المستوى الثالث - جيوفيزياء - فيزياء الحالة الصلبة (ف ٣٣٤)

Mansoura University Faculty of Science Physics Department	Geophysics, 3rd Level	Final examination, 2012-2013 Second semester May, 2013 Time: 2 hrs

Solid State Physics (Ph.334)

60 Marks

Answer the following Questions:		Marks
1.a)	A beam of X-ray of λ=0.96A is incident on NaCl crystal. Calculate the angle of the first-order Bragg's reflection from the plans (121), 101) and (100) if d (100) =2.86A.	5
b)	Study the powder X-ray diffraction method.	5
c)	What are the evidences upon the existence of line defects?	5
d)	Discuss the different types of atomic bonds in solid; give an example for each type.	5
2.a)	Discuss the temperature dependence of the diffusion coefficient	5
b)	Find the zone axes direction if the two planes have Miller indices $(12\bar{4})$ and $(11\bar{0})$ are in the zone.	5
c)	The atomic weight of iron is 55.85& its density is 7.86 gm/cm^3. Calculate the lattice constant of a unit cell, if iron has a body center cubic structure; Avogadro's number is 6.02×10^{23} atoms/ mole.	5
d)	Verify second Fick's law.	5
3.a)	Study in details one type of dislocations.	5
b)	Find the density of packing for B.C.C and S.C.	5
c)	In a unit cell of SC structure, find the angle between the normal to pair of plans whose Miller indices are (101) and (011).	5
d)	Prove that the perpendicular distance between adjacent members of the same family {hkl} in S.C = $a/\sqrt{h^2+k^2+l^2}$, where a - is the length of the cube edge.	5

With our Best wishes,

Examiners:	*Prof. Dr* H .Doweidar	*Dr. Safaa Abdel-Maksoud*

المستوى الثالث - جيوفيزياء

طرق التنقيب السزمي - ف ٢

Mansoura University
Faulty of Science
Department of Geology

Date: May, 30 2013
Time: 2 hours
Full Marks: 60 marks

2nd term Exam in Seismic Exploration (جف ٣٠٤)

Answer the Following *THREE* Questions

First Question (20 marks, 2 for each)

Rewrite the following sentences after doing the required corrections (IF EXSIST)

1- The *Root Mean Square (RMS)* velocity is greater than the average velocity

2- Dix's equation is used to convert interval velocity to RMS velocity

3- Zero offset two way time value is usually higher than the intercept time

4- Muting means the improve of selected seismic traces in a stack to maximize early arriving noises

5- Niyquist frequency can be recovered from sampled data is double of sample period

6- In case of a dipping reflector, the reflected rays are collected at the same point in downward directions

7- Notch filter allows seismic signals with high amplitude to pass from it.

8- The average seismic velocity is the distance traveled by a seismic wave from source to some points the earth divided by the half of the recoded time

9- A reflection coefficient of, for example, 0.6 implies that 40% of the energy reaching a reflecting interface is passed through the interface The remaining 60% of the energy is returned towards the surface.

10- The mis-representation of high amplitudes in sampled data is known as aliasing

المصححون:
أ.د./ حمدى صيصه * – أ.د/ محمد رفعت– د. وليد شكرى – د. فريد مكروم

Second Question (20 marks 10 for each)

Answer the following questions

1- What is migration of seismic data? Show the effect of it on different geological structures? Why time migration is less effective than depth migration in case of lateral variations?

2- What is static correction? How can you calculate it? Why is it important for reflection seismic data?

Third Question (20 marks 5 for each)

Write short notes on each of the following

a) Dip Move Out (DMO) correction
b) Normal Move Out (NMO) velocity
c) Common Mid Point (CMP) technique
d) Stacking of seismic data

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المستوى الثالث - جيوفيزيا - إحصاء تطبيقي (٢٠١٣)

Mansoura University Faculty of Science Mathematics Department Subject: Applied statistics (R 302)		Exam: June 2013 Third Year Geophysics Date : 3 – 6 - 2013 Time allowed :2 hours

Answer the following questions

1- a - The following table shows the weights of students (21 Marks)

weights	6 - 10	11 – 15	16 - 20	21 - 25	26 - 30	31 - 35
No. of students	9	3	10	8	12	8

Find i) median ii) standard deviation iii- mode

b- Find the coefficient of variation for the following data : (9 Marks)

8, 5, 4, 12, 15, 5,7, 9, 13.

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2 - a- If X is a random variable has the density function (10 Marks)

$$f(x) = ce^{-|x|} \quad , \; -\infty < x < \infty$$

Find i) constant c. ii) P(-2 < X < 5), P(X = 2), P(X > 3) .

iii) the variance.

b- Suppose 2.5% of the people on the average are left handed. Find

i) the probability at least four are left handed among 200 people.

ii) the mean and the variance. (10 Marks)

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[3] a- A random sample of 100 patients is selected and treated by a new drug for AIDS after 8 weeks, 20 of them show signs of improvement. Find 99% confidence interval for the proportion of all patients treated by this new drug and show improvement after 8 weeks. (10 Marks)

b- The weights of 8 boxes of dog food are 10.2, 9.7, 10.3, 10, 10.1, 9.9, 10.3 and 9.8 ounces. Find 95% confidence interval for the mean of all such boxes of dog food. Assume an approximate normal distribution. (10 Marks)

c- A sample of size 64 is drawn from a population with $\mu = 3.2$ and $\sigma^2 = 2.56$. Find the probability that the sample mean will be

i) more than 3.5 ii) less than 2.7 (10 Marks)

$Z_{0.025} = 1.96$, $Z_{0.005} =$, $t_{7,\,0.025} = 2.365$, $t_{8,\,0.025} = 2.306$, $\phi(1.5) = 0.933$, $\phi(2.5) = 0.994$

With my best wishes Dr. Noura Fakhry

المستوى الثالث - جيوفيزياء - مغناطيسية قديمة جف ٣٠٥

Mansoura University
Faculty of Science
Geology Department

جامعة المنصوره
كلية العلوم
قسم الجيولوجيا

Paleomagnetic Final Exam (Third level Geophysics)

االمغناطيسيه القديمه جف ٣٠٥ (المستوى الثالث برنامج الجيوفيزياء) الإثنين ٢٠١٣/٦/٣

الزمن : ساعاتان

Answer the Following Questions (Total mark 60)

1- Write briefly on the following: (20 mark)

a) Sampling collection scheme
b) Stability test for NRM
c) Major applications of paleomagentic measurements
d) Classifications of the magnetic minerals

2- Write the correct form of the following: (20 mark

a) The geologic compass is used for rock sampling.
b) The pattern of magnetic reversals is regular and periodic.
c) Magnetic susceptibility of rocks based on intensity of the earth's magnetic field.
d) Wulff stereographic projection is usually used for presentation of Is and Ds
e) Magnetic susceptibility is measured at very high fields usually exceeding 0.5 mT (millitesla)
f) The VRM occurs when igneous rock solidifies and cools below the TC.
g) Koenigsberger Ratio Q of younger volcanics usually less than older volcanics.
h) In paleomagnetic we determine the D and I of present earth' magnetic field
i) Demagnetization destroys the primary NRM
j) Repetition of the magnetic anomaly peaks above sea floor spreading is due to induced earth' magnetic field.

3- Compare between the following: (20 mark)

a) Alternating field and thermal cleaning of the rock samples
b) Secular variations and magnetic polarity reversal
c) Secondary and primary remanent magnetization
d) Geomagnetic and geologic time scale
e) SQUID and Spinner magnetometer

Best Wishes

Prof. Hosni Ghazala Prof. Ibrahim Korat Prof. Hamdy Seisa Dr. Hamdy Serag*

Final Exam in Advanced Stratigraphy (G303)
Academic year: 2012-2013
Date: 6/6/2013

3rd Level (Geology & Geophysics students)
Time Allowed: 2 hours
Full mark: 60 marks

Answer ALL the following questions

Question One (15 marks)

Complete the missing parts

1.Coastlines are.....of.....models, representing the link between the .....and.....of the basin.

2.The applications of sequence stratigraphy range widely, from.....for....., ..., and....., to improved understanding of.....of local to global changes.

3.Time control may generally be achieved by means of.....,.....,....., or by the mapping of .....

4.The base level is.....during.....relative to its position during.....

5.The depositional sequence uses the.....and its.....as a composite sequence boundary whereas genetic stratigraphic sequence uses.....as a sequence boundary.

6.Fluvial sequences show overall.....that reflect.....in an .....environment. Sequence boundaries in fluvial successions are.....at the base of the.....

7.Four main events associated with changes in depositional trends are recorded during a complete cycle of base level shifts.....,.....,.....,.....

8.Diastem is.....whereas conformity is.....

9.Basal surface of forced regression is used to define.....that accumulate in the..... environment during the.....of the.....

10.Subaerial unconformities may also be identified by the presence of.....that replace some of the original.....via processes of.....under subaerial conditions.

Question Two (15 marks)

Compare between each pair of the following (illustrate with drawings if it is possible)

1.Tectonic setting of a retroarc foreland system and a divergent continental margin.
2.Forced regression and normal regression.
3.Lowstand systems tract and transgressive systems tract.
4.Paraconformity and disconformity.
5.Sequence stratigraphy and lithostratigraphy.
6.Type 1 and type 2 sequence boundary.
7.Second order and third order depositional sequences.

Question Three (15 marks)

Tick (✓) or (X) and correct

1.Downstream-controlled fluvial systems are part of standard lowstand–transgressive–highstand systems tracts. ( )
2.Biostratigraphic determinations may provide resolutions of 4, 8, and 10 Ma. ( )
3.The actual distance between base level and sea level depends on rate of subsidence. ( )
4.The genetic stratigraphic sequence is subdivided into highstand, lowstand, and transgressive systems tracts. ( )
5.Sequence stratigraphy determines both process of sedimentary rock formation and correlation. ( )
6.Paleosols have been described from an entire range of nonmarine settings. ( )

7.Trace fossils are not sensitive to water energy, salinity, oxygen levels, and sedimentation rates. ( )

8.End of transgression marks a change in the direction of shoreline shift from regression to transgression. ( )

9.The highstand systems tract is bounded by the basal surface of marine regression at the base and by subaerial unconformity at the top. ( )

10.The transgressive–regressive sequence is bounded by subaerial unconformities on the basin margin and the marine portion of maximum regressive surfaces farther seaward. ( )

Question Four (15 marks)

A) Write briefly on

1. Economic potential of highstand systems tract.
2. Genetic stratigraphic sequence.
3. Base level.
4. Maximum flooding surface.
5. Geological applications of pedology.

B) Do as shown

1. Why sequence stratigraphy is important in the prediction of facies?
2. What are the roles of eustatic control on sedimentation?
3. Define Walter's law.
4. How can you determine a sequence boundary?
5. Why sediment supply is a by-product of climate and tectonism?

With best wishes
Dr. Tarek Anan

القائمون بالتصحيح: أ.د. عبد الله متولى شاهين د. طارق إبراهيم عنان

التكتونيات - جيوفيزياء - مكتوبة ج ٣.٧

Mansoura University
Faculty of Science
Geology Department
Date: 13 /06/2013

Second Term Exam (May 2013)
Geophysics program Third level
Subject: G 307 Tectonics
Time: 2 hours Full Mark: 60

Answer the following questions *(20 Marks per question)*

Question 1: Write on the following

a. The dynamic equilibrium of the earth plant in the light of Kepler lows *(5 marks)*

b. Assembly of Pangaea. *(5 marks)*

c. Oceanic - oceanic convergence, continental - continental divergence and transform plate boundaries. Give examples of each case. *(5 marks)*

d. Hot spots and its tectonic significance. *(5 marks)*

Question 2: Write short notes on :

a. The assembly of continents is frequently associated by continental type sedimentation and formation of cool swamps *(5 marks)*

b. Saint Andres and Jordon Fault systems. *(5 marks)*

c. The distribution of the Phanerozoic volcanoes carries evidence tectonic plate movement and rotations. *(5 marks)*

d. The tectonics setting of the island arc volcanoes. *(5 marks)*

Question 3: Write short notes on :

a. Wilson tectonic cycle and give example for each event and draw sketch diagram. *(5 marks)*

b. East pacific rise and its related tectonics. *(5 marks)*

c. Tectonic of Iaptus Ocean. *(5 marks)*

d. The Ophiolite sequence and its tectonic significance. *(5 marks)*

المستوى الثالث - جيوفيزياء، فيزياء، رياضيات فيزياء ف٣٣٣

Mansoura University
Faculty of Science
Physics Department

2^{nd} Level Exam.
May 2013
Time allowed: 2 hrs

Atomic Physics and Spectra   333 ف

Answer the following questions

1-a- Define the degenerate orbits.
Using the mass relativistic effect and the general equation of the total energy, show how elliptical orbits could explain the fine structure. (10 marks)

b- Estimate the wavelength in A° and the energy in eV of the spectral line of maximum wavelength of the Balmer series. (10 marks)

2-a- Explain the main parts of mass spectrograph, how to operate, clarify the function of the velocity selector (10 marks)

b- Discuss briefly the two main concepts of the vector atom model.
Estimate the total angular momentum vector **J** of an atom where the orbital angular momentum Vector of the atom **L** = 2, and the spin angular momentum vector **S** = 1.
Comment on the available states. (10 marks)

3-a- Study the interaction of the orbital magnetic dipole moment μ_ℓ and the external uniform magnetic field H. "normal Zeeman effect". (10 marks)

b- Explain the spectral series of the emission transition of sodium atom.
Comment on the transitions of the two D spectral lines (D_1 and D_2) of sodium atom. (10 marks)

($c=3x10^{10}$ cm/s $h=6.625x10^{-34}$ J.s $R=1.097x10^{7}$ m^{-1} $1eV=1.6x10^{-19}$ J)
($e=1.6x10^{-19}$ C $m_e=9.11x10^{-28}$ g)

Best Wishes

Prof. A. El-Khodary