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

First Semester Final Examination
Geology Students
(Invertebrate Paleontology)

January 2024	G215	50 Marks	Time: 2 hours

Answer the following questions. ملحوظة: الامتحان يتكون من ورقة واحدة على الوجهين

First question (10 degree, 2.5 degrees each)

1. Discuss the different fossil types.

2. Explain the rules of the code of nomenclature of species.

3. Classification of foraminifera based on their life strategy.

4. Development of septa in Tetracoralla, explain your answer by drawing.

Second question (15 degree, 5 degrees each)

1. What are the functions of the haptonema, chloroplasts, and Golgi body in coccolithophores.

2. Write on the different types of dental plates in Bivalvia shells **(at least three types)**.

3. Explain the echinoids morphology.

Third question (5 degrees)

Write the scientific name in front of the following definitions.

1. The posterior end of the pedicle valve in brachiopods which usually penetrated by the foramen.

2. Group of extinct organisms that has a vase-shaped skeletons made of calcium carbonate with No spicules in their skeleton structure.

3. It is an evolution process that occurs when species evolve into a common phentoypic form due to a common need.

4. A process in the fossilization journey that takes place when ground water carrying dissolved minerals infiltrates the microscopic pores and cavities in shells.

5. Group of marine organisms in which their skeleton is composed of organic matter and known as pseudo-planktonic organisms.

Fourth question (10 degrees, 5 degrees each)

Compare between the following:

1. Types of suture line in cephalopods based on the shape and the geologic age.

2. Graptolithina and dendritic Graptolites.

Fifth question (10 degrees)

A. Put true or false in the front of the following sentences (5 degrees, 1 each).

1. All the members of the phylum Echinodermata show a bilateral symmetry throughout their life.

2. The Ascon type represents the most advanced stage in Sponge.

3. When the hinge line and hinge axis in brachiopods shell are not parallel, it is called strophic hinge line.

4. The members of Endocochlia cephalopods have geologic importance by forming an exoskeleton.

5. Gastropods are responsible for declining diversity and ousting the brachiopods from their habitats.

B. Write on the following statement (5 degrees, 2.5 each).

1. Foraminifera wall structure.

2. The extraction method of siliceous microfossils

انتهت الأسئلة.....بالتوفيق والنجاح

Prof. Dr. Gamal Zidan Abdelaal

Assiut University
Faculty of Science
Department of Geology

Date: Jan 2024
Time allowed: 2 hours

Final Exam

Principles of Geophysics (G250), Total 50 Marks

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A) Mark the following statements with True (√) or False (X): (25 marks, one mark each)

Statement	True (√)	False (X)
1. Base station readings are used to determine the temporal variations in gravity and to correct for drift error in readings		
2. By increasing the electrode spacing, more of the injected current will flow to shallower depths		
3. Electrical resistivity can be used to map cavities		
4. Electrolytic conduction is slower than electronic conduction and occurs in fluids		
5. Geomagnetic field is produced by electric currents induced within the conductive molten outer core as a result of slow convective movements within it		
6. Geophysics does replace traditional geologic study		
7. Magnetic susceptibilities of basic rocks are higher than sedimentary rocks		
8. One of the disadvantages of electrical resistivity method that the electrodes must be in a good contact with soil		
9. Pendulum and free-falling body methods are used to measure absolute gravity		
10. Resistivity increases with increasing metallic minerals content		
11. Rocks with small concentration of ferro or ferri-magnetic minerals have the highest magnetic susceptibility values		
12. Sato and Mooney (1960) have provided the most complete explanation of the electrochemical processes caused the mineral SP anomalies		
13. Secondary seismic waves can travel through liquids		
14. Self-potential can be used to map the locations of water seepage in dams.		
15. The free-air effect is added if you are above sea-level and is subtracted if you are below sea-level		
16. The gravity acceleration of plutonic igneous rocks is smaller than the volcanic rock		
17. The gravity field is perpendicular to the surface of the earth whereas the magnetic field direction varies.		
18. The gravity method is active whereas the seismic method is passive		

19. The higher the value of the modulus, the stronger the material, and the smaller the strain produced by a given stress		
20. The inclination reaches its maximum (90o) at the equator		
21. The interpretation of SP is mostly quantitative		
22. The range of gravitational acceleration at the Earth's surface ranges from approximately 9.78 m/s2 at the poles to 9.83 m/s2 at the Equator		
23. The range of magnetic field strength at the Earth's surface ranges from approximately 60000 nT at the poles to 30000 nT at the Equator		
24. The sign of the self-potential is not an important diagnostic factor in the interpretation of SP anomalies		
25. True resistivity is defined as the resistivity of the subsurface when it is inhomogeneous and anisotropic and can be estimated from data inversion		

B) Choose the correct answer of the following (25 marks, one mark each):

26) The correction of gravity data due to environmental changes or tidal effect is called:
a. drift correction
b. free air correction
c. latitude correction
d. bouguer correction

27) The parameters which affect the elapse time of transmission of a pulse from its source to the detector are:
a. propagation velocity of the seismic wave
b. electrical resistivity of the subsurface
c. geometry of the propagation path
d. a and c

28) which of the following properties of earth materials control the propagation velocity of seismic waves:
a. elastic moduli
b. resistivity
c. magnetic susceptibility
d. none the above

29) The primary seismic waves are:
a. slower than secondary seismic waves
b. faster than secondary seismic waves
c. equal in speed to the secondary seismic waves
d. none the above

30) The angle of incidence that results in an angle of refraction equals to 90o is called:
a. absolut angle of refraction
b. relative angle of refraction
c. critical angle of refraction
d. none the above

31) One of the problems in interpretations of seismic refraction data is:
a. the increase in velocity with depth b. hidden layers
c. low resistivity layers d. none the above

32) Subsurface cavities filled with air will show:
a. resistive response b. conductive response
c. no response d. all the above

33) The self-potential method is classified as:
a. active method b. inactive method
c. passive method d. none the above

34) Self-potential method is best suited for the exploration of:
a. velocity of seismic layers b. massive ore deposits
c. electrical resistivity of layers d. all the above

35) The presence of sulfide ore deposits can result in:
a. low positive SP anomaly b. high negative SP anomaly
c. high positive SP anomaly d. low negative SP anomaly

36) Electrokinetic potential may result from the gradient in:
a. pressure b. temperature
c. ion concentration d. none the above

37) The non-polarizable electrode is consisting of:
a. porous pot b. metallic electrode
c. super saturated solution of the same electrode
d. all the above

38) The normal gravity acceleration at the surface of the earth equals to:
a. 9.8 m/s^2 b. 980 Gal
c. 9800 g.u. d. all the above

39) The variation in gravity acceleration from the pole to the equator equals to:
a. 10% b. 5%
c. 1% d. 0.5 %

40) The most factor controlling the density of sedimentary rocks is:
a. compaction b. age
c. depth of burial d. porosity and fluid content

41) The typical station spacing for near surface targets (e.g., archaeology) in gravity survey is:
a. 1000's of m b. few meters
c. 100's of m d. 10's of m

42) The following characterize the surface waves:
a. travel along the outer part of the Earth
b. have complex motions
c. causes greatest destruction d. all the above

43) Which of the following geophysical methods can be used to map depth to bedrock:

a. Self-Potential **b. Seismic refraction**
c. Electrical resistivity **d. b and c**

44) The declination is defined as the deflection of the north seeking pole from:

a. geographic east **b. geographic north**
c. geographic west **d. none the above**

45) The magnetic susceptibilities of rocks depend on the:

a. type of magnetic minerals **b. concentration of magnetic minerals**
c. a and b **d. type and concentration of metallic minerals**

46) The diurnal changes in magnetic field are:

a. low at night **b. low at day**
c. high at night **d. all the above**

47) The physical property of rocks that is most commonly utilized in electrical resistivity method is:

Density **b. Magnetic susceptibility**
Elasticity **d. Electrical resistively or conductivity**

48) The electrical conduction occurred by the free electrons in metallic minerals is called:

a. electronic conduction **b. electrolytic conduction**
c. dielectric conduction **d. atomic conduction**

49) Which of the followings control the resistivity of clay free and saturated rocks in Archie's law:

a. pore fluid saturation **b. resistivity of pore fluid**
c. pore water resistivity **d. all the above**

50) Electrical resistivity method can be used to map:

a. groundwater **b. minerals and Ore deposits**
c. paleochannels **d. all the above**

End of questions ***Good Luck***

Course Instructor: Prof. Dr. Gamal Zidan Abdelaal

a-olivine b-plagioclase c-orthoclase d-all of these
31-Mineral have brown colour is
a-hornblende b-biotite c-chlorite d-all of these
32-Mineral show colourless is
a-quartz c-tourmaline c-biotite d-all of these
33-Isotropic mineral have
a-Two optic axis directions b-One optic axis direction
c-no optic axis direction
34-Biaxial minerals have
a-Two optic axis directions b-One optic axis direction
c-no optic axis direction
35-Uniaxial minerals have
a-Two optic axis directions b-One optic axis direction
c-no optic axis direction

4-Indicate by the sign (✓) or (×) :
36-These minerals have inclined extinction and extinction angle helps to identify them ( )
37-The indicatrix is a sphere of the isotropic mineral ( )
38-The birefringence of the isotropic mineral is zero ( )
39-The retardation of the isotropic mineral is zero ( )
40-The variation in interference colour which the grains of a certain mineral present depends on the shape of the grain ( )
41-The interference colour varies from nil for the vertical cut to a maximum value represented by the vertical cut, passing through a series of intermediate colours corresponding to the inclined cuts ( )
42-Different intermediate colours of grains of different mineral are due to different orientations ( )
43 -The limit between the various orders interference colour is fixed in the mixture between violet and green ( )
44-Minerals with relatively weak color like chlorite, or actinolite, will show interference colors very different from colorless minerals ( )
45-Minerals that have cleavage or elongation not have an extinction angle ( )
46-Minerals with undulose extinction, solid solution/zonation, or other factors that may inhibit this measure and may be use ( )
47-Minerals belonging to the tetragonal, hexagonal, trigonal or orthorhombic crystal systems will in general show straight extinction ( )
48-Minerals belonging to the monoclinic system will often show inclined extinction but may sometimes show straight extinction ( )
49-Extinction behavior is a function of the relationship between indicatrix orientation and crystallographic orientation ( )
50-All uniaxial minerals show parallel extinction ( )

Geology Department
Faculty of Science
Assiut University

Time: 2 H
Ju. 2024

Crystallography & Optical Mineralogy (234 G)

Answer the following quations: (50 marks)

1-Indicate by the sign (✓) or (×) :

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-CHOOSE THE CORRECT ANSWER OF THE FOLLOWING

11-Prism form is: a-open b-closed c-both
12-First order prism has miller index: a-110 b-100 c-hko
13-Ditetragonal prism has miller index: a-110 b-100 c-hko
14-Bipyramid is: a-open b-closed c-compound
15-Ditetragonalbipyramid has: a-12 faces b-8 faces c-16 faces
16-Trapezohedron is: a-closed form b-open form c-both
17-Scalenohedron is: a-closed form b-open form c-both
18-Second order prism has miller index: a-110 b-100 c-hko
19-Ditetragonal prism has miller index: a-110 b-100 c-hko
20-Pyramid is: a-open b-closed c-compound
21-Ditetragonal bipyramid has: a-12 faces b-8 faces c-6 faces
22-First order prism has: a-4 faces b-8 faces c-6 faces
23-Miller Index of b dome a-(0kl) b-(h0l) c-(110)
24-Miller Index of prism in monoclinic system a-(hko) b-(100) c-(110)
25-Miller Index of basal in trigonal system a- (010) b-(0001) c-(001)

Optical Mineralogy

3-Choose the correct answer of the following

26-The most characteristic mineral twins are
a-feldspar b-bioteite c-muscovite d-all of these
27-Cross-hatching occur in
a-hornblende b-plagioclase c-microcline d-all of these
28-A simple twin occur in
a-hornblende b-plagioclase c-orthoclase d-all of these
29-Polysynthetic or albite twins occur in
a-olivine b-plagioclase c-orthoclase d-all of these
30-Parting occur in

Assiut University
Final Examination

Faculty of Science
Rock forming minerals (G.230)

Geology Department
Time allowed:2hours

January 2024

Total Marks 50

Question No.1 (Each 1 Mark)

Indicate by the sign (✓) or (X) the following statements:

1) The triclinic pyroxenoids has Ca/ (Ca+Mg+Fe) < 50%

2) In clinopyroxenes group the M2 site is occupied by Fe^{2+} and Mg^{2+}, while in orthopyeroxene a larger atoms than Fe^{2+} or Mg^{2+} enter in M2 site.

3) The double silicate chains are characterized by two sets of cleavages intersect at about 124° and 56°.

4) Amphibole double silicate chains staked together from the base by 5 cations with 6 co-ordination number and from apical oxygen by two hydroxyl group and one cation with 12- co-ordination number.

5) In dioctahedral sheet phyllosilicates , if cations are divalent , 2/3 of octahedral cations in the fundamental unit are occupied.

6) In phyllosilicates structure the tetrahedral sheets combined with octahedral sheet by removing OH- group in the octahedral sheet to make vacancy for the apical oxygen in the tetrahrdal sheets.

7) In the tectosilicates when two silicon ions from each four tetrahedron replaced by two Al ions the resulted deficiency in positive charge is balanced by introduction of monovalent K or Na cation.

8) Solid solution is applied to a mixture when the crystal structure of the mineral remains unchanged by replacement or addition of the elements.

9) The process in which the crystals removed from the magma as magma cool and cause changing in the chemical composition of the remaining melt is called magmatic differentiation.

10) The quartz transformations from *a* and β verities is reconstructive transformation, where the changes between quartz, tridymite and cristobalite are displacive transformation.

11) Solid solutions with a predominance of An + Ab are called alkali feldspars, and those predominantly composed of Ab + Or are called plagioclase feldspars.

12) Orthosilicate minerals which contain isolated SiO^{4-} polyanionic groups are those in which the oxygens of the polyanion are bound to four Si atoms.

13) (Na K) ($Al Si_3$) O_8 is the anorthite component of the feldspar minerals.

14) The low temperature feldspar characterizes the volcanic rocks.

15) Polymorph minerals are minerals have the same chemical components but differ in crystallographic structure, a good example is plagioclase group.

Question No. 2 (Each 2 Marks)

Choose the correct answer:

1) M1 sites in the crystal lattices of pyroxene minerals are occupied by two cations which are:
   a-small (C.N.=6) b- large (C.N.= 8) c - Na & Ca

2) The ratio of T-sheet : O-sheet in serpentine mineral is:
   a- 1:1 b- 2:1 c- 1:2

3) The last crystallized mineral from the magma according to Bown's series is:
   a- hornblende b- olivine c- quartz

4) A strong evidence for meteorite impact on earth surface is the presence of:
   a- tridymite b-cristobalite c- β quartz

Continued over lea

5) Kaolinite and Antigorite minerals are examples of
a- TOT b-TO c- TOT+O structures

6) The general formula of silicates present in cyclo silicates minerals is
a- $(SiO_4)^{4+}$ b- $(Si_2O_5)^{4-}$ c- $(Si2O5)^{6-}$ d-$(SiO_3)^{2n}$

7) The amphibole silicates structure :
a- have the empirical formula $(SiO3)^{2-}$
b- have tetrahedrons those sharing 3 Oxygen and those sharing 2 Oxygen
c- have only one type of tetrahedron

8) The chemical formula of epidote minerals is $(M^{2+})_2\ SiO_4\ (M^{3+})_3\ Si_2O_7O(OH)$ which classified them as
a- disilicate b- nesosilicate c- mix between disilicate and nesosilicate

9) Feldspars , serpentine and margarite minerals are:
a- all are 3-D framework silicates
b- Feldspars are 3-D framework silicates while serpentine and margarite are inosilicates
c- Feldspars are 3-D framework silicates while serpentine and margarite are layered silicates

10) Which of statement is correct to the pyroxene minerals:
a- have empirical formula XYZ_2O_6
b- have the empirical formula $XY_2\ O_5$
c- have tetrahedrons those sharing 3 Oxygen and those sharing 2 Oxygen.

11) The name crank shaft like structure is characteristic to:
a- double silicate group b- nesosilicate group c- framework silicate group

12) $W_{0-1}X_2Y_5Z_8\ O_{22}(OH)_2$ is the chemical formula of
a-nesoslicate b- inosilicates c- amphibole d- pyroxene

13) Ca amphibole are characterized by the presence of Ca cationis
a- in the tetrahedral silicon.
b- in the two large octahedral sites at apical oxygen of the tetrahedral silicon.
c- in the three small sites at apical oxygen of the tetrahedral silicon.
d- in the large ,12 / 8 coordination sites at the base of the tetrahedral silicon.

14) Exsolution of albite bodies within orthoclase host crystals are called
a- perthite texture b- solid solution c- antiperthitic texture d- twinning

15) The $X_{2-3}\ Z_4\ O_{10}\ (OH)_2$ is the chemical formula of
a- TOT+C phyillosilicates minerals
b- TOT+O phyillosilicates minerals
c- Talc minerals
d-TO phyillosilicates minerals

Question No. 3 (Each 5 Marks)

Answer Only One question from the following :

Illustrate yours answer by drawing as much as possible

A-What are the main structural and chemical differences between the single chain and the double chain silicate minerals group? On What basis the pyroxene and the amphibole mineral groups are classified into ortho type and clino type? Mention at least One mineral name representing these different types of silicates groups and Give their most diagnostic important optical properties.

B-What is the empirical formula of the TOT+C phyllosilicate minerals group? Explain briefly How you can structurally classify this group of silicate minerals? Give names and the important optical properties of only Three minerals belonging to this group? What is meant by solid solutions in plagioclase feldspar series? Mention the names of minerals component of this series.

Examiner Prof. Dr. Nadia Sharara

وبالتوفيق

Geology Department Faculty of Sciences Assiut University		Second Term Examination Mineralogy (231 G) Jan, 2023 Two Hours

Crystallography and Mineralogy (231G)
PART ONE: Crystallography

I. Choose the correct answer from A,B,C,D

1. **Mutually perpendicular axes of equal lengths are represent**
   (A)Tetragonal (B) Hexagonal (C) orthorhombic (D) Isometric
2. **Crystals that have 4 axes, one (c) being different length and six-fold symmetry are**
   (A) Trigonal (B) Hexagonal (C) Monoclinic (D) Orthorhombic
3. **Crystals that have non-perpendicular axes of unequall lengths are:**
   (A) Triclinic (B) Monoclinic (C) Trigonal (D) Orthorhombic
4. **Crystals have mutually perpendicular axes with two equal length are**
   (A) Cubic (B) Orthorhombic (C) Monoclinic (D) Tetragonal
5. **Crystals that have mutually perpendicular axes of unequal lengths are:**
   (A) Orthorhombic (B) Tetragonal (C) Monoclinic (D) Triclinic
6. **Based on external symmetry crystals classified into number of classes equall:**
   (A) 64 (B) 16 (C) 32 (D) 7
7. **Six – fold and two-fold rotation axes are common on:**
   (A) Tetragonal (B) Trigonal (C) Hexagonal (D) Isometric
8. **A combination of 4-fold, 3-fold and 2-fold rotation axes only occur in:**
   (A) Hexagonal (B) Tetragonal (C) Cubic (D) Trigonal
9. **Isometric crystals have a greatest symmetry, while the least symmetry occurs in:**
   (A) Monoclinic (B) Trigonal (C) Ticlinic (D) Orthorhombic
10. **A combination of 4-fold and 2-fold rotation axes occur in:**
    (A) Orthorhombic (B) Tetragonal (C) Monoclinic (D) Trigonal

II. Write the number of faces and label the Miller indices SYMBOLES for the following crystal forms:

1. Tetragonal bipyramid
2. dihexagonal prism
3. Dome a
4. Hexaoctahedron
5. Ditrigonal scalenohedron
6. Tetragonal prism
7. Basal pinacoid
8. Trioctahedron
9. Front pinacid
10. Dodecahedron

III. Draw the sterographic projection of holosymmetry elements in tetragonal (4/mmm) and orthorhombic (mmm) crystal systems. (5pts)

Look back

PART TWO: Mineralogy

I. Choose the correct answer from A,B,C,D (10 pts)

1. **Which of the following is representative of the formula for plagioclase?**
   (A) $(Ca,Na)(Al,Si)AlSi_2O_8$ (B) $KAlSi_3O_8$ (C) $CaCO_3$ (D) SiO_2
2. **Which of the following minerals are built from the independent silicate structure?**
   (A) Olivine (B) Pyroxene (C) Quartz (D) Biotite
3. **Which of the following is not characteristic of a mineral?**
   (A) Naturally occurring (B) Solid (C) organic (D) Ordered atomic structure
4. **Which of the following minerals are built from the double chain silicate structure?**
   (A) Olivine (B) Pyroxene (C) Amphibole (D) Biotite
5. **According to the cosmic abundance which of the following pair of elements are abundant?**
   (A) Iron and Magnesium (B) Sodium and potassium
   (C) Oxygen and silicon (D) Carbon and sulfur
6. **Which of the following is representative of the formula for quartz?**
   (A) SiO_2 (B) $CaCO_3$ (C) $NaAlSi_3O_8$ (D) $KAlSi_3O_8$
7. **Which process of the following lead to the formation of perthite?**
   (A) Exsolution (B) Solid solution (C) Fractionation (D) Metamorphism
8. **Under microscope, the distinguishing between pyroxene and amphibole mineral groups using:**
   (A) Angle between cleavage planes (B) extinction (C) Color (D) Pleochroism
9. **Which of the following is representative of the formula for albite?**
   (A) NaCl, (B) $NaAlSi_3O_8$ (C) $(Ca,Na)(Al,Si)AlSi_2O_8$ (D) SiO_2
10. **Which of the following minerals are built from the sheet silicate structure?**
    (A) Olivine (B) Pyroxene (C) Amphibole (D) Biotite

II. Answer the following questions (12 pts)

1. **In olivine solid solution between Fo (Mg_2SiO_4) and Fa (Fe_2SiO_4)**
   A) What is the type of solid solution and ionic substitution?
   B) What are the factors controlling the substitution process between Mg and Fe?
   C) Which mineral is higher in temperature of formation Fo Mg_2SiO_4 or Fa (Fe_2SiO_4)?

2. **In plagioclase mineral seies (Na, Ca, Al_2 Si_2O_8)**
   E) What is the type of ionic substitution between Na and Ca
   F) What are the other ions that exchange to reach the valance equilibrium
   G) Which mineral is higher in temperature of formation albite or anorthite.

3. **Discuss briefly the relation between isomorphism and solid solution (3 pts)**

Best wishes
Mohamed Abdel-Moneim

جامعة أسيوط
كلية العلوم - قسم الجيولوجيا

امتحان التحريرى لطلاب المستوى الثالث بقسم الجيولوجيا (جميع الشعب)
المقرر: علم الطبقات (210 ج)
الفصل الأول (دور يناير) - العام الجامعى 2023-2024م

الدرجة الكلية للأمتحان: 50 درجة الزمن: ساعتان

Q1: Shade (T) for True statements or (F) for False statements
(30marks; 1mark each)

1- The "Overlap Range Zones" are based on two or more species whose time ranges must have overlapped.

2- A lithostratigraphic unit is a body of rocks that includes all rocks formed during a specific interval of geologic time.

3- The cross cutting relationship occurs when igneous pluton or dyke is intruded into pre-existing (old) sedimentary rocks.

4- The "Acme Zone" represents strata containing the maximum diversity of a particular taxon.

5- The "Stage" is the basic chronostratigraphic unit.

6- Sets of magnetic polarity reversals in sedimentary sequences can be correlated on a global scale.

7- Winds are important agents in dispersing marine organisms.

8- Biostratigraphic correlation is based on composition of rock units, position of similar rick units a sequence and presence of key beds.

9- Physical properties such as color, degree of consolidation, resistance to weathering and erosion are always useful criteria in recognizing formation in the field.

10- Magnetostratigraphy is the correlation and dating of marine sediments and sedimentary rocks using trace-element concentrations.

11- Rate of evolutionary change of species tends to be slower in high-stress environments.

12- Formal lithostratigraphic units are those recognized in preliminary studies but not fully described and characterized.

13- Species longevity is controlled only by the organism itself.

14- The community is a natural assemblage or organisms that lived together in a particular habitat referred to as "thanatocoenosis".

15- Oyster banks, which are the smallest distinctive layers in a sequence, are of global significance as boundary stratotypes.

16- Environmental changes play a major role in speciation.

17- Bracketing relationships develop when currents cut older sediments.

36- In stratigraphy the age of a given rock can be determined by:

A- Relative dating B- Absolute dating

C- Both of them D- None of them

37- Global boundary Stratotype Section and Point defines the .....

A- lower boundary of a Stage B- upper boundary of a Stage

C- lower boundary of a System D- upper boundary of a System

38- Which of the following is not a stratigraphic principle?

A- Uniformitarianism B- Plutonism C- Catastrophism D- superposition

39- In lithostratigraphic resolution and correlation we use .....

A- magnetic properties of rock bodies

B- fossil content and chemical properties of rocks

C- primary structures and rock fabrics

D- physical properties of rocks

40- The principal of original horizontality states that .....

A- all rocks in the earth are layered horizontally

B- igneous rocks form essentially horizontal layers

C- sediments starts deposition in horizontal layers

D- sedimentary rocks can start accumulating horizontally or inclined

41- Which of the following conforms to the low of superposition?

A- Marker bed found on both valley sides

B- Granitic rock invaded by dykes

C- Intercalating sediments D- Intertonguing sediments

42- A disconformity is .....

A- an erosion surface between igneous and metamorphic rock

B- a rock unit that does not contain fossils

C- an erosion surface between horizontal sedimentary layers

D- an erosion surface between igneous and sedimentary rocks

43- The study of faunal succession allows .....

A- matching of dissimilarly-aged rocks from different outcrops

B- matching of similarly-aged rocks from different outcrops

C- correlation of igneous rocks

D-absolute dating of fossil-bearing strata

44- What is the correct order, from oldest to youngest, of the following geologic Systems/Periods?

A- Jurassic, Triassic, Cretaceous B- Cretaceous,Triassic, Jurassic

C- Triassic, Cretaceous, Jurassic D- Triassic, Jurassic, Cretaceous

45- The following methods are used in rock correlations except of .....

A- physical similarity B- time equivalency

C- fauna/flora succession D- rock textures

46- The geographic area where the original stratotype of a given stratigraphic unit is located is termed the .....

A- parastratotype B- type locality C- type section D- type horizon

47- In chronostratigraphy we can establish ..... surfaces.

A- isochrones B- dichrones C- polychrones D- all of them

48- The branch of geology that deals with the study of strata and how they are layered is called .....

A- Archaeology B- Paleochemistry C- Stratigraphy D- Astronomy

49- A nonconformity means .....

A- a sedimentary unit that is different than units above and below

B- a rock unit that does not contain primary structures

C- a small gab in the geologic record bounded by metamorphic rocks

D- an erosion surface between igneous and sedimentary rock

50- If you take a radioactive carbon date what type of dating and stratigraphy method is this?

A- Chronostratigraphy, relative dating B- Lithostratigraphy, relative dating

C- Chronostratigraphy, absolute dating D- Biostratigraphy, relative dating

إنتهت الأسئلة مع أطيب الأمنيات بالتوفيق

Examiners:

Prof. Dr. Magdy S. Mahmoud & Prof. Dr. Amr S. Deaf (Geology Department)

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

First Semester Final Examination
Zoology Students
(Paleontology)

January 2024	G211	50 Marks	Time: 2 hours

Answer the following questions.

First question (15 degree, 5 degrees each)

1. Write on the extraction technique of plant microfossils.
2. Define the fossil record and explain its weakness points.
3. What is the importance of taxonomy.

Second question (15 degrees, 5 degrees each)

1. Discuss the different types of Sponge body structure.
2. Explain the effect of salinity on the foraminiferal shells.
3. What are the ecological factors that control the distribution of calcareous nannoplankton.

Third question (5 degrees)
Define the following scientific terms.

1. Palaeobiology **2.** Calcium Carbonate Compensation Depth **3.** Coccosphere

4. Siphonal canal in gastropod shells **5.** Pseudofossils

Fourth question (5 degrees, 1 degree each)
Put true or false in the front of the following sentences (5 degrees, 1 each).

1. Articulate brachiopods constitute the most common fossil brachiopods in the geologic record.
2. Trilobites are extinct marine fossils which disappeared in the Mesozoic Era.
3. Tetracorals formed an important reef formation during the Silurian and Devonian periods.
4. A small portion of rock samples is required and enough to extract the conodonts from the matrix.
5. Archaeocyathids were important index fossils during the Cenozoic Era.

Fifth question
Write on the following statement (10 degrees, 5 each).

1. Morphology of gastropod shells.
2. Characteristics of the members that belong to order Cornacuspongia.

انتهت الأسئلة.....بالتوفيق والنجاح

جامعة أسيوط
كلية العلوم - قسم الجيولوجيا

امتحان التحريرى المستوى الثانى لقسم النبات والميكروبيولوجى (شعبة الكيمياء - نبات)
المقرر: التحفر والحفريات النباتية (٢١٩ ج)
الفصل الأول (دور يناير) - العام الجامعى ٢٠٢٣-٢٠٢٤م

الدرجة الكلية للأمتحان: ٥٠ درجة — الزمن: ساعتان

Q1: Shade (T) for True statements or (F) for False statements (25 marks; 1 mark each)

1- Any organism must successfully pass through three distinct, and separate, stages in order to become a fossil.
2- Transmitted light microscopy enables the study of internal and external features of palynomorphs, provided that the specimen is opaque.
3- Morphologically, spores have apertures but pollen grains have colpi and pores.
4- Dinoflagellate cysts are multicellular aquatic organisms, motile and heterotrophic, parasitic, or photosynthetic.
5- Uniformitarianism is a cornerstone of paleontology.
6- Mesofossils and megafossils can be extracted from their rock hosts by bulk acid maceration techniques.
7- Fossils are the remains or traces of any pre-existing life.
8- Permineralization means crystallization within pores or openings.
9- The angiosperm pollen grains appeared during the Paleozoic time.
10- That an organism possesses hard body parts increases its ability to decompose.
11- During decomposition pores in tissue are filled by minerals.
12- The formation of mold means the reproduction of the inside or outside surfaces of a living organism.
13- Exine is the outer layer of the wall of a palynomorph.
14- Spores and pollen exines are highly resistant to oxidizing agents.
15- Rocks representing the Phanerozoic Eon contain relatively abundant fossils of a variety of organisms.
16- Pollen grains can reflect distribution of their motiles, which lived in the upper water column.
17- A laevigate surface of a palynomorph means that it is densely ornamented.
18- Cellulose and lignin can be oxidized.
19- Spores and pollen grains can be used to infer paleoenvironment.
20- In a forest log, beneath the top layer of leaves, the organic matter is found degraded to an unrecognizable form.
21- Necrology is the last stage of taphonomy.
22- Stromatolites can be produced by interaction of blue-green algae.
23- Marine palynomorphs reflect the nature of terrestrial environments.
24- Preservation as external molds and casts reflects ornaments of surface patterns.
25- The totality of fossils and their placement in sedimentary layers is known as the fossil record.

: Shade the correct answer; A, B, C or D **(25 marks; 1 mark each)**

26- Which of the following processes cannot result in the preservation as altered body parts?
A- permineralization B- replacement C- oxidation D- carbonization

27- The term "palynofacies" is introduced to include:
A- Palynomorphs and palynodebris B- Amorphous organic matter and cuticles
C- Marine and terrestrial palynomorphs D- Amorphous organic matter and phytoclasts

28- The exine of a pollen grain could be ……..
A- tectate B- columellate
C- tectate-columellate D- all of these

29- Rocks formed before the Paleozoic Era contain relatively few fossils, mostly bacteria and some algal cells, they are of a …….. age.
A- Mesozoic B- Precambrian
C- Phanerozoic D- Paleozoic

30- The trilete mark on the proximal face of a spore body is named the ……..
A- tetrad mark B- proximal ornament
C- distal theckening D- equatorial girdle

31- Relative abundance datasets may be problematic due to ……..
A- selective preservation B- both A & C
C- closed-sum effect D- poor primary productivity

32- Which of the following fossils represent preservation as traces of activity?
A- Teeth B- Shells C- Wood D- Coprolites

33- The walls of pollen grains and spores are made up of ……
A- resin B- silica C- carbonates D- chitin

34- Which of the following are not plant fossils?
A- Spores B- Calcareous foraminifera C- Pollen grains D- Dinoflagellate cysts

35- Lignin is one of the substances that can be removed by:
A- floatation B- gravity separation C- mechanical destruction D- Oxidation

36- Organic matter may be removed by:
A- chemical treatment B- magnetic separation C- distillation D- all of them

37- Which of the following is not considered as representing traces of activity of the original living organism?
A- tracks and trails B- burrows C- coprolites D- casts

38- A fossil is an impression, cast, original material or track of any animal or plant that is preserved in rock after the original organic material is:
A- transformed or removed B- decayed completely C- oxidized D- dissolved

39- Which of the following cannot be considered trace fossils?
A- unaltered or altered bones B- artifacts C- shells D- leaf imprints

40- HCl and HF treatments and oxidation of the organic matter are used to:
A- remove rock material B- concentrate wood fragments
C- dissolve coaly samples D- all of them

41- Centrifugation of the organic matter is used to:
A- remove carbonates B- concentrate any strange material
C- remove silicates D- concentrate palynomorphs

42- Which of these is not a taphonomic stage?
A- fossil diagenesis B- necrology C- biostratinomy D- biostratigraphy

43- Which of the following is not a plant tissue?
A- resin B- amorphous organic matter C- wood D- bisaccate pollen

44- Rapid burial and/or lack of oxygen of palynomorphs lead to:
A- rapid decay B- dissolution C- abrasion D- none of them

45- Which of the following is not an element of a palynofacies?
A- spores B- pollen grains C- plant tissues D- diatoms

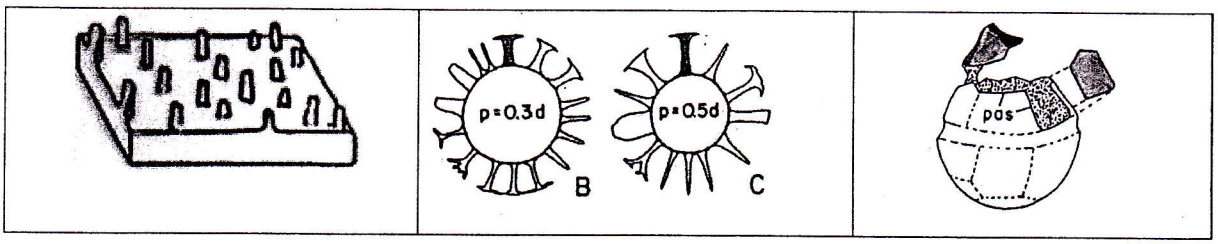
46- Low pollen production of a vegetation type might be a reason of:
A- poor productivity of original plants B- bad preparation of specimens
C- severe oxidation D- all of them

47- Kerogen types are evaluated to know the type of:
A- palynofacies B- hydrocarbons C- photosynthesis D- all of them

48- In figure 1a below the ornamentation type is .....
A- smooth B- echinate C- baculate D- clavate

49- Figure 1b below shows .....
A- proximate cysts B- skolochorate cysts C- cavate cysts D- chorate cysts

50- In figure 1c below, the archeopyle type is .....
A- apical B- combination C- precingular D- intercalary



(1a) **(1b)** **(1c)**

تمت الأسئلة مع أطيب الأمنيات بالتوفيق

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

Geology Department
Faculty of Science
Assiut University

Time: 2 H
Ju. 2024

Optical Mineralogy (235 G)

I-Indicate by the sign (✓) or (×) and correct the mistaken one (20 marks):

1-If we rotate the biaxial mineral around the minor axis we get a shape that is flattened along the rotation axis and is said to be optically negative ( )
2-If we rotate the biaxial mineral around the major axis the ellipsoid is elongated along the rotation axis and is said to be optically positive ( )
3-Biaxial materials have one principal symmetry axis and are tetragonal, hexagonal, or trigonal ( )
4-Birefringence and thickness both decrease uniformly with increasing angle from the optic axis of uniaxial mineral ( )
5-There are one optic axis of biaxial minerals ( )
6-Biaxial minerals are cubic, monoclinic or triclinic (orthorhombic) ( )
7-Isotropic mineral do give interference figures (not give) ( )
8-When 2V is acute about Z: (+) ( )
9-When 2V is acute about X: (-) ( )
10-When 2V = 0°, mineral is uniaxial ( )
11-Orthoclase is with simple twin ( )
12-Biotite has one cleavage ( )
13-Pyroxene has two cleavages ( )
14-Amphiboles have two cleavages ( )
15-Olivine has a parting ( )
16-There are one optic axis of biaxial minerals ( )
17-Opaque minerals (metallic ores) all wavelengths are absorbed ( )
18-Isotropic mineral do give interference figures ( )
19-Uniaxial minerals are tetragonal, monoclinic or triclinic ( )
20- Isotropic minerals are cubic or amorphous ( )

2-Choose the correct answer of the following (30 marks):

21-The most characteristic mineral twins are
a-feldspar b-bioteite c- hornblende
22-Cross-hatching occur in
a-hornblende b-plagioclase c-orthoclase
23-A simple twin occur in a-hornblende b-plagioclase c-orthoclase
24-Polysynthetic or albite twins occur in a-olivine b-plagioclase c-orthoclase
25-parting occur in a-olivine b-plagioclase c-orthoclase
26-Biaxial minerals have
a-Two optic axis directions b-One optic axis direction
c-no optic axis direction

27-Uniaxial minerals have
a-Two optic axis directions b-One optic axis direction
c-no optic axis direction
28-Isotropic minerals have
a-Two optic axis directions b-One optic axis directions
c-no optic axis direction
29-The limit between the various orders of interference color is
a-red b-green c-blue
30-The limit between the various orders of interference color is
a-violet b-yellow c-white
31-Refractive index of Canada Balsam is
a-1.54 b-1.65 c-1.44
32-Refractive index of garnet mineral is
a-1.77 b-1.66 c-1.88
33-Refractive index of halite mineral
a-1.54 b-1.66 c-1.88
34-Refractive index of fluorite mineral is
a-1.43 b-1.66 c-1.88
35-Mineral show two set of cleavage is
a-muscovite b-pyroxene c-olivine
36-Mineral show rhombohedral cleavage is
a-calcite b-gypsum c-halite
37-A simple twin occur in
a-hornblende b-plagioclase c-orthoclase
38-Polysynthetic or albite twins occur in
a-olivine b-plagioclase c-orthoclase
39-Pericline twinning twins occur in
a-olivine b-plagioclase c-microcline
40-Mineral show one set of cleavage is
a-tourmaline b-zircon c-hypersthene
41-Mineral without of cleavage is
a-quartz b-hornblende c-augite
42-Mineral without of cleavage is
a-apatite b-hornblende c-olivine
43-Mineral have green colour is
a-hornblende b-biotite c-muscovite
44-Mineral have yellow colour is
a-staurolite b-albite c-orthoclase
45-Mineral have brown colour is
a-hornblende b-biotite c-chlorite
46-Mineral show colourless is
a-quartz c-tourmaline c-biotite
47-Mineral show colourless is
a-feldspar c-chlorite c-actinolite

48-Mineral show dipleochroic colour is
a-tourmaline c-olivine c-quartz
49-Mineral have anomalous interference colors is
a-microcline b-clinozoisite c-anorthite
50-Cross-hatching occur in
a-hornblende b-plagioclase c-orthoclase

Good luck
Prof. Dr. Mohamed Abd El-Raouf Hassan
Prof. Dr. Mohamed Aby El-Rus

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

Second Level Examination in

Geomorphology and Environmental Geology (201G)

Time: Two Hours **3. Janu. 2024**

PART I

GEOMORPHOLOGY (25 degree)

I- Answer the following question:

1. Mention briefly the different types of drainage patterns with explain what is meant by the concept of drainage basins. (7 marks)

II- Answer THREE ONLY from the following: (each 6 marks)

2. Development of geomorphic features are affected by many factors, Discuss.

3. Describe the development of landforms in a terrain of folded structure.

4. Discuss briefly what is meant by the concept of inversion of topography.

5. Write short note on Karst landforms.

PART II

ENVIRONMENTAL GEOLOGY (25 marks, 8.5 for each)

Answer THREE ONLY from the following

1- What are the influence of the current informations on the chemical evolution of the Earth?

A- The appearance of Cyanobacteria and single-celled blue-green algae.
B-Appearance of marine animals with shells.
C-The development of organisms with backbone - the fish –
D-Modern rational (العقلانى) humans (Homo sapiens) developed only about half a million years ago.

2- Discus briefly only 4 from the following:

The carbon cycle - Eutrophication - Pyroclastic materials - Effect of volcanic eruption on Climate - Acid Mine Drainage (AMD) - System concept.

3- Just mention

A-The factors influencing the style of volcanism (i.e. Explosive vs. Quiescent).
B-The sources of the Contaminants in surface water.
C- Techniques used in Predicting Volcanic Eruptions.
D- Slope Remediation Techniques.
F- The main factors that influence slope stability.

الامتحان فى صفحتين

4-

A- The life on the Earth's surface has had an intense influence on the chemical evolution of the Earth's atmosphere. **Clarify that?**

B- The fact that the Earth is a closed system has two important implications for environmental geology**, mention them?**

C- In the attached figure the arrows point to the parts of a volcano.
Identify these parts?

1-

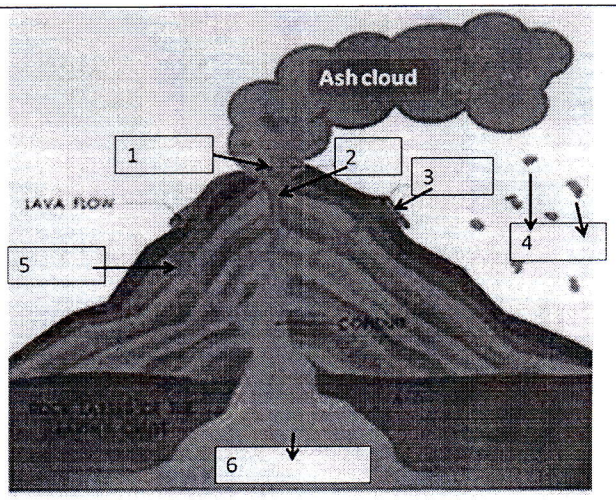
2-

3-

4-

5-

6-



----------*GOOD LUCK*----------

Prof. Dr. Ahmed Reda El-Younsy ***Prof. Dr. Mamdouh Farrag Soliman***

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