Assiut University
Faculty of Science
Geology Department

جامعة أسـيوط
كلية العلـــوم
قسم الجيولوجيا

Final Examination
2nd Level - Geology

June 2017	GIS (240G)	50 Points	Time: 2 Hours

Give your answers on the given papers and back of it
Support your answers with drawings when applicable
Answer the required questions only to save your time

A- Answer only two of the following questions..... (12 points)

1) Give detailed description with drawings on UTM coordinate systems.
2) Describe the GPS components and functions.
3) Discuss in details the Raster and Vector models in GIS.

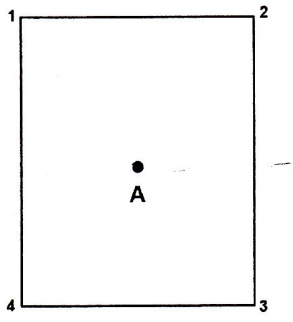
B- Fill in the gaps in the following: ..... (4 points)

1) .....expresses the spatial relationships between features
2) A mathematical model of the earth is called.....
3) .....is used to define the locations on earth's surface
4) The choice of projection affects the .....while the choice of spheroid affects the.....

C- Answer the following question..... (4 points)

The graphic below represents a map for an area. Point 'A' is located at 12° N latitude and 28° E longitude. The Coordinates of the corners of the map in UTM are given in the following Table (R = 6371 km). Answer the following questions using information provided by Point 'A' and the four coordinate pairs

Point #	UTM-Easting	UTM-Northing
1	650,000	.....
2	.....	1,404,000
3	.....	1,400,000
4	653,000	.....



1) Complete the missing coordinates within the table
2) The UTM zone of the map is .....
3) The central meridian is.....
4) The area of the map is .....km^2
5) If the distance between point 1 and 2 is 6 centimeters, what is the scale of this map?:.....

D- Choose the correct answer of the following: ..... (30 points)

1. Which projection can be conformal and equal distance at the same time?

a. conical
b. cylindrical
c. transverse
d. none of the above

2. Which statement below is true about scale?

a. Scale is fixed on a GIS map
b. Scale represents the amount of reduction between a map and the real world
c. Scale changes when you pan a GIS map
d. Scale is the amount of detail shown on a map

3. Coverages that hold a value associated with a raster are called.....

a. Backgrounds
b. Features
c. Surfaces
d. Graphics

4. Symbolizing features means.....

a. Assigning properties by which they can be recognized on a map
b. Adding labels to your map
c. Drawing circles on a map to show where cities are
d. all of the above

5. A cylindrical projection with a line of tangency at the equator will have.....

a. a standard meridian
b. a standard parallel
c. secants called reference parallels
d. All of the above

6. Cylindrical, Conic and Azimuthal are types of.....

a. Metadata
b. Spatial Data
c. Map Projections
d. Queries

7. Polygons that can be drawn at a constant distance around every feature in a layer, or at a distance that varies according to attribute values are called.....

a. Overlays
b. Operators
c. Queries
d. Buffers

8. .....defines the origin and orientation of latitude and longitude lines

a. Sphere
b. Projection
c. Datum
d. GPS

9. Binary rasters are .....

a. composed of ones and zeros
b. composed of floating point values

c. a form of an extended raster
d. none of the above

10. You have an image that covers a rectangular area 8 kilometers wide by 6 kilometers high. The image has 300 rows and 400 columns. What is the resolution of the image in X and Y directions?

a. 400 meter
b. 300 meter
c. 200 meter
d. 20 meter

11. Points coded in a raster GIS.....

a. have topology
b. will be dimensionless
c. are coded as area features
d. take less storage

12. Using a smaller cell size in a raster GIS will result in:

a. more storage required
b. less resolution
c. less storage required
d. all of the above

13. To determine orthometric height from a GPS reading requires.....

a. a topographic map
b. knowing the height difference between the geoid and ellipsoid
c. a geologic map
d. all of the above

14. A Mercator projection is based on what conformable surface?

a. cone
b. plane
c. cylinder
d. sphere

15. Three models that have been used by geodesy and cartography over time are:

a. Circle, cone and cylinder
b. Ellipsoid, spheroid and geoid
c. GPS, Satellites and receiver
d. Ellipsoid, sphere and map

16. At a scale of 1:50,000, how many centimeters represent a distance of 25 km?

a. 25 cm
b. 2.5 cm
c. 50 cm
d. 5 cm

17. With a conformal projection, distortion of ..... is minimized

a. distance
b. area
c. shape
d. direction

18. In UTM coordinate system, the projection has no distortion.....

a. along the reference latitude
b. at the origin of the projection
c. along the standard parallel(s)
d. between the standard parallels

19. The developable surface of a planar secant projection intersects the surface of the earth at

a. circle
b. point of contact
c. one standard parallel
d. two standard parallels

20. A well location is stated as: UTM 12N, 243,000, 3,420,000. This well is located

a. 257 km east of the central meridian of this zone
b. 3420 km due south of the north pole
c. 257 km west of the central meridian of this zone
d. 3420 km due north of the south pole

End of Questions, Best wishes

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

Final Exam. In Petrophysics Course (PG 226)
For Second Level (Petroleum Group)

June, 2017 **(50 marks)** **Time: 2hours**

I. Define **TEN ONLY** of the following : **(15 Marks)**

Salinity - Cleavage – Fracture - CEC - Streak – Stress - Conductivity

Poisson's ratio - Absolute Permeability- Luster - Simple Matrix - Rigidity

II. Write on **EIGHT ONLY** of the following: **(35 Marks)**

1. The resistivity of shale
2. Parameters affected on the formation resistivity factor.
3. Kozeny correlation.
4. Factors affected on porosity.
5. Oil - water system
6. Quantitative use of porosity
7. Factors affected on resistivity.
8. Porosity on Carbonate rocks
9. Factors affecting on the magnitude of Permeability
10. The resistivity of clay
11. Quantitative use of porosity
12. Clastic Reservoir

==========Good Luck==========

Dr. Mohamed Fekry khalil

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

Final Examination
Geology students 2nd Level
(Invertebrate Paleontology)

June 2017	G215	50 Marks	Time: 2 hours

Answer four only from the following questions: (Give illustrations if possible)

The First Question (12.5 Marks)

a. What are the differences between the following marine organisms; Planktonic, Benthonic and Pelagic organism.
b. Discuss the main conditions for fossilization and the different mode of fossil preservation.

The Second Question (12.5 Marks)

Describe the following Paleozoic index fossils and give the exact ages:

a. Phylum: Archaeocyatha.
b. Subclass: Tabulata.
c. Subclass: Tetracoralla.

The Third Question (12.5 Marks)

a. Write on the wall and the morphology of foraminiferal shell.
b. Determine the ages of Fusuline limestone and Nummulitic limestone.

The Fourth Question (12.5 Marks)

Discuss the following:

a. Stratigraphic distribution of order Cephalopoda.
b. Shape of Gastropoda shells.

The Fifth Question (12.5 Marks)

Give a brief account on:

a. The orientation of: Pelecypoda, Gastropoda and Brachiopoda.
b. Skeleton of Crinoidea.

The Sixth Question (12.5 Marks)

Write the difference between:

a. Regularia and Irregularia.
b. Brachiopoda and Pelecypoda.
c. Clayx in Crinoidea and corona in Echinoidea.

Good Luck,,,

Prof. Dr. Hasan A. Soliman *Prof. Dr. Adel A. Hegab*

Assiut University

Faculty of Science

Department of Geology

Final Exam for the Rock – Forming Minerals (G 230)

Prof. Dr. Fawzy Farahat Second Semester, May 2017 Time allowed: 2 Hours

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A. Choose the Correct answer: Total Points=50

1. Electron sea exists in: (1.5 points)

a. polar bonds b. ionic bonds c. covalent bonds d. metallic bonds

2. Silicate Structure in which two tetrahedral sharing 3 oxygen is called: (1.5 points)

a. Nesosilicate. b. Sorosilicates. c. Cyclosilicates. d. Single chain Silicates.

e. Double chain Silicates f. Sheet Silicates g. Tectosilicates

3. The silicon-oxygen tetrahedron is: (1.5 points)

a. The building unit of the silicate minerals
b. Composed of 4 oxygen atoms surrounding 1 silicon atom
c. Composed of the two most abundant elements on the Earth
d. All of these

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

a. The empirical formula is $(SiO_3)^{2-}$.
b. There are types of tetrahedra: those sharing 3 oxygen and those sharing 2.
c. There are only one type of tetrahedron.
d. The empirical formula is $(Si_4O_{11})^{6-}$.

5. The general formula of silicate ion present in ringsilicates is: (1.5 points)

a. $(SiO_4)^{4-}$ b. $(Si_2O_5)^{2-}$ c. $(Si_2O_7)^{6-}$ d. $(SiO_3)_n^{2n-}$

6. Garnet and Zircon are : (1.5 points)

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

7. The formula of silicate ion present in phyllosilicate is: (1.5 points)

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

8. According to Bowen's reaction series, the last mineral to crystallize from magma is:

a. Muscovite b. plagioclase c. quartz d. olivine (1.5 points)

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

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

10. According to Bowen's reaction series, which of the following pair of minerals are likely to crystallize from magma at high temperature? (1.5 points)

a. biotite- sodium rich plagioclase b. amphibole- calcium rich plagioclase
c. olivine- sodium rich plagioclase d. olivine- calcium rich plagioclase

11. Coordination number for closest packed crystal structure is: (1.5 points)

a. 16 b. 6 c. 12 d. 8

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

Group I	Group II
i. actinolite – tremolite.	a. Nesosilicate.
ii. Tourmaline.	b. Ring silicate.
iii. Sillimanite, kyanite & andalusite	c. Double chain Silicate.

B. Choose false or true for the following statements, if you are choose false, please correct the wrong:

13. Polymorphs minerals are minerals having the same chemical composition but differ in crystalline structure, a well example is plagioclase group minerals. (1.5 points)

a. False b. True.

14. Amphibole group minerals are crystallized at very high temperature and need low – silica content. (1.5 points)

a. False b. True.

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

a. False b. True.

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

a. False b. True.

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

a. False b. True.

18. Pure forsterite (Mg_2SiO_4) melts at 1890 ^{O}C, while pure fayalite (Fe_2SiO_4) melts at 205 ^{O}C. (1.5 points)

a. False b. True.

C. Fill the Spaces with Scientific terms:

19. Why the amphibole minerals are commonly occur in the intermediate and felsic rocks? (1.5 points)

.....

.....

20. Oxygen is present in two forms in silicate minerals, where it links tetrahedra together, it is known as ..... and has charge equal to ..... On the other hand, oxygen atoms that are not shared between tetrahedra are known as ..... and has negative charge equal to..... . (1.5 points)

21. Which mineral of the silica group is found only in extremely high pressure?. The mineral is ..... . (1.5 points)

22. What is the silicate class having highest Si : O ratio? (1.5 points)

..... .

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

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

.....

.....

.....

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

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

.....

D. Write short essay on the following:

27. What is the structure of kaolinite and talc minerals, and write the steps for their Chemical formulas? (6 points)

28. How TOT strips of amphibole are formed. Answer with drawing. (5 points)

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

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

May 2017	G 216	50 Marks	Time: 2 hours

PART ONE (VERTEBRATE PALEONTOLOGY)

First Question (5marks).
Write the geologic age of the given species:

1- *Gastornis*
2- *Ichthyostega*
3- *Petrolacosauridae*
4- *plesiosaur*
5- *Aegytosaurus baharijensis*

Second Question (5marks)
Which of the following is true and which is false, correct the false one:

1- *Phororacids* consider one of the Paleogene Bipedal Carnivores.....( )

2- Anapsid is first appeared in late Carboniferous.....( )

3- The Heterostraci is an armored jawless vertebrate, which lived from the Early Silurian to the Late Devonian.....( )

4- Labyrinthodontia considered the first vertebrates lived on solid ground...( )

5- Therapsids is often called mammal-like reptiles..... ( )

Third Question (10marks)
Compare between Two Only of the following:

1- Actinoptergians and Sarcoptergians.

2- Amphibian and Reptile differences.

3- Amphibians orders Anthracosauria and Temnospondyli.

4- Ichthyornithiformes and Hesperornithiformes.

Fourth Question (5marks)
Complete the following sentences:

1- Phylum Chordata characterized by several anatomical features among of them are .....,....., ..., ...

2- *Tiktaalik roseae* consider a transition form to .....

3- The first reptiles appear during ..... period, when they first evolved from .....

4- Birds evolved from a group of ..... in ..... Period.

5- The whales of Wadi El-Hitan belong mainly to the genera of ..... and ..... which have a geologic age of .....

Part 2: Origin of Species (25 marks)

Answer the following questions

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

A- Homologous structures represent a strong evidence of a common ancestor.
B- Behavioral isolation means that two species live in different habitats have a good chance of interaction.
C- Genetic flow is an evolutionary force that results from breeding of individuals within a localized group.
D- Species richness (***S***) is very sensitive to sample size.
E- Dominance indices are heavily weighted towards the most commonest species, but it can be used to indicate species diversity.

2- Define <u>Four Only</u> of the following: (8 marks; 2 marks each)

A- Hybrid sterility, B- Genetic drift, C- Prokaryotes, D- Natural selection,
E- Species, F- Prokaryotes,

3- Write briefly on <u>Three Only</u> of the following: (12 marks; 4 marks each)

A- Differentiate between the species dominance indices and information-statistic indices.
B- Adaptive radiation as a mean of allopatric speciation (with drawings).
C- Mechanism of species evolution.
D- Prezygotic reproductive isolation.

End of Part Two

Examiner: Dr. Amr S. Deaf ***Good Luck***