

Assiut University
Faculty of Science
Department of Geology



Date: July 2020
Time allowed: 2 hours

Final Exam

Geothermal and Radiometric Methods (G 452), Total 80 Marks

A) Mark the following statements with True (✓) or False (X): (35 marks, one mark each)

No	Statement	TRUE (✓)	FALSE (X)
1	Isotopes are defined as an element whose atoms have a different number of protons and electrons but similar number of neutrons in the nucleus		
2	In radiometric survey, the most significant isotopes are uranium, thorium, and potassium		
3	Radioactivity is the process where a stable atom becomes unstable through the process of decay or breakdown of its nucleus		
4	The energy of gamma ray is not a characteristic of the radioactive element it came from		
5	The emission of Gamma ray is a secondary phenomenon that generally accompanies the emissions of Alpha and Beta particles		
6	Alpha and Beta particles can ionize gas and make it electrically conductive		
7	Radiometric can be used as a mapping tool for certain rock types change		
8	The radioactive decay processes can be affected by the chemical and physical processes in the surroundings		
9	The time it takes for one half of the material to decay or disintegrate is called the half-life time		
10	The range of half-life times of radioactive nuclei does not vary enormously		
11	The radioactive decay of uranium and thorium elements leads to unstable isotopes of lead		
12	The radioactivity in sedimentary rocks is lower than the igneous rocks		
13	Most clay minerals are characterized by high radioactivity		
14	Limestones and dolomite can be classified as rocks with low/weak radioactivity		

15	Studying the radioactivity of rocks and minerals can provide useful information about the heat production with the earth		
16	One of the assumptions made in radiometric dating is that no loss or gain of parent or daughter		
17	The advantage of Potassium-Ar age dating is the wide spread of potassium element in the crustal rocks		
18	The disadvantage of Potassium-Ar age dating is the vulnerability of Ar gas to be lost by alteration or heating		
19	The ^{87}Rb has only one half-life time		
20	Zircon (accessory mineral) is the most commonly mineral used for U-Th-Pb age dating		
21	The ^{14}C method has mainly been used for dating plant material in addition to glacier ice		
22	The $^{18}\text{O}/^{16}\text{O}$ ratio provides a record of ancient water temperature		
23	Geiger-Muller counter can be used for land and airborne radiometric survey		
24	The Gamma Ray Spectrometer can be calibrated by flying over an area of known radioisotope concentration		
25	Radon Emanometer cannot be used to map faults		
26	The interpretation of radiometric data is mostly qualitative		
27	Heat escaping through the earth sets off various geological processes		
28	The leftover heat from the accretion of the earth represent 70% of the source of heat energy within the earth		
29	Heat transfer from the earth's interior to the surface by radiation		
30	Thermal conductivity controlled by the porosity and minerals present in a rock		
31	The greater the depth the greatest the thermal gradient and the lowest the thermal conductivity		
32	The mean heat-flow values of continents and oceans are nearly equal		
33	Oceanic ridge is one of the regions of anomalous heat flow		
34	The seepage of thermal water pockets through fissure and cracks can create local temperature disturbance		
35	In borehole lithology, the greatest temperature gradient occurs in shales and the lowest in salt		

B) Choose the correct answer of the following: - (35 marks, one mark each)

1) During decay, energy is released in the form of:

- a) Alpha particles
- b) Beta particles
- c) Gamma radiation
- d) all the above

2) The process that takes place when an electron from the innermost (K) shell enters the nucleus is called:

- a) K shift
- b) K release
- c) K capture
- d) K detection

3) Maximum energy in natural disintegration is generally less than:

- a) 3 MeV
- b) 10 MeV
- c) 15 MeV
- d) 30 MeV

4) Ionizing radiation of Alpha and Beta particles can:

- a) affect photographic emulsion
- b) ionize gas
- c) produce scintillations
- d) all the above

5) In radiometric survey the Gamma ray is detecting by:

- a) resistivity meter
- b) voltmeter
- c) spectrometer
- d) nanometre

6) Which of the following is the measure of the activity of radioactive specimen:

- a) Roentgen
- b) Curie
- c) Total counts
- d) all the above

7) Radioactive decay processes can be affected by:

- a) Physical processes of the surroundings
- b) Chemical processes of the surroundings
- c) Physical and Chemical processes of the surroundings
- d) none of the above

8) Isotopes are the basis of radiometric dating of rocks because:

- a) the known decay constant of isotopes
- b) they are unaffected by physical and chemical processes
- c) a and b
- d) none of the above

9) Sandstones and Gneiss rocks are generally characterized by:

- a) high radioactivity
- b) intermediate radioactivity
- c) weak radioactivity
- d) all the above

- 10) Mafic and ultramafic rocks are generally characterized by:
- a) high radioactivity
 - b) intermediate radioactivity
 - c) week radioactivity
 - d) all the above
- 11) One of the assumptions made in radiometric dating is:
- a) no loss or gain of parent or daughter
 - b) unknown decay constant
 - c) unknown half-life time
 - d) all the above
- 12) Accurate age dating method must fulfil the following:
- a) a decay only one-way
 - b) no other source of daughter
 - c) both daughter and parent stay in place
 - d) all the above
- 13) The most age dating methods are:
- a) Potassium-Aragon
 - b) Uranium-Lead
 - c) Rubidium- Strontium
 - d) all the above
- 14) The only stable isotope of calcium is:
- a) Ca^{10}
 - b) Ca^{20}
 - c) Ca^{30}
 - d) Ca^{40}
- 15) The dated event using Potassium-Aragon method is the time of final cooling below approximately:
- a) 200°C
 - b) 300°C
 - c) 500°C
 - d) 1000°C
- 16) The advantage of Rubidium-Strontium age data is that the system is:
- a) Gas-Gas
 - b) Solid-Gas
 - c) Solid-Solid
 - d) none of the above
- 17) The tritium age dating method can be used to determine:
- a) age of the Earth
 - b) age of planet
 - c) age and recharge of groundwater
 - d) age of glacier ice
- 18) The following minerals are suitable for K-Ar age dating:
- a) Hornblende
 - b) Orthoclase
 - c) Microcline
 - d) all the above
- 19) The disadvantage of ^{87}Rb - ^{87}Sr age dating method is:
- a) Rb is not abundant element in the crust
 - b) cannot apply to young rocks due to long half-life
 - c) the initial presence of non-radiogenic Sr in most minerals
 - d) all of the above

- 20) The ancient climatic features are derived from analyses of:
- a) Tritium isotopes
 - b) Uranium isotopes
 - c) Oxygen isotopes
 - d) Carbon isotopes
- 21) The number of naturally occurring isotopes of Oxygen is:
- a) two
 - b) three
 - c) four
 - d) five
- 22) which of the following instruments can be used in radiometric survey:
- a) Geiger-Muller Counter
 - b) Scintillation Meter
 - c) Gamma-ray Spectrometer
 - d) all of the above
- 23) Geiger-Muller counter respond to:
- a) Alpha particles
 - b) Beta particles
 - c) Gamma Radiation
 - d) all of the above
- 24) The presence of radon at the surface indicate buried:
- a) Uranium concentrations
 - b) Carbon concentrations
 - c) Potassium concentrations
 - d) Rubidium concentrations
- 25) Thermal measurements have provided regional and local information on:
- a) theory of convection on the mantle
 - b) position of structures such as salt domes
 - c) stratigraphic correlation from borehole measurements
 - d) all of the above
- 26) The percentage of heat produced within the earth by radioactive decay of long-lived isotopes is:
- a) 10%
 - b) 30%
 - c) 50%
 - d) 70%
- 27) Heat is transferred from the earth's interior to the surface by:
- a) conduction
 - b) diffusion
 - c) simulation
 - d) none of the above
- 28) The measure of how easily heat flows through material is known as:
- a) heat flow
 - b) thermal gradient
 - c) thermal conductivity
 - d) thermal energy
- 29) The rate of change in temperature with depth is known as:
- a) heat flow
 - b) thermal gradient
 - c) thermal conductivity
 - d) thermal energy

30) The greater the depth will result in:

- a) greatest thermal gradient and lowest thermal conductivity
- b) lowest thermal gradient and greatest thermal conductivity
- c) lowest thermal gradient and lowest thermal conductivity
- d) greatest thermal gradient and greatest thermal conductivity

31) At non-volcanic areas, the boreholes and mines measurements showed that the temperature increases with depth:

- a) 10°C per 100m
- b) 5°C per 100m
- c) 3°C per 100m
- d) 2°C per 100m

32) On the thermal gradient measurements, the measured temperature could be affected by:

- a) topography
- b) climate variations
- c) sedimentations
- d) all of the above

33) The equality of continental and oceanic heat flow is due to:

- a) oceanic mantle has higher concentration of radioactive minerals
- b) continental mantle has higher concentration of radioactive minerals
- c) oceanic crust has higher concentration of radioactive minerals
- d) continental crust has lower concentration of radioactive minerals

34) Thermal measurements can be used for the prospection of:

- a) thermal reservoir
- b) salt domes
- c) groundwater
- d) all the above

35) Regions of anomalous heat flow may result from:

- a) high concentrations of radioactive minerals
- b) high electrical conductivity
- c) increase in iron mineral content
- d) High percentage of organic matter

C) Oral questions (10 Marks)

Mark the following statements with True (✓) or False (X): (two marks each)

No	Statement	TRUE (✓)	FALSE (X)
1	Radiation is the energy in the form of particles or waves that travel from one object to another		
2	Alpha radiation is electrons whereas Beta radiation is helium nuclei		
3	Gamma ray has higher energy than X-Ray		
4	Temperature anomaly over a granite intrusion in contact with limestone is not detectable at shallow depths		
5	Thermal measurements can be used in prospection for shallow salt domes		

=====Best wishes=====

إمتحان المستوى الرابع (شعبتي الجيولوجيا والجيوفيزياء)

مقرر 415 ج (جيولوجية مصر)

Course 415 G (Geology of Egypt)

الدرجة: 70 درجة

50 درجة تحريري + 10 درجات أعمال سنة + 10 درجات منتصف الفصل

الإمتحان في 4 ورقات بالإضافة إلى إمتحان الشفهي في ورقة مستقلة رقم 5

الزمن 3 ساعات

دور يوليو 2020

الإمتحان مكون من أربعة صفحات

Answer the following questions

Question 1: Put the right or wrong mark on each of the following sentences (36 Marks, 1 mark for each sentence)

1. The Massaged Formation is Middle-Late Jurassic in age
2. The Alam El Bueb Member is the lower clastic Member of the Burg El Arab Formation
3. The Upper Cretaceous sediments in the northern Western Desert are divided into three rock units which are from bottom to top: Bahariya, Abu Roash and Khoman.
4. The appearance of Pseudohastigerina wilcoxensis marks the base of the Paleocene-Eocene Thermal Maximum (PETM=CIE) at Dababiya
5. The appearance of Acarinina sibaiyaensis marks the base of the Paleocene-Eocene Thermal Maximum (PETM=CIE) at Dababiya
6. The disappearance of Discoaster araneus marks the top of the Paleocene-Eocene Thermal Maximum (PETM=CIE) at Dababiya
7. The GSSP of the Paleocene/Eocene boundary lies at the base of Bed 1 of the Dababiya Quarry Member
8. The Carbon Isotope Curve shows an increase through the Dababiya Quarry Member
9. The Kiseiba Formation west of Aswan is equivalent in age to the Quseir-Duwi-Dakhla Formations

See next page

10. The Type section of Tarawan Formation is in Dakhla Formation
11. The Nubian Sandstone Group includes five Mesozoic formations in the southern Nile Valley
12. The Sabaya Formation is the most productive Aquifer among the Nubian Sandstone Group
13. The floor of the Farafra Oasis is made up of Nubian Sandstone
14. The iron ore deposits occur in the Bahariya Formation at Bahariya Oasis
15. The Esna Shale overlies Tarawan Formation and underlies Thebes Formation
16. The Ryan Formation in Fayoum is equivalent to Qarara Formation in the Nile Valley
17. The Qasr El Sagha Formation in Fayoum exhibit fluvio-marine facies rich in vertebrate remains
18. The Duwi Phosphate overlies Quseir Shale and underlies Dakhla Shale
19. The Dakhla Shale overlies Tarawan Chalk and underlies Esna Shale
20. The Tarawan Formation is overlain by the Esna Shale in Dakhla Oasis
21. The Bir El Temsah Formation in the Nile Delta is equivalent to Geisum Formation in the Gulf of Suez
22. The Dabaa Formation belongs to the Upper Eocene-Lower Oligocene
23. The Dababiya Quarry Member is made up of three beds
24. The Esna Shale is made up of two members
25. Fossiliferous Devonian strata were identified in five wells in the subsurface of the northern Western Desert
26. The Qasr El Sagha Formation is Middle Eocene (Lutetian) in age
27. Ophiolites in Egypt are non-metamorphosed
28. Ophiolites in Egypt are commonly occurring as allochthonous and commonly dismembered
29. Serpentinities are essentially formed after dunites
30. Boudinagad chromite lenses are associated with serpentinized ophiolitic peridotite
31. Ophiolites are remnants of oceanic crust
32. Dokhan Volcanics are younger than the Hammamat Molasse Sediments
33. The older granite group ranges in composition from tonalities to granodiorites
34. The Dokhan Volcanics are mostly subaerial, distinctly silicic and commonly intervened by elongate belt of Hammamat Molasse Sediments
35. The Hammamat Molasse Sediments were deposited in intermontane, alluvial and fresh water basins

36. The Pillow lavas associated with the Egyptian ophiolites were formed in a marine basin

Question 2 : Mark the correct word from the three words in the brackets (34 Marks, 2 Marks for each sentence)

1. The type section of the Thebes Formation is: **(Gebel Gurna opposite Luxor), (Sibaiya), (Kharga Oasis)**
2. The Garra Formation is equivalent to: **(Tarawan Formation-Hanadi Member), (Dungul Formation), (Thebes Formation)**
3. The Hanadi Member of the Esna Shale is belonging to: **(Thanetian), (Ypresian), (Lutetian)**
4. The Bed No.1 of the Dababiya Quarry Member is: **(non-carbonate shale), (Limestone), (sandstone)**
5. The Bed No. 5 of the Dababiya Quarry Member is: **(Shale), (Calcarenite), (Phosphates)**
6. The Abu Roash Formation is divided in the subsurface of the northern western Desert into **(7) (5) (3)** members
7. The Khoman Formation is a distinctive white chalk belonging to the **(Upper Cretaceous) (Lower Cretaceous) (Lower Eocene).**
8. The Alamein Member is dolomitic limestone belonging to the **(Lower Cretaceous) (Upper Cretaceous) (Upper Jurassic)** age
9. Bahrein Formation is **(Jurassic) (Cretaceous) (Silurian)** in age
10. The Belaiym Formation of the Gulf of Suez is equivalent in age to **(Syatin Form.) (Um Mahara Form.) (Mokattam Form.)**
11. The Mamura Formation in the northern Western Desert is equivalent to **(Rudeis Form.) (Um Mahara Form.) (Mokattam Form.)** in the Gulf of Suez
12. The Kareem Formation in the Gulf of Suez is equivalent to **(Um Mahara Form.) (Dungul Form.) (Abu Madi Form.)**
13. Melanges are tectonically chaotic rock units that are most important of **(Plate collisions) (Mid-ocean ridges) (Continental faults)**
14. Steinmann (1927) excluded in his famous "Steinmann's Trinity" The radiolarites explicitly as **(older rocks) (younger rocks) (sheared rocks)**
15. The major domes (e.g. Hafafit dome) are commonly bonded by **(normal faults) (thrust faults) (both normal and thrust faults)**

16. Banded iron ores are generally associated with tuffs and volcanogenic greywakes pertaining to (Older Metavolcanics OMV) (Younger metavolcanics) (Ophiolites)
17. The ophiolites in Egypt comprise (low-grade regionally serpentinites, gabbros, volcanics and volcanoclastics) (Serpentinites and metagabbros) (Metagabbros and Metavolcanics)

امتحان الشفهي المستوى الرابع (شعبتي الجيولوجيا والجيوفيزياء)

مقرر 415 ج (جيولوجية مصر)

الدرجة: 10 درجات

Answer the following question

Question 1: Put the right or wrong mark on each of the following sentences (10 Marks, 1 Mark for each sentence)

1. The St. John Island (Zabagad Island) occurs in the Gulf of Suez
2. The Tushka Lakes occur in Fayoum
3. The Qarun Lake occurs in Wadi Araba
4. The Wadi Allaqui occurs in the southern Eastern Deasert
5. The Dababiya GSSP lies north of Luxor
6. The Qattara depression occurs in the northern Western Desert
7. The Siwa Oasis occurs in north Sinai
8. The Nubian Shield developed through a processes of horizontal crustal accretion during the Pan African Period from about 950 Ma to 550 Ma
9. Gebel Owienat-Gebel Kamil basement inliers belong to Pre-Pan African crus on the Saharan Metacraton
10. The contacts between the Egyptian basement and the neighboring bedded sequences of the Nubian sandstones are commonly normal faults

Good Luck. Prof. Khaled Ouda; Prof. Ali Khudeir



Final Examination for B Sc Students

July 2020

ECONOMIC GEOLOGY (G434)

Time allowed :2hours

Total Mark 50 + 10+ 10

Answer the Following Questions

Part I Total 40 Questions, Each One 1 Mark

Put the right or wrong mark on each of the following sentences

1. Among the important factors in the evaluating the potentiality of an ore body are the coasts of extraction from the ground.
2. Whilst podiform chromite deposit belongs to mobile belts, the stratiform layered chromite deposits were intruded into stable cratons.
3. The general age of the chromite podiform deposits are Precambrian.
4. The genesis of the gold bearing fluid at El Sukkai gold mine ,Central Eastern Desert, Egypt ; are genetically related to the metamorphic model for gold mineralization, rather than direct magmatic hydrothermal origin .
5. Filter pressing stage squeezes out mobile interstitial liquid, between crystals.
6. The production of a high proportion of immiscible sulphides in late magmatic stage is possible if the magma assimilates much sulphur from its country rocks.
7. The Abu Ghalaga deposit represent the late magmatic immiscible sulphide segregation stage of the ore forming processes.
8. The copper-nickel sulfide of Abu Swayel deposits were formed from a mafic mantle-derived magma emplaced quiescently in multiple phases at higher crustal levels in a tensional rift environment.
9. The genesis of the Ni-bearing peridot veins of St John's Island, of Ras Banas in the Red Sea are younger intrusions related to sea floor spreading.
10. The surface water, which commonly referred as meteoric water and the connate water (deeply penetrating meteoric water) are not among different sources of subsurface hydrothermal water that could precipitate ore deposits.
11. Podiform chromite deposits of the major Bushveld Complex, South Africa, were produced from its critical zone.
12. Many rocks display relative preferences for ore associations e.g. as chromite in granites and tin deposits in peridotite.

28. Sericitization and development of secondary micaceous minerals, means that potassium was introduced into the wall rocks.
29. Oxidation may occur without sulfide enrichment, but sulfide enrichment cannot take place without oxidation.
30. The source of iron in Algoma type iron ores is dominantly from the ocean itself, through either direct introduction of Fe^{2+} from hydrothermal exhalations (black smokers) on the sea floor or dissolution of oceanic crust.
31. Major occurrence of Phosphorites in Egypt is known from three localities the Red Sea coast, the Nile Valley and Abu Tartar plateau in the Western Desert.
32. Uranium bearing deposits of sedimentary affiliation found in phosphate deposits of Abu Tartour, plateau in the Western Desert.
33. Uranium bearing mineralization related to the Egyptian granites is found as veinlets and stringers crossing granite masses at Iqla, Eastern Desert.
34. Aswan oolitic iron ore deposits was formed under sedimentary lacustrine conditions during the deposition of Senonian sediments.
35. The Red Sea, stratabound gold-bearing deposits in the Algoma-type BIF (Banded Iron Formation) of Egypt are exhalative deposits syngenetically formed in the early stages of island arc formation (immature arc)
36. Talc is formed as a product of metamorphism or hydrothermal alterations of Ca-rich rocks, especially ultramafics rocks.
37. Two chief chemical changes occur in the zone of oxidation: (1) the oxidation, solution, and removal of certain minerals; and (2) the transformation in place of some of these minerals into oxidized compounds.
38. Mono- mineralic fluorite veins, in Gabal Ineigi, southern Eastern Desert are true fissure filling veins.
39. Abu Dahr chromite ore body of Egypt , was formed through the separation of late stage, Fe-Ti-P rich residual liquid which intruded into the lithified host gabbroic mass.
40. The influence of the host rock in localizing hydrothermal mineral deposits may be physical, chemical, or both.

See next pages



Part II: Total 15 Questions, Each One 2 Marks
(Total 30 Marks)

Choose and Mark the correct answer from the given alternatives a, b, c

- 1) The internal zoning in pegmatites may attributed to: (a) Fractional crystallization in situ under disequilibrium conditions, (b) Metamorphic processes, (c) Segregation by gravitational.
- 2) The formation of Cu –dominant or Mo-porphyry deposits is genetically related to: (a) Hypothermal mineralization process, (b) rising of magma fractions in sub volcanic suites (c) behavior of metals during the melt-fluid partitioning on first boiling and H₂O – saturation.
- 3) The host rocks of the podiform deposits characterized by: (a) high degree of serpentinization (b) high chromium content (c) layering structure.
- 4) Greisens are important mainly for: (a) production of coarse k- feldspars minerals (b) an index of thermal metamorphic process. (c) for production of Li mica lepidolite - muscovite minerals.
- 5) Lateral secretion means: (a) diffusion of ore forming material from the enclosing rocks to a neighboring structure trap (b) an alteration haloes occur in the host rocks adjoining intrusion of an ore body (c) addition of new ore materials by uprising hydrothermal solution.
- 6) The feasibility study is the most important factor to prove (a) the commercial viability of a mine operation (b) to know industrial purposes in which the mineral can be used (c) to study the geologic infera - structure of mine area.
- 7) Many mineral deposits in Egypt are associated with the Egyptian G3 granites as: (a) Sn-W mineralization (b) Corundum deposits (c) Fe–Ti mineralization
- 8) Studies of the wall alterations are important because (a) it contribute to our knowledge the nature and the evolution of ore-forming solutions (b) it determine the grade/or facies of metamorphism in the area (c) it help in estimate the prove ore reserve.

- 9) Placer gold deposits are accessible from (a) the alteration zone close to the auriferous quartz veins. (b) the wadis near or / at the foot of gold bearing rocks (c) high grad metamorphic rocks.
- 10) In Late magmatic stage, the ore minerals are (a) crystallized later than the host silicate rocks (b) earlier in crystallization than the host rocks (c) formed due to the reaction with the host rocks.
- 11) Factors controlling deposition of ore deposits are mostly due to (a) cooling or dilution of the ore fluid by mixing with meteoric water, (b) increase in fluid pressure (c) absence of open space cavities (i.e. imperious rocks)
- 12) The G1 Egyptian 'Grey' granites are formed: (a) as a result of suturing and being of S-type granite, (b) at subduction tectonic setting with no appreciable mineralization (c) from magma having SiO_2 contents higher than 65% with accessory monazite, zircon and cassiterite.
- 13) Essential requirements for formation of hydrothermal mineral deposits are: (a) available mineralizing solutions with sufficient concentration of ore mineral (b) absence of openings in host rock (c) lacking of chemical reactions between this ore fluid and its host rocks.
- 14) The most important criteria for open space vein deposits are: (a) crustification and matching walls. (b) Islands of un replaced host and pseudomorphmic minerals (c) shrinkage and cracks textures.
- 15) The facies concept for BIF formation with the progressive change from oxide through carbonate to sulfide phases was considered to reflect (a) precipitation of iron minerals in successively more reducing environments (b) change in pressure condition during deposition (c) tectonic factors.

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Assiut University Faculty of Science

Final Examination for B Sc Students

July 2020

ECONOMIC GEOLOGY (G434)

Geology Department

Time allowed :2hours

oral Examination

Total Marks 10

Part III: Total 10 Questions, Each One 1 Marks
(Total 10 Marks)

Put the right or wrong mark on each of the following sentences

- 1- The Egyptian pegmatites are important raw materials for cement industry.
- 2- Quartz veins bearing cassiterite are occurring at Barramiya district, southern Eastern Desert Egypt.
- 3- Beryl (emerald) is a popular gemstone and also used for different purposes in nuclear reactors.
- 4- Barite mineralized veins, at Gebel El -Hudi Aswan granites, southern Eastern Desert, are high temperature hypothermal deposits.
- 5- Peridot is olivine mineral and is a lovely semi -precious gemstone its famous world occurrence is at St John's Island, southern Red Sea, Egypt.
- 6- Ilmenite; Rutile; Anatase; and Sphene minerals are all Ti – bearing minerals.
- 7- The Ni-Cu polysulfide mineralization at Abu Sawyel , southern Eastern Desert of Egypt, are formed mainly of galena and sphalerite minerals .
- 8- The presence of carbonates of copper minerals malachite and azurite; and the carbonates of zinc, smithsonite are good criteria for oxidation zone.
- 9- Silicification involves an increase in the proportion of quartz or crypto-crystalline silica in the altered rock.
- 10- True Marble deposits are metamorphosed calcareous rocks usually occur as bands or lenticels at Gabal Rokham southern Eastern Desert.

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



Final Examination for B Sc Students

July 2020

ECONOMIC GEOLOGY (G434)

Time allowed :2hours

Total Mark 50 + 10+ 10

Answer the Following Questions

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3. The general age of the chromite podiform deposits are Precambrian.
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5. Filter pressing stage squeezes out mobile interstitial liquid, between crystals.
6. The production of a high proportion of immiscible sulphides in late magmatic stage is possible if the magma assimilates much sulphur from its country rocks.
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10. The surface water, which commonly referred as meteoric water and the connate water (deeply penetrating meteoric water) are not among different sources of subsurface hydrothermal water that could precipitate ore deposits.
11. Podiform chromite deposits of the major Bushveld Complex, South Africa, were produced from its critical zone.
12. Many rocks display relative preferences for ore associations e.g. as chromite in granites and tin deposits in peridotite.

13. The transition from granite to pegmatites is only marked by the point at which H₂O fluid saturation occurred in the crystallization sequences and that pegmatites therefore, formed in the presence of an immiscible H₂O volatile fraction.
14. The volatile elements B, F, and P, play important role on pegmatite formation as they lower the granite solidus temperature to below 500 °C.
15. The copper porphyry deposits form a belt all over the world; with a geologic age ranging between 160- 35 m.y ; almost found associated with intrusions of intermediate composition.
16. The Sn-W mineralization is more often associated with S-type granites that derived from partial melting of continental crust which normally include significant proportions of metasedimentary materials.
17. The Egyptian G2 Granites have alkali to peralkaline composition being intraplate anorogenic granites formed under extensional environment.
18. The sub sea floor hydrothermal system is responsible to wide range of volcanogenic massive sulfides deposits (VMS) e.g. Kuroko types of Japan and the Um Samuki, sulfide deposits, southern Eastern Desert, of Egypt.
19. The Um Gheig (along the Red Sea Coast), Egypt, is stratabound carbonate host Pb- Zn deposits formed in basinal – diagenetic environs with no volcanic or plutonic associate intrusion.
20. For the formation of contact-metasomatic mineral deposits magma should contain ingredients of mineral deposits and intrude at deeper depth.
21. The I-type magma generated in the mid- to lower-crust by partial melting of a source rock form at relatively low temperatures (around 700 °C).
22. In epithermal gold deposits precipitation of the soluble gold in the ore fluid can be achieved by boiling or mixing of fluid with oxidized meteoric water.
23. Au precipitation in high sulfur environ follows this equation :

$$\text{Au (HS)}^{2-} + 8 \text{H}_2\text{O} \leftrightarrow \text{Au} + 2 \text{SO}_4^{2-} + 3 \text{H}^+ + 7.5 \text{H}^2$$
24. Orogenic or non-stratabound (mesothermal) gold deposits of Egypt are divided into: vein-type gold mineralization and disseminated-type gold mineralization hosted in the altered rocks (alteration zones)
25. Supergene Cu mineralization in Sinai is found in Sarabit as thin bands in shales alternating with Upper Carboniferous rocks.
26. The hydrothermal solutions deposit its mineral content in various kinds of openings in rocks, to form cavity-filling deposits, or by replacement of these rocks, to form replacement deposits.
27. Sodium carbonate (Natron) is the main salt of Natron Lake, Western Desert, while sodium chloride (Halite) is the main salt at Siwa oasis, northern Western Desert.

28. Sericitization and development of secondary micaceous minerals, means that potassium was introduced into the wall rocks.
29. Oxidation may occur without sulfide enrichment, but sulfide enrichment cannot take place without oxidation.
30. The source of iron in Algoma type iron ores is dominantly from the ocean itself, through either direct introduction of Fe^{2+} from hydrothermal exhalations (black smokers) on the sea floor or dissolution of oceanic crust.
31. Major occurrence of Phosphorites in Egypt is known from three localities the Red Sea coast, the Nile Valley and Abu Tartar plateau in the Western Desert.
32. Uranium bearing deposits of sedimentary affiliation found in phosphate deposits of Abu Tartour, plateau in the Western Desert.
33. Uranium bearing mineralization related to the Egyptian granites is found as veinlets and stringers crossing granite masses at Iqla, Eastern Desert.
34. Aswan oolitic iron ore deposits was formed under sedimentary lacustrine conditions during the deposition of Senonian sediments.
35. The Red Sea, stratabound gold-bearing deposits in the Algoma-type BIF (Banded Iron Formation) of Egypt are exhalative deposits syngenetically formed in the early stages of island arc formation (immature arc)
36. Talc is formed as a product of metamorphism or hydrothermal alterations of Ca-rich rocks, especially ultramafics rocks.
37. Two chief chemical changes occur in the zone of oxidation: (1) the oxidation, solution, and removal of certain minerals; and (2) the transformation in place of some of these minerals into oxidized compounds.
38. Mono- mineralic fluorite veins, in Gabal Ineigi, southern Eastern Desert are true fissure filling veins.
39. Abu Dahr chromite ore body of Egypt , was formed through the separation of late stage, Fe-Ti-P rich residual liquid which intruded into the lithified host gabbroic mass.
40. The influence of the host rock in localizing hydrothermal mineral deposits may be physical, chemical, or both.

See next pages



Part II: Total 15 Questions, Each One 2 Marks
(Total 30 Marks)

Choose and Mark the correct answer from the given alternatives a, b, c

- 1) The internal zoning in pegmatites may attributed to: (a) Fractional crystallization in situ under disequilibrium conditions, (b) Metamorphic processes, (c) Segregation by gravitational.
- 2) The formation of Cu –dominant or Mo-porphyry deposits is genetically related to: (a) Hypothermal mineralization process, (b) rising of magma fractions in sub volcanic suites (c) behavior of metals during the melt-fluid partitioning on first boiling and H₂O – saturation.
- 3) The host rocks of the podiform deposits characterized by: (a) high degree of serpentinization (b) high chromium content (c) layering structure.
- 4) Greisens are important mainly for: (a) production of coarse k- feldspars minerals (b) an index of thermal metamorphic process. (c) for production of Li mica lepidolite - muscovite minerals.
- 5) Lateral secretion means: (a) diffusion of ore forming material from the enclosing rocks to a neighboring structure trap (b) an alteration haloes occur in the host rocks adjoining intrusion of an ore body (c) addition of new ore materials by uprising hydrothermal solution.
- 6) The feasibility study is the most important factor to prove (a) the commercial viability of a mine operation (b) to know industrial purposes in which the mineral can be used (c) to study the geologic infera - structure of mine area.
- 7) Many mineral deposits in Egypt are associated with the Egyptian G3 granites as: (a) Sn-W mineralization (b) Corundum deposits (c) Fe–Ti mineralization
- 8) Studies of the wall alterations are important because (a) it contribute to our knowledge the nature and the evolution of ore-forming solutions (b) it determine the grade/or facies of metamorphism in the area (c) it help in estimate the prove ore reserve.

- 9) Placer gold deposits are accessible from (a) the alteration zone close to the auriferous quartz veins. (b) the wadis near or / at the foot of gold bearing rocks (c) high grad metamorphic rocks.
- 10) In Late magmatic stage, the ore minerals are (a) crystallized later than the host silicate rocks (b) earlier in crystallization than the host rocks (c) formed due to the reaction with the host rocks.
- 11) Factors controlling deposition of ore deposits are mostly due to (a) cooling or dilution of the ore fluid by mixing with meteoric water, (b) increase in fluid pressure (c) absence of open space cavities (i.e. imperious rocks)
- 12) The G1 Egyptian 'Grey' granites are formed: (a) as a result of suturing and being of S-type granite, (b) at subduction tectonic setting with no appreciable mineralization (c) from magma having SiO_2 contents higher than 65% with accessory monazite, zircon and cassiterite.
- 13) Essential requirements for formation of hydrothermal mineral deposits are: (a) available mineralizing solutions with sufficient concentration of ore mineral (b) absence of openings in host rock (c) lacking of chemical reactions between this ore fluid and its host rocks.
- 14) The most important criteria for open space vein deposits are: (a) crustification and matching walls. (b) Islands of un replaced host and pseudomorphs minerals (c) shrinkage and cracks textures.
- 15) The facies concept for BIF formation with the progressive change from oxide through carbonate to sulfide phases was considered to reflect (a) precipitation of iron minerals in successively more reducing environments (b) change in pressure condition during deposition (c) tectonic factors.

See next page



Assiut University Faculty of Science

Geology Department

Final Examination for B Sc Students

July 2020

ECONOMIC GEOLOGY (G434)

Time allowed :2hours

oral Examination

Total Marks 10

Part III: Total 10 Questions, Each One 1 Marks
(Total 10 Marks)

Put the right or wrong mark on each of the following sentences

- 1- The Egyptian pegmatites are important raw materials for cement industry.
- 2- Quartz veins bearing cassiterite are occurring at Barramiya district, southern Eastern Desert Egypt.
- 3- Beryl (emerald) is a popular gemstone and also used for different purposes in nuclear reactors.
- 4- Barite mineralized veins, at Gebel El -Hudi Aswan granites, southern Eastern Desert, are high temperature hypothermal deposits.
- 5- Peridot is olivine mineral and is a lovely semi -precious gemstone its famous world occurrence is at St John's Island, southern Red Sea, Egypt.
- 6- Ilmenite; Rutile; Anatase; and Sphene minerals are all Ti – bearing minerals.
- 7- The Ni-Cu polysulfide mineralization at Abu Sawyel , southern Eastern Desert of Egypt, are formed mainly of galena and sphalerite minerals .
- 8- The presence of carbonates of copper minerals malachite and azurite; and the carbonates of zinc, smithsonite are good criteria for oxidation zone.
- 9- Silicification involves an increase in the proportion of quartz or crypto-crystalline silica in the altered rock.
- 10- True Marble deposits are metamorphosed calcareous rocks usually occur as bands or lenticels at Gabal Rokham southern Eastern Desert.

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



كلية العلوم - قسم الجيولوجيا



جامعة أسيوط

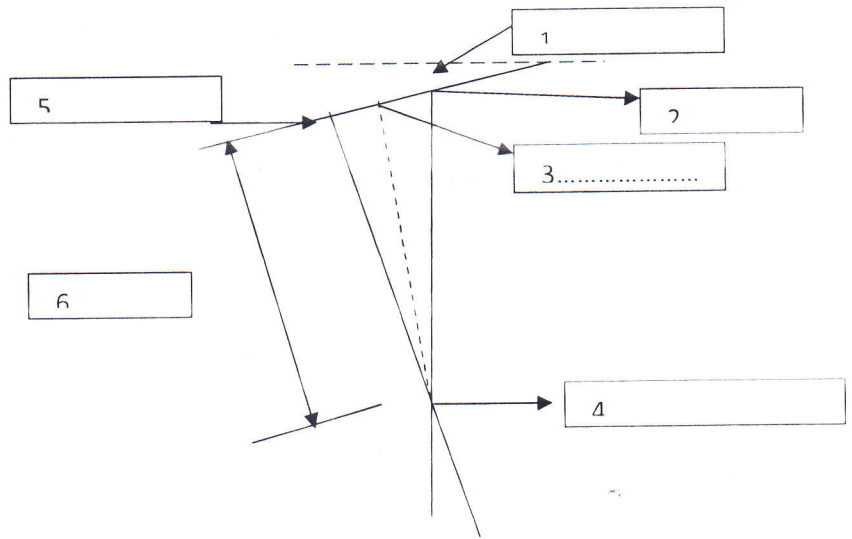
الامتحان النهائي لمقرر (G 434)
الجيولوجيا التصويرية والاستشعار عن بعد
Photogeology and Remote Sensing (G 434)

الزمن : ساعتان

يوليه ٢٠٢٠

PART I - PHOTO GEOLOGY

I – Write the correct word of photogrammetric definitions in the blank boxes in the following figure : (6 Marks) - (1 mark each word)



II-Put the correct word to complete the following phrases: (29 Marks)

(one Mark for every word)

- During aerial photography; if the plane is affected by a cross wind and no correction is made, a condition known asoccurs.
crab - drift - scale variation
- The principal point: is the of the perspective center on the photograph.
perspective projection - orthogonal projection - central projection
- The scale of a photograph depends upon the of the aero plane above the ground and the of the camera lens.
flying height - tilt angle - air base - focal length

4. The trellis drainage pattern consists of streams having one dominant direction, with subsidiary directions of drainage at, and occurs in areas of rocks

right angles - acute angles - - - - - obtuse angles -
folded sedimentary - intruded igneous - horizontal sedimentary

5. The images of ground points with greater elevations are displacedfrom the centre of the photograph causing scale variation .

Outwards - laterally - Inwards - Northwards -

6. It is this difference in parallax on the photographs that produces an illusion of three dimensions when the photographs are viewed stereoscopically and that provides a measure ofdifference.

the orientation - the elevation - the location

7. Parallax measurements from stereo-models are used to calculate the height difference between points defined on aerial photographs using the equation :

$$(h_x - h_y) = (H - h) p / W$$

Where: $h_x - h_y = \dots\dots\dots$, $H = \dots\dots\dots$,
 $h = \dots\dots\dots$, $p = \dots\dots\dots$,
 $W = \dots\dots\dots$

8. Coarse-textured drainage patterns develop where the soils and rocks havewith little surface runoff.

good internal drainage - poor internal drainage - fine grain size

9. If the plane is corrected for drift by turning into the wind, without the camera being reoriented, a condition known asresults.

drift - crab - parallax

10. The relation $d = r . h / H$ is used to estimate the relief displacement on aerial photographs;

where

$d = \dots\dots\dots$

$r = \dots\dots\dots$

$h = \dots\dots\dots$

$H = \dots\dots\dots$

11. A difference in elevation, in addition to producing relief displacement, also produces a difference in

Vertical exaggeration - Parallax - photo tone

12. Horizontal strata of differing resistance to erosion result in

stair-stepped terrain - Cuesta feature - Parallel ridges

13. The dendritic drainage pattern occurs on relatively such as horizontally bedded sedimentary rock and granite.

thinly laminated - homogeneous materials - soft materials

14. Dip and/or slope can be measured from stereomodels of aerial photographs by using the following formula:

$$\tan \alpha = f . p / C . W$$

Where

α =

F =

p =

C =

W =

15. The trellis drainage pattern occurs in areas of

folded sedimentary rocks - plateau surface - oval igneous intrusions

16. Flood basalts typically exhibit

Light photo tone - columnar jointing - spheroidal weathering .

17. The radial drainage pattern is typical of

highly dissected anticlines - volcanoes and domes - faulted structures

PART II – REMOTE SENSING

WRITE TRUE OR FALSE ON THE FOLLOWING:

(20 Marks)

1. Images are pictures detected by means other than photosensitive films. True False
2. Image contrast represents the ratio between the brightest and darkest parts of the image. True False
3. The atmosphere is affected by the presence of O₃, H₂O and CO₂. True False
4. Orbit paths of Landsat are about 20 time. True False
5. Remote sensing bands are essentially four. True False
6. Spectral reflectance curves represent the present of incident light reflected by materials as a function of wavelength. True False
7. Fault escarpments reflect lineaments. True False
8. Many wadis are formed due to lineaments. True False
9. Some lineaments in the Eastern Desert of Egypt, attain 2000 km long. True False
10. Many ore deposits are related to lineaments. True False
11. Linear plutons are uncontrolled by lineaments. True False
12. Many ore deposits occur at the intersection zones of two or three lineaments. True False
13. Landsat images are produced from information along MSS system occurring at the base of the satellite. True False
14. Mirror of the MSS system, vibrates with angle of 200. True False
15. At an elevation of 918 Km, rays of the mirror cover on the earth a line of 185 Km long. True False
16. The multispectral scanner system (MSS) occurs at the base of the space ship. True False
17. The sun light reflected from the earth is divided into 4 spectral bands; namely , Green , Red , IR and IR. True False
18. At the receiving station on the earth, the four MSS bands are registered on a magnetic tape. True False
19. The MSS bands (i. e 4,5,6 and 7) are represented on the image as Blue , Green , Red and Red. True False
20. Remote sensing is a collection of information about an object without being in physical contact with it. True False

- ١ - عند الاطوال الموجية المنخفضة , تكون انعكاسية الصخور .
 (أ) منخفضة (ب) متوسطة (ج) عليا
- ٢ - مع ازدياد الاطوال الموجية , تكون منحنيات الانعكاسية.
 (أ) تعلق قيمتها (ب) تنخفض قيمتها (ج) قيمتها متوسطة
- ٣ - صخر البازلت تكون انعكاسيته بالنسبة للحجر الجيرى :
 (أ) اقل (ب) اعلى (ج) ذات تساوى
- ٤ - عند الاطوال الموجية العالية تكون الانعكاسية للبازلت بالنسبة للانديزايت.
 (أ) اقل (ب) اعلى (ج) قربه
- ٥ - عند الاطوال الموجية المنخفضة (فى حدود $0.5 \mu m$) يبدو الفارق بين انعكاسية الصخور النضرة fresh , ونظائرها المجواه weathered .
 (أ) قليل (ب) متوسط (ج) كبير
- ٦ - مع ازدياد الطول الموجى من $0.5 \mu m$ الى $1.5 \mu m$ يزداد الفارق بين انعكاسية الصخور النضرة ونظيرتها المجواه.
 (أ) صح (ب) خطأ (ج) احتمال
- ٧ - الانعكاسية فى الصخور النضرة اقل من الانعكاسية فى حالة الصخور المجواه .
 (أ) صح (ب) خطأ (ج) ممكن
- ٨ - فى حالة التربة الجافة تكون نسبة الانعكاسية العالية اكبر من التربة الرطبة .
 (أ) صح (ب) خطأ (ج) محتمل
- ٩ - عند الانعكاسية العالية , يكون الحجر الجيرى اعلى ثم يليه الاركوز فالطين الصفحى وبعده الانديزايت وفى النهاية البازلت.
 (أ) صواب (ب) خطأ (ج) غير ممكن
- ١٠ - يمثل الرايولايت النضر (fresh) اعلى الصخور انعكاسية .
 (أ) صواب (ب) خطأ (ج) جائز
- ١١ - تم ابحار اللاندسات فى ١٩٧٢/٧/٢٣ وحصلت على معلومات خلال منتصف عام ١٩٧٦ عندما اوقف العمل .
 (أ) صح (ب) خطأ (ج) غير دقيق

١٢- كان ارتفاع اول لاندسات ٩١٨ كم فوق سطح الارض.

(أ) صح (ب) خطأ (ج) محتمل

١٣- ابهرت ثانى لاندسات فى ١٩٧٥/١/٢١ وحصلت على معلومات فى ١٩٧٨.

(أ) صح (ب) خطأ (ج) غير دقيق

١٤- ابهرت اللاندسات الثالثة فى ١٩٨٨ بعد ذلك تم تصميم مركبات اخرى.

(أ) صح (ب) خطأ (ج) جائز

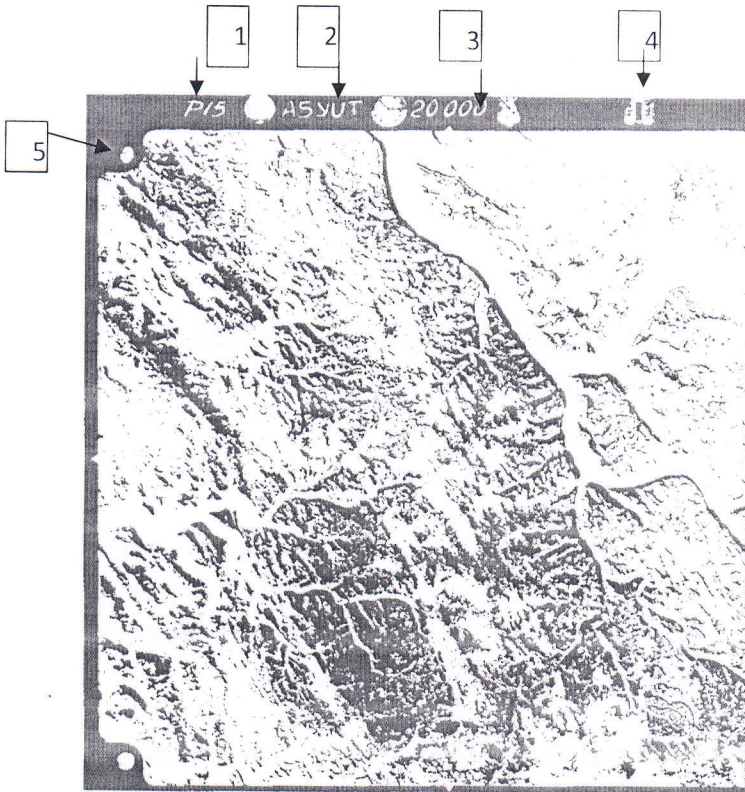
١٥- تقوم المجموعات الشمسية solar arrays بتوليد قوة كهربية من ضوء الشمس .

(أ) صح (ب) خطأ (ج) ممكن

أ.د. محمد السيد حبيب

Oral Question in Photogeology (5 marks)

Write the proper word corresponding to what is indicated on the aerial photograph



- 1.....
- 2.....
- 3.....
- 4.....
- 5.....



جامعة أسيوط

كلية العلوم - قسم الجيولوجيا

الآختبار النهائي لمقرر بيئة الأحياء القديمة وطباقية حياتية ٤١٤ ج

طلاب المستوى الرابع (شعبة الجيولوجيا) - الفصل الدراسي الثاني ٢٠١٩-٢٠٢٠

دور يونيو ٢٠٢٠

الزمن: ساعتان

ملحوظة: الآختبار يقع فى ست صفحات

مجموع الدرجات الكلية للآختبار: ٨٠ درجة

٧٠ درجة للآختبار التحريرى (متضمنا منتصف الفصل والأعمال الفصلية) + ١٠ درجات للآختبار الشفهى

أولاً: الآختبار التحريرى

I- PALAEOECOLOGY (35 marks)

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

A- Decide if the following statements are correct (✓) or wrong(x): (25 marks; one mark each)

- 1- The preserved body parts or skeletons of organisms can contribute significantly to paleoecology reconstruction ().
- 2- Laws of nature have been constant in their operation through geologic time according to methodological uniformitarian approach ().
- 3- Substantive uniformitarianism is intermediate between analogy and methodologic uniformitarianism ().
- 4- Representatives of the genus *Acropora* live today and can contribute to depth and turbulence of reef environments ().
- 5- Selective preservation may cause the fossilized dinoflagellate assemblages, extracted by the paleoecologist, to be markedly different from place to another within the deposition environment due to varying bottom oxygen concentrations ().
- 6- Ecology is the study of the interaction of organisms with one another and with the physical environment in the geologic past ().
- 7- Invertebrates is the only fossil group which is used in paleoecology investigation under the taxonomic uniformitarianism approach ().
- 8- Post-mortem destruction for the majority of organisms is total ().
- 9- Animals that are living today and move in water or air are streamlined ().
- 10- The approach of substantive uniformitarianism is largely neglected because earth materials are believed to have remained constant ().

- 11- Fossil dinoflagellates can be used to infer paleoceanic temperatures and salinities ().
- 12- Principles applied for ecologic investigation are identical with those applied in paleoecology ().
- 13- Terrestrial spores and pollen grains are regarded as depth indicators ().
- 14- Most organisms are subjected to minimal destruction during transport and sedimentation ().
- 15- Diagenesis is an alternative synonymous term of necrology ().
- 16- The fossil record which is the basis of paleoecology work is biased and incomplete ().
- 17- Any buried organic material is subjected to "diagenesis" ().
- 18- Number of species of animals and plants inhabiting the Earth today is known ().
- 19- Plant and animal fossils are used in paleoecology investigation regardless of their modes of preservation ().
- 20- Accumulation of large numbers of skeletons of dead organisms on modern sea floors means that preservation in general is high ().
- 21- Data from ancient Trilobite remains support reconstruction of the modern environments ().
- 22- Nature of the fossilized assemblage differs from their originally lived counterparts; this is referred to as "Biocoenosis and Thanatocoenosis" ().
- 23- Fossils which are seen in a museum display imply that they must have passed through post-mortem taphonomic stages ().
- 24- Ecosystems are generally complex in their nature but their explanation can be simplified by presenting the most significant environmental parameters ().
- 25- During their life histories, organisms may undergo decay and recycling of their chemical components ().

B- Choose the correct answer:

(10 marks; one mark each)

- 1- Paleontologic data are used to reconstruct:
ancient environments - restricted environments - modern environments -
all of them
- 2- Living assemblage of organisms in a given ecologic environment is termed:
fossil assemblage - biocoenosis - biozone - none of them
- 3- Modern dinoflagellates in oceans and seas reflect:
sea surface temperatures - sea surface salinities - turbulence - all of them
- 4- Beneath the top layer of leaves of any forest log the organic matter is:
degraded - protected from decay - completely oxidized - partially reduced
- 5- Which of the following are not fossils?
foraminifera - chert nodules - radiolaria - coralline algae

- 6- Recycling of organic matter after burial keeps the carbon cycle:
terminating - operating - closing - all of them
- 7- Which of the following is a significant data-base in paleoecology investigation?
analogy - taxonomy - erosion - tectonic history
- 8- Recognition of ancient environments depends on:
good taxonomy - stratigraphy background - ecologic background - all of them
- 9- Organisms are preserved as fossils once successfully passed stages of:
transportation - sedimentology - biostratigraphy - taphonomy
- 10- One of the most important information sources of paleoecologic interpretations is:
Well-established stratigraphy - structural data - geophysical data -
sedimentology background
-

II- BIOSTRATIGRAPHY (35 marks)

Examiner: Dr. Abdelhamid M. Salman (Geology Department)

Q1- True (T) or False (F) of the followings (25 marks; 1 mark each):

1. Biostratigraphic units are distinct from other kinds of stratigraphic units in that the organisms whose fossil remains establish them show evolutionary changes through geologic time that are not repeated in the stratigraphic record. ()
2. Mass Extinction requires continuous deposition and a dense fossil record. ()
3. Diachronous units representing a particular depositional environment might overlap temporally with adjacent units causing confusion over whether superposition of rock units actually signifies relative age. ()
4. Last Appearance Datum (LAD) is either local or global. ()
5. Biozone is defined as a rock unit characterized by one or more taxa that permit it to be distinguished from adjacent rocks. ()
6. Concurrent Zone is an intersection of the taxon range zones of two or more taxa. ()
7. Biostratigraphers like assemblages because they are free from some of the complications that infection biozones based on a single taxon. ()
8. Abundance Zone is also called Peak Zone. ()
9. The study of biostratigraphy allows matching of similarly-aged rocks from different outcrops. ()

10. One of the principle of the stratigraphic unit-terms of the chrono-stratigraphic units is an Epoch. ()
11. A disconformity is an erosional surface between a sedimentary rock and another. ()
12. Rock units were characterized by unique sets of fossil taxa. ()
13. Changes in fossil faunas are function as stratigraphic time lines. ()
14. Index fossil is not useful in biostratigraphy if it is wide stratigraphic range. ()
15. Interval Zone is a global interval between two successive FADs or two successive LADs. ()
16. Fossils are useful in absolute age determination because the processes of evolution have produced a unique sequence. ()
17. The age of a fossil-bearing sedimentary rock can not be determined if the stratigraphic ranges of its contained fossils are not known. ()
18. Reworked fossils are defined as Fossils from rocks of one age that have been eroded, transported, and redeposited in sediments of a younger age. ()
19. Biohorizon is a stratigraphic boundary, surface, or interface across which there is a significant change in biostratigraphic character. ()
20. Barren intervals are stratigraphic intervals with fossils common in the stratigraphic section. ()
21. First appearance datum means the time of evolutionary origin of a taxon. ()
22. Fossils are formed from hard and soft parts of an organisms. ()
23. Ichnofacies is defined based on trace fossil content. ()
24. Graptoloid is a taxon of extinct, sessile, reef-building marine organisms of the Cambrian Period. ()
25. Fusulina is an index fossil during the Cretaceous Period. ()

Q2- Select the correct answer of the followings (10 marks; 1 mark each):

1- Which of the following represents the longest time period?

- a) Precambrian b) Paleozoic c) Mesozoic d) Cenozoic

2-Which of the following statements is true of dating by stratigraphy?

- a) Soil strata are always found in the order that they were laid down
b) In most cases, the stratigraphic record for a site can be sorted out.
c) People and other animals often alter the original stratigraphic record
d) b and c

- 3- The study of faunal succession allows _____.
- a) matching of similarly-aged rocks from different outcrops
 - b) relative dating of fossil-bearing strata.
 - c) recognition of the past times that fossils were died.
 - d) all of them
- 4- Mass extinction during the Triassic (about 203 Ma) is mostly controlled by
- a) Bolide impact b) volcanism c) cooling d) regression
- 5-an extinct group of the ammonites during the Triassic period.
- a) Complex Ammonites b) Seratitic Ammonites c) Goniatites Ammonites
- 6- An extinct group during the Paleozoic era is
- a) Tetracorella b) Hexacorella c) Tabulata d) both a and b
- 7- There are several important of studying the fossils except
- a) Interpretation of the evolution of life on Earth.
 - b) Used in correlation.
 - c) Used in dating the age of sedimentary rocks.
 - d) Know the type of any rock types.
- 8-The Paleozoic does not include the
- a) Ordovician b) Jurassic c) Mississippian d) Permian
- 9-A stratigraphic sequence is a vertical set of strata
- a) used as a chronological record of the geologic history of a region.
 - b) that is unique to a specific area.
 - c) that represents a repeating set of evens such as recurring floods, debris flows, etc.
 - d) bounded above and below by igneous and/or metamorphic rocks.
- 10- We cannot accurately measure time in years with stratigraphy for many reasons as...
- a) sediments accumulate at similar rates in different sedimentary environments.
 - b) many sedimentary rocks contain fossils that have not been identified.
 - c) the rock record tells us how many years have passed between periods of deposition.
 - d) stratigraphy alone cannot be used to determine the relative ages of widely separated beds.
-

ملحوظة: الأختبار الشفهي في الصفحة التالية رقم ٦

ثانيا: الأختبار الشفهي

Decide if the following statements are correct (✓) or wrong (x): (10 marks; one mark each)

1. The sedimentational history of a fossil can be expressed in terms of necrology and diagenesis ().
2. Taphonomic chemical effects include early changes in mineralogy and oxidation ().
3. Marine dinoflagellate cysts can contribute significantly to paleoceanographic characteristics such as paleosalinities and paleotemperatures ().
4. Comprehensive tectonic background is an important data-base in paleoecology ().
5. Most plants have to die first to contribute to the fossil record ().
6. Planktonic foraminifera are well-known small tooth like fossils during the Cretaceous period ().
7. Possible causes for survival organisms during the End of Cretaceous period (~65 Ma) are volcanism and global sea level changes ().
8. Basis of Biostratigraphy is controlled by Extinctions ().
9. Tectonism is not the major factor controlling the distribution of landmasses ().
10. Assemblage Zone is defined as successive related taxa forming a zonal sequence if phylogenetically related ().

انتهت الأسئلة

Good Luck

Select the best answer for each multiple choice questions: there are 25 questions.

- 1- Abundance of oxygen in the human body is
a- Lower than in earth's crust. b- Higher than in earth's crust.
c- Equal to abundances in the earth's crust d- higher than in meteorites.
- 2- Ag, As, Cu and Zn are classified as chalcophile elements characterized by forming.....
a- Sulfides b- Silicates c- carbonates d-phosphates
- 3- Siderophile elements form alloys with iron and examples of these elements are.....
a- Au & Co b-Al & Ba c- La & Pr d- Eu & Mg
- 4- Carbon concentration in the human body are considered
a- Minor element b- Major element c- trace element d- considerable element
- 5- Almost 99 % of the mass of the human body is made up of
a- Two elements b- four elements c- twenty elements d-six elements
- 6- Sodium concentration in the human body is lower than.....
a- 0.2 % b- 5 % c- 10 % d- 50 %
- 7- From the epidemiological point of view, which of the following element excess cause Cardiomyopathy to the human body?
a- Co & As b- Na & K c- Mg & K d- Fe & Na
- 8- Hypertension is a dangerous disease which affects the cardiovascular system May result from excess concentration of
a- Al & Hg b- Cu & Fe c- Mg & K d- Cu & Mg
- 9- High concentration of Iron mixed with free silica in human body is very harmful and can cause.....
a- Silicosiderosis b- Cardiomyopathy c- gastric disturbance d- Oral infections
- 10- Presence of granulomas in the human body can be considered as a result of excess concentration of
a- Beryllium b- Potassium c- Sodium d- Nitrogen
- 11- Which of the following elements excess are harmful to the human body and cause kidney diseases (Nephrotoxicity).....
a- As & Cd b- Na & K c- Mg & Fe d- Ca & K
- 12- Disturbances in the glucose metabolism in the human body may result from deficiency of
a- Cr b- Al c- Fe d- Na

- 13- Anemia and white liver diseases in the human body is caused by deficiency of
a- Co b- Cu c- Cr d- Fe
- 14- Poor growth, rheumatoid and bone decreased in white blood coorbasle in the human body are the effect of deficiency of
a- Cu b- Mg c- Na d- Cl
- 15- Liver necrosis in the human body can be result from deficiency of
a- Selenium b- Chromium c- Potassium d- Magnesium
- 16- Kidney damage (Nephritis) in the human body can be considered as the effect concentration of
a- Chromium b- Lithium c- Magnesium d- sodium
- 17- Anemia is a disease related to trace element deficiency of
a- Fe b- Mg c- Na d- K
- 18- Hemochromatosis is a disease which affect peoples who has excess concentration of
a- Fe b- Cr c- Lu d- Ag
- 19- Excess copper concentration in the human body is very toxic and may cause.....
a- Idiopathic Cu toxicosis and diarrhea b- Anemia
c- Heat failure d- Hemochromatosis
- 20- Excess fluoride concentration in the human body can be detrimental resulting in.....
a- Fluorosis b- Arthiritis c- Osteoarthritis d- flarisis
- 21- Which of the following fluoride concentrations in drinking water is suitable for any people.
a- 0.7 - 12 mg/L b- 2 - 4 mg/L c- 5 - 10 mg/L d- 15 - 20 mg/L
- 22- Which element of the following is usually associated with zinc deposits as impurity?
a- Cadmium b- Lithium c- Potassium d- Sodium
- 23- Calcium, Magnesium, Potassium and sodium are minor elements in the human body and their useful concentrations range from.....
a- 0.1 - 1 % b- 2 - 3 % c- 0.001 - 0.002 % d- 1 - 5 %
- 24- The average percentage of water content of adult human body weight is
a- 5 - 10 % b- 12-13 % c- 15-20 % d- about 70 %
- 25- Examples of minor elements in the human body are
a- Ca & K b- As & Br c- Co % Cr d- H & N

the second part of the questions:

Sign with right or wrong on the following: (45 questions).

- 1- Medical geology is an earth science specialty that concerns how geologic materials and earth processes affect human health. ()
- 2- Environmental health science is the study of relations among the quality of the physical environment, the health of the living environment, and human health. ()
- 3- All living organism are composed of major, minor, and trace elements, given By nature and supplied by geology. ()
- 4- The compositions of rocks and minerals are imprinted on the air that we breathe, the water that we drink, and the food that we eat. ()
- 5- Sometimes the local geology can cause significant health problems because there is an insufficient amount of an essential element or an excess of potentially toxic element. ()
- 6- Toxicity effects from exposure to excess amount of trace elements may be due natural geologic sources. ()
- 7- Selenium is an essential trace element having antioxidant protective functions as well as thyroid hormone regulation properties. ()
- 8- Selenium deficiency (due to soils low in selenium), has been shown to cause health damage such as Juvenile cardiomyopathy and muscular abnormalities in adults. ()
- 9- Arsenic and arsenic containing compounds are human carcinogens. ()
- 10- Exposure to arsenic may occur through several anthropogenic sources, including mining, pesticide, pharmaceutical, glass and microelectronics. ()
- 11- Exposure to mineral dust can cause a wide range of respiratory properties. ()
- 12- Iodine deficiency disorders include goiter (enlargement of thyroid gland), cretinism (mental retardation with physical deformations and birth defects. ()
- 13- The range of element concentrations in an uncontaminated sample material is known as the background, and it is important to consider background as a range, not a single value. ()
- 14- Natural backgrounds characterize the chemistry of rocks and surface material including soils, river and lake sediments, and biological tissues. ()
- 15- Life on planet earth has developed in the presence of all the naturally occurring elements of the periodic table. ()
- 16- A few elements of the periodic table as mercury, lead and thallium, have no known essential role in sustaining life. ()
- 17- The influence of geochemistry on human and animal health is best seen in the tropical environment because the tropical environment are unique from the point of view of their climate, soil characteristic, trace element deficiencies and enrichment, mineral imbalances and extreme cases of rock weathering. ()

- 18- The volcanic ash of the volcanoes is composed of small particles of fragmented volcanic rocks, most of which are less than 30 - 40 microns across and some below 10 microns. ()
- 19- Peoples with chronic respiratory diseases such as asthma or bronchitis may be more susceptible to irritation of ash present in the lower atmosphere in high concentration. ()
- 20- The effect risk of volcanoes for healthy peoples arise from the daily exposure or long term exposure by most urban populations to particles contributes to risk of developing cardiovascular and respiratory diseases, as well as lung cancers. ()
- 21- Air pollution fluctuates daily in cities, mainly related to traffic since the health risk is proportional to the level of pollution accumulated over the day. ()
- 22- The volcanic ash is a nasal and respiratory irritant, and so , people need to avoid inhaling it which means if you are below an ash fall, stay indoors or wear a mask. ()
- 23- Volcanoes are chiefly associated with tectonic plate margins. ()
- 24- The majority of destructive eruptions in history have occurred on coninental margins or island arcs where the edge of one tectonic plate drops beneath another (a process known as subducting). ()
- 25- We can see many types of hazards associated with volcanic phenomena like acid rains, ash and tephra, eartheques, gas and acid particle emmissions, landslides, lava flows, lightning of volcanic clouds, pyroclastic density currents and tsunami. ()
- 26- Epidemiology is defined as the distribution of disease frequency or health events in man. ()
- 27- The occurrence of a disease clearly in excess of normal expectations is called an epidemic. ()
- 28- Of the elements found in the human body, four of them make up the largest percentage of our body weight (96.2 %). ()
- 29- Knowledge of the clinical aspects of trace elements is indispensable for front-line clinicians. ()
- 30- Trace element deficiencies in the human body are associated with a reduced anti-oxidant potential, accelerated aging, developmental retardation in children and immunological abnormalities. ()
- 31- The major elements of the human body are those involved in the formation of covalent bonds and are important constituents of tissues. ()
- 32- The semi-major elements of the human body often exist in the ionic state, and are involved in functions of the living body through maintence of osmotic pressure and membrane potentials. ()
- 33- The abundant elements of the human body is divided into, major elements (about 96 %) of the body weight and semi- major elements (about 4 %) of the body weight. ()
- 34- Volcano landforms and eruptive behavior are diverse, reflecting the large number and complexity interacting processes that govern the generation, storage, ascent and eruption of magma. ()
- 35- Volcnoes often form prominent landforms, with imposing peaks that tower above the surrounding landscape, large depression (calderas), or volcanic fields with numerous dispersed cinder cones, shield volvanoes, domes and lava flows. ()
- 36- The major elements of the human body are gallium, germanium, lithiumand californium. ()

- 38- The major elements of the human body are not important for health. ()
- 39- The trace elements of the human body are nitrogen, hydrogen and carbon. ()
- 40- All elements of the periodic table are not toxic if the dose is high enough. ()
- 41- The human body contains at least 60 detectable chemical elements. ()
- 42- Hydrogen is the most abundant element in the universe. ()
- 43- In most body fluids and tissues, the pH is tightly held at 7.4 and it is a sign of distress if there is a significant deviation from this value. ()
- 44- The control of pH is achieved by buffering for example, by carbonic acid (H_2CO_3) / bicarbonate in blood and by protein. ()
- 45- Although most of natural hydrogen is protium H (99.99 %), there is small amount of the heavier isotope deuterium H (0.01 % abundant) in everything we eat and drink. ()
- 46- Although bromine and bromide compounds are very toxic to human body, pepsi has included brominated oils in their beverages. ()

Oral examination (10 marks)

- 1- Asbestose considered an environmental hazard. ()
- 2- Using excess of pesticides cause harm to human health. ()
- 3- We have three types of health hazards, physical hazards, chemical hazards and biological hazards. ()
- 4- We have two factors affecting human health, internal factors and external factors. ()
- 5- The term malnutrition refers to an unhealthful intake of dietary nutrients. ()
- 6- High doses of radiation can be harmful or it cause fatal to humans and it also damage environment. Loss of white blood cells happens due to more exposure to radiation than 100 rems. ()
- 7- Pollutants reach humans through the food we eat, the water we drink and the air we breathe. ()
- 8- Male infertility has been linked to pesticides, air pollution, exposure to lead and water pollution. ()
- 9- There is a direct link between the environment and human health. ()
- 10- The remerging field of medical geology is concerned with the impacts of geologic materials and geologic processes on animal and human health. ()

Fourth Level Examination in
Sedimentary Basins & Sequence stratigraphy (G420)
For Geology and Geophysics students

Time: Two Hours

(80 degree)

June., 2020

PART-I: Sedimentary Basins (40 degree) **(35+5)**

Mark the correct answer:

1. The geosynclinal theory were proposed for classification of sedimentary basins: (4 marks)
 - Before the advent of plate tectonic theory
 - After the advent of plate tectonic theory
 2. Rift basins are caused by: (4 marks)
 - Plate divergence
 - Plate Convergence
 3. Passive margins are caused by: (4 marks)
 - Plate Divergence
 - Plate Convergence
 4. Ocean basins are caused by: (4 marks)
 - Plate Divergence
 - Plate Convergence
 5. Aulacogens are caused by: (4 marks)
 - Plate Divergence
 - Plate Convergence
 6. Trenches are basins: (4 marks)
 - Related to subduction
 - caused by plate Divergence
 7. Forearc basins are basins (4 marks)
 - Related to subduction
 - Intracratonic (interior) basins
 8. Backarc basins are basins (4 marks)
 - Related to subduction
 - caused by plate divergence
 9. Peripheral foreland basins are basins (4 marks)
 - Basins related to collision
 - Basins caused by plate Divergence
 10. Pull-apart basins are basins (4 marks)
 - Basins related to collision
 - Strike-slip basins
-

PART-II: Sequence Stratigraphy (40 degree)

(35+5)

Answer the following questions:

I- Choose the correct answer for the following statements:

(10marks)

(2marks)

1. A systems tract consists of

- a. Genetically associated stratigraphic units that were deposited during specific phases of the relative sea-level cycle
- b. Tectonically active basins that adjoin each other
- c. The regressive deposits that form when sediment accumulation rates exceed the rate of relative sea-level rise

(2marks)

2. A depositional sequence is

- a. One that never uses water saturation in marker beds as sequence boundaries.
- b. The term used to indicate that hydrothermal alteration has occurred at certain intervals in time.
- c. A stratigraphic unit composed of a relatively conformable succession of genetically related strata and bounded at its top and base by unconformities or their correlative conformity.
- d. Never used in deep marine clastics such as turbidites.

3- Which of the following would result in increase in accommodation space? (2marks)

- a. Decrease in relative sea level and increased in sediment input at the same time.
- b. Increase in relative sea level and uplift occurring at the same time.
- c. Increase in relative sea level and increase in subsidence the same time.
- d. Decrease in relative sea level and uplift occurring at the same time.
- e. Increase in relative sea level and increased in sediment input at the same time.

4- In sequence stratigraphy, the forced regression is characterized by

(2marks)

- a. Rise in relative sea-level and movement of the shoreline landwards.
- b. Fall in relative sea-level and movement of the shoreline seawards.
- c. Fall in relative sea-level and movement of the shoreline landwards.
- d. None of the answers listed here are correct
- e. Rise in relative sea-level and movement of the shoreline seawards.

5- In sequence stratigraphy, a relative sea-level rise with landward shoreline migration can be best described as.....

(2marks)

- a. Forced regression
- b. Global tectonics
- c. Transgression
- d. Simple Regression

II- Is it True or False

(6marks)

6- Marine Flooding Surfaces (MFS) can be described as transgressive surfaces.

()

7 - Water depth = (relative sea level - accumulated sediment)

()

8 - Landward migration of littoral facies known as Accommodation.

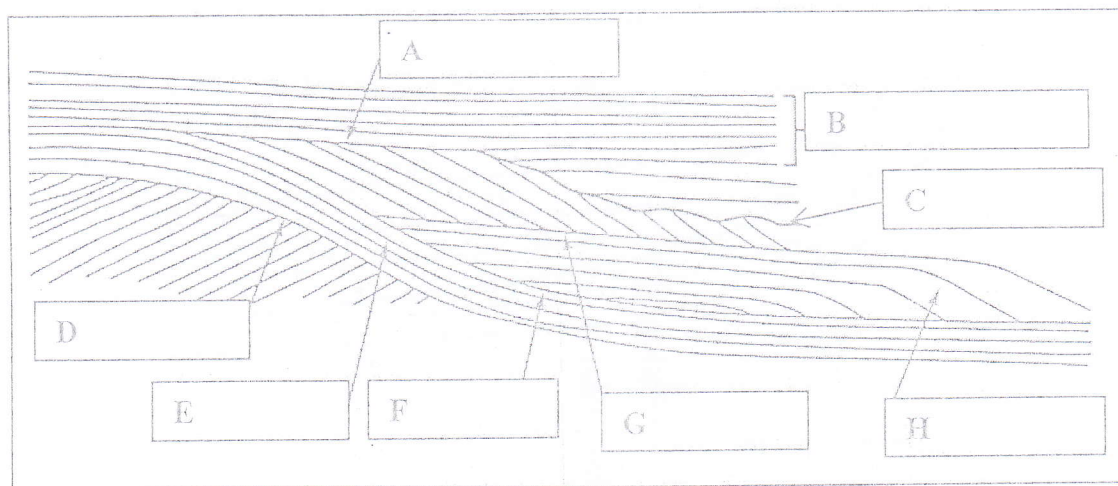
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II-9- Matching questions

(8marks)

1) Marine Flooding Surface	a) Deposited by a relatively slow rise in sea level and the filling of incised valleys.
2) Incised Valley Fill	b) Marine beds immediately overlying non-marine beds, may contain clasts from underlying unit, may have mixed faunal assemblages
3) Transgressive Lags	c) A surface that separates younger from older strata, across which there is evidence of an abrupt increase in water depth
4) Type 1 Sequence is bounded	d) below by a type 1 sequence and above by a type 1 or type 2 sequence boundary
5) Transgressive Systems Tract	e) The lower-most systems tract associated with a type 2 sequence boundary. one or more weakly progradational to aggradational sequence sets
6) Type 2 Sequence is bounded	f) A type of unconformity in which younger sediments rest upon the eroded surface of tilted or folded older rocks.
7) Shelf Margin Systems Tract	g) The middle systems tract of both type 1 and type 2 sequences. One or more retrogradational parasequence sets.
8) Angular Unconformity	h) below by a type 2 sequence boundary and above by a type 1 or type 2 sequence boundary

III- 10 - Identify the different types of seismic reflections and terminations given in the following figure (Write in the eight empty boxes, from A to H). (8marks)



A-.....

C-.....

E-.....

B-.....

D-.....

F-.....

G- _____

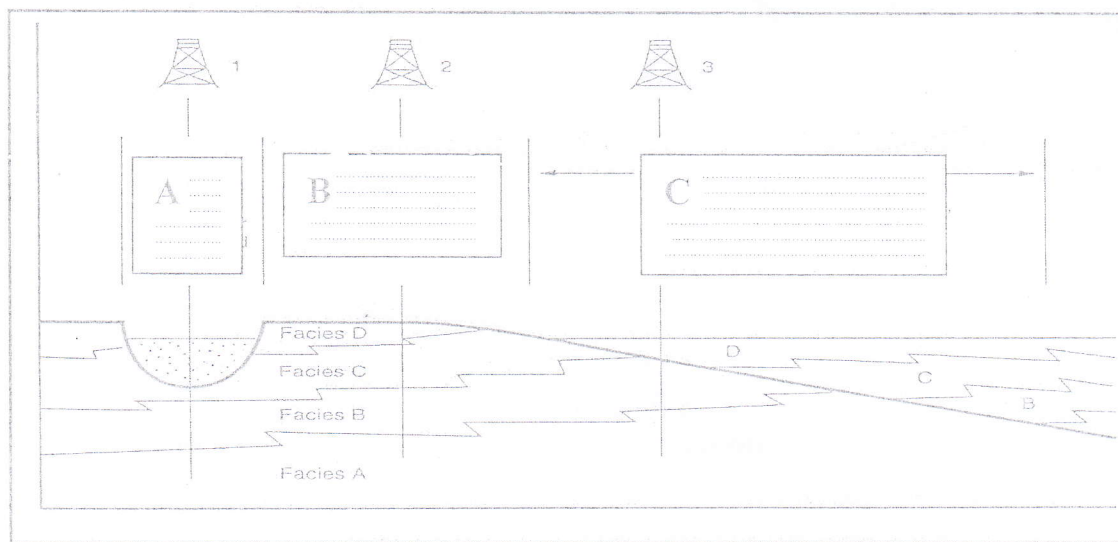
H- _____

11-(a)- Write in the three empty boxes below (A, B and C) the main feature(s) which each well shows. (6marks)

A- _____

B- _____

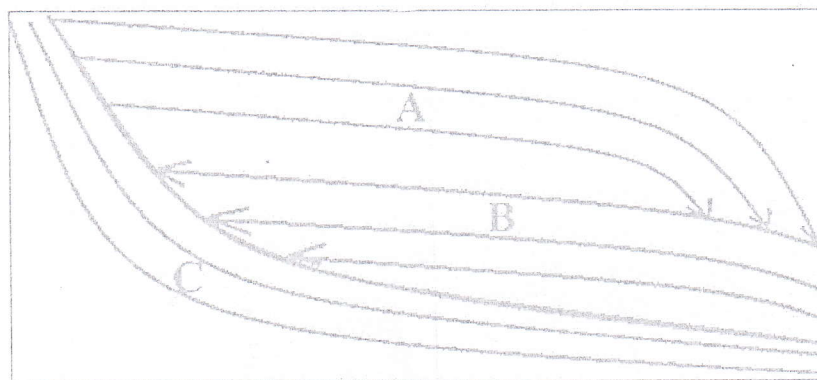
C- _____



(b)- Which wells show clear evidence of presence of a sequence boundary? (1mark)

Well no. 1 _____ Well no. 2 _____ Well no. 3 _____

12. What letters (A, B or C) on the following diagram represent the toplap-downlap sequence? (Yes, it is two different things, so watch out!) (1mark)



GOOD LUCK

Prof. Dr. Mohamed Ahmed Soliman

Prof. Dr. Ahmed-Reda El Younsy



**Final Exam of Statistical Methods
in Geophysics (G456)**

Jul. 2020

Time: 2 Hours

Answer the following Questions

The First Question

(Answer 50 Question only with 50 mark)

Put (True) or (False) mark

- 1) Difference between classical statistics and geostatistics is that geostatistics uses the sampling location of every measurement ()
- 2) Geostatistics has related to the earth sciences, e.g., hydrogeology, hydrology, meteorology, oceanography, geochemistry, geography, soil sciences, forestry, landscape ecology ()
- 3) groundwater contaminant cleanup is one of applications of geostatistics to environmental problems ()
- 4) Theoretical statistics deals with the development, derivation, and proof of statistical theorems, formulas, rules and laws ()
- 5) Applied statistics involves the applications of those theorems, formulas, rules and laws to solve real-world problems ()
- 6) Contour and grid methods are considered only to be a functional surface representation ()
- 7) Descriptive statistics consists of methods for organizing, displaying, and describing data by using tables, graphs and summary measures ()
- 8) Inferential statistics consists of methods that use the sample results to help make decisions or predictions about a population ()
- 9) There are two types of descriptive statistics such as Measures of Central Tendency and Measures of Dispersion or Variability ()
- 10) A sample define as a portion of the element selected for study ()

- 11) A variable is a characteristic under study that assumes different values for different elements ()
- 12) A data set is a collection of observations on one or more variables ()
- 13) The value of a variable for an element is called measurement ()
- 14) A sample that represents the characteristics of the population as closely as possible is called a representative sample ()
- 15) The technique of collecting information from a portion of the population is called a sample census ()
- 16) A variable that can be measured numerically is called quantitative variable such as Stratigraphic Unit and geologic age ()
- 17) Data collected on the same element for the same variable at different points in time or for different period of time called time series data ()
- 18) Covariance provides a measure of the strength of the correlation between two sets of random variates ()
- 19) Mean, mode and median are single summary measure for one variable ()
- 20) A variance value of zero indicates that all values within a set of numbers are identical ()
- 21) Skew is a measure of asymmetry in the distribution ()
- 22) Kurtosis characterizes the relative peakedness or flatness of a distribution compared with the normal distribution ()
- 23) Standard deviation is calculated as the square root of variance ()
- 24) The value of any correlation coefficient must be between 0 and +1 inclusive ()
- 25) A positive skew indicates a longer tail to the right, while a negative skew indicates a longer tail to the left ()
- 26) Negative kurtosis indicates a relatively flat distribution ()
- 27) The Regression analysis tool performs linear regression analysis by using the "least squares" method to fit a line through a set of observations ()
- 28) A continuous variable can assume only certain values with no intermediate values ()
- 29) Interpolation techniques can be classified into Five main classes ()
- 30) Interpolation is used because field data are expensive to collect, and can't be collected everywhere ()
- 31) The assumption that makes interpolation a viable option is that spatially distributed objects are spatially correlated ()

- 32) Global interpolation method tend to produce smoother surfaces with less abrupt changes ()
- 33) In Approximate Interpolation, the surface passes through all points whose values are known ()
- 34) Global Interpolation is used when there is an hypothesis about the form of the surface, e.g. a trend ()
- 35) The idea of geostatistics is the points which are close to each other in the space should be likely close in values ()
- 36) In random sample, each object is equally accessible from the population (biased natural occurrence) ()
- 37) Point to point interpolation is the most frequently performed type of spatial interpolation done in GIS. e.g. Precipitation and rainfall data ()
- 38) Interpolation methods use mathematical estimation to "guess at" what the values are "in between" those points ()
- 39) Measures of spread are represented by mean, median and mode ()
- 40) Before formal analysis the data should be examined by displaying as histograms and Plotting ()
- 41) Approximate interpolators are used when there is some uncertainty about the given surface values ()
- 42) From types of descriptive statistics are measures of central tendency ()
- 43) Sampling methods may lead to counterproductive results, even with huge size of collected data ()
- 44) Abrupt methods produce surfaces with a stepped appearance ()
- 45) The spline method is best for gently varying surfaces, such as elevation, water table heights, or pollution concentrations ()
- 46) The Inverse Distance Weighting interpolator assumes that each input point has a local influence that diminishes with distance ()
- 47) Universal Kriging used when a trend, or slow change in average values, in the samples exists ()
- 48) Trend is a statistical method that finds the surface that fits the sample points using a least-square regression fit ()
- 49) Kriging is a very flexible girding method ()

- 50) The interpolated surface generated by Minimum Curvature is analogous to a thin, linearly elastic plate passing through each of the data values, with a minimum amount of bending ()
- 51) The Kriging method is the exact interpolation method, which providing very precise results unless is not a noise ratio so large ()
- 52) The Sill is the total vertical scale of the variogram ()

The Second Question

(Answer 10 Questions only with 20 mark)

Choose the correct answer

- 1- Data collected on different elements at the same point in time or for the same period of time called (time series data – cross section data- Survey)
- 2- Geologic Unit thickness and ground elevation are called (continuous – discrete – qualitative) variables.
- 3- A measure of the dispersion of a set of data from its mean called (Standard deviation- Covariance - Kriging)
- 4- The correlation is between two values of the same variable at times X_i and X_{i+k} called (correlation coefficient –autocorrelation - Regression)
- 5- (Negative – positive - Zero) skewness indicates a distribution with an asymmetric tail extending toward more negative values
- 6- Large data sets for Skewness measure is (unreliable- more reliable - less reliable)
- 7- A survey that includes every member of population is called (census – data collection - Survey).
- 8- (Gradual – Abrupt - Local) methods produce a smooth surface between sample points.
- 9- (Local – Global- Point) methods apply a single mathematical function repeatedly to small subsets of the total set of observed data points and then link these regional surfaces to create a composite surface covering the whole study area.
- 10- (Descriptive – Inferential - Theoretical) Statistics calculate a few numbers to represent all the data.
- 11- (Pairs – Sill - Length) represents the average variogram value for the group of pairs separated by a specified distance.
- 12- (Length –Scale - Pairs) is the horizontal range of the variogram

Oral Exam

Answer the following questions

(10 marks)

Put (✓) or (X) mark

- 1- A population consists of all elements, individuals, items, or objects whose characteristics are being studied ()
- 2- Member is a specific subject or object about which the information is collected ()
- 3- A sample that represents the characteristics of the population as closely as possible is called a representative sample ()
- 4- A variable that cannot assume a numerical value but can be classified into two or more nonnumeric categories is called qualitative variable ()
- 5- Regression measures the variability (volatility) from an average or mean ()
- 6- The coefficient of variation is the standard deviation divided by the mean ()
- 7- The main uses of geostatistics is to predict values of a sampled variable over the whole area of interest, which is referred to as spatial prediction or spatial interpolation ()
- 8- In kurtosis, a value greater than 0 indicates a peaked distribution and a value less than 0 indicates a flat distribution ()
- 9- Before formal analysis the data should be examined by displaying as histograms and Plotting ()
- 10- In the random sample, selection of an object does not affect the selection of another object (independence of sampling). ()

Geology Department Faculty of Sciences Assiut University Fourth level		Second Term Examination Ore forming processes (438 G) June, 2020 Two Hours
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Ore Forming Processes (438g)

A. Sign the true statement by (✓) and the false one by (X)

1. Magmatic deposits are genetically linked with the evolution of magma
2. Mineral deposits resulted from the injection of residual magma (feldspar, mica, and quartz) is named pegmatitic.
3. Porphyry type is a supergene type deposits
4. Factor that make a viable mineral deposit is named enrichment factor
5. Syngenetic refers to ore deposits that form after their host rocks.
6. Hypogene: refers to mineralization caused by descending hydrothermal solutions
7. Cu-Ni and Co are lithophile elements
8. Separation of ore minerals by fractional crystallization during magmatic differentiation is named magmatic segregation.
9. Cr - deposits of Bushveld is deposited via pegmatitic process
10. Li, Sn, Zr, U, and W are chalcophile elements
11. Chalcophile elements are typically found associated with felsic and alkaline rocks
12. Cu-Ni ores are deposited via magmatic immiscibility process
13. The heat of hydrothermal solutions may come from magma, metamorphism or just an increase in temperature with depth.
14. S-saturation is reached by the fractionation of Fe-bearing minerals such as olivine and pyroxene.
15. Chromite deposits are associated with basic and ultrabasic rocks
16. Hypothermal is a hydrothermal ore deposits formed at substantial depths (greater than 4500 meters) and elevated temperatures (400–600 °C).
17. Supergene refers to the mineralization caused by descending hydrothermal solutions.
18. Metallogeny is the study of the genesis of mineral deposits.
19. The process of ore deposition from hot aqueous solutions of various sources is known as magmatic segregation.
20. Ore deposits formed due to replacement of wall rocks adjacent to an intrusive is called pyrometasomatic (skarn) type deposits.
21. Magmatic immiscibility is settling out from magmas of sulfide, sulfide-oxide or oxide melts which accumulate beneath the silicates or are injected into country rocks or extruded on the surface.
22. Metallogenic epoch is a region characterized by a particular assemblage of mineral deposit types.
23. Lateral Secretion is the diffusion of ore and gangue forming materials from the country rocks into faults and other structures.
24. Leaching of soluble elements leaving concentrations of insoluble elements is known as residual process.
25. hydrothermal ore deposits formed at intermediate depths (1500–4500 meters) and temperatures (200–400 °C) called epithermal deposits
26. Specific gravity of minerals are the factor controlling placer deposits type.

27. Hydrothermal ore deposits formed at shallow depths (less than 1500 meters) and fairly low temperatures (50–200 °C) are mesothermal deposits
28. Ore is any unnaturally occurring material from which a mineral or aggregate of value can be extracted at a profit.
29. Ore forming processes mean understanding the nature and origin of mineral occurrences and how they fit into the Earth system.
30. Concentration of heavy minerals into placer due to mechanical accumulation is called residual type deposits
31. Diamond deposits are genetically associated with kimberlite rocks.
32. Supergene Enrichment means leaching of certain elements from the upper part of a mineral deposit and their re-precipitation at depth to produce higher concentrations.
33. Sn and W deposits are genetically associated with S-type granite
34. Volcanic Exhalative is the process of exhalation sulfide-rich magmas at the surface, usually under marine conditions.
35. VMS (volcanogenic massive sulfide) deposits consists of over 90% iron sulfide.
36. Magma, groundwater, sea water and chemical reactions during metamorphism are the main sources of water of hydrothermal solutions.
37. Crystallization of columbite and tantalite as disseminated grains or segregations in pegmatites is known as residual mineral deposits.
38. Diamond deposits are genetically associated with kimberlite rocks.
39. Cu, Mo, Pb and Zn mineralizations are genetically related to I-type granite .
40. Banded iron ore is formed via magmatic processes.

B. Choose the correct answer for each sentence of the following:

1. Lithophile elements are typically found associated with (basic and ultrabasic , felsic, intermediate) igneous rocks
2. Porphyry type deposits are spatially and genetically associated with (mafic, ultramafic, felsic to intermediate) intrusions.
3. In the porphyry type deposits Cu, Au, are derived from (mafic mantle, felsic crustal, mixing of crustal and mantle).
4. The inner zone of the hydrothermal alterations related to porphyry type deposits is represented by (phyllic, potassic, propylitic) alteration.
5. VMS deposits are derived via (magmatic fractionation, fluid immiscibility, hydrothermal solution).
6. The metal zonation of VMS is represented in the inner zone by (1. pyrite and chalcopyrite, 2. pyrite- sphalerite - galena , 3. sphalerite-galena-pyrite).
7. Evaporites are (mechanical placer, chemical, supergene) type deposits
8. The main factor controlling the placer deposits is (pressure, temperature, specific gravity).
9. Residual mineral deposits produced as a result of (mechanical weathering, chemical weathering, evaporation)
10. The existing mineral deposits that turned into a more highly concentrated mineral deposits by weathering process is (secondary enrichment, placer deposits, residual deposits)
11. Hot aqueous solutions responsible for the formation of many ore deposits are named (magma melts, sea water, hydrothermal solutions).
12. Mineral Deposits formed from hot aqueous fluids are (magmatic, residual, hydrothermal) type deposits.
13. Bauxite and laterite are formed due to residual process.

14. Pt—Cr Bushveld, South Africa deposits are formed via (fluid immiscibility, magmatic segregation, pegmatitic) process.
15. Cu – Ni deposits of Sudbury, Canada are formed by (fluid immiscibility, magmatic segregation, pegmatitic) process.
16. Li, deposits of Kings Mtn. N.C. is deposited by (pegmatitic, immiscibility, magmatic fractionation) process.
17. Skarn type deposits are (magmatic, sedimentary, metamorphic) process.
18. Concentration of heavy minerals into placer is (mechanical concentration, chameical precipitation, residual concentration) process
19. Leaching of certain elements from the upper part of a mineral deposit and their re-precipitation at depth to produce higher concentrations is named (supergene enrichment, placer deposits, residual concentration) process .
20. Ore deposits that form after their host rocks are (epigenetic, pregenetic, syngenetic) deposits.
21. (Hypogene – Supergene – Hypothermal) refers to mineralization caused by descending hydrothermal solutions.
22. Hydrothermal ore deposits formed at temperatures between (50–200 °C , 200 – 400, 400–600 °C) called epithermal deposits
23. Ni, Co, PEG and Au are genetically associated with (basic, acidic, intermediate) igneous rocks.
24. A region characterized by a particular assemblage of mineral deposit types is (metallogenic, metallogenic epoch, metallogeneic provinces)
25. Li, Sn, Zr, U, and W mineralization are genetically related to (acidi and alkaline, basic, intermediate) igneous rocks.
26. Cr-deposit is formed by (magmatic segregation, fluid immiscibility, pegmatitic) process.
27. Hydrothermal deposits formed at temperature between 200-400°C are (epithermal, mesothermal, hypothermal) deposits.
28. VMS deposits formed as due to the interaction between hydrothermal solution and (island arc volcanic, granite, gabbro) under marine conditions.
29. Ore deposits that form at the same time of their host rocks are (epigenetic, postgenetic, syngenetic) deposits.
30. The inner zone of alterations related to VMS deposits is represented by (potassic, chloritization, sericitization).

GOOD LUCK

Prof. Dr. Mohamed Abdel Moneim

Name:.....

..... الاسم

2Assiut University
Faculty of Science
Department of Geology



Date: July 2020
Time allowed: 2 hours

Final Exam

Subject: Petroleum Geology and Hydrogeology (G 460), 4th level, special geology, geochemistry and geophysics groups, Total 80 Marks

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Pat I (Petroleum Geology 40 Marks)

Transfer the questions to your answer sheet and answer the following questions

Written questions (35 Marks)

- I- Which of the following is true and which is false :- (15 Marks, one mark each)
- 1- Maturation is the process that is carried out at shallow depths and from which the gas and oil are generated
 - 2- Critical moment in petroleum system is the time at which the petroleum is extracted
 - 3- For hydrocarbon formation and accumulation source rocks, migration routes, reservoir rocks, trap and seal rocks must be present
 - 4- Hydrocarbon trap is the geologic feature in which the petroleum is generated
 - 5- Lateral and vertical continuity indices of hydrocarbon reservoir are mainly controlled by structure, stratigraphic and diagenetic features
 - 6- In Gulf of Suez oil fields, the main clastic reservoir rocks are, Nubia C, Rudies, Nuhkul and Kareem formations which belonging to Eocene age
 - 7- The clastic reservoir rocks in the Western Desert are the Nubian sandstone members that belonging to Paleozoic and Bahariya, Abu Roash, Khuman chalk formations which belonging to Lower and Upper Cretaceous
 - 8- Stratigraphic traps which associated with unconformities are common between two or more sedimentation cycles or igneous activities
 - 9- Salt dome traps are common in Sinai oil fields due to occurrence of Syrian Ace fold system.
 - 10- Water drive production is the best method for producing from hydrodynamic traps.
 - 11- Borehole geophysical measurements are applied for determination of reservoir porosity and saturation.
 - 12- Production of oil and gas depends on porosity of the reservoir rocks.
 - 13- Hydrocarbons migrate primary in proto-petroleum phase only.
 - 14- Secondary migration of hydrocarbons is carried out in reservoir rocks.
 - 15- Stratigraphic traps are more predominant than structure traps in Gulf of Suez oil field.

II- Choose the correct answer of the following: - (20 Marks, 2 marks each)

- 1- Preliminary exploration of large sedimentary basins which may contain hydrocarbons is generally carried out by applying: -
 - a- Seismic methods
 - b- Gravity and/or magnetic methods
 - c- Electric methods
- 2- Vitrinite kerogen which originated from fibrous and woody plants as well as fragment and structureless colloidal humic matters generally produces: -
 - a- Oil at depth level 2.5-4km. and high temperature
 - b- Gas at depth level 4-5km and low temperature
 - c- Gas at depth level 4-5km and high temperature
- 3- Sweet oil is
 - a- Free from sulfur
 - b- Generated at shallow depths
 - c- Less quality in compared with sour oil
- 4- API is the unit that differentiate between
 - a- Light and heavy oil
 - b- Oil and gas
 - c- Thermal and biogenic gases.
- 5- For hydrocarbon formation and accumulation different factors must be present. These factors are:-
 - a- Depth, temperature and pressure
 - b- Depth, Temperature, and organic matters
 - c- Depth, Pressure and organic matters
- 6- Primary migration of hydrocarbons is generally carried out: -
 - a- From source rock to reservoir rock
 - b- From migration rock to reservoir rock
 - c- From migration rock to source rock
- 7- Capillary pressure in the reservoir is generally increase the: -
 - a- Reservoir Productivity.
 - b- Oil or gas level in the productive wells
 - c- Reservoir quality.
- 8- At catagenesis zone of petroleum generation, if the kerogen from type I, the produced hydrocarbon is mainly: -
 - a- Gas
 - b- Oil
 - c- Immature hydrocarbons

- 9- Secondary migration phase which depending on specific gravity of the hydrocarbons is generally carried out in the :-
 - a- Reservoir rocks
 - b- Source rocks
 - c- Migration rout
- 10- Petroleum quality is measured by API%, The Egyptian petroleum especially that occurred in Western Desert region has:-
 - a- High API %
 - b- Low API%
 - c- Moderate API%

Oral questions (5 Marks)**(5 marks, one mark each)****Which of the following is true and which is false: -**

- 1- Porosity and permeability are the main parameters for reservoir characterization and calculation.
- 2- Organic gases are generated at depth more than thermal gases.
- 3- Water drive is one of natural method for petroleum production.
- 4- The reservoir reserve can calculated from surface geophysics only.
- 5- Crude oil is the mixture of hydrocarbon that is liquid in the underground reservoir and at the normal atmospheric temperature when extracted to the surface

Part II (Hydrogeology 40 Marks)**Transfer the questions to your answer sheet and answer the following questions****Written questions (35 Marks)****I. Which of the following is true and which is false :- (15 Marks, one mark each)**

- 1- The hydrologic cycle, describes the discontinuous movement of water on, above, and below the surface of the Earth.
- 2- The water below the surface of the Earth primarily is groundwater, but it also includes soil water.
- 3- Water vapor emitted from rivers by a process called transpiration.
- 4- Groundwater occurs everywhere beneath the Earth's surface.
- 5- Groundwater is water that exists in the pore spaces and fractures in rock and sediment above the Earth's surface.
- 6- Groundwater is a significant part of the hydrologic cycle, containing 21 percent of Earth's freshwater.
- 7- Juvenile type of water is water that was entrapped in the interstices of a sedimentary rock at the time the rock was deposited.
- 8- The rate at which groundwater moves through the saturated zone depends on the permeability of the rock and the hydraulic gradient.
- 9- Aquifer is a formation or group of saturated geologic formations capable of storing and yielding freshwater in usable quantities.
- 10- Permeability is a measure of how well the spaces are disconnected.
- 11- In an unconfined aquifer the groundwater table forms the lower

boundary of the saturation zone.

- 12- Aquifer is a formation or group of saturated geologic formations capable of storing and yielding freshwater in usable quantities.
- 13- the specific yield of an aquifer is always more than the porosity.
- 14- In any evaluation of groundwater resources the quality of the water is of almost not equal importance to the quantity available.
- 15- The rate at which groundwater moves through the saturated zone depends on the permeability of the rock and the hydraulic gradient.

II. Choose the correct answer of the following: - (20 Marks, 2 marks each):

1- Hydrogeology is a part of:

- a. geology
- b. hydrology
- c. groundwater

2- Water is a common:

- a. organic substance
- b. chemical substance
- c. physical substance

3- Saltwater oceans hold:

- a. 55% of surface water.
- b. 80% of surface water.
- c. 97% of surface water.

4- The hydrologic cycle is the process:

- a. by which water travels from the atmosphere to the Earth's surface and then back to the atmosphere.
- b. by which water travels from the Earth's surface to atmosphere and then back to the ground again.
- c. by which water travels from beneath the Earth's surface to atmosphere and then back to the ground again.

5- Evaporation exceeds precipitation over:

- a. continents.
- b. oceans.
- c. rivers.

6- Hydrologic Cycle Powered by energy from the:

- a. earth.
- b. moon.
- c. sun.

7- Excessive rain or snowmelt can produce overland flow process called:

- a. precipitation.
- b. evaporation.

- c. runoff.
- 8- Water vapor raises cools and eventually:
- percolate.
 - condenses
 - evaporate.
- 9- Recharge to water table (downward flow):
- 50% of infiltration in clay deposits.
 - 0% of infiltration in clay deposits.
 - 10% of infiltration in clay deposits.
- 10- Groundwater makes up about:
- 80% of the water on the Earth.20% of the water on the Earth.
 - 1% of the water on the Earth.
 - 20% of the water on the Earth.

Oral questions (5 Marks).**(5 marks, one mark each)****Which of the following is true and which is false: -**

- 1- The very shallow flow of water in the subsurface (the upper 3 m or 10 ft) is pertinent to the fields of soil science, agriculture and civil engineering.
- 2- drinking water should be aesthetically acceptable in that it should not possess unpleasant or objectionable taste, odor, colour or turbidity.
- 3- The hydraulic conductivity is equal to the specific discharge under unit hydraulic gradient
- 4- Confined aquifer bounded by confining beds
- 5- An important process affecting the quality of ground water is ion exchange

=====Best wishes =====

بسم الله الرحمن الرحيم

جامعة أسيوط

كلية العلوم - قسم الجيولوجيا

امتحان المستوى الرابع بكلية العلوم شعبة الجيولوجيا والكيمياء

المادة: خريطة مصر الجيولوجية (٤١٠ ج)

(Geologic map of Egypt (410 G)

الزمن: ساعتان

الدرجة: ٨٠ درجة

٢٠٢٠/٢٠١٩ الفصل الدراسي الثاني

الامتحان يتكون من خمس صفحات

I- Remarke by (✓) or (X) (31 Marks, one Mark for each one)

- 1- The Paleozoic strata are well represented in the Eastern Desert. ()
- 2- There is difficulty in the determining the geologic age of the Paleozoic rocks in Egypt. ()
- 3- The Triassic rocks are well distributed in all the geographic provinces of Egypt. ()
- 4- The age of the glacial deposits in Egypt is Early Cretaceous. ()
- 5- The thickness of the Paleozoic rocks is equal at the different provinces of Egypt. ()
- 6- Ophiolite associations in the Eastern Desert are allochthonous. ()
- 7- Ophiolites in the Eastern Desert are non-metamorphosed. ()
- 8- Serpentinities in the Eastern Desert belong to ophiolites. ()
- 9- Ophiolites generally represent remnants of oceanic crust. ()
- 10- Boudinaged chromite lenses are associated with meta-gabbros. ()
- 11- Serpentinities + meta-pyroxenites + meta-gabbros + meta-basalts forms the whole sequence of ophiolite in Egypt. ()
- 12- Island arcs are generally derived from subduction of oceanic crust under continental crust. ()
- 13- The Grey Granite Group are relatively younger than the Red Granite Group. ()
- 14- The Dokhan Volcanics are older than the Hammamat Sediments. ()
- 15- Both the Dokhan Volcanics and the Hammamat Sediments are intimately associated. ()

- 16- The contact between the Precambrian Basement and the Phanerozoic Sediments is non-conformity superimposed by normal faults. ()
- 17- The contacts between Hafafit Dome and the surrounding basement rocks are normal and thrust faults. ()
- 18- The Hammamat Sediments were derived mainly from the Dokhan Volcanics. ()
- 19- The Banded-Iron Ores occur in the Precambrian Basement. ()
- 20- Talc-Carbonates were derived from alteration of serpentinite rocks. ()
- 21- Abu Fannani Tonalite Intrusion is younger than the Meatiq Mylonite. ()
- 22- The dominance of holes in the granite masses is ascribed to subaerial physical weathering. ()
- 23- The Older Granite Group form low-relief outcrops compared with those of Younger Granite Group. ()
- 24- Hammamat Sediments were deposited in marine water. ()
- 25- Hammamat Sediments are devoid of any contents of marine fossils. ()
- 26- Quartz Veins were created by hydrothermal activities. ()
- 27- Quartz Veins are less regular masses. ()
- 28- The contact between the Hammamat Sediments and the Dokhan Volcanics at Wadi Hammamat is low-angle thrust. ()
- 29- The Fawakhier Younger Granite represents a plutonic mass. ()
- 30- Several xenoliths with different size and shape occur in the Fawakhier Granite margin. ()
- 31- Dykes and sills are commonly sedimentary bodies. ()

II- Choose the correct answer (Multiple Choice Questions) (39 Marks, one & half Mark for each one)

1- Which age covers long time of the earth history?

- a) Paleogene b) Paleozoic c) Neogene d) Proterozoic

2- An unconformity is a.....

- a) sedimentary unit b) period of deposition c) buried erosion surface d) type of fault

3- The oldest era of the geologic time scale is

- a) Archean b) Azoic c) Proterozoic e) Paleozoic

4- The group which does not show a correct sequence of the geologic column is:

- a) Paleocene, Eocene, Oligocene b) Devonian, Ordovician, Silurian
c) Paleozoic, Mesozoic, Cenozoic d) Triassic, Jurassic, Cretaceous

5- The Cretaceous Period was named for the abundant deposits ofthat characterize it.

- a) coal b) chalk c) gypsum d) conglomerate

6- According to the principle of uniformitarianism,

- a) geologic processes we observe today have operated in the past
b) geologic process in the past operated at the same rate as they do today
c) all of the planets formed from a uniform solar nebula
d) early Earth was covered by a uniform magma ocean

7- In general, igneous rocks:

- a) form at relatively high temperatures b) form at high and low pressures
c) form by crystallization of solids from a liquid d) all of the above

8- Metamorphic rocks are changed rocks. Which of the following rock types could be the "parent" of a metamorphic rock?

- a) sedimentary b) igneous c) metamorphic d) all of the above

9- Oxygen built up in the Earth's atmosphere because:

- a) the oceans separated from the crust b) rocks weathered and released their oxygen
c) algae and other organisms employed photosynthesis
d) oxygen settled on Earth from planets further from the sun

10- Which of the following represents the longest time period?

- a) Precambrian b) Paleozoic c) Mesozoic d) Cenozoic

11- The Paleozoic does not include the.....

- a) Ordovician b) Jurassic c) Mississippian d) Permian

12- The boundaries between seem to coincide with major changes in the life forms present on Earth.

- a) periods b) systems c) eras d) epochs

- 13- The principal of original horizontality states that
- most rocks in the Earth's crust are layered horizontally
 - igneous rocks form essentially horizontal layers
 - metamorphic gradients are essentially horizontal before deformation
 - sediments are deposited as essentially horizontal layers
- 14- Fossils are most common in which rock types?
- sedimentary
 - igneous
 - metamorphic
 - all of these commonly contain fossils
- 15- A disconformity is
- a rock unit that does not contain fossils
 - an erosional surface between igneous and metamorphic rocks
 - an erosional surface between horizontal sedimentary rocks
 - an erosional surface between different rock types
- 16- The Burg El Arab Formation isthan Mersa Matrouh Formation.
- older
 - younger
 - equivalent
 - None of these
- 17- Which of the following is used by geologists to determine the relative ages in a rock sequence?
- stratigraphy
 - fossils
 - cross-cutting relationships
 - all of these
- 18- A stratigraphic sequence is a vertical set of strata
- used as a chronological record of the geologic history of a region
 - that represents a repeating set of events such as recurring floods, debris flows, etc.
 - bounded above and below by igneous and/or metamorphic rocks
 - that is unique to a specific area
- 19- The Desouky Formation isthan Dhiffah Formation.
- older
 - younger
 - equivalent
 - none of these
- 20- The Bahrein Formation isthan Wadi Natrun Formation.
- older
 - younger
 - equivalent
 - none of these
- 21- The stratigraphic arrangement of the pre-rift rock units are
- Dakhla, Esna, Tarawan, Thebes
 - Tarawan, Esna, Dakha, Thebes
 - Dakhla, Tarawan, Esna, Thebes
 - Thebes, Tarawan, Dakhla, Esna
- 22- A nonconformity is
- a rock unit that is different than units above or below it
 - a gap in the geologic record bounded below by metamorphic or igneous rocks and bounded above by sedimentary rocks
 - a rock unit that does not contain fossils
 - a sequence of rocks that does not contain any gaps in the geologic record
- 23- During which geologic period did Manganese Ore form at Sinai?
- Cretaceous
 - Paleocene
 - Ordovician
 - Carboniferous

- 24- The Lakkia Formation isthan Qiseib Formation.
a) older b) younger c) equivalent d) none of these
- 25- The Shifah Formation isthan Kohla Formation.
a) older b) younger c) equivalent d) none of these
- 26- The Umm Bogma Formation isthan Wadi Malik Formation.
a) older b) younger c) equivalent d) none of these

Oral Examination (10 Marks, one Mark for each one)

I- Remarke by (✓) or (X)

- 1- The Hammamat Sediments are characterized by primary bedding and poorly sorted conglomerates. ()
- 2- The contact between Fawakhier Younger Granite and Fawakhier Ophiolites is intrusive. ()
- 3- The Dokhan Volcanics are intrusive bodies. ()
- 4- The Dokhan Volcanics were characterized by the dominance of andesite and rhyolites volcanics. ()
- 5- The Dokhan Volcanics built up high-relief outcrops. ()

II- Choose the correct answer (Multiple Choice Questions)

- 6- The Rod El Hammal Formation isthan Abu Darag Formation.
a) older b) younger c) equivalent d) none of these
- 7- During which geologic period did the Red Sea Rift take place?
a) Neogene b) Paleogene c) Cretaceous d) Devonian
- 8- Which of the following will not make a fossil?
a) decomposed organic material b) plant impressions (casts)
c) animal footprints d) loose animal bones
- 9- Most periods in the geologic time scale are named for
a) geographic localities b) fossils c) paleontologists d) catastrophic events
- 10- The thickest rocks of Paleozoic Era them were occurred at the part of Egypt.
a) southern b) northern c) eastern d) middle

أنتهت الأسئلة مع أطيب الأمنيات بالتوفيق
أ.د/ علي عبدالقادر خضير أ.د/ ناجح عبدالرحمن عبيدالله

امتحان مادة جيولوجيا الاثار (458ج)

الفصل الدراسي الثاني - العام الجامعي (2020/2019)

الزمن ساعتان

المستوى الرابع

Chose the correct answer (70M)

- 1- The World's Oldest Surviving Geological Map dated :
(A) The 1150 B.C (B) The 2150 B.C (C) The 3150 B.C
- 2- The scientific study of past cultures and the way people lived based on the things they left behind is:
(A) Geoarcheology (B) Archaeology (C) Archaeometry
- 3- Artifacts are usually found:
(A) Buried in the ground (B) Located in the surface
- 4- The orientation of the Turin Papyrus Map is
(A) East to West (B) South to north
- 5- Mixtures of organic and lithic materials capable of supporting plant growth:
a) Sediments (B) Soils (C) Rocks
- 6- Soil fertility in areas inhabited by humans is in uninhabited areas
(A) higher than (B) lower than (C) equal
- 7- Archaeologists study past cultures by examining:
a) Rocks (B) Soil (C) Artifacts
- 8- Any place where human activity occurred and where artifacts are found is called
(A) Geologic station (B) Archaeological site
- 9- Red ocher has been used for decorations since at least the Mousterian tradition:
(A) Magnetite (B) Hematite (C) Limonite
- 10- Provenance of artifacts determined by techniques such as:
(A) Mineralogy (B) Petrography (C) Trace elements

(D) Stable isotopes

(E) All of them

11- The term mortar refers to a mixture of:

(A) Quicklime with sand and water

(B) Sand and gravel

(C) Silica and feldspar

12- Prehistoric archaeological sites dated:

(A) Before written history

(B) After written history.

13- The gold occurrences of Egypt and Sudan are located in

(A) The Phanerozoic sediments

(B) The Precambrian basement rocks

14- The branch of science that provides a wealth of information for mineralogists, geologists and archaeologists involved in archaeometric studies of our past.

(A) Archaeomineralogy

(B) Archaeogeology

15- Favored site for urban civilizations:

A) along and in the floodplains of great river systems

B) Near seas

(C) In the Desert areas

16- A chemical sedimentary rock resulting from precipitation of silica from seawater and recorded in many prehistoric sites:

A) Limestone

(B) Phosphate

(C) Chert

17- Pottery is the general term for artifacts made mostly of

(A) Granite

(B) Clay

(C) Limestone

18- The most common geochemical method in archaeology is:

(A) Soil phosphate analysis

(B) Silicate analysis

19- The building stone should be:

(A) Hard, strong and durable

(B) Soft

(C) Light in colour

20- Plaster of Paris" is manufactured by heatingwhich rehydrates in the presence of water.

(A) Silica

(B) Gypsum

(C) Anhydrite

21- Metal workers learned how to alloy the metals:

A) By 3000bc

(B) By 4000bc

(C) By 5000bc

22- The only elements that are available in their native state and were most important to early societies:

- A) Iron (B) Gold and copper (C) Aluminum

23- the main building stones of ancient Egypt were:

- A) Diorite (B) Gabbro (C) Limestone and sandstone

24- The stones which used in the form of finely dressed blocks or slabs or columns in monumental and costly buildings were:

- A) Granites & marbles (B) Limestone (C) Sandstone

25- During this period almost all important gold mining sites in the Eastern Desert of Egypt and in the Nubian Desert were discovered and exploited:

- A) during the relatively short span of 140 years between Thutmosis III and Amenophis IV (roughly 1480–1340 BC).
B) Early Dynastic times (C) During the Islamic time

26- Seasoning of stones :

- A) Makes the stone more darker (B) Makes the stone hard and compact
(C) Makes the stone more Porous

27- A natural volcanic glass produced by rapid quenching of magma:

- A) Obsidian (B) Tuffs (C) Limestone

28- The earliest metal tool to be manufactured around 6000bc:

- (A) Copper (B) Lead (C) Zinc

29- the shared ways of life learned by a group of people, including their language, religion, technology, and values:

- A) History (B) Culture (C) Geology

30- Used as a geochemical exploration tool to locate ancient settlements:

- A) Analysis of Silicon and oxygen
B) Analysis of phosphate/nitrogen/carbon

31- Assist in evaluate the effects of post-depositional environment on the condition or safety of the archeological deposits:

- A) Geomorphological and geoarchaeological investigations

- B) Geophysical exploration (C) Geochemical investigation
- 32- Lime mortar hardens by:
 (A) Absorption of carbon dioxide from the air (B) absorption of moisture from the air
- 33- The Turin Papyrus Map depicts a 15 km stretch of the
 (A) Western Desert (B) Wadi Alaqi
 (C) Wadi Hammamat in the middle of the Eastern Desert.
- 34- The important places in the Western Desert that was heavily populated during the Middle, Late and Final Neolithic times.
 A) The Kiseiba-Nabata area (B) Wadi Kubbaniya
- 35- The primary raw material for archeological ceramics is :
 (A) Gypsum (B) clay-rich sediments (C) quartz

امتحان الشفوي (عشر درجات)

- 1- Prehistoric knives and spear points in many parts of the world, were made of:
 (A) Wood (B) Obsidian flakes (C) Conglomerate
- 2- The stones of Hibis sandstone temple were probably coming from the
 A) Gebel el-Teir quarry (B) Minia quarry
- 3- From Early Dynastic times onward, the material of choice within the region for pyramids, mastaba tombs, and temples was.
 A) Sandstone (B) Limestone (C) Gravels
- 4- Plaster essentially differs from mortar by:
 A) Containing a temper dominated by sand rather than gravel-size material.
 B) Containing dominate Silica rather than feldspar
- 5- Soil phosphate mapping is the most widely used chemical method involved in archaeological site prospecting, because :
 A) Phosphate is so readily fixed to soil particles after the decomposition of organic material.
 B) Phosphate is more abundant in the soli
 C) Phosphate is easily to analyses