

امتحان التحريري لطلاب المستوى الرابع بكلية العلوم شعبة الجيولوجيا
المقرر: بيئة الأحياء القديمة وطباقية حياتية (٤١٤ ج)
Palaeoecology & Biostratigraphy 414G
دور يونيو - العام الجامعي ٢٠٢٢-٢٠٢٣ م

الزمن: ساعتان

الدرجة الكلية للامتحان: ٥٠ درجة

Q1: Shade (T) for true statements or (F) for false statements (1 mark each)

Palaeoecology ↓

- 1- Benthonic fossils can contribute significantly to past surface water gradients.
- 2- The term "ecosystem" refers to the living community and their controlling available environmental variables.
- 3- *Acropora palmata* live in restricted turbulent marine water of modern reef environments.
- 4- After death all organisms preserve as fossil.
- 5- Degradation is a term used to explain biostratigraphic processes.
- 6- Terrestrial plants are good salinity indicators in the marine environment.
- 7- Qualitative data are less expressive of the original community than quantitative data.
- 8- "Analogy" is intermediate between substantive and methodologic uniformitarianism approaches.
- 9- Present-day organisms can be used to reconstruct ancient environments.
- 10- The actual number of species inhabiting the Earth today is well known.
- 11- Some fossils are more advantageous than others in paleoecology investigations.
- 12- Pollen grains can be applied to infer past paleoclimate.
- 13- Processes of the fossil formation can be inferred by studying taphonomy.
- 14- Fossil data are basically used to reconstruct present-day environments.
- 15- Fossilized plants and animals imply that they passed through post-mortem stages.

Biostratigraphy ↓

- 16- Biostratigraphic intervals are delineated by using one or more fossil taxa.
- 17- Ideal index fossils are usually found in all sediments of all ages.
- 18- The "Lineage Zone" defines a zone with successive phylogenetically-related taxa.
- 19- Pseudofossils can be applied in age determination of sedimentary rocks.
- 20- Evolution of the zone concept has resulted in numerous kinds of zones of varied terminologies.
- 21- Erosional or intrusive contacts between rock units are important stratigraphic criteria.
- 22- Time-keepers include rhythmic sedimentary clocks.
- 23- Biostratigraphy means classification of rock units on the basis of their fossil content.
- 24- Mesozoic fossils are enriched by representatives of plants and animals.
- 25- Abundance zones are characterized by peaks of certain taxa.
- 26- Rock intervals that lack any fossils are not subject to biostratigraphic classification.
- 27- One of the basic principle of biostratigraphy is the mass extinction events.
- 28- Biostratigraphic rules are used to place rocks and events in local/regional orders and in correlation.
- 29- "Assemblage Zone" is a zone that is characterized by the occurrence of one taxon.
- 30- Last appearance datum means the time of evolutionary origin of a certain taxon.

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

Palaeoecology ↓

- 31- Ecology is the study of the interactions of with one another and with the physical environment in the present times.
A- fauna B- organisms C- flora D- organic sediments
- 32- The paleoecologist examines the ancient ecosystems to
A- reconstruct paleoenvironments B- examine living organisms
C- infer biogeography D- measure environmental gradients

- 33- Selective degradation of marine dinoflagellates in modern seas result from
 A- increased surface temperatures B- increased bottom oxygen concentration
 C- increased salinities D- increased chlorophyll-*a* concentration
- 34- Which of the following belongs systematically to the calcareous algae?
 A- stromatolites B- dinoflagellates C- silicoflagellates D- spores
- 35- Plant remains that are buried beneath a given forest-floor may undergo
 A- degradation B- sorting
 C- complete removal D- transport
- 36- Dinoflagellates are good paleoenvironmental indicators because they are
 A- diverse B- of slow evolution rates C- of short geologic history D- not diverse
- 37- Dinoflagellates in the modern seas can reflect the following except of sea
 A- surface temperatures B- bottom oxygen concentration
 C- surface salinities D- bottom temperatures
- 38- Many plants contribute to the fossil record even if they are still living because they
 A- live longer B- die easily
 C- have shorter life span D- possess dispersed parts which move away from the parent plant
- 39- The organic matter of a given forest-floor may have originated from
 A- the existing forest vegetation B- distant plant communities
 C- few of the forest plant types D- plant roots
- 40- Recycling of the organic matter after burial keeps the carbon, nitrogen and sulfur cycles:
 A- end B- operate C- close D- start
- Biostratigraphy** ↓
- 41- One of the most significant ancient biota events is the
 A- extinction of rare species B- continuous occurrence of older taxa
 C- mass extinction of few taxa D- mass extinction of multiple taxa
- 42- The Period do not belong to a Mesozoic span of time.
 A- Cretaceous B- Jurassic C- Silurian D- Triassic
- 43- The interval in the geological time scale is the longest.
 A- Cenozoic B- Paleozoic C- Mesozoic D- Precambrian
- 44- The evolutionary changes in living organisms are
 A- reversible B- rare C- nonreversible D- impossible
- 45- The is not a barrier to fossil dispersal.
 A- temperature B- geography C- plate movements D- geomorphology
- 46- Taxa that are geographically widespread and abundant are often resistant to degradation and extinction, therefore they are fossils
 A- index B- long-ranging C- absent D- short-ranging
- 47- Normally life forms are preserved as fossils in rocks:
 A- sedimentary B- volcanic C- plutonic D- metamorphic
- 48- One of the most significant bio-events is the
 B- abundance of trace fossils B- absence of plant fossils
 C- lack of faunal fossils D- fossil turnover
- 49- The ideal species in biostratigraphic correlation should essentially be:
 A- rare B- Geographically widespread
 C- long ranging D- morphologically complicated
- 50- Before establishing a formal "Taxon Range Zone" it should be temporarily named
 A- florizone B- teil zone C- acme zone D- lineage zone

انتهت الأسئلة مع أطيب الأمنيات بالتوفيق

Examiner:

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



Ore forming processes (438G)

Answer the following questions : (50 pts)

1. Choose the correct answer from a,b,c,d and then complete the sentences (10 pts)

1. Leaching of soluble elements leaving concentrations of insoluble elements is named deposit.
(a. placer b. skarn c. residual d. VMS)
2. Separation of Cr-ore from the magma is
(a. hydrothermal b. immiscibility c. chemical d. magmatic segregation)
3. Leaching of certain elements from the upper part of a mineral deposit and their re-precipitation at depth produce higher concentration is named
(a. porphyry b. residual c. supergene enrichment d. hydrothermal)
4. Settling out of Cu-Ni sulphid melts from magma with decreasing temperature is named deposit.
(a. immiscibility b. placer c. magmatic segregation d. porphyry)
5. Ore deposits formed by replacement of carbonate wall rocks adjacent to an intrusive body are named
(a. placer b. skarn c. residual d. VMS)
6. Beryl deposits associated with coarse grained felsic rocks is named
(a. pegmatitic b. porphyry c. skarn d. residual)
7. Minerals concentrated by flowing surface water and depositing high density minerals either in stream or near costlines is named
(a. chemical b. residual c. placer d. hydrothermal)
8. Stratiform accumulations of sulfide minerals that precipitate from hydrothermal fluids in the seafloor but also land-based volcanic is named
(a. porphyry b. pegmatitic c. immiscibility d. VMS).
9. Ore minerals are dominantly structurally controlled and which are spatially and genetically related to felsic to intermediate intrusions is named deposit
(a. porphyry b. residual c. VMS d. pegmatitic)
10. Cassiterite and wolframite ores which can be formed by hydrothermal processes at high temperature is named
(a. epithermal b. hypothermal c. mesothermal d. supergene enrichment)

2. Compare between VMS and porphyry type deposits from the following points of view: 5 pts)

Rock association, Ore deposits shape, ore forming processes, types of alterations

3. What are the sources of water, heat and metals in hydrothermal deposits? (5 pts)

4. a. Which types of the following deposits may related to porphyry type deposits: Low sulphidation – high sulphidation – medium sulphidation Au-Cu deposits

b. Which types of the following metals elements associated with basic and which is associated with acidic magma: Chalcophile, lithophile and siderophile elements (5 pts)

5. Write the metal zonation of VMS deposits. (5 pts)

a. A core composed of

b. Intermediate zone.....

c. The outer or upper zone.....

6. Write the name of alteration zones related to porphyry type deposits: (5pts)

a. Inner zone

b. Outer zone.....

c. Middle zone.....

7. Mention why S-saturation caused in a basic magma due to fractional (5pts)

8. Crystallization of olivine, pyroxene, chromite and magnetite? (5 pts)

9. Write briefly about the sources of metals and sulphur in porphyry deposits. (5pts)

10. Mention ONE ore deposits related to each process of the following processes

Placer-liquid immiscibility- Residual type deposits- Skarn type deposits-Chemical precipitation (5pts)

Best wishes

Mohamed Abdel-Moneim



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

Jun. 2023

Time: 2 Hours

" الاجابه فى نفس الورقه "

Answer the following Questions

First Question

Answer (T) for true sentences or (F) for false sentences (1.5 mark each).

- 1- Interpolation predicts values for cells in a raster from a limited number of sample data points.
- 2- Abrupt methods produce surfaces with a stepped appearance.
- 3- Local Interpolation is used when there is an hypothesis about the form of the surface, e.g. a trend
- 4- The selection of interpolation methods decide the quality, accuracy and follow-up analysis applications
- 5- Gradual methods produce a stepped surface between sample points
- 6- In global interpolation method, apply a single mathematical function to all observed data points and generally produce smooth surfaces.
- 7- A grid is a mesh of cells, each with its own position, and its own value (or values if multiple variables).
- 8- Lines to point interpolation are the most frequently performed type of spatial interpolation done in GIS. e.g. Precipitation and rainfall data
- 9- Approximate interpolators are used when there is some certainty about the given surface values
- 10- The idea of geostatistics is the points which are close to each other in the space should be likely close in values.
- 11- A typical example of a gradual interpolator is the distance weighted moving average.
- 12- Isolines or contours are used to define a common characteristic along a point
- 13- In geostatistics we use the regular grid with rectangular cells.
- 14- Geostatistics is used for simulation, optimization of sampling and characterizing the uncertainty
- 15- Contour and grid methods are considered only to be a functional surface representation.

- 16- A positive skew indicates a shallower tail to the right, while a negative skew indicates a longer tail to the left.
- 17- Inferential statistics consists of methods that use the sample results to help make decisions
- 18- There are two types of descriptive statistics such as Measures of Central Tendency and Measures of Dispersion or Variability.
- 19- Mean , mode and median are single summary measure for one variable.
- 20- Skew is a measure of asymmetry in the distribution.
- 21- Sample defines as a portion of the element selected for study.
- 22- The technique of collecting information from a portion of the population is called a sample census.
- 23- A variable that can be measured numerically is called quantitative variable such as Stratigraphic Unit and geologic age.
- 24- Interpolation is used because field data are expensive to collect, and can't be collected everywhere.
- 25- The assumption that makes interpolation a viable option is that spatially distributed objects are spatially correlated.
- 26- 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.
- 27- Covariance provides a measure of the strength of the correlation between two sets of random variates.
- 28- Kurtosis characterizes the relative peakedness or flatness of a distribution compared with the normal distribution.
- 29- Standard deviation is calculated as the square root of variance.
- 30- In random sample, selection of an object does affect the selection of another object independence of sampling).

Second Question

- Write on types of Variables

(5 marks)

Answer sheet

a) **Answer (T) for true sentences or (F) for false sentences (1.5 mark each).**

No.	True or False	No.	True or False	No.	True or False
1		11		21	
2		12		22	
3		13		23	
4		14		24	
5		15		25	
6		16		26	
7		17		27	
8		18		28	
9		19		29	
10		20		30	

b) **Write on types of Variables**

(5 marks)

Credit hour system - Second Semester - Final Examination
Petroleum Geology Program
Isotopes Geology (PG 433)

Fourth Level

2022/2023

Allowed time 2 hour

ملحوظة: الامتحان في صفتين

Answer (T) for True sentences Or (F) for False sentences: (2 marks each) (50 M)

1. Evaporation of surface water in equatorial regions causes formation of air masses with H₂O vapor enriched in ¹⁸O and D compared to seawater.
2. Absolute Geological Dating Techniques: Assigns an age to a rock that puts it into a narrow range (e.g., mid-Devonian; Late Cretaceous, upper Pliocene).
3. Relative Geological Dating Techniques: Assigns an age to a rock that is a number (e.g., 354.7 +/- 21.3 MA; 1,453 KA +/- 67 KA).
4. Sedimentary and igneous sulfides tend to exhibit similar trends in their $\delta^{34}\text{S}$ values.
5. The light isotope forms a lower energy bond; it does not vibrate as violently. Therefore, it forms a stronger bond in the compound.
6. Because the lead isotopes are created by decay of different transuranic elements, so the ratios of the four lead isotopes to one another can be very useful in tracking the source of melts in igneous rocks and the source of sediments.
7. Samarium–neodymium is an isotope system which can be utilized to provide a date as well as isotopic fingerprints of geological materials, and various other materials including archaeological finds.
8. Stable carbon isotopes measured from samples collected in a geological context can be used to differentiate between biotic and abiotic carbon transformations and can, therefore, serve as a biosignature.
9. Carbon isotopes may equally have utility in tracing the carbon cycle on other planets.
10. Stable isotopes provide information about ice volume and paleotemperatures.
11. Isotopes have different ## of neutrons, and thus a different mass
12. Different isotopes can have different fractionation for the same reaction, and different reactions have different fractionations, as well as being different at different temperatures and pressures.
13. The extent of fractionation of S-isotopes between sulfate and sulfide depends on the size of sulfate reservoir and temperature.
14. The fractionation of oxygen isotopes among coexisting minerals can be used as a geothermometer.
15. Measuring the isotopic composition of two phases allows us to calculate the temperature at which they equilibrated (assuming, of course, that they did equilibrate).

16. When minerals react with acidic meteoric waters during weathering to form clays, the amount of isotopic fractionation can depend on the isotope composition of the meteoric water and the isotope composition of the original minerals.
17. Many isotope systems have more than 2 stable isotopes
18. Fission-Track Dating – Measure decay of uranium 238 by counting number of tracks
19. Lead isotope geochemistry is useful for providing isotopic dates on a variety of materials.
20. Carbon isotope ratios are easily measured, and therefore stable carbon isotopes can be widely used to trace the carbon cycle on Earth.
21. The variations of $\delta^{18}\text{O}$ are attributable to temperature fluctuations of surface water in the oceans during the Pleistocene epoch.
22. Oxygen in igneous and metamorphic rocks is depleted in ^{18}O relative to SMOW.
23. The stable sulfur isotopes are: ^{36}S , ^{37}S , ^{38}S , ^{39}S
24. Carbon has three stable isotopes (^{11}C , ^{12}C and ^{13}C) and two radiogenic isotopes (^{14}C , ^{15}C).
25. The increase in $\delta^{18}\text{O}$ of the carbonate indicates an increase in the temperature of bottom water at this site

بسم الله الرحمن الرحيم

جامعة أسيوط

كلية العلوم - قسم الجيولوجيا

امتحان التحريرى للمستوى الرابع بكلية العلوم شعبة الجيولوجيا والكيمياء

المادة: خريطة مصر الجيولوجية (410 ج)

(Geologic Map of Egypt (410 G)

الزمن: ساعتان

الدرجة: 50 درجة

دور يناير 2022/2023م

ملحوظة: الامتحان يتكون من أربع صفحات

Answer the following questions:

First Question: choice the correct answer (10 Marks)

- 1- Relative dating of rock layers tell us that the deeper we dig
A- the younger the rock get B- the older the rock get
C- the harder the rock get D- The softer the rock get
- 2- The clastic sedimentary rocks form by
A- erosion, transportation, precipitation
B- precipitation, transportation, erosion
C- transportation, erosion, precipitation
D- erosion, precipitation, transportation
- 3- Which is the correct order for the division of the Precambrian Eon
A- Proterozoic, Archean, Hadean B- Hadean, Archean, Proterozoic
C- Archean, Proterozoic, Hadean D- Hadean, Proterozoic, Archean
- 4- Surface where rock has eroded away producing a break in the rock record
A- inclusion B- unconformity C- superposition D- cross-cutting
- 5- The is the fundamental unit in the lithostratigraphic classification.
A- system B- period C- formation D- bed
- 6- The is the classification of bodies of rock based on the descriptions of the strata and their relative stratigraphic positions
A- Chronostratigraphy B- Lithostratigraphy
C- Biostratigraphy D- Allostratigraphy
- 7- The member is a/an lithostratigraphic unit
A- formal B- informal C- sandstone D- limestone

انظر خلف الصفحة

- 8- The Paleozoic strata are most complete in the subsurface of the
 A- northern parts of the Western Desert C- Sinai
 D- southern parts of the Western Desert D- north Eastern Desert
- 9- The Carboniferous rocks are characterized by the occurrence of ore in Sinai
 A- gypsum B- iron C- phosphorite D- manganese
- 10- What is the period which characterized by the formation of glacial episode in Egypt?
 A- Carboniferous B- Devonian C- Triassic D- Jurassic
- 11- The correct arrangement of the Cretaceous formations in Sinai from older to younger are:
 A- Malha, Raisan Aneiza, Raha
 B- Raisan Aneiza, Malha, Raha
 C- Raha, Raisan Aneiza, Malha
 D- Malha, Raha, Raisan Aneiza
- 12- The is an example for the Syrian Arc Mountains in the unstable shelf.
 A- Gebel Arif El Naga B- Gebel Duwi
 C- Gebel Gharib D- Gebel Dronka
- 13- The Formation represents the Mediterranean Salinity Crisis Event in Egypt.
 A- Sidi Salem B- Abu Madi C- Rositta D- Dabaa
- 14- The Miocene rocks expose in the Northern Western Desert and represent by formations
 A- Moghra & Dabaa B- Moghra & Marmarica
 C- Sidi Salim & Qawasim D- none of them
- 15- The Gebel Maghara is characterized by the occurrence of coal layers within the Formation.
 A- Safa B- Shusha C- Raha D- Hala
- 16- The kaolinite beds are occurred within the Formation at Sinai.
 A- Raha B- Malha C- Halal D- Sudr
- 17- The correct arrangement of the Lower Cretaceous formations in the south of Western Desert from older to younger are:
 A- Sabaya, Abu Balas, Six hills B- Abu Balas, Sabaya, Six hills
 C- Six hills, Abu Balas, Sabaya D- Abu Balas, Six hills, Sabaya

انظر خلف الصفحة

18- The Triassic sedimentary rocks are represented by rock unit in the northern Western Desert.

- A- Siwa B- Faghour C- Eghi D- Ras Qattara

19- The Upper Neogene rock layers correspond to.....

- A- the Late Neogene B- the Early Neogene
C- The Middle Neogene D- none of these

20- The Formation in the Red Sea Coast characterizes by the occurrence of evaporates (gypsum) rocks

- A- Um Mahara B- Abu Dabab C- Shagra D- Samh

Second Question: (10 Marks)

- 1- In a geologic time table trace and arrange the Nile Valley Eocene rock units from Upper to Lower Egypt, explaining the economic important of these rocks.
- 2- Construct a geologic time table for the Neogene (Miocene & Pliocene) rock units in the Nile Delta region, discussing the petroleum activities in this region.
- 3) Write briefly an essay on the Early Cretaceous rocks in Sinai, illustrating their important.

Third Question: (10 Marks)

- 1- Sketch the subsurface stratigraphic sequence of the Paleozoic strata in the north Western Desert.
- 2- Define the geologic age and the stratigraphic relationship for six only of the following rock units:
i- Qasib & Lakia ii- Kharita & Bahariya
iii- Abu Aggag & Timsah iv- Abu Roash & Khoman
v- Tenih & Dabaa vi- Maghrabi & Taref

Fourth Question: (10 Marks)

- Write brief notes on the lithologic and the field features of the Ophiolite sequences exposed in the Eastern Desert of Egypt.

..... انظر خلف الصفحة

Fifth Question: (10 Marks)

- Display the lithological characters of the high grade rocks exposed in the Western Desert and the Eastern Desert concerning the rock assemblages, metamorphism and dynamic metamorphism.

Good Luck

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Prof. Dr. Ali A. Khudier

Prof. Dr. Nageh A. Obaidalla

Assiut University
Faculty of Science
Department of Geology



Date: May 2023
Time allowed: 2 hours

Final Exam

Geothermal and Radiometric Methods (G 452), Total 50 Marks

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

No	Statement	TRUE (v)	FALSE (X)
1	In radiometric survey, the most significant isotopes are uranium, thorium, and potassium		
2	Radioactivity is the process where a stable atom becomes unstable through the process of decay or breakdown of its nucleus		
3	Radiometric can be used as a mapping tool for certain rock types change		
4	The radioactive decay processes can be affected by the chemical and physical processes in the surroundings		
5	The time it takes for one third of the material to decay or disintegrate is called the half-life time		
6	The radioactive decay of uranium and thorium elements leads to unstable isotopes of lead		
7	The radioactivity in sedimentary rocks is lower than the igneous rocks		
8	Studying the radioactivity of rocks and minerals can provide useful information about the heat production with the earth		
9	One of the assumptions made in radiometric dating is that no loss or gain of parent or daughter		
10	The disadvantage of Potassium-Arargon age dating is the vulnerability of Argon gas to be lost by alteration or heating		
11	Zircon (accessory mineral) is the most commonly mineral used for U-Th-Pb age dating		
12	The ^{14}C method has mainly been used for dating plant material in addition to glacier ice		
13	The $^{18}\text{O}/^{16}\text{O}$ ratio provides a record of ancient water temperature		
14	Geiger-Muller counter can be used for land and airborne radiometric survey		
15	The Gamma Ray Spectrometer can be calibrated by flying over an area of known radioisotope concentration		
16	Radon Emanometer cannot be used to map faults		
17	Heat escaping through the earth sets off various geological processes		

18	The leftover heat from the accretion of the earth represent 70% of the source of heat energy within the earth		
19	Heat transfer from the earth's interior to the surface by radiation		
20	Thermal conductivity controlled by the porosity and minerals present in a rock		
21	The greater the depth the greatest the thermal gradient and the lowest the thermal conductivity		
22	The mean heat-flow values of continents and oceans are nearly equal		
23	Oceanic ridge is one of the regions of anomalous heat flow		
24	The seepage of thermal water pockets through fissure and cracks can create local temperature disturbance		
25	In borehole lithology, the greatest temperature gradient occurs in shales and the lowest in salt		

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

26) 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

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

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

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

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

29) 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

30) 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

31) 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

32) 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

33) The most age dating methods are:

- a) Potassium-Arargon
- b) Uranium-Lead
- c) Rubidium- Strontium
- d) all the above

34) 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

35) 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

36) 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

37) The ancient climatic features are derived from analyses of:

- a) Tritium isotopes
- b) Uranium isotopes
- c) Oxygen isotopes
- d) Carbon isotopes

38) 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

39) The presence of radon at the surface indicate buried:

- a) Uranium concentrations
- b) Carbon concentrations
- c) Potassium concentrations
- d) Rubidium concentrations

40) 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

41) The percentage of heat produced within the earth by radioactive decay of long-lived isotopes is:

- a) 10%
- b) 30%
- c) 50%
- d) 70%

42) Heat is transferred from the earth's interior to the surface by:

- a) conduction
- b) diffusion
- c) simulation
- d) none of the above

43) The measure of how easily heat flows through material is known as:

- a) heat flow
- b) thermal gradient
- c) thermal conductivity
- d) thermal energy

44) The rate of change in temperature with depth is known as:

- a) heat flow
- b) thermal gradient
- c) thermal conductivity
- d) thermal energy

45) 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

46) 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

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

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

48) 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

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

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

50) 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

=====End of Questions=====

Assiut University
Faculty of Science
Department of Geology



Date: May 2023
Time allowed: 2 hours

Final Exam

Geothermal and Radiometric Methods (G 452), Total 50 Marks

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

No	Statement	TRUE (v)	FALSE (X)
1	In radiometric survey, the most significant isotopes are uranium, thorium, and potassium		
2	Radioactivity is the process where a stable atom becomes unstable through the process of decay or breakdown of its nucleus		
3	Radiometric can be used as a mapping tool for certain rock types change		
4	The radioactive decay processes can be affected by the chemical and physical processes in the surroundings		
5	The time it takes for one third of the material to decay or disintegrate is called the half-life time		
6	The radioactive decay of uranium and thorium elements leads to unstable isotopes of lead		
7	The radioactivity in sedimentary rocks is lower than the igneous rocks		
8	Studying the radioactivity of rocks and minerals can provide useful information about the heat production with the earth		
9	One of the assumptions made in radiometric dating is that no loss or gain of parent or daughter		
10	The disadvantage of Potassium-Argon age dating is the vulnerability of Argon gas to be lost by alteration or heating		
11	Zircon (accessory mineral) is the most commonly mineral used for U-Th-Pb age dating		
12	The ^{14}C method has mainly been used for dating plant material in addition to glacier ice		
13	The $^{18}\text{O}/^{16}\text{O}$ ratio provides a record of ancient water temperature		
14	Geiger-Muller counter can be used for land and airborne radiometric survey		
15	The Gamma Ray Spectrometer can be calibrated by flying over an area of known radioisotope concentration		
16	Radon Emanometer cannot be used to map faults		
17	Heat escaping through the earth sets off various geological processes		

18	The leftover heat from the accretion of the earth represent 70% of the source of heat energy within the earth		
19	Heat transfer from the earth's interior to the surface by radiation		
20	Thermal conductivity controlled by the porosity and minerals present in a rock		
21	The greater the depth the greatest the thermal gradient and the lowest the thermal conductivity		
22	The mean heat-flow values of continents and oceans are nearly equal		
23	Oceanic ridge is one of the regions of anomalous heat flow		
24	The seepage of thermal water pockets through fissure and cracks can create local temperature disturbance		
25	In borehole lithology, the greatest temperature gradient occurs in shales and the lowest in salt		

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

26) 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

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

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

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

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

29) 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

30) 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

31) 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

32) 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

33) The most age dating methods are:

- a) Potassium-Ar
- b) Uranium-Lead
- c) Rubidium-Strontium
- d) all the above

34) 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

35) 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

36) 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

37) The ancient climatic features are derived from analyses of:

- a) Tritium isotopes
- b) Uranium isotopes
- c) Oxygen isotopes
- d) Carbon isotopes

38) 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

39) The presence of radon at the surface indicate buried:

- a) Uranium concentrations
- b) Carbon concentrations
- c) Potassium concentrations
- d) Rubidium concentrations

40) 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

41) The percentage of heat produced within the earth by radioactive decay of long-lived isotopes is:

- a) 10%
- b) 30%
- c) 50%
- d) 70%

- 42) Heat is transferred from the earth's interior to the surface by:**
a) conduction
b) diffusion
c) simulation
d) none of the above
- 43) The measure of how easily heat flows through material is known as:**
a) heat flow
b) thermal gradient
c) thermal conductivity
d) thermal energy
- 44) The rate of change in temperature with depth is known as:**
a) heat flow
b) thermal gradient
c) thermal conductivity
d) thermal energy
- 45) 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
- 46) 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
- 47) On the thermal gradient measurements, the measured temperature could be affected by:**
a) topography
b) climate variations
c) sedimentations
d) all of the above
- 48) 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
- 49) Thermal measurements can be used for the prospection of:**
a) thermal reservoir
b) salt domes
c) groundwater
d) all the above
- 50) 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

=====End of Questions=====



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

Time: Two Hours (50 degree) 8-June-2023

PART-I: Sedimentary Basins (25 degree)

I-Answer the following question:

- 1- a. What is a sedimentary basin? (5 marks)
b. Mention the terminology used to describe basins prior to the development of the theory of Plate Tectonics? (4 marks)

II- Answer Two questions Only from the following:

- 2- a. Choose the correct answer (4 marks)
- Rift basins are caused by plate divergence
- Rift basins are caused by plate convergence
b. What is the economic significance of rift basins? (4 marks)
- 3- a. Mention the Subduction-related basins. (4 marks)
b. Back arc basins are formed in: (4 marks)
- Subduction-related basins
- Divergent-related basins
- Collision-related basins
- 4- a. Choose the correct answer (4 marks)
The pull apart basins are:
- Strike-Slip/Transform fault basins
- Rift basins
- Both
b. Describe briefly the sedimentary fill of pull apart basin (4 marks)

PART-II: Sequence Stratigraphy (25 degree)

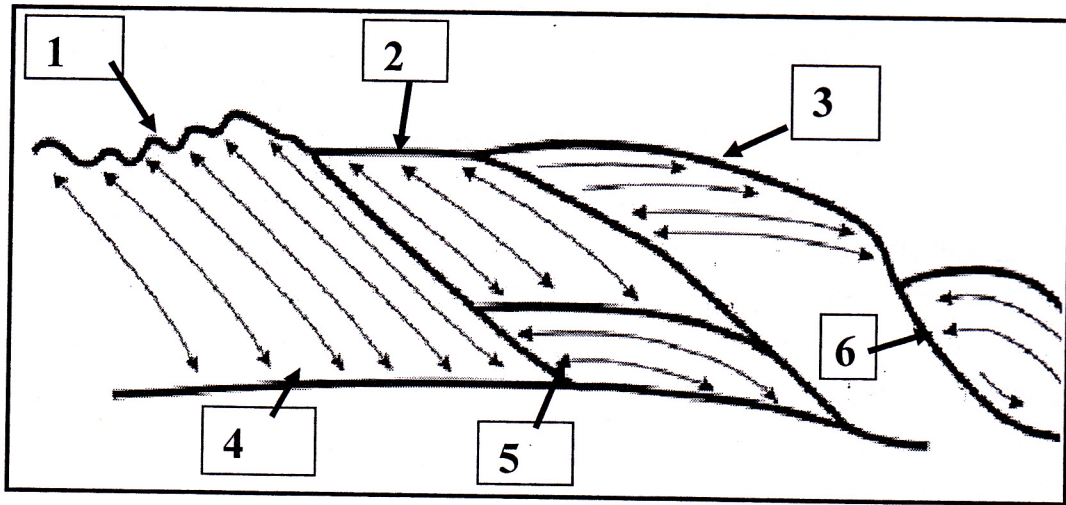
I- Answer TWO ONLY of the following questions (7 marks)

(Illustrate your answer by diagrams):

1. Describe **1st, 2nd, 3rd, 4th** and **5th** order relative sea level cycles in terms of the time periods over which they operate and the possible causative mechanisms.
2. What is the distinguishing characteristic of Parasequence bounding surfaces?
3. The difference between retrogradational and progradational stratal pattern in response to sea level changes and sediment flux.

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II- 4 - Identify the different types of seismic reflections and terminations given in the following figure. (6marks)



1-

2-

3-

4-

5-

6-

III- Choose the correct answer for the following statements:

(8marks)

5. the movement of coastline landward in response to a transgression; can occur during sea level rise with low sediment supply.
 - a. retrogradational
 - b. formation
 - c. progradational
 - d. accomodation
6. What is the effect of lowstand on accommodation space?
 - a. Sediments will be mostly filled in the basin bypassing the deposition process on the continental shelf.
 - b. Accommodation space will be moved towards the shoreline.
 - c. Accommodation space always will be decreased significantly.
 - d. Sediments will be mostly filled in the continental shelf with very little to no sed deposition on the basin.
7. What kind of sequence pattern would you expect to observe if the sediment supply remains at the constant but relative seal level remain constant?
 - a. Aggradational
 - b. Transgressional
 - c. Progradational
 - d. Retrogradational
8. During this period, no (or very little) sediments get deposited in the basin.
 - a. Highstand
 - b. Lowstand
 - c. Warm and wet seasons
 - d. Retrogradation

9. In sequence stratigraphy, the forced regression is characterized by which of the following

- 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. Rise in relative sea-level and movement of the shoreline seawards.

10. which of the following would result in increase in accommodation space?

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

11. What kind of sequence pattern would you expect to observe if the sediment supply remains at the constant but relative seal level remain constant?

- a. Aggradational
- b. Transgressional
- c. Progradational
- d. Retrogradational

12. In sequence stratigraphy, what do you call the termination of more steeply dipping overlying strata against a surface or underlying strata that have lower apparent dips?

- a. Toplap
- b. onlap
- c. downlap
- d. erosional surface

IV- Matching questions

(4marks)

1) Marine Flooding Surface	a) The middle systems tract of both type 1 and type 2 sequences. One or more retrogradational parasequence sets.
2) Type 1 Sequence is bounded	b) The lower-most systems tract associated with a type 2 sequence boundary. one or more weakly progradational to aggradational sequence sets
3) Transgressive Systems Tract	c) below by a type 1 sequence and above by a type 1 or type 2 sequence boundary
4) Shelf Margin Systems Tract	d) A surface that separates younger from older strata, across which there is evidence of an abrupt increase in water depth

-----GOOD LUCK-----

8-June-2023

Prof. Dr. Mohamed Ahmed Soliman

Prof. Dr. Ahmed-Reda El Younsy



Assiut University
Date: June 2023

Department of Geology



Faculty of Science
Time allowed: 2 hrs

Final Exam

**Hydrogeology and Petroleum Geology (G460), 4th level, special geology,
geochemistry and geophysics groups
Total Marks: 50 Marks (5 pages)**

Part I Petroleum Geology (25 Marks)

Q1: Shade the correct answer A, B or C (15 marks; 1 mark each)

1. Shale is called very good source rock when contains amount of organic matter ranges between:
a. TOC: 1-2 wt% b. TOC: 0.5-1 wt% c. TOC: >2 wt%
2. 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 route
3. The sedimentary environment in which huge amount of organic matter can be produced:
a. Bathyal b. Continental slope c. Continental shelf
4. Most of hydrocarbon reserves all over the world are generally occurred in:
a. Late Jurassic – Early Tertiary rocks b. Pliocene – Recent rocks c. Precambrian rocks
5. combination of physical factors that promote the accumulation and retention of petroleum in one location is called:
a. hydrocarbon migration b. Reservoir rock c. Hydrocarbon traps
6. Stratigraphic hydrocarbon traps are more common than structural ones during:
a. Pre-rift stage b. Syn-rift stage c. Thermal subsidence stage
7. Which of the following factors are required for high organic productivity.
a. High turbidity b. nutrients c. High temperature
8. Type III kerogen can generate at high thermal maturity levels

- a. Oil only b. Gas only c. Both of oil and gas
- 9. The most important stage responsible for hydrocarbon generation is:
 - a. Catagenesis b. Diagenesis c. Metagenesis
- 10. The reservoir rock having the porosity range 20-25% is called:
 - a. Fair reservoir rock b. Good reservoir rock c. Excellent reservoir rock
- 11. Which factor of the following cause increase in porosity:
 - a. Quartz cementation b. Dolomitization c. Calcite cementation
- 12. The electrical log used to reflect shale or clay content is:
 - a. Neutron log b. Sonic log c. Gamma ray log
- 13. Petroleum quality is measured by API%, The heavy crude oil usually has:
 - a. High API % b. Low API% c. Moderate API%
- 14. Capillary pressure in the reservoir is proportion inversely with:
 - a. Grain size of the reservoir rocks b. Saturation of the reservoir rocks c. Reservoir continuity
- 15. The inclined gas/oil contact (GOC) or oil/water contact (OWC) is generally accompanied with:
 - a. Hydrodynamic traps b. Diapric traps c. Stratigraphic traps

Q2: Shade (T) for True or (F) for False statements. (10 marks; 1mark each)

- 16. Sweet hydrocarbons have very low content of Sulphur. ()
- 17. Gravity and Magnetic methods are the geophysical methods applied in evaluation of the petroleum reservoirs. ()
- 18. Oil Window is the subsurface zone in which oil is generated within diagenesis phase. ()
- 19. Tar sand or Tar-mat is an unconventional source of oil and gas. ()
- 20. Diapric traps are formed by flow due to density contrast. ()
- 21. The H/C elemental ratio is higher in type III kerogen than type I kerogen. ()
- 22. During early migration, hydrocarbons are free to migrate vertically and laterally within the reservoir. ()
- 23. Seismic reflection measures the variation in some physical properties of rocks through which the bore hole is drilled. ()
- 24. Net pay is the total thickness of the petroleum reservoir. ()
- 25. Source rock is fine grained sediments rich in organic matter. ()

Part II Hydrogeology (25 Marks)

Q3: Shade the correct answer A, B or C (10 marks; 1 mark each)

26. The available water for plant growth are represented only by the moisture volume ranges between:
- A. The wilting point and the field capacity.
 - B. The hygroscopic water and the wilting point.
 - C. The field capacity and the maximum water capacity.
27. Most ground water are of:
- A. Connate origin.
 - B. Atmospheric origin.
 - C. Volcanic origin.
28. The transmissivity coefficient is equal to the product of:
- A. The permeability coefficient and the saturated thickness of the aquifer.
 - B. The permeability coefficient and the groundwater depth.
 - C. The permeability coefficient and the groundwater elevation.
29. The hygroscopic coefficient is the maximum moisture which are initially dry soil will absorb in contact with the atmosphere of:
- A. 60% relative humidity at 20 °C.
 - B. 50% relative humidity at 25 °C.
 - C. 25% relative humidity at 50 °C.
30. The Nile Valley aquifer is of:
- A. Granular rocks.
 - B. Fissured rocks.
 - C. Karstified rocks.
31. The Tertiary aquifer in Wadi El-Qaa represents one of the:
- A. Red sea costal aquifers.
 - B. West Nile Delta costal aquifers.
 - C. North Sinai costal aquifers.

32. The Nubian sandstone aquifer system is mainly related to:

- A. Karstified aquifer types.
- B. Granular aquifer types.
- C. Hard and fissured aquifer types.

33. In the unsaturated zone, the gravitational water moves:

- A. Vertically upwards.
- B. Vertically downwards.
- C. Laterally.

34. The contact springs are related to:

- A. Gravitational springs.
- B. Non-gravitational springs.
- C. Volcanic springs.

35. Ghanate system is mainly composed of:

- A. Horizontal and radial wells.
- B. Non-penetrating wells and volcanic springs.
- C. Mother and shift wells.

Q4: Shade (T) for True or (F) for False statements. (15 marks; 1mark each)

36. In the Nile Delta aquifer, the thickness of the clay lenses increases towards the north.

37. The Oolitic limestone aquifer dominating the area to the west of Nile Delta.

38. At EL-Arish in Sinai, the middle fluvial gravely aquifer and the lower calcareous sandstone aquifer are hydraulically in contact.

39. The reserve water in the Nubian sandstone aquifer in Sinai is estimated to be around 100 billion m³.

40. The Fissured and Karstified Carbonate aquifers are the least explored and exploited in Egypt although it occupies about 50% of its total area.

41. The wilting point is the moisture content at which permanent wilting of plants occur.

42. Field capacity is the amount of water held in the soil after the excess gravitational water has drained away.
43. Moisture equivalent is the amount of water at which a saturated soil will retain after being centrifuged at a centrifugal force 1000 times that of gravity.
44. The field capacity and wilting point represent the upper and lower limits of moisture needed for plant growth.
45. The hygroscopic water absorbed from the air forming thin films of moisture on soil particle surface.
46. Connate water is the water entrapped the sedimentary rock at the time it was deposited.
47. The moisture concentration around the soil particle is more in the case of hygroscopic water than that in capillary water.
48. An aquifuge material is an impermeable material neither containing nor transmitting water.
49. According to Darcy's law, the flow velocity is equal to the product of the coefficient of permeability and the hydraulic gradient.
50. In the confined aquifer, the water table serves as the upper surface of the zone of saturation.

GOOD LUCK

بسم الله الرحمن الرحيم

جامعة أسيوط
كلية العلوم
قسم الجيولوجيا

Assiut University
Faculty of science
Geology Department

إمتحان المستوى الرابع (شعبتي الجيولوجيا والجيوفيزياء)

مقرر 415 ج (جيولوجية مصر)

Course 415 G (Geology of Egypt)

الزمن : ثلاث ساعات

الدرجة: 50 درجة

دور يونيو 2023

الإمتحان مكون من أربع صفحات

Part I (Precambrian) 10 Marks

Answer the following question

Question 1 (A and B): (10 Marks)

1. A) Discuss briefly the metamorphic types occurring in the Basement rocks of the Eastern Desert of Egypt.

B) Compare between the Hammamat molasse sediments and the foreland sediments.

Part II (Phanerozoic) 30 Marks

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

Question 2: (10 Marks)

Identify the major paleogeographic and paleoenvironmental events and their absolute ages which took place in Egypt during the Oligocene-Pliocene and which gave rise to the present geological and geomorphological landmarks of Egypt (10 Marks)

Question 3: (10 Marks)

Describe in a time table the litho-, bio- and chemostratigraphy as well as the paleoenvironment and paleontology of the Paleocene-Eocene boundary interval as

given in the Global Stratotype Section and Point (GSSP) at Dababiya village , south Luxor.

Question 4 (A and B)(10 Marks):

4A: Compare and correlate in a time table the Carboniferous rock units in Abu Durba and Northern Galala along both sides of the Gulf of Suez. (5 Marks).

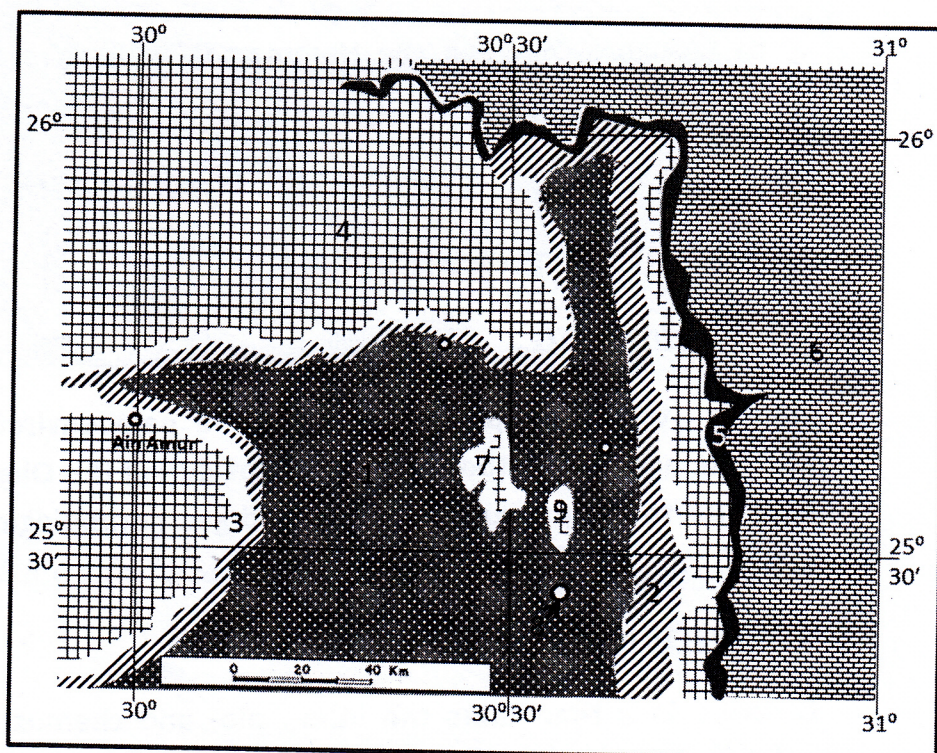
4B: Mark the correct word from the three words in the brackets (5 Marks)

1. The Alamein Member is dolomitic limestone belonging to the (Lower Cretaceous) (Upper Cretaceous) (Upper Jurassic) age
2. The Jurassic Wadi Natrun Formation is made up of (dolomitic limestone) (sandstone) (shale)
3. Fossiliferous Devonian strata were identified in (10) (5) (3) wells in the subsurface of the northern Western Desert
4. Cambrian Strata were fully penetrated in (5) (10) (3) wells in the subsurface of the northern Western Desert
5. Bahrein Formation is (Jurassic) (Cretaceous) (Silurian) in age

Question 5 (A and B): (10 Marks)

5-A: Look to the adjacent map (Map 1) and define the following: (5 Marks)

- i- The name of district
- ii- The names of rock units and their equivalent ages which are given from 1 to 6.



5-A: Select from list B the equivalent rock units to those of list A, and re-arrange the units of list A in stratigraphic order according to their ages. (5 Marks)

List A

Belayim Formation
Kiseiba Formation
Dabaa Formation
Garra Formation
Birket Qarun Formation
Mamura Formation
Ryan Formation
Tanka Formation
Bir El Temsah Formation
Kareem Formation

List B

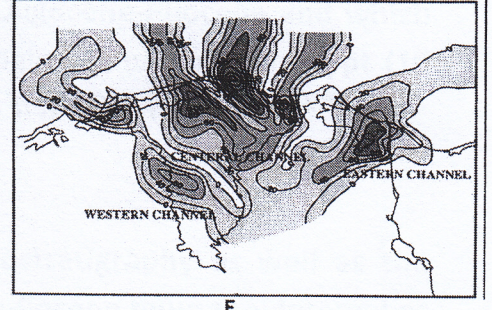
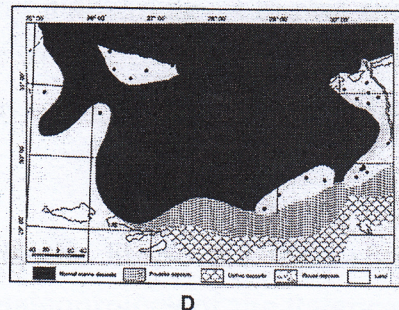
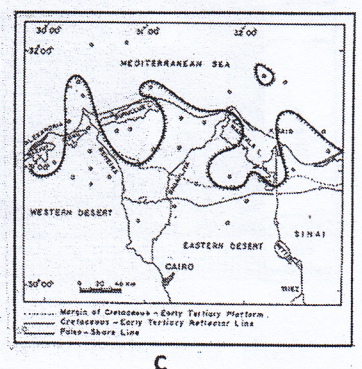
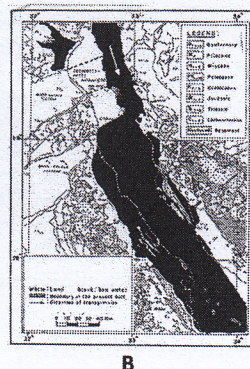
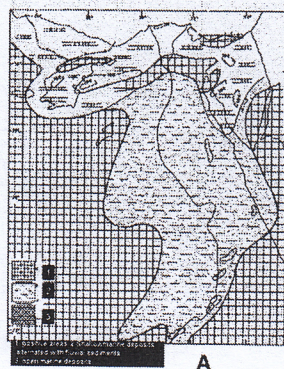
Rudeis Formation
Mokattam Formation
Um Mahara Formation
Quseir-Dakhla Formations
Syatin Formation
Tarawan Formation-Hanadi Member
Observatory Formation
El Qurn-Wadi Garawi Formation
Abu Madi Formation
Geisum Formation
Qasr El Sagha – Qattrani Formation

Part III (Structural Framework, Paleogeography and Paleoenvironment) (10 Marks)

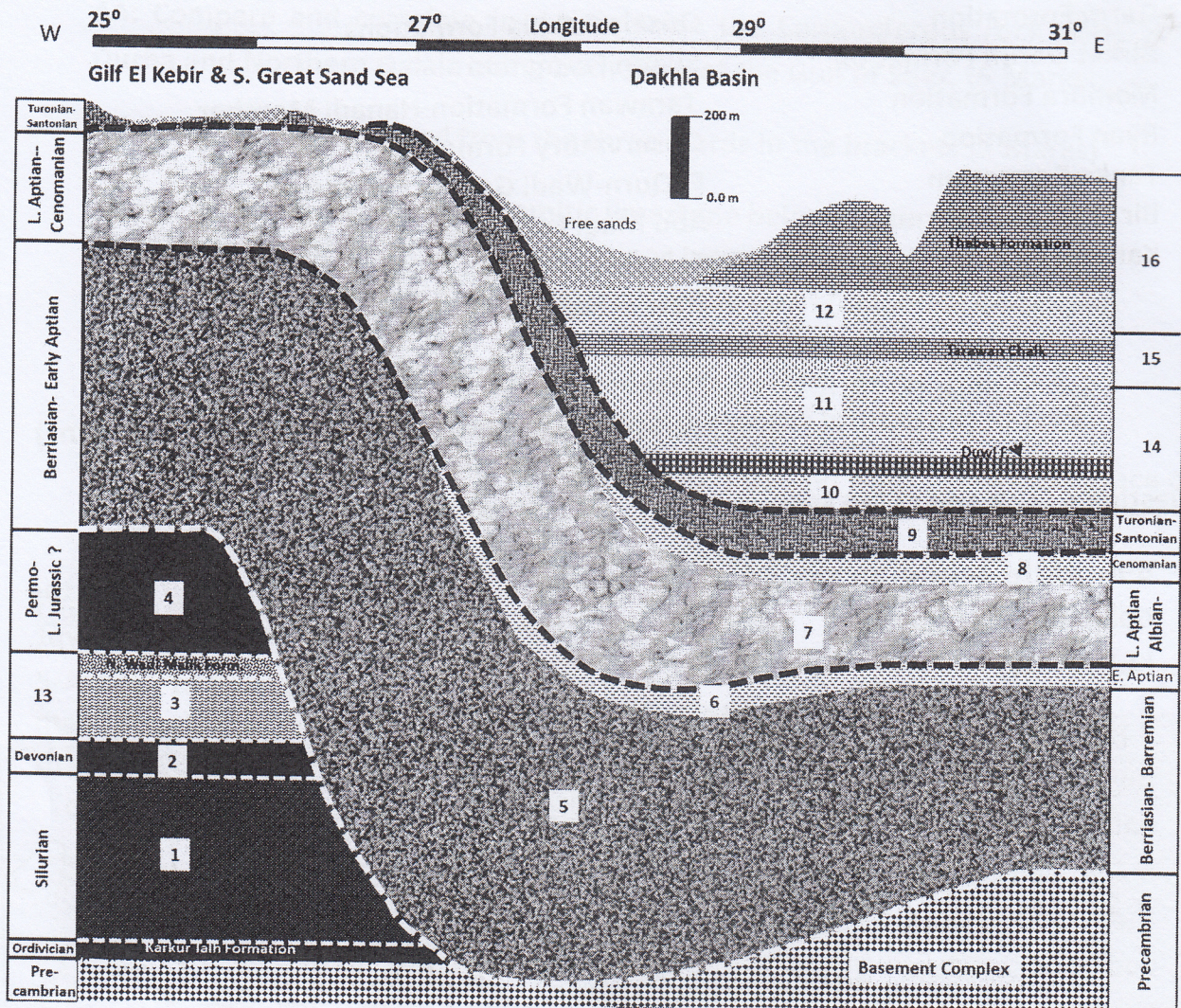
Question 6 (A, B and C) (10 Marks)

6-A: Write briefly on the lithologic composition and the main features of the ophiolite sequences exposed in the Eastern Desert of Egypt. (3.5 Marks)

6-B: Look to the following paleogeographic maps and define the Period, Epoch and Absolute age during which the Egyptian land was submerged (black color) in a way such as in figures A, B, C, D and E. (2.5 Marks)



6-C: You have a correlation chart of the rock units exposed between the Gilf El Kebir at west and Dakhla –Kharga stretch at east in the southern Western Desert. Define the rock units from 1 to 12 and the time units from 13 to 16 in the chart (4 Marks)



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

Credit hour system - First semester - Final Examination
Geology and Geophysics Programs
Geoarcheology (G 458)

Fourth Level

Allowed time 2 hour

ملحوظة: الامتحان في اربع صفحات

Chose the correct answer (30M)

- 1- the shared ways of life learned by a group of people, including their language, religion, technology, and values:
(A) History (B) Culture (C) Geology
- 2- Used as a geochemical exploration tool to locate ancient settlements:
(A) Analysis of Silicon and oxygen
(B) Analysis of phosphate/nitrogen/carbon
(C) Analysis of oxygen/hydrogen/carbon
- 3- 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
- 4- 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.
- 5- 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 (C) Fayoum
- 6- The primary raw material for archeological ceramics is :
(A) Gypsum (B) clay-rich sediments (C) quartz
- 7- Prehistoric knives and spear points in many parts of the world, were made of:
(A) Wood (B) Obsidian flakes (C) Conglomerate
- 8- 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
- 9- A chemical sedimentary rock resulting from precipitation of silica from seawater and recorded in many prehistoric sites:
(A) Limestone (B) Phosphate (C) Chert

- 10- Pottery is the general term for artifacts made mostly of:
 (A) Granite (B) Clay (C) Limestone
- 11- 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
- 12- The World's Oldest Surviving Geological Map dated :
 (A) The 1150 B.C (B) The 2150 B.C (C) The 3150 B.C
- 13- The scientific study of past cultures and the way people lived based on the things they left behind is:
 (A) Geoarchaeology (B) Archaeology (C) Archaeometry
- 14- Artifacts are usually found:
 (A) Buried in the ground (B) Located in the surface (C) Among rocks
- 15- Soil fertility in areas inhabited by humans is in uninhabited areas
 (A) equal (B) lower than (C) higher than
- 16- Any place where human activity occurred and where artifacts are found is called
 (A) Geologic station (B) Archaeological site (C) Fossils
- 17- Red ocher has been used for decorations since at least the Mousterian tradition:
 (A) Magnetite (B) Hematite (C) Limonite
- 18- Provenance of artifacts determined by techniques such as:
 (A) Stable isotopes (B) Physics (C) Biology
- 19- The term mortar refers to a mixture of:
 (A) Quicklime with sand and water (B) Sand and gravel (C) Silica and feldspar
- 20- Prehistoric archaeological sites dated:
 (A) Before written history (B) After written history (C) At present
- 21- The major gold occurrences of Egypt and Sudan are located in
 (A) The Phanerozoic sediments (B) The Precambrian basement rocks
 (C) The Quaternary Sedimentary rocks
- 22- Favored site for urban civilizations:
 (A) along and in the floodplains of great river systems
 (B) Near seas (C) In the Desert areas
- 23- The most common geochemical method in archaeology is:
 (A) Silicate analysis (B) Soil phosphate analysis (C) XRD
- 24- The building stone should be:
 (A) Hard, strong and durable (B) Soft (C) Light in color
- 25- Metal workers learned how to alloy the metals:
 (A) By 5000bc (B) By 4000bc (C) By 3000bc
- 26- 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

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

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

28- During this period, almost all the 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

29- Seasoning of stones :

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

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

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

Answer (T) for True sentences Or (F) for False sentences: (One mark each) (20 M)

31. Plaster of Paris” is manufactured by heating gypsum which rehydrates in the presence of water.

32. All kinds of land use have an impact on soil properties such as bulk density, weathering, particle redistribution and magnetic, electric and chemical properties.

33. Limestone and sandstone were the main building stones of ancient Egypt.

34. Slates used in many areas as roofing material for ordinary constructions.

35. Along the Red Sea coast, the temples and other important buildings of the Ptolemaic and Roman Periods were built with blocks of anhydrite and gypsum.

36. Nearly all the limestone came from Tertiary formations (mainly Eocene but also Palaeocene and Pliocene) with the ancient quarries located in the hills and cliffs bordering the Nile Valley between Cairo in the north and Isna in the south

37. Quarries in the Nile Valley from Isna southward into northern Sudan supplied the sandstone, which came from the Cretaceous Nubia Group.

38. Andesite is Micro crystalline quartz with few traces of chemical impurities.

39. The primary raw material for archaeological ceramics is sandstone

40. Primary clay deposits are formed by river or lake deposition.

41. Gold occurrences in the ANS are mainly confined to quartz-mineralized shear zones

42. New Kingdom oval shaped andesitic stone mill with a selection of grinding stones

43. Archaeomineralogy provides a wealth of information for mineralogists, geologists and archaeologists involved in archaeometric studies of our past.
44. Gold occurrences located in the Arabian–Nubian shield (ANS) extend from the river Nile eastwards towards the Arabian Peninsula.
45. Prehistoric sites occurred after the culture began writing records of daily life
46. In Georgia, and most of the United States, prehistoric sites were created by the ancestors of Native American Indians.
47. Plasters and mortars commonly have both a matrix (coarse component) and a temper (fine binder).
48. Plaster essentially differs from mortar by containing a temper dominated by sand rather than gravel-size material.
49. Archaeometry describes collaborative research efforts between Physical Sciences and Archaeology.
50. Activities such as firing, drainage, ploughing, digging, cultivation and grassing can be traced by means of geophysical and geochemical explorations.

Assiut University
Faculty of Science
Geology Department
SUBJECT: Medical Geology examination

Mark : 50 Marks
Year : June 2023
436G

First Question:

Discuss briefly the harmful effect of the following elements on the health of the human body?

1- Cd 2- Hg 3- Pb 4- As (10 marks)

Second Question:

What is the essential elements for living organisms ? (10 marks)

Third Question:

Compare between the following elements in the earth's crust and in the human body ?

☞ Oxygen, Silicon, Iron, Calcium, Sodium, Potassium and Magnesium (10 marks)

Fourth Question:

Write short notes on the Major, Minor and trace elements of the human Body? (10 marks)

Fifth question:

Discuss briefly the harmful effect of volcanos on human being and the environment ?

(10 marks)



امتحان طلاب المستوى الرابع (ساعات معتمدة)
مقرر (445 ج) جيولوجيا تصويرية واسنشعار عن بعد

زمن الامتحان : ساعتان

الدرجة الكلية (50 درجة)

يونيو 2023

I. Choose the correct words to complete the following phrases and then rewrite in your answer paper:
(2 marks each)

1. The trellis drainage pattern occurs in areas of
folded sedimentary rocks - plateau surface - oval igneous intrusions
2. On vertical aerial photograph the images of ground points with greater elevations are displaced from the centre of the
Inwards - outwards - laterally
3. 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. A difference in elevation, in addition to producing relief displacement, also produces a difference in
Vertical exaggeration - Parallax - photo tone
5. Wave length intervals with high transmission are called and are used to acquire remote sensing images.
wavelength regions - atmospheric windows- reflected energy peak

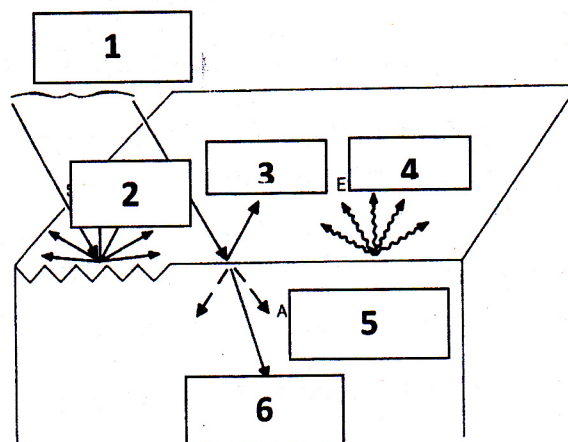
II. Write short notes on Three of the following (6 marks each)

- a- Microwave Remote Sensing
- b. Sun Synchronous Satellite Orbits .
- c. Thermal Remote Sensing.
- d. Generations of Landsat Satellites

باقي الأسئلة على الصفحة التالية

III. The figure shows the interaction processes between electromagnetic energy and matter, write the correct words in the boxes. (6 marks)

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....
- 6.....



IV. Compare and contrast between Only Four of the following: (4marks each)

1. Photographic and non-photographic Remote Sensing Systems.
2. Active and Passive sensors.
3. Geostationary and Near Polar satellite Orbits.
4. Spectral and spatial resolution of a Satellite sensor.
5. Cross-Track and Along Track Scanners.

GOOD LUCK!!

Prof.Dr. Moustafa M. Youssef



ملحوظة : الامتحان في صفتين

Part (1) - MINERAL PROSPECTING (25 Marks)

I) Answer the following question (7½ Marks):

- a. Define the following items:

Elemental dispersion, Pathfinder elements, Background and threshold value

- b. What are the important parameters to be considered in orientation survey?
c. Select **TWO** geochemical prospecting surveys and explain briefly how can be utilized in mineral prospecting processes indicating the targeting ores in each selected method.

II) Answer shortly FIVE ONLY of the following questions (17½ Marks):

- 1) Discuss briefly the main surface signatures displayed during geological prospecting of mineral deposits in the field.
- 2) What are the differences between photo geological and remote sensing techniques in mineral prospecting? Summarize the advantages and disadvantages of applying remote sensing in mineral deposits prospection.
- 3) Show how direct and indirect detection of mineral deposits can encountered using seismic and electromagnetic geophysical techniques, presenting some examples.
- 4) Explain, by examples, the role of self-potential and resistivity geophysical techniques in detecting minerals directly and indirectly.
- 5) In radioactivity techniques for investigating mineral deposits, what are the measured parameter, units, physical property, and main causes of anomalies? Give examples of the direct and indirect applications.
- 6) Explain how well logs can be used for locating directly and indirectly certain minerals and ores.
- 7) List the sequence methodologies carried in Geographic Information System? Illustrate the benefits of GIS in prospecting for mineral deposits?

بقية الاسئلة في الصفحة الثانية

Part (2) - INDUSTRIAL MINERALS AND ROCKS (25 M)

Answer THREE questions only of the following

Q1

- i- Write on the classification of clay minerals for industrial purposes?
- ii- Discuss the application of industrial minerals as density modifiers and more lightweight applications?

Q2

- i- Mention the applications of industrial minerals as mineral fillers?
- ii- Describe the various types of zeolites and their uses?

Q3

- i- Discuss the applications of industrial minerals in plastics and polymers, UV absorbance and environmental uses?
- ii- What are green and critical minerals?

Q4

- i- Explain the applications of industrial minerals used in paint and ceramics industry?
- ii- Write on the application and importance of those minerals and rocks: fluorite, talc, graphite, garnet and perlite?

تمت الاسئلة وبالتوفيق

أ.د. جلال حامد الحباك

أ.د. عوض عبدالخالق عمران



University: Assiut

Introduction to embryology & evolution

Faculty: Science

Code: 418 Z

Total degree = 50

Department: Geology

Time: 2 hrs.

Final exam. June 2023

Q1. Put False (F) or true (T) & correct the false: لاحظ الأسئلة في صفحتين 9 marks

1. A developmental pattern including a larval stage is called indirect development.
2. Ovoviviparous animals have direct contact with mother through placenta.
3. Fertilization membrane prevents the entrance of sperms to the ovum.
4. In oogenesis the first maturation division occurs before fertilization.
5. Spermiogenesis is the changes of spermatids to spermatozoa.
6. Secondary oocyte contains the diploid number of chromosomes.
7. Fertilizin attracts the spermatid to the egg membrane.
8. Protostomes have undetermined cleavage.
9. Parthenogenesis means the development of the eggs without fertilization.

Q2. Choose the correct answer:

10 marks

1. Dorsal root ganglia of spinal nerves are derivatives of ...
(a) forebrain (b) spinal cord (c) neural crest (d) hind brain.
2. Meroblastic cleavage occurs ineggs
(a) alecithal (b) mesolecithal (c) polylecithal (d) all answers correct.
3. In the gastrula of the Amphibia the neural plate are found at the.....side
(a) dorsal (b) ventral (c) lateral (d) nothing
4. The lining of the mouth is made up of.....
(a) endoderm (b) mesoderm (c) ectoderm (d) all answers correct
5. Animals have cleavage.
(a) radial (b) circular (c) spiral (d) all answers)
6. All these structures are derivatives of the ectoderm except
(a) Neural tube (b) hair (c) epidermis (d) thyroid gland
7. The epimer is differentiated in to
(a) Sclerotome (b) dermatome (c) myotome (d) all answers
8. Connective tissues originate from
(a) ectoderm (b) mesoderm (c) endoderm (d) neural crest
9. All these classes are amniotic animals except
(a) Mammals (b) Amphibia (c) Birds (d) Reptiles

10. Reproduced by meiotic division (meiosis)

(a) Gamete cells (b) somatic cells (c) both (d) nothing

Q3. Write short notes on two only with drawing if possible:

6 marks

- 1- The differences between the blastula of Amphioxus and toads.
- 2- Mention different types of the extra embryonic membranes.
- 3- Different types of the stem cells according to their potentials.

Q4. Correct over the line:

(13 marks)

- 1- Darwin and Wallace were based on cloning technology.
- 2- Progeria syndrome is evidence of natural election.
- 3- Preplanned thesis was disproved by cut tailed rats' experiment.
- 4- Turtles of Galapagos are examples of Natural selection.
- 5- Metamorphosis is the mechanism of New Darwinism.
- 6- Convergent evolution is the reason of insect immunity.
- 7- Living beings evolved gradually in intermediate forms by chance.
- 8- Ediacaran fossils have exoskeletons.
- 9- The sheep Dolly is a product of parallel evolution.
- 10- Pineal gland is functionless and over time should be disappeared.
- 11- Burgess Shale's fossils displayed simple similar animals.
- 12- Macroevolution causes sickle-cell anemia.
- 13- Variations add new characteristics resulting new species.

Q5. Answer only three of the following:

(12 marks)

- 1- Explain why transition of life from Water to Land is impossible.
- 2- Discuss the invalidity of Morphological Homology as evidence of evolution.
- 3- Illustrate why metamorphosis should happen perfectly and not by chance.
- 4- Demonstrate the distribution of animals according to Darwinism & fossil record.