Geology Department
Faculty of Science
Assiut University

Time: 2 H
Mau. 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-Tetragonal 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 (0kl) (h0l) (110)
24-Miller Index of prism in monoclinic system a-hko b-100 c-110
25-Miller Index of pinacoid basal in trigonal system a- (010) b-(0001) c- (001)

Optical Mineralogy

3-Choose the correct answer of the following

26-Isotropic mineral have
a-Two optic axis directions b-One optic axis direction
c-no optic axis direction
27-Biaxial minerals have
a-Two optic axis directions b-One optic axis direction
c-no optic axis direction
28-Uniaxial minerals have
a-Two optic axis directions b-One optic axis direction

c-no optic axis direction

29-The most characteristic mineral twins are

a-feldspar b-bioteite c-muscovite d-all of these

30-Cross-hatching occur in

a-hornblende b-plagioclase c-microcline d-all of these

31-A simple twin occur in

a-hornblende b-plagioclase c-orthoclase d-all of these

32-Polysynthetic or albite twins occur in

a-olivine b-plagioclase c-orthoclase d-all of these

33-Parting occur in

a-olivine b-plagioclase c-orthoclase d-all of these

34-Mineral have brown colour is

a-hornblende b-tourmaline c-chlorite d-all of these

35-Mineral show colourless is

a-quartz c-tourmaline c-biotite d-all of these

36-Mineral have green colour is

a-hornblende b-biotite c-muscovite d-all of these

37-Mineral have yellow colour is

a-staurolite b-albite c-orthoclase d-all of these

38-Mineral have brown colour is

a-hornblende b-biotite c-chlorite d-all of these

39-Mineral show colourless is

a-muscovite c-tourmaline c-biotite d-all of these

40-Mineral show colourless is

a-feldspar c-chlorite c-actinolite d-all of these

41-Mineral show dipleochroic colour is

a-tourmaline c-olivine c-quartz d-all of these

42-Mineral show tripleochroic colour is

a-feldspar c-zircon c-hornblende d-all of these

43-Mineral show isotropic is

a-halite b-biotite c-zircon d-all of these

44 Mineral show isotropic is

a-fluorite b-muscovite c-feldspar d-all of these

45-Mineral show isotropic is

a-garnet b-augite c-hypersthene d-all of these

46-Mineral show isotropic is

a-pyrite b-augite c-hypersthene d-all of these

47-The most common cause of alteration is by

a-water b-pressure c-temperature d-all of these

48-The most common cause of alteration is by

a-weathering b-pressure c-all of these d-CO_2

49-Crystal form of the grains is

a-anhedral b-subhedral c-euhedral d-all of these

50-Inclusions may be

a-gaseous b-liquid c-solid d-all of these

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

Second Semester Final Examination
Geology Students, 2nd Level
(Vertebrate Paleontology and Origin of Species)

June 2024	G216	50 Marks	Time: 2 hours

Part 1: Vertebrate Paleontology (25 degree)

Answer the following questions.

Q1: Write the scientific term in the front of following sentence (5 marks; 1 mark each)

1. A cartilaginous flexible rod supporting the body of chordates which is located between the digestive tube and the nerve cord.
2. microscopic organisms, tooth-like in shape, and considered as remains of a group of primitive chordates.
3. A group of jawless fishes which possesses fusi-form head armor and a fan-shaped tail.
4. A group of reptiles which is usually termed mammal-like reptiles.
5. The process in which vertebrate development the head with brain and sense-organs.

Q2: Answer the following questions (15 marks)

A. Write on the following (*5 marks*)

1. Interment stage in Taphonomy.
2. Characteristics of the most primitive jawed fish Placoderms.

B. Explain the following statements (*5 marks*)

1. The transition of amphibians from water to land was not an easy task, Explain.
2. Causes of dinosaur's extinction.

C. Write on the origin of the following vertebrates (*5 marks*).

1. Birds
2. Tetrapod

Q3: State whether the following statements are correct or wrong (5 marks, 1 mark each)

1. *Tiktaalik* had well developed digits and so could grasp or throw something.
2. Labyrinthodontia considered to be the bridge to the reptiles.
3. The Paleocene Epoch witnessed the first appearance of large, heavy-bodied, flightless predators
4. The Devonian Osteostracans were among the most advanced of all known agnathans.
5. The earliest reptiles were large feeding on grubs and insects.

continue.....

Part II: Origin of Species (25 degrees)

Answer the following questions

1- Write briefly on TWO only of the following: (10 marks; 5 marks each)

A- Evidence of species evolution.

B- Differentiate between the Shannon-Wiener index and Simpson index.

C- Prezygotic reproductive isolation.

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

A- Microevolution, B- Genetic drift, C- Specie richness, D- Hybrid sterility,

E- Prokaryotes, F- Natural selection, G- Ecological species concept.

3- State whether the following statements are correct or wrong and correct the wrong one: (5 marks; 1 mark each)

A- Species richness (S) is very sensitive to sample size.

B- Similarities among embryos of different vertebrates point to a common ancestor.

C- Dominance indices are heavily weighted towards the commonest species, but it can be used to indicate species diversity.

D- Ecological isolation means that two species live in different habitats have a good chance of interaction.

E- Homologous structures represent a strong evidence of a common ancestor.

---------- ***End of Exam*** ----------

Good Luck

Prof. Dr. Amr S. Deaf ***Assoc. Dr. Amr A. Abdelhamid***

As[illegible]t University
Department of Geology
Faculty of Science

Final Exam for Rock – Forming Minerals (G 230)

Prof. Dr. Fawzy Farahat | May 2024 | Time allowed: 2 Hours

First: Choose the Correct answer:- Total Points=50

1. Silicate Structure in which two tetrahedral sharing 2 oxygen atoms is called: (1.5 points)

a. Nesosilicate. b. Sorosilicate. c. Cyclosilicate. d. Single chain Silicate.
e. Double chain Silicate f. Sheet Silicate g. 3-D framework silicate

2. Which of the following statements are correct for amphibole silicates? (1.5 points)

a. The basic unit cell is $(SiO_3)^{2-}$.
b. There are two types of tetrahedra: one sharing 3 oxygen atoms and other sharing 2 oxygen atoms.
c. There are only one type of tetrahedra.
d. The basic unit cell is $(Si_2O_6)^{4-}$.

3. The general formula of silicate ion present in cyclosilicates is: (1.5 points)

a. $(SiO_4)^{4-}$ b. $(Si_2O_5)^{2-}$ c. $(Si_2O_7)^{6-}$ d. $(Si_n O_{3n})^{2n-}$ e. $(SiO3)^{2-}$

4. Garnet, Zircon and sphene are mineral belong to : (1.5 points)

a. Nesosilicates b. Inosilicates. C. Phyllosilicates d. Ring Silicates.

5. The formula of silicate ion presents in phyllosilicate is: (1.5 points)

a. $(Si_6O_{18})^{12-}$ b. $(Si_3O_9)^{2-}$ c. $(Si_4O_{10})^{4-}$ d. $(Si_2O_7)^{6-}$ e. (SiO_2)

6. Feldspars, muscovite and phlogopite: (1.5 points)

a. All are three – dimensional silicates.
b. Feldspars are three dimensional, while muscovite and phlogopite are inosilicates.
c. Feldspars are not three dimensional, while muscovite and phlogopite are layered silicates.
d. All are layered silicates.
e. Feldspars are three dimensional, while muscovite and phlogopite are layered silicates.

7. Match minerals in Group I with the corresponding silicate structure in Group II. (1.5 points)

Group I	Group II
i. Anthophyllite and actinolite.	P. Nesosilicate.
ii. Epidote and Zoisite.	Q. Sorosilicate.
iii. Kyanite.	R. Double chain Silicate.

8. Al^{3+} fits both in 4-fold and 6-fold coordination while Fe^{2+} and Mg^{2+} have sizes approximately for either 8-fold or 12-fold coordination. (1.5 points)

a. False b. True.

9. β-quartz is characterized by low – temperature and low symmetry while α-quartz high temperature and high symmetry. (1.5 points)

a. False b. True.

10. Double chain and sheet silicates group minerals are anhydrous minerals. (1.5 points)

a. False b. True.

11. Pure forsterite (Mg_2SiO_4) melts at 1890 ^oC, while pure fayalite (Fe_2SiO_4) melts at 205 ^oC. (1.5 points)

a. False b. True

Second: Fill the Spaces with Scientific terms:-

12. Which minerals are found in the earth's mantle? (1.5 points)

.....

13. Which mineral of the silica group are found only in extremely high pressure? The minerals are ..... . (1.5 points)

14. Define the isomprphism and give example of isomorphic minerals (1.5 points)

..... .

15. The Silicate Structure named as Crankshaft–like chain is characteristic to ..... group minerals. (1.5 points)

16. What is the difference between the structure of antigorite and chrysotile? (1.5 points)

.....

17. Pyroxene and amphibole are classified as ortho - or clino pyroxene / amphibole according to the identity of structural site ..... in pyroxene and structural site ..... in amphibole. (1.5 points)

18. What is the difference between the structure of pyroxene and the structure of pyroxenoid. (1.5 points)

.....

19. What is the lowest stable mineral of weathering ..... and the more stable mineral of weathering..... (1.5 points)

20. 20. Polysynthetic twinning characterize .....mineral while carlsbad twinning characterize ..... mineral. (1.5 points)

d: Write brief account on the following:

25. What is the structure of Muscovite and write the steps for its Formation? (5 points)

26. What is the structure of Talc and write the steps for its Formation? (5 points)

27. How TOT I-beam structure of pyroxene is formed? Answer with drawing. (5 points)

28. Bown,s reaction series (5 points)

Assiut University
Faculty of Science
Geology Department

Final Exam (2023 – 2024)
Physics and chemistry students
Time: 2 hours

Mineralogy and Crystallography (231G) **(50 Marks)**

Choose the correct answer:

1.…… is the most enriched mineral in Si.
(a) Olivine (b) Hornblende (c) Quartz

2. Zircon and topaz minerals belong to ……group.
(a) ortho silicates (b) ring silicates (c) sheet silicates

3. The ratio of Si:O in double chain silicates is……..
(a) 4:11 (b) 1:4 (c) 1:2

4.……mineral is a member of the olivine group.
(a) Augite (b) Diopside (c) Forsterite

5.…… are characterized by high relief.
(a) Hypersthene & quartz (b) Biotite & microcline (c) Olivine & garnet

6.…… minerals show low relief and low interference colors.
(a) Feldspars (b) Amphiboles (c) Pyroxenes

7. The amphibole mineral which crystallizes in orthorhombic system is ……..
(a) anthophyllite (b) tremolite (c) actinolite

8. Orthopyroxenes show …….. extinction.
(a) parallel (b) oblique (c) symmetrical

9. Barite and galena are characterized by……..
(a) transparency (b) luster (c) very high specific gravity

10. Augite is found in igneous rocks such as ……..
(a) gabbro (b) granite (c) trachyte

11. ……..are single chain silicate minerals.
(a) Pyroxenes (b) Amphiboles (c) Micas

12. Framework silicates are characterized by Si:O ratio ……..
(a) 1:4 (b) 1:2 (c) 2:5

13. …….. are polymorphs of SiO_2.
(a) Quartz & tridymite (b) Muscovite & quartz (c) Cristobalite & diopside

14. ……..is the principal mineral of amphibolites.
(a) Olivine (b) Hornblende (c) Magnesite

15. The structure of mica minerals is…….. of silicate tetrahedra.
(a) individuals (b) three-dimensional framework (c) parallel sheets

16. ……..shows strong pleochroism.
(a) Garnet (b) Muscovite (c) Biotite

17. Beryl that has bluish green color is named ……..
(a) emerald (b) aquamarine (c) pegmatite

18. …….. mineral crystallizes in cubic system and is isotropic.
(a) Garnet (b) Plagioclase (c) Cassiterite

19. ……..is easily recognized by its strongly magnetic character.
(a) hematite (b) ilmenite (c) magnetite

20. Platinum metals occur associated with……intrusions.
(a) ultramafic (b) acidic (c) intermediate

21. The mafic minerals are rich in……
(a) Al & Si (b) Na & K (c) Mg & Fe

22. ……..is distinguished by its cubic cleavage and salty taste.
(a) Fluorite (b) Halite (c) Gypsum

23. Carbonate minerals group include ……
(a) calcite & dolomite (b) magnesite & siderite (c) a & b

24. Calcite is the main constituent of ……..
(a) sandstone (b) limestone (c) gneiss

25. Cassiterite is the most important ore of .....
(a) Sn (b) Na (c) Ti

26. Miller indices are (0kL) for .....form.
(a) a-dome (b) basal pinacoid (c) tetragonal prism

27. Miller indices for orthorhombic prism are.....
(a) 010 (b) hk0 (c) hkL

28. The horizontal axes (a, b) are.....symmetry axes in the tetragonal system.
(a) 3-fold (b) 4-fold (c) 2-fold

29. b-dome form has Miller indices .....
(a) h0L (b) 0kL (c) hhL

30. Cube form is composed of ..... square faces.
(a) 8 (b) 6 (c) 12

31. There are 6 (2-fold) symmetry axes in .....systems.
(a) orthorhombic & trigonal (b) cubic & hexagonal (c) tetragonal & monoclinic

32. Octahedron form has Miller indices.....
(a) 111 (b) hk0 (c) 110

33. Front pinacoid exists in .....system.
(a) hexagonal (b) tetragonal (c) orthorhombic

34. The three axes (a, b, c) are ..... symmetry axes in cubic system.
(a) 4-fold (b) 3-fold (c) 2-fold

35. ..... are Miller indices for the general form of hexagonal system.
(a) h0h$\bar{1}$L (b) hki$\bar{1}$L (c) hh2h$\bar{1}$L

36. The side pinacoid has Miller indices .....
(a) 010 (b) 100 (c) hh0

37. The vertical c-axis is 6-fold symmetry axis in .....system
(a) hexagonal (b) orthorhombic (c) cubic

38. Miller indices for tetragonal prism second order form are.....
(a) 110 (b) 010 (c) 100

39. The crystallographic axes in cubic system are.....
(a) $a = b \neq c$ (b) $a \neq b \neq c$ (c) $a = b = c$

40. The axes (a_1, a_2, a_3) have the same length in .....system.
(a) orthorhombic (b) hexagonal (c) tetragonal

41. The .....is the general form in orthorhombic system.
(a) Pinacoid (b) Dome (c) Bi-pyramid

42. .....are closed crystal forms.
(a) Front pinacoid & prism (b) Cube & octahedron (c) dome & side pinacoid

43. Basal pinacoid has Miller indices (001) in these crystal systems except.....
(a) hexagonal (b) tetragonal (c) orthorhombic

44. .....are Miller indices for tetragonal bi-pyramid first order.
(a) hhL (b) h0L (c) h00

45. The crystal form has Miller indices (h0h$\bar{1}$0) is.....
(a) hexagonal prism second order (b) hexagonal prism first order (c) di-hexagonal prism

46. In trigonal system .....form has Miller indices (h0h$\bar{1}$L).
(a) rhombohedron (b) di-trigonal scalenohedron (c) basal pinacoid

47. The three axes (a, b, c) are 2-fold symmetry axes in .....system.
(a) monoclinic (b) cubic (c) orthorhombic

48. The hemi-bipyramid form is composed of .....
(a) 4 faces (b) 6 faces (c) 8 faces

49. There are one 2-fold symmetry axis and one vertical symmetry plane in ..... system.
(a) triclinic (b) monoclinic (c) trigonal

50. In cubic system .....form has Miller indices (110).
(a) tetra-hexahedron (b) rhombic dodecahedron (c) tris-octahedron

Good Luck Dr. Hany Helmy

Geology Department
Faculty of Science
Assiut University

Time: 2 H
Mau 2024

Crystallography (233 G)

Answer the following quations (50 marks)

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 ( )
11-All system contains prism form ( )
12-All system contains bipyramid form ( )
13-All system contains cube form ( )
14-All system contains planes ( )
15-All system contains octahedron form ( )
16-All system contains pidon form ( )
17-All system contains a-dome form ( )
18-All system contains b-dome form ( )
19-All system contains di-prism form ( )
20-All system contains pyramid form ( )
21-All system contains center ( )
22-Tetragonal system contains one fourfold ( )
23-Tetragonal system contains four twofold ( )
24-Tetragonal system contains five planes ( )
25-Hexagonal system contains one sixfold ( )
26-Hexagonal system contains six twofold ( )
27-Hexagonal system contains seven planes ( )
28-Orthorhombic system contains three twofold ( )
29-Orthorhombic system contains three planes ( )
30-Trigonal system contains three planes ( )

CHOOSE THE CORRECT ANSWER OF THE FOLLOWING

31-Prism form is:
a-open b-closed c-both
32-First order prism has miller index:
a-110 b-100 c-hko
33-Ditetragonal prism has miller index:
a-110 b-100 c-hko
34-Bipyramid is:
a-open b-closed c-compound
35-Ditetragonal bipyramid has:
a-12 faces b-8 faces c-16 faces
36-First order prism in tetragonal system has:
a-4 faces b-8 faces c-6 faces
37-Miller Index of b dome in monoclinic system
a-110 b-100 c- h0l
38-Ditetragonal prism has:
a-4 faces b-8 faces c-6 faces
39-Second order prism has miller index:
a-110 b-100 c-hko
40-Ditetragonal prism is:
a-open b-closed c-both
41-Prism form in trigonal system is:
a-4 faces b-3 faces c-6 faces
42-Octahedron has miller index:
a-111 b-100 c-hko
43-Miller Index of prism in monoclinic system:
a-110 b-100 c-hko
44-Octahedron is:
a-open b-closed c-compound
45-Cube has:
a-12 faces b-8 faces c-6 faces
46-Trapezohedron is:
a-open b-closed c-both
47-Scalenohedron is:
a-open b-closed c-both
48-Rhombohedron form have:
a-3 faces b-6 faces c-8 faces
49-Cubic has miller index:
a-111 b-100 c-hko
50-Mineral crystal in octahedronform is
a-fluorite b-pyrite c-all of the above

Assiut University
Faculty of Science
Geology Department

جامعة أسيوط
كلية العلوم
قسم الجيولوجيا

Second Semester, Second Level Final Examination

Time: 2 hours	Total marks: 50	Fundamentals of Geophysics (G250)	May, 2024

Choose the correct answer:

1) The physical property of rocks that is most commonly utilized in electrical resistivity method is:
a) Density b) Magnetic susceptibility c) Elasticity d) Electrical resistively or conductivity

2) The physical property of rocks that is most commonly utilized in seismic method is:
a) Acoustic velocity b) Density c) Magnetic susceptibility d) Electrical resistively or conductivity

3) The electrical conduction occurred by the slightly displacement of electrons to their nucli is called:
a) electronic conduction b) electrolytic conduction c) dielectric conduction d) atomic conduction

4) 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

5) The SI unit of electrical resistivity is:
a) Ohm b) m/sec c) ohm.m d) siemens/m

6) 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

7) Which of the following control the electrical resistivity of earth materials:
a) magnetic susceptibility b) water content c) porosity d) b and c

8) The presence of clay minerals tends to decrease the resistivity because clay minerals:
a) can combine with water
b) can absorb cations in an exchangeable state on the surface
c) tend to ionize and contribute to the supply of free ions
d) all the above

9) True resistivity can be obtained when the subsurface is:
a) isotropic and homogeneous b) anisotropic and homogenous
c) isotropic and inhomogeneous d) anisotropic and inhomogeneous

10) The most common electrode arrays are:
a) Wenner array b) Sato and Money Array c) Archie's array d) all the above

11) Choosing the best electrode array for resistivity survey depends on:
a) type of structure to be mapped b) sensitivity of the resistivity meter
c) background noise level d) all the above

12) Which of the following techniques are used for electrical resistivity field survey:
a) Sounding b) leap frog c) common midpoint d) a and c

13) Quantitative interpretation of resistivity sounding data can provide information about:
a) density of electrical resistivity layers
b) velocity of electrical resistivity layers
c) depth to electrical resistivity layers
d) none the above

14) which of the followings are disadvantages of resistivity method:
a) the electrode must be in a good contact with soil
b) culture problems causing interference
c) highly conductive or resistive surface layer
d) all the above

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

16) Areas of seepage in dam investigations will show:
a) resistive response b) conductive response c) no response d) all the above

17) Self-potentials are generated by a number of natural sources such as:
a) presence of metallic minerals b) fluid streaming c) electrochemical reactions d) all the above

18) 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

19) 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

20) Electrokinetic potential may result from the gradient in:
a) Pressure b) temperature c) ion concentration d) none the above

21) Electrochemical potential is also called:
a) liquid-junction potential b) Bioelectric potential c) streaming potential d) a and b

22) To make Self-Potential measurements we need:
a) High impedance voltmeter b) electric wires c) non-polarizable electrodes d) all the above

23) 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

24) One of the electrode configurations for self-potential survey is:
a) Wenner b) dipole-dipole c) leap-frog d) none the above

25) SP anomalies are often interpreted qualitatively by:
a) Profile shape b) Amplitude c) number of layers d) a and b

26) 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

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

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

29) 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

30) The correction of gravity data due to elevation only is called:
a) drift correction b) free air correction c) latitude correction d) bouguer correction

31) The correction of gravity data due to the variation in density of earth materials is called:
a) drift correction b) free air correction c) latitude correction d) bouguer correction

32) 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

33) The following formula $g_\lambda = 978031.8\left(1+0.0053024\sin^2\lambda - 0.0000059\sin^2 2\lambda\right)\text{mGal}$) is known as:

a) IGPF b) IGF c) IGRF d) IGKF

34) The Eötvös correction is huge and may reach:
a) ~2.5 mGal per km/h b) ~5 mGal per km/h c) ~15 mGal per km/h d) none the above

35) Rock density can be determined by:
a) borehole gravity measurements b) Nettleton's method c) Nafe-Drake curves d) all the above

36) 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

37) Bulk modulus is defined as:
a) shear stress over shear strain
b) volume stress over volume strain
c) shear stress over volume strain
d) volume stress over shear strain

38) Which of the following can support shear forces:
a) Gases b) liquids c) solids d) a and b

39) Primary seismic waves can travel through:
a) Gases b) liquids c) solids d) all the above

40) 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

41) which of the following considers surface waves:
a) Primary waves b) Love waves c) Secondary waves d) none the above

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

44) To record arrival times of seismic waves on land we use:
a) Hydrophones b) electrodes c) geophones d) resistivity meters

45) 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

46) Seismic refraction method can be used to:
a) depth and thickness of geologic strata b) depth to bedrock c) depth to water table d) all the above

47) Which of the following represents geometric factor (G) of wenner array:
a) $G = 2\pi a$ b) $G = 4\pi a$ c) $G = \pi a$ d) $G = 3\pi a$

48) We can increase the penetration depth in electrical resistivity by:
a) decreasing the current electrode spacing
b) decreasing potential electrode spacing
c) increasing the potential electrode spacing
d) increasing the current electrode spacing

49) 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

50) The interpretation of self-potential method is mostly:
a) Qualitatively b) quantitively c) both qualitatively and quantitatively d) semi-qualitatively

End of questions

GOOD LUCK

Dr. Mostafa Thabet

جامعة أسيوط
كلية العلوم - قسم الجيولوجيا

امتحان التحريرى لطلاب المستوى الثانى بقسم الجيولوجيا (جميع الشعب)
المقرر: علم الطبقات (٢١٠ ج)
الفصل الثانى (دور يونيو) - العام الجامعى ٢٠٢٣ – ٢٠٢٤ م

الدرجة الكلية للأمتحان: ٥٠ درجة الزمن: ساعتان

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

1-Lithostratigraphic units that are not yet fully described are referred to as "informal".
2- Remains of fossil animals and plants can be applied in magnetic stratigraphy.
3- The Paleozoic Era reflects the major changes of life forms on the Earth.
4- Allostratigraphic units are defined on the basis of its physical and biological content.
5- Environmental changes play the significant role in speciation.
6- Biostratigraphic zones are bodies of rocks containing the maximum abundance a mineral.
7- Stratigraphic sequences can be correlated to each other.
8- Extinction events across geologic ages may vary in magnitude.
9- Sharp contacts between rock units result from abrupt lithological changes.
10- The law of faunal succession has a great importance in determining the absolute ages of rocks.
11- Stratigraphy deals with all rock types that possess laminated nature.
12- The "Stage" is the basic chronostratigraphic unit.
13- Sets of magnetic polarity reversals in sedimentary sequences can be correlated between sections worldwide.
14- Sea currents are important agents in dispersing marine organisms.
15- The "Taxon Range Zone" is defined on the basis of evolutionary changes.
16- The geological time scale is a system of chronologic measurement that relates stratigraphy to time.
17- Bracketing relationships are used to estimate absolute rock ages.
18- Lithostratigraphy deals with spatial arrangement of rock units and is independent of time.
19- A given "Formation" may consist of one or more types of lithology.
20- Each formal lithostratigraphic unit should have a clear and precise definition including a designated stratotype and a type locality.
21- Sea level changes are all of eustatic nature.
22- Biostratigraphy deals with lithological correlations of rock bodies.
23- Major stage boundaries are defined on the basis of local events.
24- Original horizontality is a principle that conforms to strata even if they are now being inclined.
25- Radioactive carbon isotopes can be used in absolute age dating.
26- Species that overlap through space and time can be used in seismic stratigraphy.
27- Rock units which are made up of soils are termed "pedostratigraphic units".
28- Unconformities are important structural evidences of superposition.
29- Among criteria and evidences of superposition are the fossils.

A marker bed represents an instant of geologic time where thin and distinctive sediment is found.

Q2: Shade the correct answer; A, B, C or D **(20 marks; 1mark each)**

31- The principle of "uniformitarianism and catastrophism" can explain past geologic events of a region except of .....
A- faunal successions B- appearance/disappearance of species
C- mass extinctions D- appearance of new species

32- In chemostratigraphy we can use .....
A- magnetic properties of rock bodies
B- physical properties of rocks
C- primary structures and rock fabrics
D- stable carbon isotopes

33- Gabs between rock units develop due to .....
A- abrupt change in lithology B- gradual change in lithology
C- fining upward sediments D- erosion and/or non-deposition

34- Which one of the following is not used in rock correlation?
A- physical similarity B- time equivalency
C- fauna/flora succession D- rock textures

35- If sedimentary facies are seen overlapping, this can be due to .....
A- truncation B- weathering C- sea level fluctuation D- erosion

36- To understand the processes which acted in the past the rule of ..... must be considered.
A- inclusions B- faunal succession
C- strata continuity D- uniformitarianism and catastrophism

37- Age assessment of a layer, or group of layers, as "Lower Triassic" means that the layer(s) corresponds to .....
A- earliest Triassic B- earliest Late Triassic
C- lowest Triassic D- Early Triassic

38- In case the stratotype of a given rock unit is no longer expresses the full unit characteristics, geologists should seek for a .....
A- Holostratotype B- Parastratorype C- Neostratotype D- Lectostratotype

39- Which one of the following is not a stratigraphic issue?
A- The study of temporal rock relationships
B- The study of spatial distribution of rocks
C- The study of physical and mineralogical properties of rocks
D- The correlation of rocks

40- The following do not conform to the law of superposition except of?
A- A marker bed found on both valley sides B- Sediments cutted by dykes
C- Interbedded sediments D- Intertonguing sediments

41- Lithostratigraphic units can be distinguished by their.....
A-physical characteristics B- chemical composition
C- fossil content D- structural relationships

42- Stratigraphic units that are bounded by unconformities have been incorporated recently in the stratigraphic work, they are named ..... units.
A- magnetostratigraphic B- cyclostratigraphic

C- pedopstratigraphic D- allostratigraphic

43- The unconformity type where unconformable layers show no visible unconformity surface are termed .....

A- angular unconformity B- paraconformity

C- disconformity D- nonconformity

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

A- Carboniferous, Permian, Triassic B- Permian, Carboniferous, Triassic

C- Triassic, Carboniferous, Permian D- Triassic, Permian, Carboniferous

45- The following tools are used in stratigraphy except of .....

A- fossil content B- total organic carbon content

C- seismic properties of rocks D- rock types

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- The following terms are used in chronostratigraphy except of .....

A- isochrones B- dichrones C- faunizones D- polychrones

48- Among the most commonly used Mesozoic time-stratigraphic units is the:

A- Period B- Formation C- Member D- Eon

49- Formations are considered:

A- primary formal lithologic units B- chronostratigraphic units

C- widespread and mappable units D- A and C

50- In a rock succession, superposition means that:

A- oldest rocks are at base B- youngest rocks are on top

C- younger rocks may sometimes underlie older rocks D- all of them

إنتهت الأسئلة مع أطيب الأمنيات بالتوفيق

Examiners:

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

Assiut University
Faculty of Science
Department of Geology

جامعة أسيوط
كلية العلوم
قسم الجيولوجيا

2023/2024 Second Semester, Final Examination		
22 May 2024	On: Geographic Information System (G-240)	Time: 2 hours

Answer ONLY the required questions, illustrating your answer by suitable sketches wherever possible:

First Question: GIS has become a crucial tool in various fields due to its ability to analyze, visualize, and interpret spatial data. From urban planning to environmental management, GIS finds applications across diverse sectors. **Could you share five examples of the most common applications of GIS?**

(5 marks)

Second Question: Compare between ONLY FIVE from the following concepts in GIS and remote sensing: **(20 marks)**

a) Raster vs. vector data
b) Reference vs. thematic maps
c) Active vs. passive satellites
d) Spatial vs. spectral resolution
e) Equidistant vs. conformal projections
f) Geographic vs. projected coordinate systems
g) Small-scale vs. large-scale maps
a) Geostationary vs. sun-synchronous satellites

Third Question: Choose the correct answer: **(20 marks)**

1. **Each Universal Transverse Mercator (UTM) zone divided into _____ East/West bands, each 8° high lettered from the south pole using C through X letters.**
   a) Twenty b) Twenty-one c) Twenty-two d) Twenty-three
2. **The raster data model consists of rows and columns of equally sized _____ interconnected to form a planar surface.**
   a) Points b) Lines c) Grids d) Pixels
3. **Polygons that can be drawn at a constant distance around every feature in a layer, or at a distance that varies according to attribute values are called _____**
   a) Overlays b) Boundaries c) Buffers d) None of them
4. **_____ occur when the shared boundary of two polygons does not meet exactly.**
   a) Overlaps b) Slivers c) Gaps d) Symmetrical difference
5. **The X-value, called the Easting, has a value of _____ at the central meridian of each zone in the UTM coordinate system.**
   a) 10,000,000 m. b) 1,000,000 m. c) 750,000 m. d) 500,000 m.
6. **UTM coordinate system divides the globe into 60 N/S zones, each _____ wide.**
   a) 4° longitudes b) 6° longitudes c) 8° longitudes d) 10° longitudes
7. **In the Egyptian Transverse Mercator (ETM) projection system, Egypt was divided into _____ belts/zones.**
   a) Two b) Three c) Four d) Five
8. **If a certain location has the following geographic coordinates (longitude 39° 10′ 17′′E and latitude 21° 29′ 55′′N), the corresponding UTM zone will be:**
   a) Q36 b) Q37 c) R36 d) R37
9. **Landsat-7 satellite maintains _____ radiometric resolution for its bands and can therefore record values for each pixel that range from 0 to 255.**
   a) 4-bit b) 8-bit c) 12-bit d) 16-bit

10. **A raster model with pixels representing 10 m. by 10 m. in the real world would be said to have a spatial resolution of _____**
a) 100 m. b) 20 m. c) 10 m. d) 1 m.

11. **City names such as New York, Tokyo, or London refer to _____.**
a) Nominal locations b) Absolute locations
c) Relative locations d) None of them

12. **_____ is the main latitude reference in the ETM projection system.**
a) Equator b) Latitude 22° c) Latitude 25° d) Latitude 30°

13. **A source of potential error in an aerial photograph is the _____ which arises from the three-dimensional aspect of terrain features.**
a) Curvature b) Orthophoto c) Relief displacement d) Error propagation

14. **Universal Transverse Mercator (UTM) used from _____**
a) Latitudes 84°N to 84°S b) Latitudes 84°N to 80°S
c) Latitudes 80°N to 84°S d) Latitudes 80°N to 80°S

15. **_____ refers to define and describe places in relation to other known locations. For instance, Cairo, Egypt, is north of Johannesburg, South Africa.**
a) Nominal location b) Absolute location c) Relative location d) None of them

16. **Zone 1 in the UTM system is from _____ longitudes.**
a) 180°W to 170°W b) 180°W to 160°W
c) 180°W to 174°W d) 180°W to 164°W

17. **The global World Geodetic System of 1984 datum uses the _____ as the origin of the geographic coordinate system and is used for defining locations across the globe.**
a) Sea level b) Ground elevation c) Centre of the Earth d) None of them

18. **In ArcMap, the _____ provides a page view where map elements such as the data frame, a scale bar, and a map title, are arranged on a page for map printing.**
a) Data frame b) Layout view c) Table of contents d) Symbology

19. **GPS technology consists of a constellation of _____ satellites that are orbiting the Earth and constantly transmitting time signals.**
a) Twenty-four b) Three c) Twenty-three d) Four

20. **Online maps and GISs are _____ because we can zoom in and out at will.**
a) Large-scale maps b) Small-scale maps
c) Scaleless maps d) None of them

<u>Fourth Question</u>: True or False: **(10 marks)**

1. GIS is a computer-based information system that enables the capture, storage, modeling, retrieval, analysis, and presentation of geographically referenced spatial data. ( )
2. Health records, soil description, and sample quality are examples of attribute data. ( )
3. When using decimal degrees, latitudes above the equator and longitudes east of the prime meridian are negative, while latitudes below the equator and longitudes west of the prime meridian are positive. ( )
4. Three fundamental vector types exist in GIS: points, lines, and polygons. ( )
5. Orthophotos are vertical photographs that have been geometrically "corrected" to remove the curvature and terrain-induced error from images. ( )

== Good Luck,,, ==

Assoc. Prof. Rashad Sawires