Mansoura University
Faculty of Science
Geology Department

جامعة المنصوره
كلية العلوم
قسم الجيولوجيا

Magnetic Prospecting Final Exam (3rd level Geophysics) 2014/2015

طرق التنقيب االمغناطيسيه جف ٣٠٨ (المستوى الثالث برنامج الجيوفيزياء) 2014/12/25

Time: 2 hours

Answer the Following Questions (Total marks 60)

1- Define of the following: (10 marks)

a- Magnetic anomaly is due to sum of ----------and ---------- magnetization.

b- Magnetic susceptibility of igneous rocks is ---------- than sedimentary rocks.

c- Intensity I of magnetization depends upon ----------, ---------- and ----------.

d- Magnetic methods usually used to explore for ----------, ---------- and ----------

e- In diamagnetic materials all electron shells are ---------- and having ----------K.

f- Gradiometer measures ---------- and ----------gradient of the earth's magnetic field.

2- Choose (Yes or No) and correct the wrong: (10 marks)

a- More than 95% of earth magnetic field is of internal origin.

b- Shape of the magnetic anomaly changes with depth.

c- Magnetization of rocks increases with decreasing magnetite contents.

d- Remnant magnetization not affects magnetic anomalies.

e- Magnetic susceptibility greatly affects amplitude of the magnetic anomalies

f- Geomagnetic maps show periodically elements of the earth's magnetic field

g- Diurnal variation correction is for secular variations.

h- Remnant magnetization gives information about the induced earth's magnetic field.

i- Curi temperature is the degree at which minerals attain magnetization.

j- Magnetic method is a potential geophysical method.

3- Mention the reasons for the following: (20 mark)

a- Interpretation of magnetic anomalies is more complex than gravity.

b- In magnetic, time of measurements at the base station is shorter than gravity.

c- Magnetic survey is usually used for detecting subsurface basement and sedimentary basins.

d- Proton magnetometer is more than fluxgate magnetometer.

4- Write on the following: (20 mark)

a. Corrections of the magnetic measurements.

b. Airborne magnetic field survey.

c. Factors affecting shape of the magnetic anomalies.

d. Hysteresis loop and it importance.

Best Wishes

Prof. Dr. Hosni Ghazala Prof. Salah Naser Ayad Prof. Adel Genidi. Dr.Shaaban Mashal*

المستوى الثالث - جيوفيزياء - مبادئ الجيولوجيا الاقتصادية ج ٣١٥

Mansoura University
Faculty of Science
Geology Department
Time : 2 hours
Full Mark: 60 degree

First Term Exam (January 2014)
Third Level (Geophysic Program)
Subject: G-315 (Economic Geology)
Date: 29-12-2014

Answer the Following Questions:-

<u>Question One</u> : Write short notes with examples of ore minerals **(20 Degree)**

1- Concentration by hydrothermal solution.
2- Mineral deposits of surface origin.
3- What happened in metamorphism, weathering and metasomatic replacement.
4- Gaseous and vapour mineral deposits.
5- Concentration by sedimentation processes.

<u>Question One:</u> Give a suitable term for these sentences **(20 Degree)**

1- Less soluble minerals separated first then followed by the most soluble.
2- Rocks and ores slowly dissolved and different metal is deposited.
3- Ore minerals are formed later than the surrounding rocks.
4- Useless minerals occur within the ore.
5- Least ratio of metal in the ore.
6- Conditions sometimes suitable for forming mineral deposits.
7- Geological body from which metal extracted.
8- Content of metal in the ore.
9- Arrangement of metal ores in zones around igneous intrusion.
10- Ranges of uses from the ore.

<u>Question Three</u> : Write briefly (answer <u>five only</u>): **(20 Degree)**

1- Methods of formation of mineral deposits.
2- Cavity filling and metasomatic replacement deposits.
3- Iron ore deposits can be formed by different ways.
4- Role of volatile constituents in the residual solution.
5- Factors controlling contact metamorphism and metasomatic deposits.
6- Differentiate between the different kinds of iron ore deposits in the field.
7- Factors controlling deposition of carbonates in sea water.
8- Causes of magmatic differentiation.

<u>Exam Committee:</u>

*Prof. Dr. Amin Gheith** *Prof. Dr. Salah ayad* *Dr. Ghalib Essa* *Dr. Mohamed Awad*

Mansoura University Faculty of Science Physics Department Subject: Physics		First Term third Year :Geo-Physics Date :Dec 29th 2014 Time allowed : 2 hours
Course (s): Elasticity & Fluid Mechanics **phy332**		Full Mark:: 60Mark

Answer THE FOLLOWING Questions: Each Question (15) Marks

[1] a- - Define the following terms: i –Body forces. ii – Fatigue of metals. Iii – Stiffness of a shaft. iv – Poisson's ratio. v – Bulk modulus. Vi –Flow rate. Vii- Nonviscous fluid. **[7] Marks**

b- A solid brass sphere of volume **0.50 m^3** is located on air where pressure is **1x 10^5** Pa .The sphere is submerged in into the ocean to a depth where the pressure is **2x10^7** Pa. How much does this volume change? Bulk modulus of brass is **6.1x10^{10}** Pa **[8] Marks**

[2] a- Illustrate ,how intrusions and extrusions can be formed on the surface of a metallic sample during cyclic stress . **[6]Marks**

b- A **500** mm long, **16** mm diameter metallic rod. When subjected to **12x10^3** N load, its length increases by 0.3 mm and its diameter decreases by **0.0024** mm. Determine its modulus of elasticity and its Poisson's ratio. **[9] Marks**

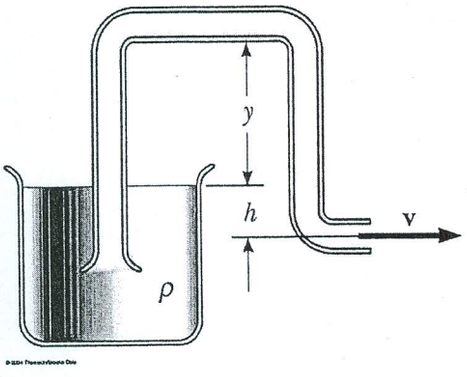
[3] a- - Derive the relation between the Bulk modulus (B) and the modulus of Elasticity (Y) and Poisson's ratio (ν). **[7] Marks**

b- A pipe has a diameter of **16** cm at point **1** where the pressure is **200 x 10^3** Pa, and **10** cm at point **2** that is **6** meter higher than point **1**. When oil of density **800** kg/m^3 flow a in this pipe at a rate of **0.03** m^3 /s. Find the pressure at point 2. **[8] Marks**

[4] a- Prove that the product of the area (**A**) and the speed (**V**) at all points along a pipe is constant for an incompressible fluid. **[7] Marks**

b- A siphon is used to drain water from a tank, as illustrated in Figure. The siphon has a uniform diameter. Assume steady flow without friction. If the distance h = 1.00 m, find the speed of outflow at the end of the siphon. **[8] Marks**

ρ water = 10^3 Kg/m^3



Examiners: 1- Dr. Nabil Kinawy **2- Dr. Mohamed Mansour**

ع. ٣٠٥ - جيولوجيا حقلية ومساحة

MANSOURA UNIVERSITY
Faculty of Science
Geology Department
Mansoura-EGYPT

Date: January 15, **2015**
First semester –Academic Year **2014/2015**
Full Mark: **60**
Time allowed: **2** Hours

إمتحان دور يناير 2015 مادة الجيولوجيا الحقلية (GEO 305) المستوى الثالث جيوفيزياء
أجب عن جميع الأسئلة الآتية

Q1. Write on the followings; *Support your answer with drawings wherever needed*: (40 marks)

1- Derive equations that calculate layer dimensions (true, apparent and vertical thicknesses) in three different topographic settings.
2- The V-rule about exposure patterns around a valley.
3- The Fault parameters (fault throw, stratigraphic throw, heave, offset and strike separation) on maps and cross sections.
4- Exposures patterns of non-plunging, plunging and doubly plunging anticline and syncline in maps and frontal and lateral cross-sectional views.
5- Advantages and disadvantages of aerial photographs and topographic maps as field tools.

Q2. Mark with Yes or No: (10 marks)

1- The axial plane of a doubly plunging fold plunges in two opposite directions.
2- Plunging folds show curved outcrops on leveled earth's surface.
3- The clinometer is used to determine bearing direction.
4- Attitude of a horizontal line represent trend of strike of a plane.
5- The vertical and strike separation are synonymous.
6- Curved strike contours indicate a fold with a plunging axis.
7- Oldest exposures on uplifted blocks juxtapose younger ones on the downthrown block across a fault.
8- Layers are younger up-dip if the sequence is inverted.
9- Omission of stratigraphic units indicates reverse fault.
10- The N30°E,20°NW represent attitude of a fold axis.

Q3. Chose the right answer: (10 marks)

1- Strike line is a line of intersection of .....
   a) two vertical planes.
   b) two horizontal planes.
   c) horizontal plane with a vertical or an inclined one.
   d) (a) and (b).

2- The ....(i).... is the angle between ....(ii).....
   a) (i) pitch & (ii) a line and its projection.
   b) (i) plunge & (ii) a line and its projection.
   c) (i) true dip & (ii) a line and strike of a plane containing it.
   d) (a) and (b).

3- Exposures are extended with no repetition as parallel lines; it means that the layers are.....
   a) surely vertical even the earth's surface is irregular (i.e. it does not develop a V-pattern across a valley).
   b) may be inclined surface if the earth's surface is leveled.
   c) (a) and (b)
   d) irrelevant choices.

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4- Exposures are repeated on maps one side is a mirror image of the other side, it means that .....

a) the mirror occurs on the axial trace of a fold.
b) the sequence is faulted.
c) (a) and (b)
d) irrelevant choices

5- Exposures of a stratified sequence attitude horizontally on a sloping topography, it means that the layers....

a) may be inclined
b) may be horizontal
c) may be vertical
d) all of the above

6- An axial plane of a non-plunging cylindrical fold dips 50° in the direction of 250°, then the fold axis .....

a) trends 050°
b) trends N20°W
c) trends 20°NW
d) (a) and (b)

7- From the item No. 4, the axial trace .....

a) is horizontal if the earth's surface is leveled.
b) plunges 250°/50° if the earth's surface is leveled.
c) (a) and (b).
d) irrelevant choices.

8- The exposures of fold limbs converge NW on the axial trace, mean that .....

a) the fold is a plunging anticline if its hinge line plunges NW.
b) the fold is a plunging syncline if its hinge plunges SE.
c) (a) and (b).
d) The fold is non-plunging.

9- The attitude of a strike line of a plane is 030°/30°, means that .....

a) the represented plane dips 30° in direction 030°.
b) the represented plane dips N30°E/30°.
c) (a) and (b).
d) irrelevant choices.

10- A line pitches 30°NW means that .....

a) the apparent dip is 30° due NW if the plane is vertical.
b) the apparent dip is 30°due NW if the plane is inclined.
c) the apparent dip is 30°due NW if the plane is horizontal.
d) irrelevant choices.

Examiners: Prof. Adam El-Shahat; Prof. Mahmoud El Sherbini; Dr. Ghaleb Essa; **Dr. Ahmed Shalaby***

٣ جيوفيزياء - جيولوجيا تحت سطحية (ج ٣١٧)

Mansoura University
Faulty of Science
Department of Geology
El Mansoura - Egypt

Date: January 05, 2015
Final semester – Academic year 2014/2015
3rd Program Geophysics
Full Marks: 80 marks
Time allowed: 2 hrs

Final Exam in Subsurface Geology (G317)

Answer the following questions

Q1. Complete the following **(10 Marks)**

a. The main purpose of subsurface geology is to get the .....

b. A well log is a ..... made ..... or after the .....

c. Correlation may be ..... or .....

d. The different methods of correlation are ....., ... and .....

e. Pure scientific value of subsurface geology is one of ....., it includes 1) ....., 2) ....., 3) ..... and 4) .....

Q2. Write short notes on the following: **(30 Marks)**

a. Prospecting and exploration of economic deposits (8 Marks)

b. Information needed for subsurface evaluation (8 Marks),

c. Correlation and its purposes (8 Marks),

d. Facies (6 Marks)

Q3. Comment on each of the following **(20 Marks)**

a. The geophysical methods considered as one of the sources of subsurface data (7 Marks)

b. The pure scientific value of subsurface geology involves any geologic knowledge about the subsurface (7 Marks)

c. Factors affecting distribution, frequency and mobility of elements (6 Marks)

All the best

لجنة الامتحان والتصحيح:
أ.د./ محمود قورة أ.د. محمود الشربيني د. فريد مكروم د./ غالب عيسى*

٣ جيوفيزياء - تحليل عددى (٣٠٣ر)

Level: 3 Program: Geophysics Numerical Analysis (303ر)	Faculty of Science Mathematics Department	1st Semester Time:2 hour Date: 1/1/2015

Answer the following Questions:

Question (1)

(1) Derive Newton-Raphson method, and use it to find an approximation to $\sqrt[3]{25}$ correct to within 10^{-3}. (10 Marks)

(2) Define Lipschitz condition. Show that the following initial-value problem has a unique solution. Use Runge-Kutta method of order four to approximate it.

$$y' = y - t^2 + 1, \quad 0 \le t \le 1, \quad y(0) = 0.5, \text{ with } h = 0.2$$ (10 Marks)

Question (2)

(1) State and prove under what condition(s) the function $g(x)$ has a unique fixed point in $[a, b]$. (10 Marks)

(2) Show that the sequence defined by

$$x_n = \frac{1}{2} x_{n-1} + \frac{1}{x_{n-1}}, \quad \text{for } n \ge 1,$$ (10 Marks)

converges to $\sqrt{2}$ whenever $x_0 > \sqrt{2}$

Question (3)

(1) State and derive Newton Divided-Difference Formula. (5 Marks)

(2) By using the following data (5 Marks)

x	1	1.05	1.1	1.15	1.2
f(x)	0.1924	0.2414	0.2933	0.3492	0.3943

Find an approximate value for

(a) $f(1.01), f(1.09), f(1.18),$ (10 Marks)

(b) $f'(1.1)$, using 3 and 5-point formula (10 Marks)

(c) $\int_1^{1.2} f(x)\,dx, \quad n = 3, 4.$ (10 Marks)

Best Wishes; *Dr. Tamer Mohamed El-Azab*

٣ جيوفيزياء - جيولوجيا البترول ج ٣١٨

Mansoura University
Faulty of Science
Department of Geology
Mansoura - Egypt

Date: January 22, 2015
Final semester – Academic year 2014/2015
3rd Program Geophysics
Full Marks: 80 marks
Time allowed: 2 hrs

Final Exam in Petroleum Geology (G318)

Answer the following questions

Q1. Complete the following **(25 Marks)**

a. Compaction is the main cause of ..... migration, whereas gravity ..... and ..... are the primary causes of secondary .....

b. Keogen is a term applied to the organic constituents of sedimentary rocks which are ..... in organic or alkaline .....

c. Oil shales considered as a form of ..... occurrence of petroleum, they are neither ..... nor ....., but rather and intermediate ..... material.

d. Primary stratigraphic traps are those with permeability produced during ..... such as ....., ... and .....

e. Secondary stratigraphic traps are those with permeability produced after ..... and they are divided into 1) ..... and 2) .....

Q2. Write on each of the following: **(25 Marks)**

a. Zones of coats (6 Marks)

b. The role of groundwater for oil accumulation (7 Marks),

c. Photosynthesis (6 Marks),

d. Solid petroleum occurrences (6 Marks)

Q3. Discuss each of the following **(30 Marks)**

a. Origin of petroleum (10 Marks)

b. Migration of petroleum (10 Marks)

c. Traps produced due to vertical movements (10 Marks)

All the best

لجنة الامتحان والتصحيح:
أ.د./ آدم الشحات أ.د. حمدي صيصة د. غالب عيسى* د./ حمدي سراج

Mansoura University
Faulty of Science
Department of Geology

Date: January, 12, 2015
Time: 2 hours
Full Marks: 60 marks

1st term Exam in Seismic Exploration (جف ٣٠٣)

Answer the Following Questions

First Question **(25 Marks)**

1- What is static correction? How is calculated? Why is it important?
(10 Marks)

2- Define each of the following: **(15 Marks, 3 for each)**

a) Ground roll corresponding to P waves
b) Head waves
c) Diving waves and boundary discontinuity
d) Reciprocity and reciprocal time
e) Spilt-spread shooting in shallow refraction seismic measurements

Second Question **(20 Marks, 5 for each)**

a) What are the information do you need to determine depth to the first interface?
b) Why reversed profiling is important in shallow refraction seismic shooting?
c) What are reflection and transmission coefficients?
d) Why is Snell's law important in seismic investigations?

Third Question **(15 Marks)**

Do as shown in brackets

a) Conversion of an oblique incident P wave at an interface with two different velocities when $V_2 > V_1$ (**Graphically only,** 3 Marks)

b) Situations in which seismic refraction methods are not useful (**Comment**, 5 Marks)

c) Factors cause the amplitude to change as wave propagates are ... (1)..., ... (2)...., ... (3) ... and ...(4).. (**Complete**, 4 Marks)

c) What is geophone? Draw its main parts? How does it work? (**Answer**, 3 Marks)

المصححون:

ا.د/حمدى صيصه* – ا.د/ابراهيم كرات – د./أحمد الجلادى – د./ وليد شكرى