Dept. of Zoology

Faculty of Science

Assiut University

Final exam of invertebrate1 (220Z)2017

Time :Two hours

Total mark 50

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## Answer the following questions

### Q1 Choose the correct answer (10 mark one for each)

**1-While most of the Platyhelminthes are free living or endoparasites, which one of the following taxa has an ectoparasitic life cycle?**

a) Cestoda b)Trematoda c)Turbellaria d)Monogenea

**2-The members of the phylum Platyhelminthes are called flatworms because their bodies are flattened**

a) Dorsoventrally b) laterally c) anteriorly d) posteriorly

**3-A cuticle is different from a tegument in that a cuticle is _____ while a tegument is _____.**

a) alive, syncytial b) syncytial, ciliated c) ciliated, dead d)dead, alive

**4-The nervous system of the flatworms has sensory, motor, and association nerves, and it is organized into a _____ pattern.**

a)spinal cord b) endothelial c)ladderlike d)nerve net

**5- In which way are protostomes and deuterostomes the same?**

A They both have spiral cleavage of the embryo

B.The coelom develops in the same way in both.

C. The mouth forms first in both, before the anus.

D. They both form a hollow sphere in the embryo that has an indentation called a blastopore.

E.They both have indeterminate fate of the embryonic cells, so that separated cells all have the capacity to become a complete embryo.

**6-In some sponges, asexual reproduction can occur by**

a)bud formation b)regeneration following fragmentation

c)formation of gemmules d)all of the above

**7- How does a planarian consume food?**

a-by filter feeding b-diffusion across the cell membrane c-capturing with tentacles

d-siphoning food through a pharynx

**8-Which of the following stages of Ancylostoma duodenale is infective to human beings?**

a)Rhabditiform larva b) Eggs c) Adult worm d) Filariform larva

**9- Protists are extremely diverse and thus pose a challenge to their classification. Three of the four statements are true concerning protists and their classification. Select the exception**

. A) The Kingdom Protista contains unicellular, colonial, and multicellular members

. B) The Kingdom Protista contains autotrophs and heterotrophs.

C) The Kingdom Protista contains members that have chloroplasts

. D) The Kingdom Protista contain eukaryotes and prokaryotes

**10-African sleeping sickness is caused by a human parasite called**

a)Trysoma b)panosoma c)Trypanosoma d) Dipanosoma

انظر خلفه

## Q2- Mention the scientific terms of the followings ( 10 marks) one mark for each point

1- In phylum Platyhelminthes the cells that form a meshwork filling the spaces between the muscles and organs that develops from the mesoderm.
2-An extension of body wall of Polycheata used in swimming , gas exchange and burrowing.
3-The chitinous bristles that earthworms use to anchor themselves in the earth and pull themselves along.
4-The salt and water balance organs found in Platyhelminthes.
5- Flagellated cells that line the canals of the sponge.
6-Phylum linked between parazoa and metazoan.
7-A term that refers to Cnidaria and the Cnetophora.
8-Structures are found in many anemones, the edges of the septa are extended into thread like structures that contain nematocysts and gland cell.
9- The infective stage in the life cycle of *Fasciola* sp.
10-The scientific name of pork worm.

## Q3- Compelet the following statements ( 10 marks) one mark for each point

1-The cells that secrete mucus in the epidermis of the Turbellaria are called…..-
2- The a cillatelta clade contains two classes are……and……
3- Phylumporifera is classified into three classes ……,…… and
4- The infective stage of Taenia solium is ….while the infective stage of Schistosoma mansoni is ……..
5--Excretion in the phylum Nematoda by……. while Excretion in the phylum Annileda…..
6-Phylum Cinderea is classified into four classes … ……,……, … and
7-- The cavity of cnidarians is called…… while in porifera is called…….
8- The type of body cavity of rotifera is ……..while in platyhelminthes is……
9-Hookworms are in the genus ……and feed on ……in the intestine
10- The three types of canal system of porifera are …… ,……..and……

## Q4- Illustrate with labelling drawing four only of the following: 8 marks 2 for each

1- Body plan of Monogenea
2- Structure of body wall of Trematoa
3- Body plan of placozoa
4-Body plan of Annilida
5- Structure of trophozoit of sporozao

## Q5 Answer the four only of the following:-(12mark ) 3 mark for each point

1- Demonstrate Ascaris life cycle in human.
2-Compare between the classes of Annileda.
3-Demonstrate Scyphozoan Life Cycle – Aurelia.
4-Demonstrate Plasmodium life cycle in human.
5-Demonstrate the circulatory system in earth worm.

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Good luck

أ.د/ أزهار حسين محمد

Geology Department
Faculty of Science
Assiut University

Time: 2 H
Jap. 2018

## Optical Mineralogy (235 G)

**I-Indicate by the sign (✓) or (×) and correct the mistaken one (30 marks):**

1-The gypsum plate is cut from a piece of clear gypsum to such a thickness about 0.06 mm thick that it gives a first-order red interference color ( )
2-The mica plate consists of a cleavage (flake) of optically clear muscovite mica about 0.03 mm ( )
3- The Berek compensator is a plate of calcite 0.1 mm thick is cut normal to the optic axis and used in measuring the retardation of the mineral to determine its birefringence ( )
4-In a homogeneous substance, light rays are not straight line ( )
5-Inhomogeneous substance, light rays are straight line ( )
6-Light moving along rays may be bent or refracted in passing from one substance to another of same properties ( )
7-If a grain has a higher index than the surrounding material, it is said to show positive relief ( )
8- Birefringence occur in isometric system and amorphous minerals ( )
9-Refractive index ( n ) depends largely on the density of the material ( )
10-Substances of high refractive index have high refringence ( )
11-The refractive index is the velocity of light in the medium ( )
12-When substances are more dense, light travels at a low velocity and light ray bends toward the perpendicular ( )
13-When substances are less dense, light travels at a higher velocity than in denser materials and light ray bends away from the perpendicular ( )
14-Relief is positive when the grain has higher refractive index than its surroundings, positive if lower ( )
15- Positive relief occur quartz, and feldspar ( )
16-Strong positive relief occur fluorite ( )
17-Apatite have low relief ( )
18-Plagioclase has high relief, plagioclase ( )
19-Refractive index of Canada Balsam (N) is 166 ( )
20-Refractive index of garnet mineral is 1.23 ( )

**Choose the correct answer of the following:**

21-The size of minerals that allows for optical identification is
a- 0.01 mm
b- 0.05
c- 0.1

22-The transmitted light intensity is related to
a-the absorption and mineral thickness
b- the absorption

c- mineral thickness

**23-The type of illumination may be**

a-orthoscopic (parallel, without the condenser)

b- conoscopic (convergent, with the condenser incorporated)

c-both

**24-The accessory plates include**

a-quartz wedge

b- gypsum plate

c- mica plate

b- Berek compensator

e-all

**25-The vibration plane of the polarizer can be determined with a rock section containing**

a-biotite showing cleavage

b- tourmaline showing cleavage

c-both

**26-Crossing the nicols is important to be sure of crossing of the Nicols by**

a-complete darkness of the field of view

b-complete light of the field of view

**27-Thin rock slice is**

a-0.03 mm

b- 0.3mm

c-3mm

**28-Synthetic resin is**

a-n~1.55

b- n~1.65

c- n~1.5

**29-Light vibrating in a single plane is said to be**

a-plane polarized

b- cross nicols

**30-Biaxial minerals have**

a-Two optic axis directions

b-One optic axis direction

c-no optic axis direction

**Answer of the following quactions:**

**31-What is the meaning of the interference colour? (5 Marks)**

**32-What the meaning of alteration (5 Marks)**

**33-What the interference figure of biaxial mineral (5 marks)**

**34-What the interference figure of uniaxial mineral (5 marks)**

**Good luck**

**Prof. Dr. Mohamed Abd El-Raouf Hassan**

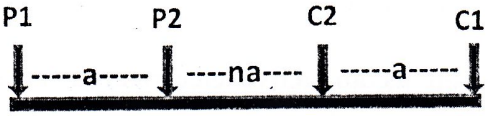
# FACULTY OF SCIENCE
# ASSIUT UNIVERSITY

**Final Exam in Principals of Geophysics (G250)**
**(Two Pages – 50 marks total)**

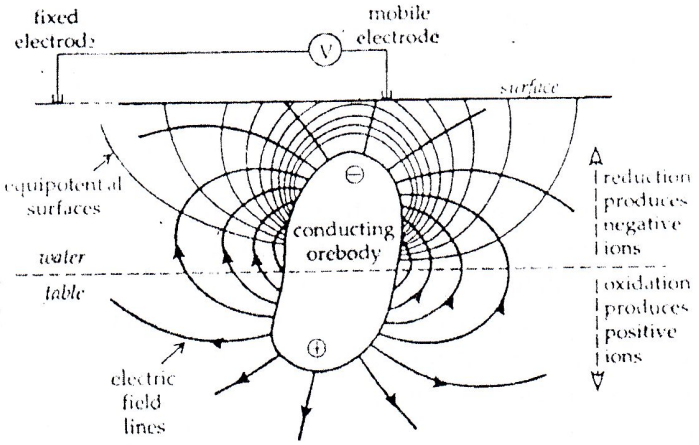
January: 2018 Time: 2 hours

**A) Answer the following questions: (five marks each)**

**1) Derive the geometric factor (K) for the electrode array sketched below.**




**2) What is the following model and describe it in detail.**




**B) Define <u>only five</u> of the following: (two marks each)**

| | | |
|---|---|---|
| Inclination | Bulk modulus | Apparent resistivity |
| Shear modulus | Declination | The geoid |
| Bouguer anomaly | Critical angle of refraction | |

C) Mark only ten of the following statements with True or false: (two marks each)

1. Vertical electrical sounding in resistivity best suited to map lateral electrical resistivity contrasts, such as lithologic contacts
2. In gravity survey the typical station spacing for near surface applications (e.g., archaeology) is few kilometers
3. The interpretation of SP is mostly qualitative
4. Resistivity increases with increasing water content
5. The gravity acceleration varies from the equator to the pole by almost 5%
6. The higher the value of the modulus, the stronger the material, and the smaller the strain produced by a given stress
7. Sedimentary rocks are higher in gravity acceleration "g" than igneous rocks
8. Primary seismic waves are faster than secondary seismic waves
9. The sign of the self-potential is an important diagnostic factor in the interpretation of SP anomalies
10. Mineral potentials in SP result from the flowing of fluid through a capillary or porous medium
11. In gravity land survey the station interval should be greater than the size of the anomalous feature
12. Self-Potential is classified as an active electrical method whereas the resistivity method is passive
13. Secondary (shear) seismic waves cannot travel through liquids
14. The self-potentials are almost invariably negative over the top of the sulfide deposit and are quite stable in time
15. By increasing the electrode spacing, more of the injected current will flow to shallower depths

D) Write brief notes on only five of the followings: (two marks each)

1. List the different corrections applied to gravity data
2. The different component of non-polarizable electrode
3. Advantages and limitations of resistivity method
4. Type of electrical current conductions in subsurface earth materials
5. The source mechanisms of self-potentials
6. Archi's law and define all of its components
7. Causes of variations of gravity acceleration "g" over the earth's surface
8. Two problems associated with the interpretation of seismic refraction data

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End of questions

Good luck.....

Prof. Dr.: Gamal Zidan AbdelAal

Geology Department
Faculty of Science
Assjut University

**Final Exam, Petroleum Geology Students**
**Invertebrate Palaeontology and Palaeoecology (PG217)**
**January 2018**

**Total score: 50 marks** **Time allowed: 2 hours**

ملحوظة: أسئلة هذ الامتحان على الوجهين – من فضلك أقلب الورقة للاجابة على باقى الأسئلة

## I- PART I (INVERTEBRATE PALAEONTOLOGY) (25 marks)

***ANSWER THE FOLLOWING QUESTIONS:***

*Question No. 1: Give the expression for the following sentences: (5 marks; 1 mark each)*

a- In fossilized skeletons, the process that takes place when ground water, carrying dissolved minerals, infiltrates the microscopic pores and cavities in bones, wood or shells.

b- Alternation of sexual and asexual generations in Foraminifera.

c- A group of microorganisms that is considered major source of atmospheric oxygen.

d- The aperture of Gastropoda with siphone canal.

e- The indirect evidence of prehistoric life.

*Question No. 2: Give the terminology applied to the following: (10 marks)*

a- *Compare between the following: (2.5 mark each)*
   1- Polyp and Medusa form in Cnidiria.
   2- Orders Calcarea and Triaxonida.

b- *Write on **two only** of the following: (2.5 mark each)*
   1- Sponge types in Spongia (illustrate your answer by drawings)
   2- Shell morphology of Gastropoda.
   3- Dental plate in Bivalvia.

*Question No. 3: (5 marks; 1 mark each)*

*Check if the following statements are true or false and correct the false:*

a- Goniatitic suture line is restricted to the Triassic System.
b- The skeleton of Heteractinellida is marked by the presence of Monaxon spicules.
c- The members of the Order Tetracxonida are commonly called "stone sponge".
d- The Endocochlia is the most important subclass of Cephalopoda.
e- Centric diatoms dominate the marine environments from the Cretaceous until present.

*Question No. 4: Answer **two only** of the following:* *(5 marks; 2.5 marks each)*

a- Describe the internal structures of the Bivalvia shell.
b- Write on the geologic history of Tabulata
c- Write on the ecology, geologic distribution and body structure of Archaeocyatha.

***Examiner (Part I): Dr. Amr Abdel-Sabour (Geology Department)***

## II- PART II (PALAEOECOLOGY) (25 marks)

***ANSWER THE FOLLOWING QUESTIONS:***

*Question No. 5: Mark the (right) and the (wrong) statements: (10 marks; 1 mark each)*

a- Studying populations within physical and biological environment is called autecology.
b- Diatoms are not considered good depth indicators.
c- The communities resulting from Q-mode or R-mode analyses are characterized by the species that are common and have high degree of fidelity.
d- Taphonomy is those processes that take place during diagenetic alterations.
e- The taxonomic uniformitarian approach can be applied to faunas and floras as well.
f- Holocene dinoflagellate cysts are considered good environmental indicators.
g- Past changes in rivers discharges might have influenced past oceanographic conditions.
h- Stromatolite morphology can reflect current velocity.
i- A fossil assemblage as a community is termed "biocoenosis".
j- All living animals moving in water or the air are "streamlined".

*Question No. 6: Complete the missing word(s): (5 marks; 1 mark each)*

a- Studying populations within physical and biological environment is called .....
b- The science of ecology deals with the study of the interaction of organisms with one another and with the .....
c- In geologic terms, the rock unit containing a community is termed .....
d- Accumulation rates as absolute abundance data sets give greater precision than data come from .....
e- Visual grouping by distribution maps of comparable dinoflagellate cysts can reflect influence of .....

***ANSWER TWO ONLY OF THE FOLLOWING QUESTIONS:***

*Question No. 7: (5 marks; 2.5 marks each)*

Discuss briefly the following:

a- The community concept b- Environmental significance of Acroporidae

*Question No. 8: (5 marks)*

Comprehensive ecologic background of preserved remains of ancient life is necessary for paleoecology reconstruction; discuss this statement with examples.

*Question No. 9: Answer the following: (5 marks; 2.5 marks each)*

a- Morphology of fossilized organisms can reflect substrate, turbulence and locomotion method, discuss this statement with examples?
b- Compare between substantive and methodologic uniformitarianism.

*Question No. 10: Write briefly on: (5 marks; 2.5 marks each)*

a- Ecosystems b- Differential preservation

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

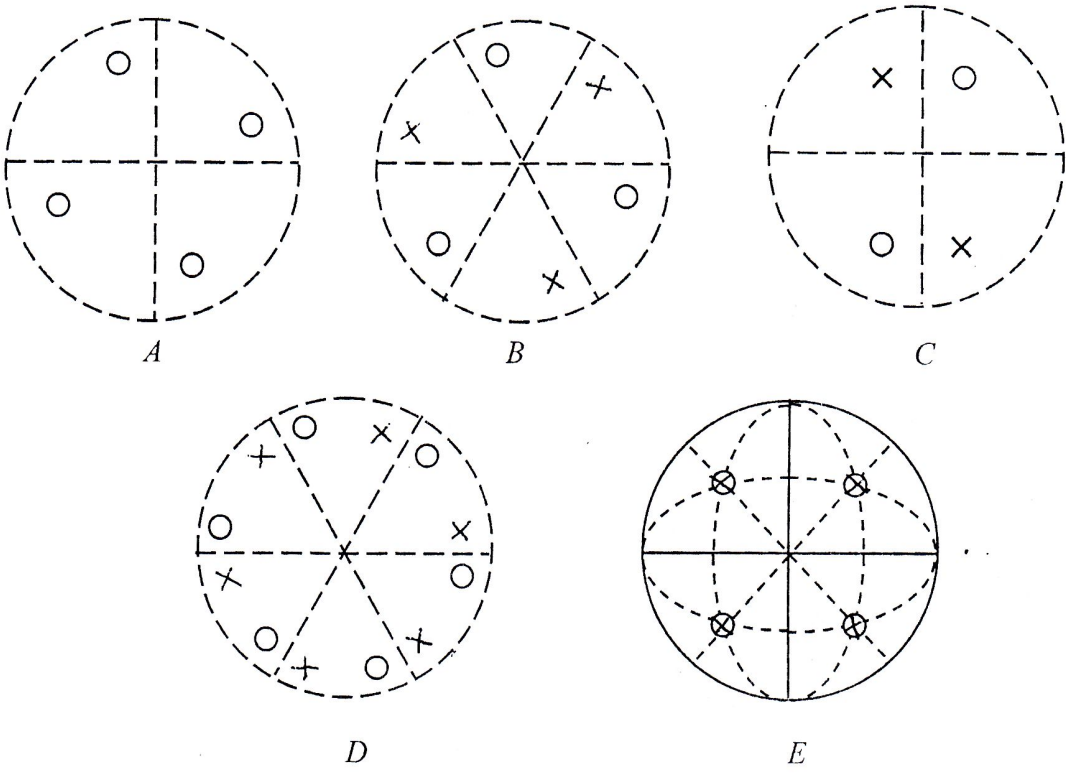
انتهت الأسئلة مع أطيب الأمنيات بالتوفيق

*Geology Department – Students of Level Two – January 2018*
*Course No. (G233) – Total marks (50) – Time allowed: 2 Hours*

*Answer the following questions:*

*1) Define **ONLY 5** of the following:* ***(10** Marks)*
*Crystal form – Hemimorphism – Inversion axis – Open form – Dome – First order – Pedion.*

*2) Write the Hermann-Maugin (HM) symbol for each stereogram; write the name of the form and its Millers indices:* ***(15** Marks)*




*3) Draw Stereograms for **ONLY 5** of the following forms and write their names:* ***(25** Marks)*

{1 0 $\bar{1}$ 1} in class 3m
{2 1 1} in class 4mm
{1 1 0 } in class 23
{2 1 1 } in class mm
{2 1 $\bar{3}$ 0} in class $\bar{6}$m2
{2 1 0 } in class $\bar{4}$3m
{2 2 1 } in class 43
{2 0 1} in class $\bar{4}$2m

***Good luck*** ***Prof. Dr/ Wagih Bishara***

سوف يعقد الاختبار الشفهى عقب التحريرى مباشرة بمعمل رقم ٣

Geology Department
Faculty of Science
Assiut University

Time: 1 H
Ja. 2018

Crystallography (231 G)

## Answer the following quations:

I- Crystallography

**1-Indicate by the sign ( ✓ ) or ( × ):** (10 marks)

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

2-Sterographic projection of rhombohedron, scalenohedron, and second order prism in trigonal system with example mineral crystalline in this system (5 marks)

3-Sterographic projection of first order prism, second order prism, and second order bipyrimadal in tetragonal system with example mineral crystalline in this system

(5 marks)

4-Sterographic projection of octahedron, rhombodedcahedron, and trioctahern in cubic system with example mineral crystalline in this system

(5 marks)

**Good luck**
**Prof. Dr. Mohamed Abd El-Raouf Hassan**

## Part Two: Mineralogy

**ANSWER ONLY TWO QUESTIONS FROM THE FOLLOWING**

(Illustrate your answer with drawing as much as possible) ( Total Marks 25)

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### Question No 1

A- What are the general structural formula and the structural arrangement properties for minerals belonging to the single chain structure of the silicate minerals? On What basis you can classify the types of minerals in such subgroup? What are the most important optical properties characterize these minerals? (9½ Marks)

B- How mineral kingdom can be classified on a genetic basis? (3 Marks)

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### Question No 2

A-Compare from the structural point of view between the linkage of Si- tetrahedron in the Nesosililcates (Orthosilicate) group and in the Phyllo (Sheet silicate) group. What are their most important known minerals? What are the most important characteristic physical and optical properties for these minerals? Mention their important industrial uses. (10 Marks)

B-What is meant by: Ploymorphisn and Pseudomorphism (Give examples) (2½ Marks)

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### Question No 3

A-What are the essential features ofthe structures for the double chain silicate mineral group? Give its general chemical formula. What are the common optical properties of these group of minerals? (8½ Marks)

B-Correct the following mineralogical knowledge:

Galena has a chemical formula ($FeS_2$) while Chalcopyrite has ($CuS_2$) chemical formula, and both crystalline in orthorhombic systen. Electrum is a mixture between native gold and copper.

Gold is poor conductor to heat andelectricity and high melting point making it well-suited for use in coins and jewelry, while Graphite is good conductors of electricity with low melting point which making it not suite for high temperature electrodes.

Shalerite has $FeS_2$ chemical formula while Malachite has the formula $CuFeS_2$ and both have nearly similar physical properties.

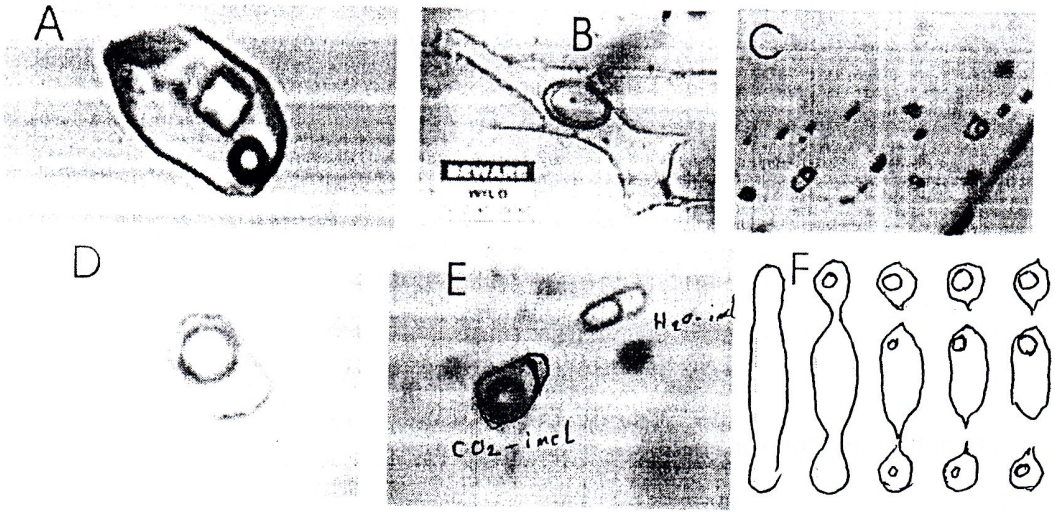
Calcite crystallized in tetragonal system and Aragonite in orthorhombic system and both are characterized by perfect rhomboledral cleavage. (4Marks)

Good Luck Examiner: Prof. Dr. Nadia Sharara و بالتوفيق

| Geology Department<br>Faculty of Sciences<br>Assiut University<br>Second level | | First Term Examination<br>Fluid inclusions in oil exploration<br>(224 GP)<br>January, 2018<br>Two Hours |
|---|---|---|

Answer the follwing questions

1. Look to the photos and then answer (10 marks)

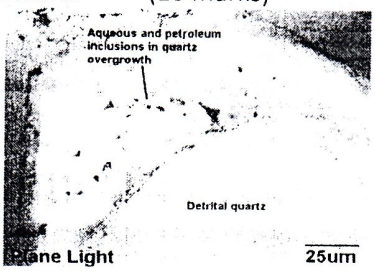



A) 1. Write the name of physical phases
   2. In such system, what is the phase changes used to estimate the salinity
B). 1. What is the type of fluid inclusion based on composition?
   2. Is the $Tm_{ice}$ can faxes the salinity and whay ?
C and D). 1. Write the paragenetic distribution of inclusions in both figures.
E). How can interpret the coexisting of CO2 and H2O
F). 1. What is the name of feature in the photo?
   2. Is these inclusions can be used for microthermometric measurements?

2. What are the important attributes of fluid inclusions? (10 marks)

3. What is the fluid inclusions stratigraphy (FIS)? Write five applications for FIS? (10 marks)

4. Look to the photo and then answer (10 marks)



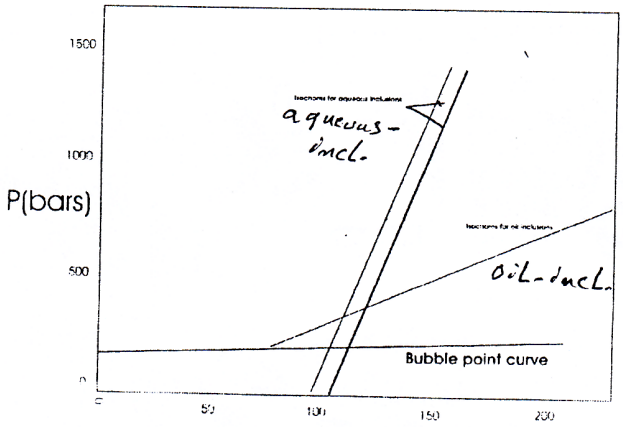

Look to back

a) Discuss briefly the significance of distribution and abundances of petroleum inclusions in the upper photo.

b) Is the distribution of these inclusions can establish the time relation between inclusions and the host menerals, and why?

5. a) What are isochores and their uses in fluid inclusions study?

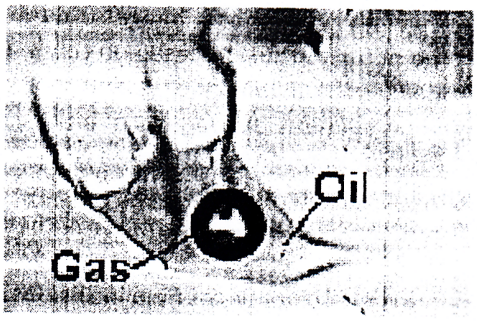
b) How can estimate the condition of trapping for the coexisting oil and-H2O inclusions from the following isochors diagram? (5 marks)




1. 6) Look to photos and then answer: (5marks)

a

b




a) Which type of reservoir illustrated from inclusions in (a and b)?

b) How can differentiate between mature and immature oil using the fluorescence color for inclusions?

With my best wishes

Prof. Mohamed

| Assiut University<br>Faculty of Science<br>Geology Department | | جامعة أسيوط<br>كلية العلوم<br>قسم الجيولوجيا |
|---|---|---|

First Semester Examination
Zoology Students
(Paleontology)

| December 2017 | G211 | 50 Marks | Time: 2 hours |
|---|---|---|---|

Answer the following questions:

First question (10 marks).

Give the correct expression for the following:

1- Minerals which grow within rocks into shapes that resemble fossils .....

2- Transfer the organism from the biosphere to the lithosphere .....

3- The depth in the ocean below which the rate of supply of calcite lags behind the rate of solvation .....

4- Spherical layer of coccoliths surrounding the cell .....

5- Deposits which consist of about 6 m thick and contain more than 400 million diatom valves per gram .....

6- The processes that takes place when water dissolves the original hard parts and replaces them with mineral matter.....

7- The totality of fossils of the organisms which inhabited the Earth and their placement in sedimentary layers.....

8- The group of calcareous nannofossil which have unknown biologic affinity .....

9- Ornametation of Ostracods that has rounded or polygonal shape and bounded by walls .....

10- Group of organisms which marked by the dominance of the medusae stage and contain massive amounts of mesoglea .....

Second question (10 marks)

Put true (√) or false (x) in the front of the following sentences with correction of the false one.

1- Conodonts rapidly evolved and used as biostratigraphic tool during the Devonian – Permian age .....( )

2- The first occurrence of Palaeocopida and Leiocopida Ostracods was during the Ordovician .....( )

3- Tetracoralla was important reef formation during the Paleozoic ..... ( )

4- Pennate Diatoms dominate the non-marine environments from Paleocene to Recent..... ( )

5- Foraminiferal wall structure could be changed due to the environmental changes.. ( )

6- The Periostracum layer of the bivalve shell is commonly preserved in the fossil state ( )

7- The skeleton of Sponge is completely made up of calcium carbonate..... ( )

8- The fresh water Spongia is restricted to Jurassic Epoch..... ( )

9- The Porcelaneous tests of Foraminifera are characterized by the possession of minute perforations in the test wall ..... ( )

10- Discoasteraceae are important Paleogene group that become extinct at the Pliocene Epoch ..... ( )

Third question (15 marks).
Discuss the following sentences:

1- Development of septa in Tetracoralla (explaine your answer by drawing) and their relation to Hexacoralla.

2- Applications of Ostracods.

3- Colour Alteration Index.

Fourth question (10 marks)
Write on Four only from the following:

1- Importance of Conodonts

2- Evolution of suture line of ammonites.

3- Ostracods depth related fauna

4- Geologic history of Tetracoralla

5- Ecology of coccolithophores

Fifth question (5 marks)
Choose the correct answer:

1- The most important subclass of Cephalopoda is Endocochlia ..... (Give reason for your answer)

a. True b. False

2- The maximum abundance of foraminifera and calcareous nannoplankton was during

a. Lower Triassic b. Jurassic c. Upper Cretaceous

3- The type of teeth that composed of two or three cardinal teeth below the Umbo as well as elongated lateral teeth known as .....

a. Schizodont b. Taxodont c. Heterodont

4- The correct age of phylum Archaeocyatha is .....

a. Devonian b. Permian c. Cambrian d. Ordovician

5- The conodonts that have Thorn shaped and expanded base defined as .....

a. Ramiform b. Pectinoform c. Coniform

*Good Luck....Dr. Amr Abdel Sabour*

Assiut University

Faculty of Science
Department of Geology

Final Exam for Rock – Forming Minerals (G 230)

Prof. Dr. Fawzy Farahat  First Semester, January 2018  Time allowed: 2 Hours

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A. Choose the Correct answer:-  Total Points=50

1. Silicate Structure in which two tetrahedral are not sharing oxygen atoms is called:
   a. Nesosilicate. b. Sorosilicate. c. Cyclosilicate. d. Single chain Silicate.
   e. Double chain Silica f. Sheet Silicate. g. Tectosilicate (2 points)

2. Which of the following statements are correct for pyroxene minerals? (2 points)

   a. The empirical formula is $XYZ_2O_6$.
   b. There are types of tetrahedra: those sharing 3 oxygen and those sharing 2.
   c. There are only one type of tetrahedra.
   d. The empirical formula is $XYZ_2O_5$.

3. The general formula of silicate ion presents in disilicates is: (2 points)
   a. $(SiO_4)^{4-}$ b. $(Si_2O_5)^{2-}$ c. $(Si_2O_7)^{6-}$ d. $(SiO_3)_n^{2n-}$ e. $(Si_2O_5)^{4-}$

4. Kyanite and sphene are : (2 points)
   a. Nesosilicates b. Inosilicates. C. Phyllosilicates d. Ring Silicates.

5. The formula of silicate ion present in cyclosilicates is: (2 points)
   a. $(Si_6O_{18})^{12-}$ b. $(Si_3O_9)^{2-}$ c. $(Si_4O_{10})^{4-}$ d. $(Si_2O_7)^{6-}$.

6. Feldspar, serpentine and margarite minerals: (2 points)
   a. All are 3-D framework silicates.
   b. Feldspars are 3-D framework silicates, while serpentine and margarite are inosilicates.
   c. Feldspars are not 3-D framework silicates, while serpentine and margarite are layered silicates.
   d. Feldspars are 3-D framework silicates, while serpentine and margarite are layered silicates.
   e. All are layered silicates.

7. The amphibole minerals occurred in ultramafic and mafic rocks are crystallized in: (2 points)
   a. Early stage of crystallization. b. Late stage of crystallization.

8. Olivine and phlogopite are minerals found in: (2 points)
   a. Earth,s crust b. Earth,s Mantle c. Earth,s core

9. Exsolution is not common in both alkali feldspar and plagioclase as they cool after crystallization.

a. False b. True. (2 points)

10. β-quartz, β-tridymite and β-cristobalite are characterized by high – temperature and high symmetry while α-quartz, α- tridymite and α- cristobalite are low temperature and low symmetry.

a. False b. True. (2 points)

11. Twelve – fold coordination is the lowest common coordination number such as $K^+$ and $Na^+$.

a. False b. True. (2 points)

B. Fill the Spaces with Scientific terms:-

12. Define the isomorphism and give example of isomorphic minerals (2points)

.....

.....

13. Why quartz group minerals are confined only in the Earth,s crust? (2 points)

.....

14. Fibrous variety of quartz is called chalcedony, mentioned three types of chalcedony:

a. .....

b. .....

c. ..... (2 points)

15. What differences between the structures pyroxene group minerals and pryroxenoid group?

..... (2 points)

16. The feldspar group minerals are characterized by Silicate Structure named as..... (2 points)

17. What differences between cubic closest packing and hexagonal closest packing ?

.....

.....(2 points)

18. Garnet minerals are classified into grandite and pyralspite groups. What differences between these groups?. (2 points)

.....

.....

C. Answer the following questions:-

19. What is the structure of chlorite and write the steps for its Chemical Formula ?. (3.5 points)

20. Write short notes about the Olivine phase diagram. Answer with drawing. (3.5 points)

21. How TOT strips of amphibole are formed. Answer with drawing. (3.5 points)

22. Write briefly for Bown,s reaction series. Answer with drawing (3.5 points).

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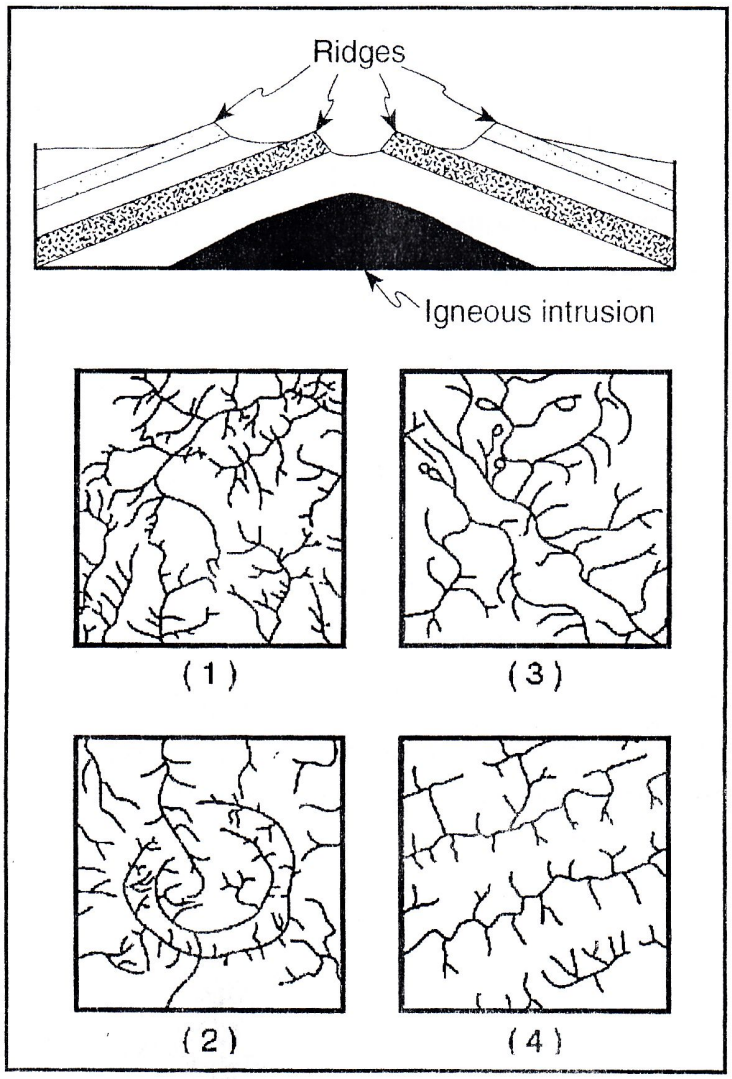


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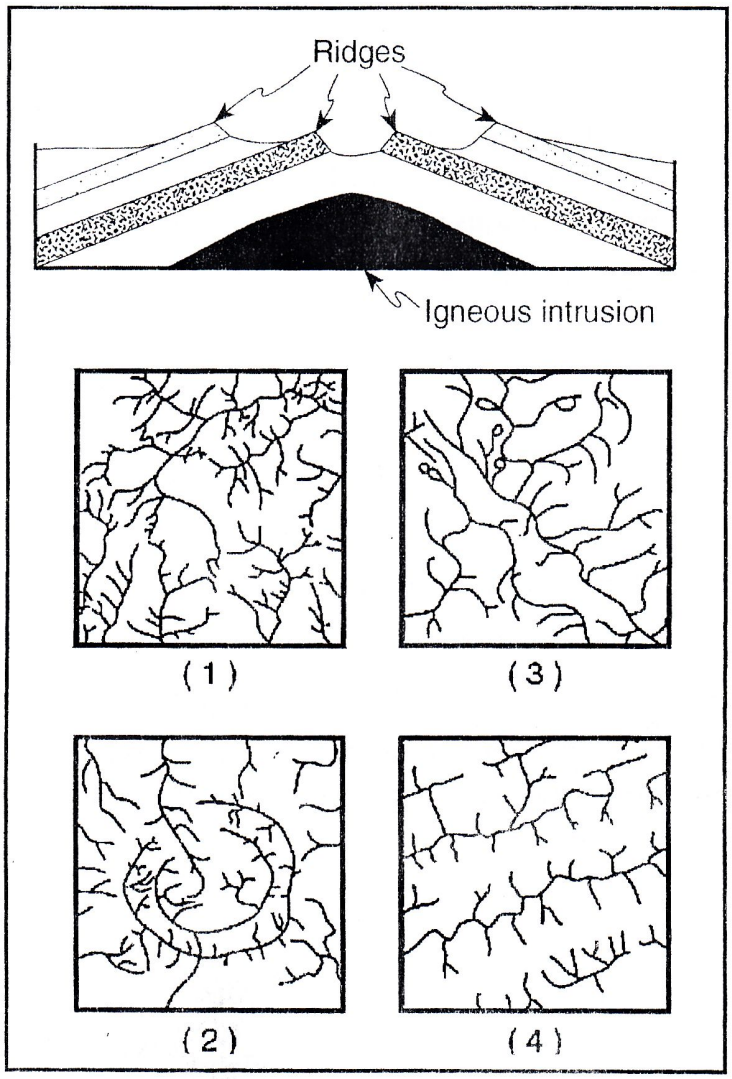


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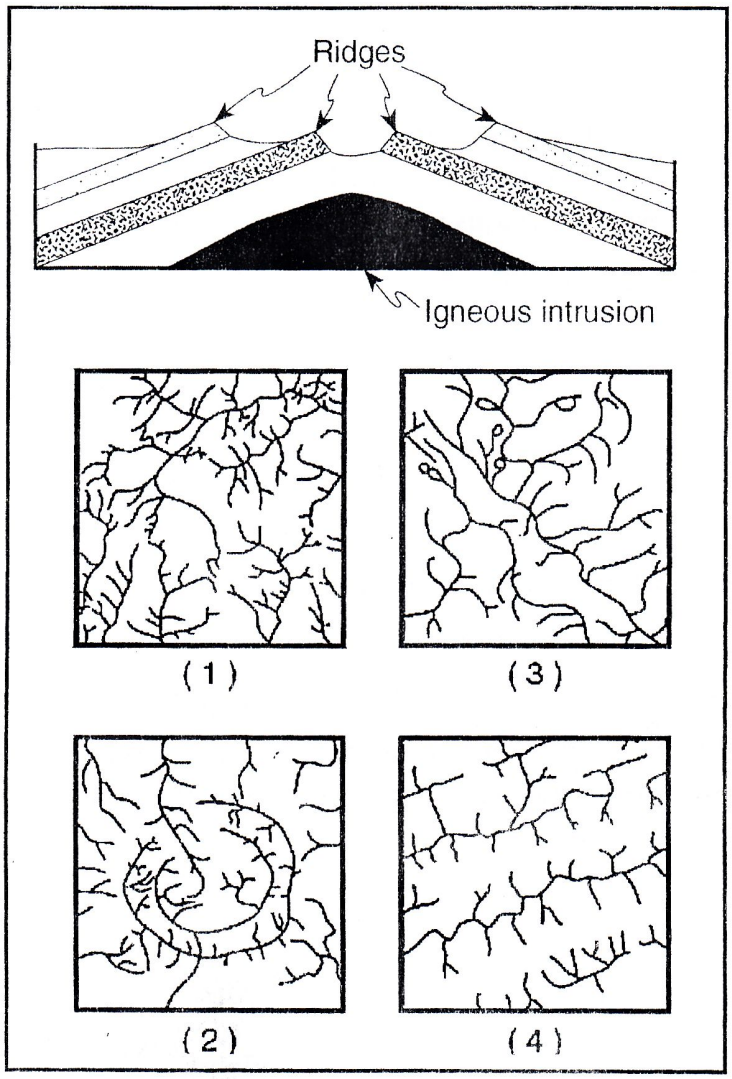


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