTES ON:

1. Inhomogeneous strain.
2. Directed stress.
3. Brittle behavior.

PART II: STRUCTURAL GEOLOGY (30 marks)

ANSWER THE FOLLOWING TWO QUESTIONS:

Try to Illustrate your answers with suitable drawings when possible

- I. Choose the correct answer for FIVE of the following statements, and then rewrite in your answer paper (5 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 (1 mark)

- 4- Parallel 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- The horizontal component of dip separation is called (1 mark)

Throw - Heave - dip slip

باقى الأسئلة فى الصفحة التالية

II. COMPARE AND CONTRAST BETWEEN THE FOLLOWING: (12 MARKS)

a) Restraining bend , and Releasing bend along a strike-slip fault.

b) Chevron and Ptygmatic folds.

ANSWER ONLY THREE OF THE FOLLOWING QUESTIONS:

III. Explain how folds may develop as an indirect result of the action of a shearing stress. (6 marks)

IV- Write short notes on : (6 marks)

a- Field criteria of faults.

b- Parasitic folds and kink bands.

V- Define and illustrate by drawings: (6 marks)

Kink folds – Monoclines - Listric fault - Salt dome

Strike Oblique slip normal fault - Pull-apart basin

VI. Write a concise account on : (6 marks)

a) Geometric classification of fault arrays

b) Neutral surface folding

GOOD LUCK

Prof. Dr. Mohammed A. Hassan

Prof. Dr. Moustafa M. Youssef

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

June 2016

Time: 2 hours

1. Define only five of the following: (*two marks each*)

Dielectric permittivity
Liquid junction potential
Magnetic permeability
Resistivity anisotropic coefficient

Resistivity formation factor
Chargeability
Longitudinal conductance
Streaming potential

2. Mark the following statements with True or False: (*one mark each*)

- a) As clay content increases, earth electrical resistivity decreases.
- b) As the grain size is reduced, the IP effect increases
- c) Both SP and electrical resistivity methods can be used to map water seepage in Dam investigation
- d) By decreasing the electrode spacing, more of the injected current will flow to greater depths.
- e) Chargeability is of the highest important physical property in induced polarization surveying
- f) Disseminated sulfide ore deposit has lower SP than massive one.
- g) In GPR method, the electrical conductivity is the most important property controlling the depth of penetration
- h) In GPR, the larger the Fresnel zone, the lower the horizontal resolution
- i) In the GPR survey, the wavelength and arrival time of the reflected EM pulse are measured
- j) IP method can discriminate the lithology variation from the fluid chemistry changes
- k) Low dielectric materials display wide *hyperbolas* with high velocity
- l) Mineral types can be accurately discriminated exclusively on the basis of chargeability
- m) Penetrating depth in GPR method can be improved by lowering the frequency
- n) Resistivity changes do not necessarily correspond to a lithology change
- o) SP method involves the measurement of artificially generated earth electrical potentials between points on the surface of the ground

- p) The sign of Self potential is an important diagnostic factor in the interpretation of SP anomalies
- q) The SP of sulfide ore body is always negative near the upper end of the body
- r) Topography has minor effect on SP measurements.
- s) Without sound geological knowledge, resistivity data may be misleading
- t) Younger rocks are usually having lower resistivity than older rocks

3. Provide short answers for only ten of the following: (two marks each)

1. With drawing only, explain the Sato and Mooney model for mineralization potential.
2. For each equation below, define and explain the variables and carefully describe how the equation is used in near surface geophysics
 - a. $\delta = (2/\sigma)(\sqrt{\epsilon/\mu})$
 - b. $V = c/\sqrt{\epsilon_r}$
3. List the main causes (mechanisms) of IP.
4. What are the three main EM properties that control the propagation of radio waves?
5. List four methods of Depth (Velocity) Estimation in GPR
6. With the help of drawing, what constitutes a "non-polarizing" electrode?
7. What are the advantages and limitations of electrical resistivity method?
8. Describe with drawing the different acquisition modes in GPR
9. What are the most possible factors that control resistivities of rocks and minerals?
10. What are the main electrochemical controls on the IP response
11. Write the formula of Archie's law and define all of its components
12. List three types of mechanisms generating SP (spontaneous potential).
13. What is principle of suppression and equivalence in resistivity sounding method?
14. Explain with drawing the induced polarization phenomenon
15. List three types of resistivity field procedures.

End of Questions

Course Instructor Dr. Gamal Zidan AbdelAal

GOOD LUCK

بسم الله الرحمن الرحيم

جامعة أسيوط

كلية العلوم - قسم الجيولوجيا

امتحان التحريرى لطلاب كلية شعبة جيولوجيا البترول

المادة: (PG 304) Field Technique and Mapping

الزمن: ساعتان

٢٠١٦/٢٠١٥ م

الدرجة: ٥٠ درجة

ملحوظة: الامتحان يتكون من صفحتين

Part One (25 Marks)

Answer the following questions using drawing when possible

1- Define only three geological terms of the following: (6 Marks)

a- Shield volcanoes b- Hade c- Lava domes d- Tephra

2- Compare between the following geological pairs: (7 Marks)

a- Slip cleavage – Fracture cleavage

b- Calderas – Craters

c- Crenulation cleavage – Shear cleavage

3- Outline the main structural features of lavas. (6 Marks)

4- Write what you know on the followings: (6 Marks)

a- Laccoliths b- Catazonal plutons c- Chilled margins

Part two (25 Marks)

أجب عن الأسئلة التالية:

السؤال الأول: (7 Marks)

1- Write on the following:

i- Criteria of unconformity.

ii- Field mapping.

السؤال الثاني: (7 Marks)

- 2- Write the name of the geological structure of the following field photographs, and comment on each one.

Photo no. 1



Photo no. 2



السؤال الثالث: (5 Marks)

Redraw the underlying field photograph (taken west of Qusier City, Red Sea) and display the main geological features.



السؤال الرابع (6 Marks)

- 1- What is the intraformational conglomerate? Discuss its formation?
2- Write on two of the following:
Geological uses of Total Station – Load cast – Mud cracks

انتهت الأسئلة مع اطيب الأمنيات بالنجاح والتفوق

أ.د/ ناجح عبدالرحمن عبيدالله

أ.د/ على عبدالقادر خضير

Assiut University

Date: June, 2016

Faculty of science

Time allowed: 2 hours

Geology Department

Final Examination

Subject: Course No. G 336(metamorphic rocks)

Students: 3rd year Geology (credit system)

Figures must be drawn whenever possible:-

Answer this question: -

(14 Marks)

1-A. A deep- seated syenitic dyke (500 m. thick) intruded into unmetamorphosed pelitic sediments:- -calculate the temperature of country rocks at distances (50m-250m and 500m), where the temperature of country rocks prior to intrusive was only 150°C. What happened to these rocks in contact with thin dykes (one meter only) of the same type?

1-B. Heating of the pelitic country rocks adjacent to variable intrusions at a shallower depth, where the load pressure is 300 bars, illustrate with diagram the width of the zone of each metamorphic grade.

Answer **THREE** only of the following questions:-

2- A. Match mineral assemblages (a-e) with rock names (1-7):- **(12 Marks)**

a- Quartz – mica- garnet

1- Marble

b- Hornblende –epidote- calcite

2- Quartzite

c- Pyroxene – plagioclase

3- Amphibolite

d- Quartz

4- Banded gneisses

e- Pyroxene – garnet

5- Garnet-mica schists

6- Granulite

7- Eclogite

2-B. What are the main factors responsible for the variation on metamorphic rocks? Give examples.

**3-A. What are specific minerals and fabrics found in metamorphic rocks?
Explain the variation between the textures and the degree of metamorphism.**

(12 Marks)

3-B. Write on equations of forming each of the following minerals under different conditions: K-feldspar – cordierite- staurolite.

4-A. Define the metamorphic zones and what are the main zones in Barrovian type and Buchan- type metamorphism- what are differences between both of them, particularly, in Al_2SiO_5 minerals.

(12 Marks)

4-B. The higher temperature boundary of very – low grade is indicated by number of reactions, what are these reactions and what are the main products?

5-A. What are the assemblages characterized the very low – grade and medium – grade. What are the factors on which they depend?

(12 Marks)

5-B. List the index mineral in metamorphosed pelitic sediments and classify them according to metamorphic grade.

GOOD LUCK



جامعة أسيوط
كلية العلوم-قسم الجيولوجيا

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

الزمن : ٢ ساعة

يونيه ٢٠١٦

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 and then rewrite in your answer paper

(2 mark each)

1- How is "stress" related to "force"? Choose all that apply.

- a. Stress is the same as force, but applied to geology.
- b. Stress is an accelerated force, driven into a rock.
- c. Stress is a measure of how concentrated the force is.
- d. Stress is the force applied to a given area.

2- The difference between elastic deformation and plastic deformation of rocks is that plastic deformation (is)

- a. Permanently alters the shape of a rock layer.
- b. Always occurs just before a rock layer breaks.
- c. Returns to its original shape after the pressure are removed.
- d. All of the above.

3- Strain is _____.

- a. the pressure placed on a rock by gravity
- b. the force necessary to move a rock unit
- c. an irreversible change in volume and/or shape of a rock body caused by stress
- d. only that portion of stress that compresses a rock
- e. the amount of force acting on a rock unit

4-Which of the following is not a tectonic force responsible for folding or faulting rocks?

- a. compressive force
- b. tensional force
- c. shear force
- d. all of these are tectonic forces

5-An overturned fold is characterized by _____

- a. two limbs at right angles to one another
- b. two limbs dipping in the same direction - with one tilted beyond vertical
- c. two limbs dipping in opposite directions
- d. two limbs not parallel to each other

6-Dip-slip faults are associated with _____ forces.

- a. Shearing
- b. Tensional
- c. compressive
- d. tensional and compressive

7-What type of fault is a thrust fault?

- a. low-angle normal fault
- b. low-angle reverse fault
- c. high-angle reverse fault
- d. low-angle strike-slip fault

II- Define and illustrate by drawings FIVE ONLY:

(10 marks)

Hydrostatic Pressure - Kink folds – Monoclines – Heave - Vergence angle - Feather joints-Slickensides

III- Write short notes on TWO ONLY:

(12marks)

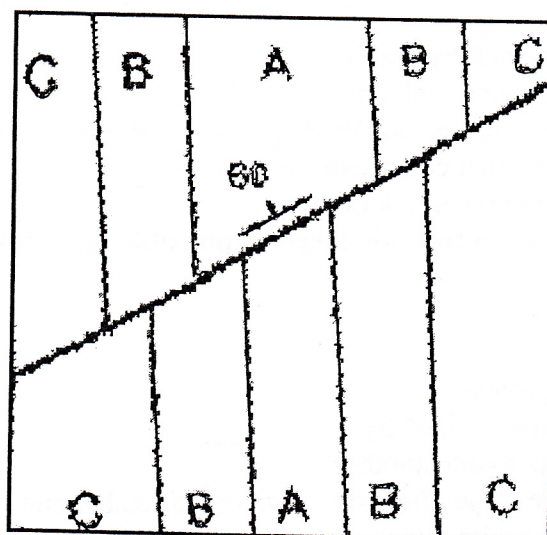
- Non-Tectonic Structures.
- Unconformities.
- Field criteria of faults.

IV-Match the phrase on the right with the term on the left

(6marks)

1	Columnar joints	A	Non-rotational, homogeneous deformation
2	Pure shear strain	B	Thermal contraction fractures
3	Hydrostatic Pressure	C	Change in shape
4	Distortion	D	Permanent deformation without loss of cohesion
5	Simple shear strain	E	Change in volume only
6	Ductile Strain	F	rotational, homogeneous deformation

V- In the geologic map below, units A, B, and C are sedimentary rocks; unit A is the oldest and unit C is the youngest. The sedimentary rocks are cut by a fault, indicated by the dark line, which dips 60 degrees to the northwest. (8marks)



- What type of structure is shown on the map?
- Which way do the sedimentary layers dip - assuming the structure is not overturned?
- What type of fault is depicted on the geologic map?
- Why is unit A wider north of the fault than it is south of the fault?

GOOD LUCK

Pro.Dr. Ahmed R. El Younsy

بسم الله الرحمن الرحيم

جامعة أسيوط

كلية العلوم - قسم الجيولوجيا

امتحان التحريرى لطلاب كلية العلوم شعب الجيولوجيا والجيوفيزياء والجيوكيمياء

(الفصل الدراسى الصيفى)

المادة: (306G) (Field Geology)

٢٠١٦/٢٠١٥ م

الدرجة: ٥٠ درجة

الزمن: ساعتان

ملحوظة: الامتحان يتكون من صفتين:

أجب عن الأسئلة الآتية:

السؤال الأول: (15 Marks)

- 1- Write on the following geological features, illustrating your answer by drawing: (9 Marks)
 - i- Criteria of unconformity
 - ii- Flame structure
 - iii- Vesicular structure

- 2- Explain only two of the following concepts: (6 Marks)
Datum section – dykes – Paraconformity
(Illustrate your answer by drawing).

السؤال الثانى: (15 Marks)

- 1- By using your information about the field trip, draw a stratigraphic section for the rock units at the iron-ore mine at El-Gadidah in the Bahariya Oasis (scale not important) (5 Marks)

- 2- Write on the uses of only two of the following instruments: (4Marks)

Tape – Compass – Thloedolite

- 3- Compare between the following geological structures: (6 Marks)
 - i- Symmetrical and asymmetrical ripple marks
 - ii- Igneous and sedimentary rocks

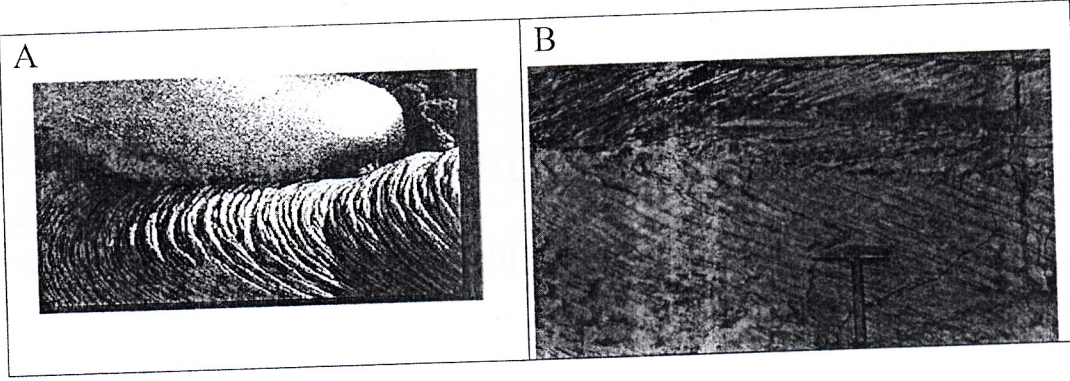
أنظر خلف الصفحة

السؤال الثالث (20 Marks)

1- Discuss the type of contacts between the rock units. (8 Marks)

2- Write the type of structures in the following field photos and explain the reasons of their formation (redraw these photos in your answer).

(12 Marks)



انتهت الأسئلة مع اطيب الأمنيات بالنجاح والتفوق

أ.د/ ناجح عبدالرحمن عبيدالله

تنبيه هام: امتحان الشفوى بعد الانتهاء من امتحان التحريرى مباشرة



Final Examination
Petroleum Geology

June 2016	Seismic Modeling (353PG)	50 Points	Time: 2 Hours
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Question 1: Answer briefly the following questions:..... (20 marks)

1. What is Geologic Modeling?
2. What are Models used for?
3. What are Model Inputs & Outputs?
4. What are Key Planning & Modeling Issues?

Question 2: Give one main difference between **Only Three** of the following: .(12 marks)

1. Structural and Stratigraphic framework
2. Faulted and Un-faulted models.
3. Chronostratigraphic and Lithostratigraphic correlation
4. Deterministic and Stochastic porosity modeling

Question 3: (✓) in front of the correct sentence and (✗) in front of the wrong for **Only Nine** of the following: (18 marks)

1. Geologic Modeling is a discipline based on data analysis, synthesis and integration across disciplines ()
2. All geologic models are built only using 'stochastic' approaches ()
3. Typical dimensions for a geologic model cell are 2000 ft by 2000ft by 10 ft ()
4. When building the model; the tops in the depth grids must in turn be consistent with the tops used in the petrophysics ()
5. Geologic models do not provide the capability to calculate volumetrics in 3D ()
6. Seismic Data and its interpretation is an output of the Geologic model ()
7. Method for handling faults framework depends on the model purpose ()
8. Faults can create Compartments in the reservoir and reflected in the model ()
9. Model framework is defined by structural and stratigraphic surfaces ()
10. We convert the 3D framework to a 3D grid by filling the framework with empty cells with a defined internal laying scheme ()

الزمن: ٣ ساعات

الفصل الدراسي الثاني مايو ٢٠١٦

إمتحان المستوي الثالث لشعبة الجيوفيزياء والجيولوجيا كيمياء
مبادئ علم الصخور (324G)

Part One: Igneous Rocks

(17 Marks)

Write Briefly on three Only of the Following:

- 1- Form and Structures of intrusive igneous rocks.
- 2- Gabbro Family.
- 3- Classification of igneous rocks.
- 4- Poikilitic and directive textures.

Part Two: Metamorphic rocks

(17 Marks)

Answer the following questions:

I. Compare between (Five only) of the following:

- 1- Progressive and retrogressive metamorphism.
- 2- Neomorphism and metasomatism.
- 3- Eclogite and migmatite in metamorphic rocks.
- 4- Thermal and impact metamorphism.
- 5- Porphyroblasts and porphyroclasts in metamorphic textures.
- 6- Skarn and hornfels metamorphic rocks.
- 7- Augen and mineral fish textures.
- 8- Green schist and blue schist.

II. Give an concise on (three only) of the following:

- 1- Evidences of metamorphism.
- 2- Classification of foliated metamorphic rocks.
- 3- Mylonitic texture in dynamic metamorphism.
- 4- Types of metamorphism.

Part Three: Sedimentary rocks

(16 Marks)

Answer the following question:

1. Describe briefly the texture and composition of the following rocks:
 - a- Calcareous oligomectic conglomerate
 - b- Greywacke

(6 Marks)

Answer two questions only:

2. What is the difference between heavy minerals and light minerals? Why we study the heavy minerals?

(5 Marks)

3. a- What is the difference between mudrocks and shale?
 - b. What are the clay mineral groups?

(5 Marks)

4. a- What are the common minerals that constitute the carbonate rocks?
 - b. Describe briefly the texture and composition of:

Oosparite
Pelsparite
Biomicrite

(5 Marks)

5. What are the evaporite rocks? Mention their mineralogical composition.

(5 Marks)

أ.د. محمد احمد سليمان

بسم الله الرحمن الرحيم

جامعة أسيوط
كلية العلوم - قسم الجيولوجيا

امتحان المستوى الثالث بكلية العلوم شعبة جيولوجيا البترول
المقرر: حفريات دقيقة وحفريات نباتية (313 ج ب)
(Micropaleontology and Palynology, PG313)

الزمن: ساعتان

الدرجة: 50 درجة

دور يونيو: 2016م

ملحوظة: الامتحان يتكون من صفحتان:

I- Micropaleontology (25 Marks)

أجب عن الأسئلة الآتية:
السؤال الأول: (8 درجات)

1) Compare between the following:

- a- Freshwater and marine Ostracoda in: shell walls - shell shape - ornamentation.
- b- Radiolaria and benthonic foraminifera in: systematic position - environmental habitat - shell structure - shell shape - mode of life

السؤال الثاني: (9 درجات)

2, a) Complete the following:

- i) Content of dissolved oxygen in marine water depends on: and
- ii) The sea water column is subdivided into, and zones depending on the penetration of light.

2, b) Describe the dimorphism phenomenon in foraminifera.

السؤال الثالث: (4 درجات)

3) Write on **only one** the following:

- a) The effect of alkalinity on the tests of foraminifera.
- b) Discuss by drawing the different types of conodonts.

السؤال الرابع: (4 درجات)

4) Correct and discuss the following:

- a) Nummulitids and fusulinids belong to the planktonic foraminifera.
- b) Planktonic foraminifera live as a burrowing fauna in the marine sediments.
- c) Calcareous shells of fossils are preserved below the CCD.
- d) The wall structure of all microfossils groups is calcareous.

Palynology (25 Marks)

Answer the following questions

1- Define Five Only of the following: (5 marks; 1 mark each)

A- Amb, B- Dinoflagellate, C- Palynology, D- Kerogen, E- Spores, F- Exine, G- Cingulum

2- Mark the correct and the wrong statements, and correct the wrong: (5 marks; 1 mark each)

- A- Maceration (oxidation) is one of the essential steps in the standard palynological processing technique.
- B- Dinoflagellates with a nucleus are classified under Dinokaryota.
- C- New and inexperienced HF users should be monitored by experienced laboratory personnel.
- D- Proximal face is that part of a palynomorph, which faces towards the centre of the tetrad, between equator and proximal pole.
- E- Dinoflagellates are classified using the International Code of Zoological Nomenclature (ICZN) as protozoans.

3- Choose the correct answer: (5 marks; 1 mark each)

- A- Steps of source rock evaluation involve identification of:
1- Type of OM 2- Amount of OM 3- Maturation of OM 4- All of them
- B- Classification of dinoflagellate cysts is mainly based on:
1- Number of plates 2- Arrangement of plates
3- Type of archeopyle 4- All of them
- C- For a safe processing of palynological samples in lab, certain steps must be carried out:
1- Work in a purpose-built HF laboratory 2- Use an efficient HF fume-cupboard
3- Work under supervision of an experienced laboratory personnel
4- Wear full protective clothing 5- All of them
- D- One of the following is (are) not a type of palynomorphs:
1- Spore & pollen grains 2- Acritarch 3- Conodont 4- Dinoflagellate cysts 5- Chitinozoa
- E- In dinoflagellate cysts, a combination archeopyle stands for:
1- Precingular + anterior intercalary plates 2- All apical plates
3- Adenate apical + precingular plates 4- None of them

4- Write briefly on TWO Only of the following: (10 marks; 2.5 marks each)

- A- Life cycle of spore-producing plants (with drawings).
- B- Kerogen types.
- C- Standard palynological extraction technique of organic matter from sedimentary rocks.
- D- Cavation in dinoflagellate cyst wall (with drawings).

تمت الأسئلة مع أطيب الأمنيات بالتوفيق

د / عمرو سعيد ضيف

أ.د / ناجح عبد الرحمن عبيد الله

Geology Department Faculty of Science Assiut University		Time: 2 H June-2016 Sedimentation & Depositional Systems 325 G P
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Part One: Sedimentation (25 Marks)

Answer the FIRST QUESTION and ONLY ONE of the others:

I- The First Question (إجباري): (10 Marks)

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

- 1) Sphericity is a description of how angular the edges of a particle are ().
- 2) Layers of Mg-O/OH in a clay mineral are referred to as gibbsite layers ().
- 3) Gypsum is the main mineral constituent of the carbonate minerals ().
- 4) Debris-flow deposits are typically poorly sorted, matrix-supported sediments with random clast orientation and no sedimentary structures ().
- 5) Intraformational conglomerates are derived from outside the depositional basin ().
- 6) Heavy minerals typically have densities that exceed those of the common rock-forming minerals quartz and feldspar ().
- 7) High feldspar content in sandstone carries specific implications about source area, climate and topography ().
- 8) Glacial till that is transported within glacial ice is typically rounded in shape ().
- 9) Polymictic conglomerates are composed of clasts include several different rock types ().
- 10) Massive Bedding has primary sedimentary structures ().

II- The Second Question (إختياري): (15 Marks)

- A) Define the planar bedding and write on its types. (5 Marks)
- B) Write on the classification of conglomerates and Breccias (4 Marks)
- C) Compare between the following: (6 Marks)
 - i) Hummocky cross stratification and Heterolithic stratification
 - ii) Quartz arenite and quartz wacke
 - iii) kandite group and smectite group.

III- The Third Question (إختياري): (15 Marks)

Write on of the following:

- A) Define each of the following: (6 Marks)
 - i) Roundness
 - ii) Sphericity
 - iii) Form of the particles
 - iv) Texture of the sediments
- B) Write on The evaporites and its economic importance. (5 Marks)
- C) Dunham classification of limestones. (4 Marks)

باقى الأسئلة فى الصفحات التالية
أنظر خلفه

Part Two: Depositional systems (25 Marks)

Answer only **five questions** out of the following, extra answers will not be considered.

1. Write short notes on (5 marks):

- a. Carbonate compensation depth (CCD) (2 Marks).
- b. Palaeocurrent patterns as a diagnostic feature of the sedimentary facies (3 Marks).

2. Write the scientific term describing the following items (5 Marks):

- a. is a geographic location under which sediment can accumulate and characterized by a particular combination of geological processes and environmental conditions (1 Mark).
- b. Unlike lithology and fossils, are undoubtedly generated in place and can never have been brought in from outside (1 Mark).
- c. is the sediment disturbances caused by living organisms (1 Mark).
- d. marked by the interaction of fluvial and near-shore marine processes. Deltas, beaches, tidal flats, bars and lagoons (1 Mark).
- e. are accumulations of sediment formed by the reduction in velocity of stream upon reaching the ocean. Sometimes, crossbedded sandstones, sometimes plane-bedded sandstones (1 Mark).

3. Write short notes on (5 marks):

- a. Processes in a model delta (3 Marks).
- b. Ancient pelagic deposits (2 Marks).

4. True or false (5 Marks):

- a. Ripple marks are strictly marine sedimentary structures (1 Mark).
- b. Alluvial fans would have an overwhelming majority of fine grain clastic rocks (1 Mark).
- c. High energy environments deposit finer sediments (1 Mark).
- d. The lateral migration of a meandering channel erodes the outer concave bank, scours the river bed, and deposits sediment on the inner bank (point bar) (1 Mark).
- e. In searching for ancient deltas, we must look for thick clastic sequences showing repeated cycles of upward-coarsening grain size (1 Mark).

5. Write short notes on (5 Marks):

- a. The vertical gradation of the grain size in alluvium of meandering rivers (give a sketch drawing) (2 Marks).
- b. Economic aspects of alluvial deposits (3 Marks).

6. Fill in the given spaces with appropriate words (5 Marks):

- a. Oozes are defined as sediments with over% organic skeletal detritus. There are three major types of ooze, ooze, ooze and ooze (1 Mark).

- b. Two major types of delta may be differentiated. dominated deltas, and those dominated byprocess. Most deltas are subjected to extensive marine reworking and distinction must be made between deltas dominated by oraction (1 Mark).
- c. To use fossils to identify the depositional environment of the host sediment two assumptions must be made 1) that the fossil in the place where it was2) that the of the fossil can be deduced either from its or from studying its living descendants (1 Mark).
- d. is a mass of sedimentary rock which can be defined and distinguished from others by its,,, and(1 Mark).
- e. Placers of alluvial deposits are variously termed occur in place above the parent ore, placers are those transported a short distance downslope and placers have undergone fluvial transportation (1 Mark).

Good luck

Dr. Mahmoud Essa

Dr. Abdalla El Ayyat



Summer Semester, Final Examination
For 3rd Level Students (Petroleum Geology Branch)
On: Geophysical Exploration for Oil and Gas (351-PG)

August, 2016	(Total Marks: 50)	Time: 2 hours
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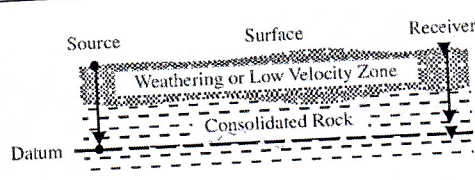
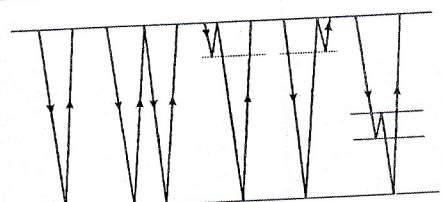
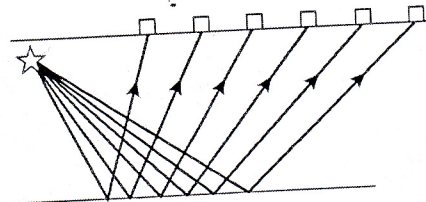
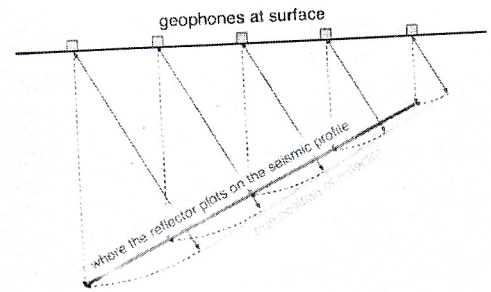
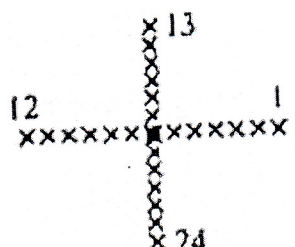
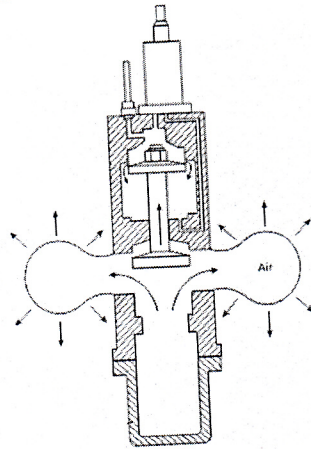
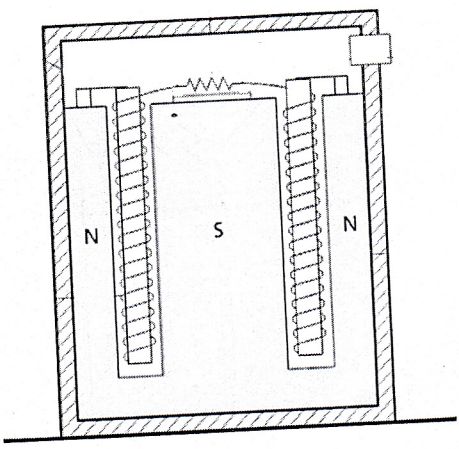
Answer the following questions:

First Question: Complete the following sentences: (15 Marks)

1. During gravity surveying, if there are denser rocks below the ground surface they will give a _____ gravity anomaly.
2. A _____ is the instrument used to measure the intensity of the magnetic field at a particular place.
3. _____ in an area is often the only way of being absolutely sure what is underground.
4. In seismic surveying, _____ are created by a controlled source and propagate through the subsurface.
5. The smaller the contrast in acoustic impedance across a rock interface the _____ is the proportion of energy transmitted through the interface.
6. If the reflection coefficient equals to +1, all the incident energy is _____.
7. By suitable analysis of the _____ for reflected or refracted rays it is possible to compute the depth to the underlying layers.
8. _____ is defined as the difference between the travel times t_1 and t_2 of reflected-ray arrivals recorded at two offset distances x_1 and x_2 .
9. We use the term _____ to denote any event on the seismic record from which we wish to obtain information.
10. _____ is the number of times that the same midpoint is sampled by different shots and different receivers.
11. _____ is the process of moving the reflections to their proper places with their correct amount of dips.
12. _____ is the process of excluding parts of the traces that contain only noise or more noise than signal.
13. A seismic _____ is a localized region within which the sudden release of energy leads to a rapid stressing of the surrounding medium.

14. Horizontal slices may be taken through the seismic data volume to display the pattern of reflections intersected by any time plane. Such a representation of the 3-D data is known as a _____.
15. In marine surveying, the passage of a compressional seismic wave is marked by transient pressure changes and these are detected by _____.

Second Question: What are these equations and sketches refer to? (10 Marks)

1)	$R = \frac{\rho_2 v_2 - \rho_1 v_1}{\rho_2 v_2 + \rho_1 v_1}$	2)	$\frac{\sin \theta_1}{\sin \theta_2} = \frac{v_1}{v_2}$
3)	$\Delta T = t_x - t_0 \approx \frac{x^2}{2V^2 t_0}$	4)	 A diagram showing a seismic wave path from a Source to a Receiver. The wave travels through a 'Weathering or Low Velocity Zone' and then through 'Consolidated Rock'. The 'Surface' is indicated, and a 'Datum' is shown at the base of the rock layer.
5)	 A sketch showing multiple seismic waves reflecting off a horizontal interface. The waves are represented by vertical lines with arrows indicating direction.	6)	 A sketch showing seismic waves originating from a point (star) and traveling through a medium with a velocity gradient, bending away from the normal as they travel.
7)	 A diagram showing 'geophones at surface' and a 'seismic profile' below them. The profile shows a curved line representing the 'where the reflector dips on the seismic profile'.	8)	 A diagram showing a cross-section with numbered points 1, 12, 13, and 24. The points are marked with 'x' symbols and connected by lines.
9)	 A diagram showing a seismic wave source, likely a vibrator, with arrows indicating the direction of wave propagation.	10)	 A diagram showing a magnetic field setup with a central core labeled 'S' (South) and two outer cores labeled 'N' (North). The setup is enclosed in a rectangular frame.

Third Question: True (T) of False (F):

(5 Marks)

1. The presence of gas in sedimentary rocks reduces the elastic moduli, Poisson's ratio and the V_p/V_s ratio.
2. The term spread refers either to the pattern of geophones that feeds a single channel or to a distribution of shot-holes or surface energy sources that are fired simultaneously.
3. Dip moveout at an offset distance x is the difference in travel time ΔT between reflected arrivals at x and at zero offset.
4. Gravity surveys use a gravimeter that measure the velocity at a given point.
5. Many types of navigation methods are used in marine seismic work, including radio-positioning, sonic devices, and observation of navigation satellites.

Fourth Question: Write short notes on ONLY FIVE of the following:

(10 Marks)

- | | |
|-------------------------|------------------------|
| 1. Common midpoint | 2. Multi-fold shooting |
| 3. Synthetic seismogram | 4. Static correction |
| 5. CMP Staking | 6. Split spread |
| 7. Seismic noise | 8. Diffraction |

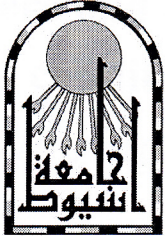
Fifth Question:

(10 Marks)

The presence of the hydrocarbons in the pore spaces of a rock lower the rock velocity and density. Thus, hydrocarbons change the contrast in acoustic impedance with the overlying and underlying rocks. **Describe the most common hydrocarbon indicators which can be observed on the seismic sections** (*Use sketches to support your answer*).

===== **GOOD LUCK** =====

Dr. Rashad Sawires

Geology Department Faculty of Science Assiut University		Second Semester Exam. May 2016 Time: 2 hours
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Subject: Sedimentary Environments and Sedimentary Basins (335 G)

Answer the following questions:

(50 Marks)

1. Which of the following is true and which is false: (5 Marks)

- () Trough cross – bedding is the main primary sedimentary structures characterize the fluvial sediments.
- () Aeolian sediments are mainly poorly sorted.
- () Grain textures are important in sedimentary environment interpretation.
- () Deltaic sediments are important for hydrocarbon exploration.
- () Sedimentary cycle is characterized either by vertical variation in primary sedimentary structures and/or the change in lithology.

2. Bed load and overbank fluvial sediments are economically important; write on their industrial applications.

(5 Marks)

	Bed load sediments	Overbank sediments
Lithology		
Industrial applications		

3. Industrial materials were laid down in Egypt under different environmental conditions, *illustrate the environment of the following:*

(6 Marks)

Industrial Materials	Depositional Environment
Dolomite	
Coal	
Gypsum	
Hammamat conglomerates	
Kaolin	
Placer deposits	

4. The sedimentary basins are important for hydrocarbon resources; *mention the main sedimentary basins of Egypt.*

(5 Marks)

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5. Answer only ONE question of the following:

(4 Marks)

A- Write notes on the composition and texture of Alluvial fans.

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B- Write brief account on delta types.

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6. The development of basin fills are controlled by many factors, *mention these*.

(7 Marks)

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7. Modern and ancient deltaic sediments in Egypt are well represented; give three examples of the locations of the ancient ones.

(3 Marks)

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8. Which of the following is true and which is false: (6 Marks)

- () Rift basins are related to plate convergence.
- () About 80% of the sedimentary basins on the earth have been formed due to extensional forces.
- () Trenches are related to plate convergence.
- () The Nubia sandstone in Egypt was deposited under aeolian environment.
- () Sedimentary environment is a geographic location under which sediments were accumulated
- () Sedimentary basins are regions of the Earth's crust dominated by subsidence.

9. Define only **FOUR** of the following:

(4 Marks)

- Basin Axis
- Pelagic sediments
- Depocenter of sedimentary basin
- Neritic sediments
- Active sedimentary basins

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10. Write short notes on the economic importance of marine sediments.

(5 Marks)

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Ezzat A. Ahmed

GOOD LUCK



First circular Exam, Petrology (324G) –Summer C. 8-2016

Time: 3 Hours

Total marks: 50

الامتحان في أربع صفحات

Part I- Igneous and metamorphic Rocks

- (Questions 1-24, one mark for each); أجب في نفس ورق الأسئلة

Read the statements and select and/or write the answer for the following:

1- Basaltic magmas

- a- are less viscous than granitic magmas
- b- are more viscous than granitic magmas
- c- Have viscosity similar to the granitic magmas

2- The Processes responsible for changing a magma's composition are:

- A- Magmatic differentiation
- B-
- C-

3- Rocks formed entirely above the surface of the earth are called

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4- laccoliths are

- A- intrusive igneous Structures
- B- Extrusive igneous Structures
- C- Metamorphic Structures

5- Define the Ultramafic rocks

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6- In Phaneritic Texture of igneous rocks

- A- Large crystals occur in a fine-grained groundmass.
- B- Grains are visible and identifiable using the naked eye
- C- Rocks contain variable proportions of glass.

7- The mineralogical composition of the gabbroic rocks are Ca-plagioclase, pyroxene, amphibole and olivine whereas, the mineralogical composition of basaltic rocks are:

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8- Muscovite in acidic rocks can be considered as

- a- an essential mineral b- an accessory mineral c- a secondary mineral

9- Diorite and Andesite are

- a- Acidic rocks b- mafic rocks c- ultramafic rocks d- None

10- Potash Feldspar minerals are rich in acidic rocks whereas, pyroxene and Ca-plagioclase are rich inrocks

11- Mention only the factors that affecting the crystal size in igneous rocks

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12- In the ophitic textures of gabbro and basalt:

- a- Pyroxene grains partially surround plagioclase laths
b- Pyroxene grains completely surround plagioclase laths
c- Plagioclase laths with interstitial pyroxene grains
d- None of the above

13- The diabasic texture are common in

- A- Gabbroic rocks b- Basaltic rocks c- Both

14- Perthitic textures are common in

- A- Granitic rocks b- Gabbroic rocks. C- Both

15- Politic rocks are metamorphic rocks originate from:

- a- Sandstones b- Limestones C- Mudstones

16- The sources of heat within the Earth are come from:

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17- The main cause of foliation and lineation in metamorphic rocks is

- a- Confining pressure b- Directed pressure c- Both

18- Define the slaty cleavage

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19- What are the Chemically Active Fluids

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20- What are the evidences of metamorphism

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21- Contact (Thermal) metamorphism are characterized by:

- a- High temperature/high pressure
- b- High temperature/Low pressure
- c- low temperature/Low pressure

22- Quartzite and Marble can be formed by

- a- contact metamorphism only
- b- regional metamorphism only
- c- contact and regional metamorphism

23- Hornfels is

- a- a contact metamorphic rocks
- b- a regional metamorphic rocks
- c- can formed by both contact and regional metamorphism

24- Write your comment on the picture

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This is a Quartz grain

II- Write only on five from the following: 2 marks for each)

أجب في كراسة الإجابة

- 1- The Amygdaloidal structure
- 2- Classification of igneous rocks based on silica content
- 3- Types of porphyritic textures in igneous rocks
- 4- Schistose structure
- 5- Prograde metamorphism of shale
- 6- Metamorphic index minerals make zones in pelitic rocks. What are these zones?

Part II- Sedimentary rocks

Answer only two questions out of the following. Extra answers will not be considered.

1. True or false (8.5 marks):

- Polymictic conglomerates are those with several or many different types of clast, but oligomictic conglomerates are those with just one type of clast (1 mark).
- The shape of a grain includes four classes (spheres, discs, blades and rods) based on ratios involving the long (L), intermediate (I) and short axes (S) (1 mark).
- A coarsening upward is a type of stratification in which there is a progressive decrease in the grain-size upwards through the bed (1 mark).
- Minerals that are very stable at the Earth's surface are minerals that either form as a result of chemical weathering, or crystallize at the lowest temperatures (1 mark).
- Sand that commonly forms sandstones is found in two very important places: beaches and deserts (1 mark).
- Cubic packing in medium sand has a porosity of about 48%, whereas rhombohedral packing for the same sand will have a porosity of about 26% (1 mark).
- Texture refers to the geometric properties of the mineral components in a rock. It includes the size, shape and arrangement of these components (1 mark).
- Heavy minerals are minerals with a specific gravity of more than 2.85 that usually constitute less than 1% of sediments (1.5 marks).

2. Fill in the spaces with appropriate terms (8.5 marks):

- Shale is a rock that comes from relativelyand.....water (1 mark).
- Wackestone has more than% allochems, grainstone is also allochem-supported but mud (1 mark).
- A common place to find conglomerate is(1 mark).
- refers to the angularity of particle outline but.....measures the degree to which a grain approaches a perfect sphere (1 mark).
- The two main classes of sandstone are.....contain less than 15% clay or matrix, whereas.....have more than 15% matrix (1 mark).
- composed of rounded particles indicating some degree of transport (mountain stream) but.....composed of angular fragments indicating that they did not travel far from their source (1 mark).
- The four components of sedimentary rocks are.....and.....(1 mark).
- Water is the most common agent of transport, sediments may be carried by four mechanisms. These mechanisms are.....and.....(1.5 marks).

2. Write in detail on the following items (8.5 marks):

- Classification of sandstones (3 Marks).
- Non-skeletal limestone grains (3 marks).
- Depositional environments for conglomerate (2.5 mark5).

مع أطيب الأمنيات بالتوفيق
أ.د. / ممدوح فراج سليمان
د. / عبد الله العياط