

Optical Mineralogy (235 G)

I-Indicate by the sign (✓) or (×) and correct the mistaken one (10 marks):

Indicate by the sign (✓) or (×) with correct of answer:-

- 1-The quartz wedge is cut from a piece of clear and have a thickness from zero thickness at one end to about 0.25 mm at the thick end of the wedge. ()
- 2-The gypsum plate is cut from a piece of clear gypsum to such a thickness about 0.06 mm thick that it gives a first-order red interference color. ()
- 3-The mica plate consists of a cleavage (flake) of optically clear muscovite mica about 0.03 mm. ()
- 4-The Berek compensator is a plate of calcite 0.1 mm thick is cut normal to the optic axis and used in measuring the retardation of the mineral to determine its birefringence. ()
- 5-In a homogeneous substance, light rays are not straight line. ()
- 6-Inhomogeneous substance, light rays are straight line ()
- 7-Light moving along rays may be bent or refracted in passing from one substance to another of same properties ()
- 8-Plagioclase has high relief, plagioclase ()
- 9-Birefringence occur in isometric system and amorphous minerals ()
- 10-Refractive index (n) depends largely on the density of the material ()

Answer of the following quactions:

- 11-What is the meaning of extinction positions? (2 Marks)
- 12-What is an anomalous interference colors? (2 Marks)
- 13-Why use the microscope? (2 Marks)
- 14-What is double refraction? (2 Marks)
- 15-What is the relief? (2 Marks)
- 16-What is the meaning of the interference colour? (5 Marks)
- 17-What the meaning of alteration (5 Marks)
- 18-What the interference figure of biaxial mineral (10 marks)
- 19-What the interference figure of uniaxial mineral (10 marks)

Good luck

Prof. Dr. Mohamed Abd El-Raouf Hassan

10. Draw the structure of $(\text{Si}_4\text{O}_{11})^{6-}$. (3 points)
11. Draw the structure of SiO_2 . (3 points)
12. Arrange the following minerals which crystallized from the magma according to the decreasing order of temperature (From high to low temperature). (3 points)
- a. Hornblende b. pyroxene c. biotite d. olivine e. quartz f. orthoclase
13. What differences between the structure of TOT I-beam and TOT strips in the Fe/Mg minerals? (3 points)
14. What is the silicate class having the highest Si : O ratio? (3 points)
15. a. What is the structure of margarite? (4 points)
- 15b. write the steps for the formation of the Chemical formula of margarite
- 16a. What is the structure of phlogopite? (4 points)
- 16b. write the steps for the formation of the Chemical formula of phlogopite.

Assiut University Faculty of Science Geology Department		جامعة أسيوط كلية العلوم قسم الجيولوجيا
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Second Semester Final Examination
Geology students 2nd Level
(Invertebrate Paleontology)

May 2018	G215	50 Marks	Time: 2 hours
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Answer two only from the following questions (Please, give illustrations if possible)

The First Question (12.5 Marks)

Discuss the followings:

- 1- What are the differences between Planktonic, Benthonic and pelagic marine organisms?
- 2- What do you know about the different modes of Fossilization and the main conditions for completing the process?

The Second Question (12.5 Marks)

- 1- Describe three Paleozoic index fossils and fossil building rocks.
- 2- Compare between the skeletons of Archaeocyatha and Sponges.

The Third Question (12.5 Marks)

- 1- Write on the shell morphology and different wall composition of Foraminifera.
- 2- Write on the development of Tetracoralla and their age.
- 3- What are the different types of Tabulata and their stratigraphic importance?

The Fourth Question (12.5 Marks)

Explain the following:

- 1- Regularia and Irregularia in Echinoidea.
- 2- The ornamentation in Pelecypoda, Gastropoda and Brachiopoda.

The Fifth Question (12.5 Marks)

What do you know about?

- 1- Apical system in Echinoidea.
- 2- Skeletal in Crinoidea.

The Sixth Question (12.5 Marks)

Give short notes on:

- 1- Wall structure of Brachiopoda.
- 2- Morphology of Pelecypoda, Gastropoda.
- 3- Geological distribution of Cephalopoda.

Good Luck,,,

Prof. Dr. Hassan A. Saliman

Prof. Dr. Adel H. Hegab

II- Chose the correct answer and comment on your choice on only five of the following:- 15 Marks (3 Marks each)

- 1- Drift correction of gravity measurements is generally referred to:
 - a- Elevation of the measuring point
 - b- Density of the rock units at the measurement point
 - c- Instrument materials and weathering conditions
- 2- Tide correction is referred to:-
 - a- Topography of points around the measurement point
 - b- Attraction between the Moon and the Earth during day and night
 - c- Material of the instrument used in measurements
- 3- Application of gravity in hydrocarbon investigation summarized in:-
 - a- Defining the sedimentary basins
 - b- Defining of topography
 - c- Estimating the density of subsurface rocks
- 4- Compensation depth of mountain in the inner mantle depends on:
 - a- Elevation of the mountain
 - b- Density of rocks building the mountain
 - c- Viscosity of the inner mantel materials
- 5- If the crust has no lateral variation in density, which of the following can be accepted?
 - a- $g_{\text{observed}} = g_{\text{theoretical}}$
 - b- $g_{\text{observed}} \neq g_{\text{theoretical}}$
 - c- $g_{\text{observed}} > g_{\text{theoretical}}$
- 6- The depth of investigation by applying gravity or magnetic methods depends on:-
 - a- Distance between stations
 - b- Distance between base station and measuring stations
 - c- Kind of buried geologic features

III- what the differences between only five of the following: - 20 Marks (4 Marks each)

- 1- Positive and negative gravity anomalies
- 2- Absolute and relative gravity.
- 3- Free air and Bouguer corrections of gravity measurements.
- 4- Gravity and magnetic earth fields
- 5- Regional and residual gravity or magnetic anomalies
- 6- Passive and direct electric methods

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

Assiut University
Faculty of Science
Department of Geology



Date: May 2018
Time allowed: 2 Hours

Final exam

Subject: Fundamental of Geophysics (G)
Name:

Students: second level all groups
Total 50 Marks

Transfer and answer the following questions in your answer notebook

I- Fill the missing answer in five only of the following:- 15 Marks (3 Marks each)

1- Geophysical methods are classified into active and passive methods or direct and indirect methods: -

a- The active methods depend onfor examples,
.....method, method and.....method.

b- The passive methods depend on for examples,
..... method, method and.....method.

2- Also the geophysical methods are classified based on the places of measurements into:-

a- b-.....

c- d-

e-

3- Qualitative interpretation of gravity and magnetic anomalies includes:-

a- b-

c- d-

4- Earth magnetic field includes five elements. These elements are: -

a-

b-

c-

d-

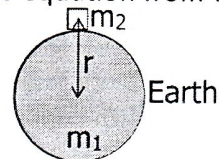
e-

5- The following figure represents the earth and m_2 is a point on its surface. If the mass of the earth is m_1 and its radius is r , write the equation from which gravity value at the point of mass m_2 is calculated.

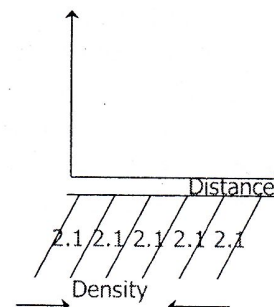
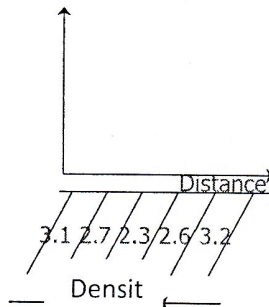
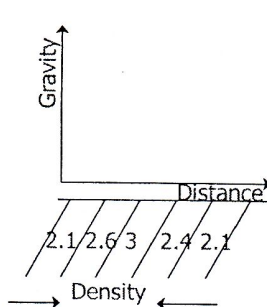
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6- The following figures representing density distribution of the subsurface rock blocks. Define with drawing which showing high gravity, low gravity and constant gravity.



E- Choose the correct answer of the following: (10 points)

1. A geographic coordinate system depends onas measuring units.
 - a. meters
 - b. feet
 - c. degrees
 - d. none of above
2. A polygon, a line, or a point that represents an object is a.....
 - a. map
 - b. surface
 - c. feature
 - d. raster
3. In UTM, the false Northing in the northern hemisphere is.....m.
 - a. 500000
 - b. 100000
 - c. 0
 - d. 999999
4. GPS heights are measured with respect to
 - a. The mean sea level
 - b. A reference ellipsoid
 - c. The geoid
 - d. The center of the earth
5. What is the basic component of a Raster?
 - a. A point
 - b. A line
 - c. A polygon
 - d. A cell
6. Cylindrical, Conical and Azimuthal are types of.....
 - a. Metadata
 - b. Spatial Data
 - c. Map Projections
 - d. Queries
7. A GIS system can directly capture the.....spatial data sets.
 - a. quantitative
 - b. qualitative
 - c. attribute
 - d. both a and b
8.defines the origin and orientation of latitude and longitude lines
 - a. Sphere
 - b. Projection
 - c. Datum
 - d. GPS
9. With a conformal projection, distortion of is minimized
 - a. distance
 - b. area
 - c. shape
 - d. direction
10. The information linked to the geographic features and describes them are.....
 - a. Analogue data
 - b. Metadata
 - c. Spatial data
 - d. Attribute data

End of Questions, Best wishes



Final Examination
2nd Level - Geology

May 2018	GIS (240G)	50 Points	Time: 2 Hours
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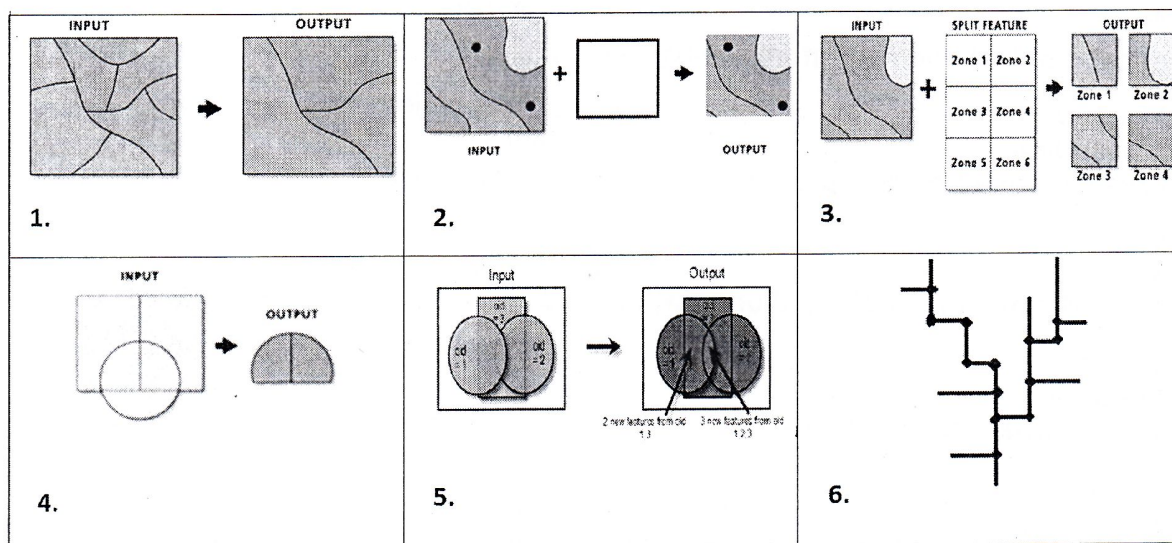
Support your answers with drawings when applicable
Answer the required questions only to save your time

A- Answer only two of the following questions..... (16 points)

- 1) Give detailed description on the classification of projection.
- 2) Describe the UTM Coordinate system.
- 3) Discuss in details the Raster and Vector models in GIS.

B- Answer the following question: (6 points)

Indicate the GIS functions that give the following processes



C- Answer only two of the following: (8 points)

- 1 Give five sources of data input for GIS
- 2 Compare between digital and analogue geospatial data
- 3 Compare between shapefiles and coverages

D- Define only five of the following:..... (10 points)

Topology

Metadata

Network

Geographic data model

Geodatabase

Geodesy

Answer the following Questions:

1. Define ONLY FIVE of the following:- (10 Marks)

Closed form – Prism – Special form – Crystal habit – Pinacoid – Dimetric crystals – Plane of symmetry

2. Write the Miller's indices and number of faces for ONLY FIVE of the following forms:- (5 Marks)

Tetragonal prism 1st order – Rhombic dodecahedron – Trisoctahedron – Hexagonal prism 2nd order – Orthorhombic bipyramid – Rhombohedron – a-dome

3. Draw stereograms for ONLY FIVE of the following forms and write their names:- (15 Marks)

- | | |
|--|---|
| a) { 101 } in orthorhombic system | e) { $10\bar{1}1$ } in hexagonal system |
| b) { 210 } in tetragonal system | f) { $10\bar{1}1$ } in trigonal system |
| c) { 110 } in cubic system | g) { 111 } in cubic system |
| d) { $11\bar{2}1$ } in trigonal system | |

4. Define ONLY SIX of the following: (12 Marks)

Twinkling – Pleochroism – Extinction – Interference colours – Indicatrix – Optic sign – Double refraction – Isotropism

5. A crystal having the two refractive indices: ordinary 1.55 and extraordinary 1.64, it is required to write what is: (8 Marks)

- the crystal system,
- the shape of the indicatrix
- the optic sign
- the interference figure of a horizontal section

Good Luck, Prof.Dr. Wagih Bishara

يعقد الامتحان الشفهي عقب التحرير مباشرة بمكتب أ.د/ وجيه بشاره

Part 2: Origin of Species (25 marks)

Answer the following questions

1- Write briefly on Three Only of the following: (12 marks; 4 marks each)

- A- Causes of species extinction.
- B- Random sampling.
- C- Differentiate between the Shannon-Wiener index and Brillouin index.
- D- Evidence of evolution.

2- Define Four Only of the following: (8 marks; 2 marks each)

- A- Deductive statistics, B- Allopatric speciation, C- Genetic drift, D- Species,
- E- Statistical population, F- Macroevolution.

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

- A- Characteristics of a population which differ from individual to another are called variables.
- B- Biological species concept defines a species as a set of organisms with a unique genetic history.
- C- Shannon index does not change with abundance, as long as the proportional abundance remains constant.
- D- According to Darwin's theory of evolution, species alive today are descended with modifications from common ancestors.
- E- Information-statistic indices are affected by both number of species and their evenness.

End of Part Two

Examiner: Dr. Amr S. Deaf

Good Luck

Geology Department Faculty of Science Assiut University		قسم الجيولوجيا كلية العلوم جامعة أسيوط
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Second Semester Final Examination
Geology Students, 2nd Level
(Vertebrate Paleontology and Origin of Species)

May 2018	G 216	50 Marks	Time: 2 hours
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PART ONE (VERTEBRATE PALEONTOLOGY)

First Question (5marks).

Write on Two only from the following:

- 1- The origin of birds.
- 2- Anatomical features that characterize phylum Chordata.
- 3- The main subclass of Reptiles.
- 4- The age and the importance of Conodonts.

Second Question (5marks)

Give the correct age for the given species

- | | |
|-----------------------|-------------------------------|
| 1- <i>Phororacids</i> | 2- <i>Pterosaurs</i> |
| 3- <i>plesiosaur</i> | 4- <i>Ichthyornithiformes</i> |
| 5- <i>Eryops</i> | |

Third Question (10marks)

Write on the following:

- 1- The transition of the early Amphibian from water to land was not easy task, explain and how Amphibians face these difficulties?
- 2- The characteristics of *Tiktaalik roseae* and its age.
- 3- Different theories about the extinction of dinosaurs.
- 4- Evolution of jaw in jawed fishes.

Fourth Question (5marks)

Choose the correct answer:

- 1- The first jawed fish oils.....

a. Placodermi	b. Osteostraci	c. Conodonts
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- 2- Synspondyli have a well specialized teeth than Mammals

a. Right	b. Fals
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- 3- *Diatryma* consider one of the Bipedal Carnivores of age

a. Eocene	b. Cretaceous	c. Pleistocene
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- 4- is one of the biggest dinosaurs ever found

a. <i>Triceratops</i>	b. <i>Stegosaurus</i>	c. <i>Brachiosaurus</i>	d. <i>Bahariasaurus ingens</i>
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- 5- The evolution of the early fish seem to have taken place during.....

a. Ordovician and Silurian	b. Devonian	c. late Carboniferous
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Examiner: Dr. Amr Abdel Sabour