المستوى الثالث - جيوفيزياء - تحليل عددى

المستوى: الثالث البرنامج: جيوفيزياء المقرر: تحليل عددى	كلية العلوم – قسم الرياضيات	دور : يناير ٢٠١١ الزمن : ساعتان التاريخ : ١٧ /١/ ٢٠١١

Answer the following questions **(each question 20 marks)**

[1]-a) Use Newton's method to find an approximation to a $\sqrt[2]{3}$ accurate to within 10^{-4}. **(8 marks)**

b) Show that the initial value problem $y' = 1 + \frac{y}{t}$, $1 \le t \le 2$, $y(1) = 2$ has a unique solution, then use Euler's method with h = 0.5 to approximate it. **(12 marks)**

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[2]-a) Solve the following linear system using L U factorization **(12 marks)**

$$3x_1 - x_2 + 2x_3 = 12,\quad x_1 + 2x_2 + 3x_3 = 11,\quad 2x_1 - 2x_2 - x_3 = 2$$

b) Derive Simpson's rule for evaluating $\int_a^b f(x)dx$. **(8 marks)**

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[3]-a) Approximate f(0.9) if **(10 marks)**

f(0.6) = -0.177 , f(0.7) = 0.014,
f(0.8) = 0.224 , f(1.0) = 0.658.

b) Use all appropriate formulas to approximate $f'(0.6)$ for the following data **(10 marks)**

X	0.2	0.4	0.6	0.8	1.0
F(x)	0.98	0.92	0.81	0.64	0.38

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[4]-a) Find an approximate value of the fixed point of the function $g(x) = x - \frac{x^3 + 4x^2 - 10}{3x^2 + 8x}$, in [1, 2]. **(8 marks)**

b) For the data in this table approximate f(0.05) using the Newton forward divided-difference formula and f(0.65) using the Newton backward divided – difference formula **(12 marks)**

X	0.0	0.2	0.4	0.6	0.8
F(x)	1.00	1.22	1.49	1.82	2.23

مع أطيب التمنيات بالنجاح

د. سامية أبوعوض

Mansoura University
Faculty of Science
Geology Department

First Term Exam (January 2011)
Third Level (Geophysic Programme)
Subject: G-315 (Economic Geology)
Date: 24-1-2011 Time: 2 hours
Full Mark: 60 degree

Answer the Following Questions:

Question One: 15 degree

(I) Give terms used: (5 degrees)

a)Minerals point to the degree of temperature that have been formed in ancient time.

b)Minerals can be crystallize according to its ability for solublization in hot solution.

c)Rocks and ores slowly dissolved and different metal is deposited in the spaces that occupied.

d)Ore deposits are younger than the country rocks.

e)Alteration products of younger ore deposits as a result of weathering.

(II) Give examples: (10 degrees)

(a)Some metals extracted from the ore as secondary product in addition to the primary metal.

(b)Paragenesis of sulphides.

(c)Gangue minerals.

(d)Syngenetic deposits.

(e)Metallogenic provinces and epochs.

Question Two: Mention only: 15 degree

(a)Methods of formation of mineral deposits.

(b)Mineral zonation around igneous intrusions.

(c)A mineral deposit can be formed by different ways.

(d)Elements tends to occur in acidic igneous and basic igneous rocks.

(e)Epigenetic igneous and sedimentary mineral deposits.

Question Three: Give short notes: 15 degree

(A)Primary hydrothermal solution and types of mineral deposits.

(B)Concentration of mineral deposits by surface water. (give examples).

Question Four: Define and give examples: 15 Degree

(a)Contact metasomatic replacement deposits and factors controlling them.

(b)Residual mineral deposits.

(c)Concentration of mineral deposits by sedimentation processes.

With my Best Wishes

Exam Committee:

Prof. Dr. Amin Gheith* *Prof.Dr. Abd Elkadr Zalata* *Prof.Dr.Salah Ayad* *Dr. Mohamed Awad*

المستوى الثالث صيوفيزياء
جيوفيزيا تحت السطحية (ج ٣١٧)

Mansoura University
Faculty of Science
Geology Department

Date: 19/1/2011
Time: 2 hours

Final Term Exam.
Subject: Subsurface Geology
3rd Level, Geophysical Program

Code: G 317
Full marks: 60 marks

Answer the Following Questions

1- Write short notes on each of the following: (20 marks)

a- Definition of the subsurface geology. (5 marks)

b- Pure scientific importance of subsurface geology. (5 marks)

c- Information needed for subsurface evaluation. (5 marks)

d- The main categories of geophysical exploration methods. (5 marks)

2- Give an account on each of the following (20 marks)

a- Geochemical exploration methods. (6 marks)

b- Lithologic correlation. (7 marks)

c- Definition of "Facies" and its nature. (7 marks)

3- Write on the following: (20 marks)

a- Economic importance of subsurface geology. (7 marks)

b- Drilling methods as a source of subsurface geologic data. (6 marks)

c- Construction purposes of subsurface geology. (7 marks)

لجنة التصحيح:
أ.د. محمد عابد إ. د. محمود الشربينى د. عبد القادر زلطة د. غالب عيسى*

المستوى الثالث - الجيوفيزياء - جيولوجيا البترول (G 318)

Mansoura University
Faculty of Science
Geology Department

Date: 22/1/2011
Time: 2 hours

Final Term Exam.
Subject: Petroleum Geology
3rd Level, Geophysical Program

Code: G 318
Full marks: 80 marks

Answer the Following Questions

1- Complete the following: (20 marks)

a- Solid petroleum occurrences appear in the form of ..... (4 marks)

b- The basic prerequisite for Photosynthesis is ..... (4 marks)

c- Differences in the composition and properties of petroleum are attributed to differences in the ..... (4 marks)

d- The heavy oil occurs as ..... surrounding sand grains and it is too viscous to ..... (4 marks)

e- Vertical movements that originate folds are either due to ..... (4 marks)

2- Write briefly on each of the following: (30 marks)

a- The rule of ground water for oil accumulation. (10 marks)

b- Conditions of genesis of hydrocarbon. (10 marks)

c- Migration of petroleum. (10 marks)

3- Give short notes on each of the following: (30 marks)

a- Active petroleum surface occurrences. (8 marks)

b- Zones of coats. (7 marks)

c- Function of bacteria in oil formation. (8 marks)

d- Kerogen shale. (7 marks)

لجنة التصحيح:
أ.د. محمد عابد إ. د. آدم الشحات د. حمدى الصيصة د. غالب عيسى*

المستوى الثالث - جيوفيزياء - جيولوجية تطبيقية وحماية

Mansoura University
Faculty of Science
Geology Department

Date: 15/1/2011
Time: 2 hours

Final Exam.
Subject: FIELD GEOLOGY
3rd level Students of Geophysics

Course: Geo 305
Full marks: 60 marks

Answer the Following Questions

Support your answer with suitable illustrations as can as possible

Q1. Mark with YES or NO: (10 marks; 1 mark per each)

1- Cut-off lines are exposures of a stratigraphic unit on a fault plane.
2- Cut-off lines are horizontal if an inclined layer faulted oblique to the fault plane.
3- The layers become younger in direction of dip if they exposed on an overturned section.
4- The axial plane of doubly plunging folds plunge in two directions.
5- Plunging folds show curved outcrops on leveled earth's surface.
6- Vertical angle is the angle between true dip and strike of a layer.
7- The clinometer is used to determine the bearing direction.
8- The graduated arc of Brunton compass is used to determine orientation of a line.
9- During sighting of an object above eye-level, reading orientation is taken from north pointer of compass needle.
10- The vertical and strike separations are synonymous.

Q2. Chose the correct answer: (10 marks; 1 mark per each)

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

2- Strike lines measure the attitude of.....
   a. linear objects.
   b. horizontal planes.
   c. a and b.
   d. inclined planes.

3- 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. a and b.
   d. (i) true dip & (ii) a line and strike of a plane containing it.

4- Attitude of an axial plane of a non-plunging cylindrical fold is 250°/50°, then the fold axis ....
   a. is oriented 050°.
   b. is oriented N20°W.
   c. a and b.
   d. is oriented 20°NW.

5- From the item No. 4 the axial trace .....
   a. is horizontal if the earth's surface is leveled.
   b. plunges 250°/50°.
   c. a and b.
   d. irrelevant choices.

إقلب الورقة (باقى الأسئلة فى الخلف)

6- The exposures of fold limbs converge on the axial trace, mean that.....
   a. the fold will be surely plunging if the earth's surface is rugged.
   b. the fold will be non-plunging if the earth's surface is leveled.
   c. a and b.
   d. irrelevant choices.

7- The exposure widths are different on both sides of an axial trace, means that..... if the earth's surface is leveled.
   a. the fold is symmetrical.
   b. the fold is asymmetrical.
   c. the fold limbs must dip in the same direction.
   d. b and c

8- Exposures are repeated on maps one side is a mirror image of the other side means that .....
   a. the mirror is on the axial trace of a fold.
   b. the mirror is on a fault trace.
   c. a and b.
   d. irrelevant choices.

9- If exposures of a stratified sequence occurred on a horizontal attitude on a vertical earth's cliff, the layers ..... attitude.
   a. may be inclined.
   b. may be horizontal.
   c. are vertical.
   d. a and b.

10- Exposures are extended with no repetition as parallel lines, mean that the layers are..
   a. surely vertical even so the earth's surface is irregular.
   b. may be inclined surface if the earth's surface is leveled.
   c. a and b.
   d. developed on non-plunging fold.

Q2. Answer the followings: (40 marks; 8 marks per each)

1- Drive equations that measure the layer dimensions.
2- Discuss the V-rule on exposure patterns around a valley.
3- Instructions of Brunton compass before field studies.
4- Explain the fault parameters can be measured on geologic maps and cross sections.
5- The exposure patterns for faulted folded terranes with traverse faults.

Regards

Examiners:
Prof. Adam El Shahaat
Prof. Abdel Kader Zalata
Prof. Mahmoud El Sherbini
Dr. Ahmed Shalaby*

جيوفيزيا - طرق التفسير السزمية

Geology Department — Level (3) جف ٣٠٣ — 1st term Exam 2011
Faculty of Science — Seismic Prospecting 1
Mansoura Uniuvesity — Date 10/01/2011

TIME ALLOWED 2 HOURS

Answer the following three questions

First Question — 20 Points (10 for each)

Write in details on each of the following:

a) Static corrections

b) Problems affecting seismic refraction method

Second Question — 20 Points (4 for each)

Write short answer on each of the following:

a) What are the acoustic impedance and the reflection coefficient?

b) Why must velocity increase with depth for a refraction survey to be successful?

c) How do travel-time curves of refraction shots taken in opposite directions indicate that a layer is dipping?

d) What do we measure in refraction seismology?

e) What are the different waves generated by a shot and recorded on a geophone?

Third Question
(a) Multiple Choice Questions — 10 Points (2.5 for each)

For each question below, choose the letter corresponding to the CORRECT answer.

1) *In P (primary) waves, the particles in a rock body move*

a) back and forth at right angles to the direction in which the wave travels.
b) back and forth parallel to the direction in which the wave travels.
c) in a circle like sea waves.
d) in an elliptical pattern.
e) at a 45-degree angle to the direction the wave travels.

2) *Seismic waves arrive in what order?*

a) P, S, Surface
b) Surface, S, P
c) S, P, Surface
d) S, Surface, P
e) Surface, P, S

3) ***P-Waves are also said to be _____________-_____________ waves***
a) north-south
b) side-side
c) up-down
d) push-pull
e) east-west

4) ***Which characteristics best describe S waves?***
a) first to arrive, push-pull waves, move through the Earth's interior
b) second to arrive, move through the Earth's mantle, will not move through a liquid
c) third to arrive, do not move through the Earth's interior
d) last to arrive, surface waves
e) refracted waves, orbital motion similar to sea waves, will not move through a liquid

3- (b) Complete Questions   10 Points

a) The intersection of the backward extrapolation of the traveltime with the time axis is known as...(1)... while the intersection of the forward extrapolation of the traveltime elements with the other time axis is defined as.. (2).....

b) ... (3)...states that the path taken between two points by a ray is the path that can be traversed in the least time.

c) ... (4).......... Is a surface wave, which propagates along the surface of the ground with a characteristically low frequency and low velocity, but with a relatively high amplitude

d) Critically refracted waves are also known as ...(5) or ....(6)

e) .... (7)....... describes either the amplitude or the intensity of a reflected wave relative to an incident wave.

f) ..... (8).... The distance on a seismic time-distance curve at which the travel times of the direct and refracted waves are the same.

g) Uphole survey is a technique in which seismic sources are found ... (9).... while geophones are located ... (10)....

With my best wishes
Hamdy Seisa

لجنة الممتحنين

أ.د. حمدي حامد صيصة
أ.د. محمد رفعت شريف
أ.د. أيمن [illegible]
د. رشيد الدماسطي

الأصل

Mansoura University Faculty of Science Geology Department First Term Exam 12/01/2011	Subject: Geophysics (3٠8) (كود المقرر(جف308 Course: طرق التنقيب المغناطيسية المستوى الثالث جيوفيزياء Time: 2 hours Full Mark: 60

هام: الإمتحان على صفحتين

Answer these <u>THREE</u> questions: (20 Marks for each question)

I- a) Complete the following: (10 Marks)

1- Quantitative interpretation of aeromagnetic map determines the …….. of ……..

2- Perceptibility is used to …….. between anomalies and depends on ……. of anomalies.

3- Schmidt-type magnetometer measures …….. component, while proton magnetometer measures …….. magnetic field.

4- Magnetic amplitude determines …….. magnetization, and with decreasing amplitude, the body becomes …….. from earth's surface.

5- In magnetic vertical plate, the …….. of anomaly is equal to its …….. distance.

6- Magnetic anomaly of …….. is usually ……..

7- The isolation of magnetic …….. is used as pipe shape (as thin volcanic neck).

8- Normal correction is due to …….. in magnitude and …….. of the earth's field from place to another.

9- Unknown parameter introduced by the direction of …….. in rocks is one of the …….. interpretation factors.

10- Dynamic theory of earth's magnetism is one of the most …….. theories in estimating ……..

b) Write briefly on FOUR of the following (illustrate with drawings): (10 Marks)

1- Qualitative interpretation of residual maps.
2- Magnetic effects of bodies of simple shapes.
3- Depth estimation by magnetic method.
4- Engineering applications by magnetic method.
5- Magnetic mapping of geological structures.

II- a) Answer with YES or NO: (10 Marks)

1- The average magnetic field intensity at the earth's surface is 5.0 oersted.
2- Magnetic minerals in the earth's crust has large density and it is much less to produce earth's magnetic field.
3- Presentation of reduced data profiles are not helpful for revealing faults and folds.
4- In direct search of magnetic bodies, the dip direction can be inferred from asymmetry of the magnetic profiles at right angle to the strike.
5- In magnetic profiles, the large amplitude of anomaly refers to high susceptibility.
6- Depth estimation methods are based on minimum slope and total slope parameters.
7- Magnetic gradient is useful when torsion balance data are compared with magnetic results.
8- Most magnetic surveys are designed to map structures on or within the basement.
9- Magnetic moment depends on shape and volume of magnetic body.

10- Intensity of magnetization is a gradient quantity having a direction parallel to the direction of magnetization.

b) Briefly illustrate FOUR of the following (Draw as possible):
(10 Marks)

1- Profile method of semi-quantitative interpretation.
2- Type of magnetic susceptibilities.
3- Specification of the earth's magnetic field.
4- Airborne surveys for regional geology and effect of height of flight path on the anomalies.
5- Using magnetic methods in petroleum exploration.

III- **a) Match between (A) and (B):** (10 Marks)

A	B
1- Perceptibility means level of	**1- bottom less vertical and sided prism.**
2- Resolution in magnetic method which appears on profile	**2- estimate magnitude and form of magnetic anomalies.**
3- In magnetic methods, it is possible to use	**3- the sharpness of the anomalies which are seen by the spacing.**
4- The parameters of horizontal slope which acts the fault can be obtained by	**4- indicate to magnetization.**
5- Magnetic amplitude of anomalies is used	**5- depth rule to crude estimate of depth to the top of dike-like body.**
6- Susceptibility contrast from the amplitude anomalies can be	**6- calculating the effect of the two distribution of magnetic poles.**
7- Magnetic map of basement indicate to	**7- explain characters as maximum anomaly and inflection point according reach body.**
8- In magnetic map, sided prism	**8- to determine magnetization contrast.**
9- Calculation of magnetic effects of some geometrical models help to	**9- background noise of anomaly.**
10- Estimate of the direction of magnetization can be made	**10- found by bottomless vertical and sided prism in magnetic map.**

b) Write briefly on FOUR only, illustrate with drawings: (10 Marks)

1- Why most magnetic surveys are designed to detect magnetic minerals directly.
2- Using aeromagnetic survey in mining exploration.
3- Computed methods of magnetic interpretation.
4- Quantitative interpretation by models.
5- Dipole magnetism and residual magnetic.

Prof. Dr. R. Shereef

لجنه التصحيح : أ.د. رفعت شريف* أ.د. عبد القادر زلطه د.شعبان مشعل د. حمدى سراج الدين

المستوى الثالث - جيوفيزياء - فيزياء الأرض والفضاء ف٢٢

Mansoura University Faculty of Science Physics Department Course Title: Elasticity and Fluid Mechanics (Phy. 332) Date: 26-1-2011		Jan. 2011 Exam Type: Final Third Level : (Geophysics) Time: 2 Hours Full Mark: 60 Mark

Answer the following questions:

1-a- Discuss the stages of creep? [7 Mark]

b- Write on the following:-

Fracture - elasticity - Fluid mechanics [8 Mark]

Stress- Strain curve [5 Mark]

2- a- Compared between elastic behavior and viscoelastic behavior? [7 Mark]

b- Mention the types of creep? [3Mark]

c- Write on the following:-

Types of Fatige- Deformation - Navier- Stokes equations [10 Mark]

3- a- Discuss the factors affecting on the fatigue life. [10 Mark]

b- Write on the following:-

Elastic moduli- Types of Fracture - Newtonian fluids [10 Mark]

Examiners

أ.د. أبوبكر البديوى أ. د. أحمد عرابى أ.د.محروص شاكر أ. د. أحمد الجريحى