Mansoura University
Faculty of Science
Geology Department
Date:27/12/2014

First Term Exam. (Dec. 2014)
Fourth Level (Geophysics)
Course No.G407
Course: Quaternary Geology& Delta
Time: 2 hours Full Mark: 60

Answer the Following Questions

Question One : Tick (√) or (X) and correct

1- During mountain building , the consumption of CO2 in weathering causes the onset of ice age.
2- The axial tilt cycle is equivalent to stadial episode.
3- Plucking is one of the processes of weathering by glaciers.
4- Faculae are relatively bright hot areas on the solar surface.
5- The periglacial landforms are normally formed by repeated freeze-thaw action.
6- Development of mixed oak with Quercus and Ulnus points to early temperate interglacial.
7-The maximum shear of ice sheet on the lithosphere is at its center.
8- In tide dominated deltas, the effects of buoyancy are negligible.
9- The subaqueous delta lies below the low tide limit.
10- Much of hydrocarbon production of deltas is produced from distributary mouth bar mud.
11- Major rivers with abundant suspended load tend to build extensive thick deltas.
12-Erratic discharge in rivers results in coarse poorly sorted sand with shoestring geometry.
13-In deltas with extreme sediments and discharge annual variation, sand bodies trend at high a angle to the shoreline.
14- The upper delta plain is more extensive where the tidal range is large.
15- Deforestation of drainage basin results in accelerated growth of deltas.

(15 marks)

Question Two: Complete

1-.....,.....and.....are types of glacial landforms.
2- Tills are developed at.....,along.....,and within the.....valley
3- Loess is formed in the..... and deposited in the.....area
4- The mean temperature of.....is.....or.....than that of glacial
5- .....,.....and..... are thinner than the ice sheet
6- The landforms developed on horizontal active layers include.....,.....and.....
7-The.....and.....forest are close to glacier whereas the.....forest are far from it.
8- In the oxygen isotope analysis,..... is used as standard for water and.....for sediments.
9 – Wave-built features along delta shorelines include.....and.....
10- Major river systems require.....drainage basin with .....precipitation.
11- A low wave power basin produces.....sorted sand bodies oriented at.....angle to strike.
12- Nonerratic discharge regimes produce..... channels where sand bodies take.....geometry.
13-A river system consists of....., alluvial valley,.....and a receiving basin.
14- The drainage basin is the source of.....and.....
15- In a river system with constant annual discharge,.....bodies trend at.....angle to coast.

(15 marks)

Question Three: Choose the correct answer:

1- The Holocene is accepted to be considered as
a) an epoch b) an age c) both
2- The well known lithological evidence of periglacial stage is
a) till b) loess c)varve
3- The well developed section of Quaternary vertebrates in Italy is at
a) Villafrancia b) Calabria c) Sicily
4- The Alps glacier is
a) hot b) warm c) cold
5- The type locality of Quaternary is in the
a)deep sea b) ice core c) glaciofluvial terraces
6- The most effective factor of sea level rise is
a) eustatic change b)hydrostatic change c) steric change

Prof.O.Hegab and Prof.A.Elshahat لجنة التصحيح:

7- The interpluvial stage is evidenced by the expansion of
a) pluvial lake b) green forest c) dune field

8- The increase of ice sheet thickness is associated with the increase of its
a) +δ18 b) -- δ16 c)+δ16

9- High persistent wave power produces delta shoreline which is
a) indented b) straight c) concave

10- Drainage basin characterized by tropical climate contain sediments with high
a) bedload b) suspended load c) biogenic load

11- Tidal channels with crevasse splays are characteristic of delta coasts with
a) microtidal range b) mesotidal range c) macrotidal range

12- The subareal delta plain occurs
a) at the low tide b) above the low tide c) below the low tide

13- High nearshore wave power is associated with steep
a)straight offshore b)concave offshore c) convex offshore

14- The lower delta plain is more extensive when the tidal range is
a) low b) high c) moderate

15- High wave power along delta shorelines produce sand bodies which are
a) ill sorted b) well sorted c) moderately sorted

(15 marks)

Question Four: Answer two only of the following

a- Write in the morphological, lithological and biological evidences of Quaternary in the glacial zone

b- Write briefly on the factors affecting on sea level changes and describe, with illustrations, the witness of such changes.

c- Discuss the effect of wave power on the morphology of delta coasts.

(15 marks)

Good Luck

تسجيلات آبار ف ٤٠١

MANSOURA UNIVERSITY
Faculty of Science
Geology Department
Mansoura-EGYPT

Date: Tuesday, 30 December **2014**
First semester –Academic Year 2014/2015
Full Mark: 80
Time allowed: **2** Hours- (*12.00-14.00 reading time*)

B. Sc. Exam in GPHY-401 (Well Logging) for Geophysics Program (Credit Hours Board)

Well Logging (Relating to material taught by Dr. Mohammed Awad Ahmed)

Instruction: Answer All the following questions: Q1 (33.75 %) (A and B), Q2 (28.75 %) (A and B), Q3 (37.5 %), and (A, B, and C). In your answers use labeled diagrams and provide specific, named examples wherever possible. No aids allowed.

Q1-A) TRUE/FALSE (/9 MARKS)

Directions: Read the statement completely and determine if the statement is **true** or **false**. In the blank provided, write "**True**" for a true statement and "**False**" for a false statement. Each True/False question is worth **1 mark**. The True/False section is worth a total of **9 marks**.

_____1. If there is a direct, continuous flow of formation water or hydrocarbon fluids into the borehole, then the logged temperature shows a marked increase at the inflow point

_____ 2. Typical sonic tool transmitters (transducers) are either magnetostrictive or, more commonly, piezoelectric and translate an electrical signal into an ultrasonic vibration

_____ 3. When a rock with low thermal conductivity is encountered, it will show a low thermal gradient

_____ 4. The separation between the curves from the shallow and deep tools, plotted on the same resistivity scale, is diagnostic of hydrocarbons. It is sometimes called the hydrocarbon separation, and is used in the "quick look' technique for locating oil or gas.

_____ 5. The spectral gamma ray log is affected by the mud additives barite and KCl. Barite does not affect the result while KCl will only affect the potassium result

_____ 6. The spectral gamma ray log gives the radioactivity of the three elements combined, while the simple gamma ray log shows the amount of each individual element contributing to this radioactivity

_____ 7. Resistivity tools can only function in boreholes containing conductive muds. They cannot be run in oil-based muds or freshwater based muds. Induction logs, on the contrary, are most effective with non-conductive muds, oil-based or fresh water based

_____ 8. A persistent rise in temperature with depth is usually expressed in terms of a temperature gradient, that is in ·C increase per kilometre of depth

_____ 9. Salt is inefficient; it keeps heat in and has a low thermal conductivity. Shale, conversely is very efficient, let's heat escape rapidly and therefore has a high thermal conductivity

لجنة الامتحان و التصحيح * | ا.د. حسنى غزالة -ا.د. ابراهيم كرات - ا. د. حمدى صيصه - د.محمد عوض.*

Q1-B) MATCHING (/18 MARKS)

Directions: Fill in the blank next to each item with the correct corresponding **letter in capital letters** (**A-R**). For each item there is only **one correct** answer. NO option will be used more then once. Each matching question will be worth **1 mark**. The matching section is worth **18 total marks**.

1. Match

Answer	Theme items		Option
	1. The SGR, or standard gamma ray,	A	is the process which attempts to combine a knowledge of tool response with geology, to provide a comprehensive picture of the variation of the important petrophysical parameters with depth in a well
	2. A frequent cause of tight spots is	B	use of the Th/K rario
	3. The borehole environmental corrections consist of	C	Environmental correction and Thermal maturation of organic matter
	4. Clay volume calculation	D	Neutron-Density Log 'Negative Separation'"
	5. Continuous Temperature Measurements uses are:	E	, represents the contributions of only the thorium and potassium in API units
	6. Detection of gas bearing zone	F	Sonic Logs
	7. Depositional environment and condensed sequences	G	is the contribution, in API units, of uranium.
	8. If gaseous hydrocarbons enter the well, the gas expands on entering the borehole	H	continuous, in situ measurements of parameters related to porosity, lithology, presence of hydrocarbons, and other rock properties of interest
	9. The theoretical concepts of well-logging techniques were developed with the assumption	I	Use of the Th/U ratio
	10. Water saturation calculations	J	Gamma-Ray, Neutron, Density and Sonic Logs
	11. , the difference between the SGR and the CGR	K	removing that part of the signal caused by deviation of the actual environment from the ideal
	12. Well logs provide	L	Resistivity Logs
	13. BHT Measurements uses are	M	Overpressure identification and locating fluid movements
	14. Well logging is defined as	N	dropping rapidly in temperature
	15. The CGR, or computed gamma ray curve	O	is the total contribution of the three elements in API units.
	16. Calculation of primary porosity	P	a record of characteristics of rock formations traversed by a measurement device in the well bore
	17. Dominant clay mineral and detrital mineral content	Q	abundant smectite in the clay mineral mixture
	18. Well logging interpretation	R	of an infinite, homogeneous, and isotropic medium.

Q2-A) MULTIPLE CHOICE (SINGLE ANSWER) (/5 MARKS)

Directions: Read each question and all the answers thoroughly and then identify the choice that best completes the statement or answers the questions below. For each question there is only **one correct answer**. Place the correct answer (**A-D**) in **capital letters** in the box provided next to each numbered question. Each multiple-choice question will be worth **1 mark**. The entire multiple-choice section is worth **5 marks**.

[ ] 1. Temperatures taken in boreholes during drilling are therefore consistently well below the real formation temperature. To correct its values, uses the .....

A. Horner plot
B. Pickett
C. Crossplot
D. Histrogram

[ ] 2. A sand zone with 15 % porosity, 16 % clay volume and water saturation of 35%, the hydrocarbon saturation is .....

A. 85%
B. 84 %
C. 65 %
D. 69%

[ ] 3. A persistent rise in temperature with depth is usually expressed in terms of a ....., that is in ·C increase per kilometre of depth.

A. thermal conductivity
B. temperature gradient
C. absolute temperature
D. defferntial temperature

[ ] 4. An ..... is recorded simultaneously with most sonic logs. It represents a time derived from the average velocity of the formation logged and plotted over the vertical depth of the interval in milliseconds (10^{-3} seconds).

A. integrated travel time
B. interval transit time
C. time constant
D. circulation time

[ ] 5. If there is a direct, continuous flow of formation water or hydrocarbon fluids into the borehole, then the logged temperature shows a marked ..... at the inflow point.

A. expand
B. decrease
C. increase
D. loss

Q2-B) MULTIPLE CHOICE (MULTIPLE ANSWERS) (/18 MARKS)

Directions: Read each question and all the answers thoroughly and then identify the choice that best completes the statement or answers the questions below. For each question there are **multiple correct answers**. Place the correct answer (**A-D**) in **capital letters** in the box provided next to each numbered question. Each multiple choice question will be worth a total of **2 marks**. The entire multiple choice section is worth **18 marks**.

[ ] 1. Typically the temperature tool will give nor just the ..... temperature but also, a temperature .....

A. absolute
B. gradient
C. static
D. differential

[ ] 2. Natural radiation in rocks comes essentially from only three elemental sources: the radioactive elements of the ..... family, of the ..... family and of the radioactive isotope of .....

A. thorium
B. uranium-radium
C. carbon
D. potassium 40K

[ ] 3. Sonic values are given in ..... and the value is called the .....

A. interval transit time
B. integrated transit time
C. meter per second
D. microseconds per foot

[ ] 4. The simple gamma ray sonde can be combined in many tools; it is run both ..... in the borehole (sonic and resistivity tools) or against the borehole wall, that is ..... (density and neutron tools).

A. circular
B. incircular
C. eccentered
D. centered

[ ] 5. The ..... gives the radioactivity of the three elements combined, while the ..... shows the amount of each individual element contributing to this radioactivity.

A. sonic log
B. simple gamma ray log
C. spectral gamma ray log
D. neutron

[ ] 6. The unwanted logging effects of the borehole-compensated sonic are.....

A. noise spikes
B. signal attenuation
C. dynamic compensation system
D. cycle skipping

[ ] 7. The clay material may be distributed in sand formations in three different forms:.....

A. dispersed
B. compacted
C. laminated
D. structural

[ ] 8. The unwanted logging effects of the long spaced sonic are.....

A. noise spikes
B. signal attenuation
C. dynamic compensation system
D. cycle skipping

[ ] 9. Uranium passes into sediments in three principal ways:.....

A. adsorption by organic matter
B. heavy minerals such as zircon,
C. chemical precipitation
D. chemical reaction in phosphorates

Q3-A) SEQUENCE (/ 8 MARKS)

Directions: Fill in the blank next to each item with the **correct order number**. For each item there is only **one correct** answer. Each sequence question will be **worth 1/2 mark**. The sequence section is worth **8 total marks**.

1. List a step by step the procedure to analyze well logs. Be specific and detailed

_____ A. Porosity and water saturation determination
_____ B. Cutoffs report
_____ C. Formation temperature and Rw determination
_____ D. Clay volume analysis
_____ E. Single indicator and double indicator
_____ F. Borehole environment corrections for different logs
_____ G. Reservoir zone (porosity more than 10% and volume of shale less than 30%)
_____ H. Depth matched readings
_____ J. Pay zone (porosity more than 10%, Vsh less than 30%, and Sw les than 50%)

2. The seven distinct sections of Wireline log layout are: ..... , ..., ..., ..., ..., ..., and .....

_____ A. Scale section
_____ B. Logging/Calibration Constants
_____ C. Scale section
_____ D. Log trailer
_____ E. Log data
_____ F. Repeat Section
_____ G. Header information

Q3-B) FILL IN THE BLANK (/ 9 MARKS)

Directions: Read the statement below completely and thoroughly then fill in the blank using the words provided in the word bank. Each word will only be used once and there are some words that won't be used at all. Choose the word that **BEST** completes the statement. Each answer will be worth a **TOTAL of 1/2 mark**. The fill in the blank answer section is worth a **combined 9 marks**.

Word Bank:

cuttings	**cycle skipping**	**equal**	**on gauge**
bit	**twice**	**'logger's**	**high**
bow-springs	**magnetic markers**	**mudcake**	**caving**
separate	**mud-cake build-up**	**odometer**	**arms**
formation fluids	**drillers**	**Once**	**en-larged**

1. Some sondes are designed to be operated in a centralized position in the borehole. This operation is achieved by the use of ..... attached to the exterior, or by more sophisticated hydraulically actuated .....

Answer: .....

2. In Section with the borehole's actual diameter is ..... by as much as 3½in occurs in soft, unconsolidated formations because of the scouring effect of drilling muds.

Answer: .....

3. The principal functions of drilling muds are: to remove the ....., to prevent ..... from flowing into the borehole, to prevent the borehole walls from ....., and to cool the .....

Answer: .....

4. When a rock with ------- thermal conductivity is encountered, it will show a low thermal gradient.

Answer: .....

5. The microlog-caliper reading is then the hole drilled diameter minus ..... the mudcake thickness

Answer: .....

6. Logger's depth, generally the more accurate, is measured with the wireline cable. There are two ways, by using ..... on the cable and by direct measurement with an .....

Answer: .....

7. The density-caliper reading is then the hole drilled diameter minus ..... the mudcake thickness.

Answer: .....

8. A Section drilled to ..... is usually in the case of hard, consolidated, and impermeable formations.

Answer: .....

9. In circular boreholes, the four-arm device caliper logs are ..... They ..... in noncircular holes as one caliper reads the long axis and the other reads the short axis

Answer: .....

10. In boreholes, two sets of independent depth measurement exist side by side; ..... depth' and ..... depth'

Answer: .....

11. The solid particles that exceed the pore size are retained at the formation face. Their buildup forms a plaster-like layer of very low permeability called a .....

Answer: .....

Q3-C) SHORT ANSWER (/ 13 MARKS)

Directions: Read the statement below completely and thoroughly then fill in the blank with a short answer that **BEST** answers the question. The short answer section is worth a **combined 13 marks**.

1. Compare between the unwanted environmental effects of gamma ray and sonic logs (/ 3 Marks)

2. Source-rock identification and overpressure zone detection (/ 5 Marks)

2. Geochemical behavior of potassium, thorium and uranium and natural radioactivity (/ 5 Marks)

Mansoura University
Faculty of Science
Geology Department

جامعة المنصوره
كلية العلوم
قسم الجيولوجيا

Radiometric Final Exam (4th level Geophysics) 2014/2015

طرق التنقيب الأشعاعيه جف ٤٠٣ (المستوى الرابع برنامج الجيوفيزياء) ٢٠١٢/١/١٧ صباحا

Time: 2 hours

Answer the Following Questions (Total marks 60)

1- Choose Yes or No and correct the wrong; (10 marks)

a. Radiometric method is an active geophysical method

b. In magmatic stage U and Th elements enter the formation of the rock forming minerals.

c. U radioactive series consists of ten isotopes and ended with normal Pb^{204}.

d. Gamma particles have penetrating power less than Beta rays.

e. Atoms of unstable elements usually emit radiations.

f. At the electromagnetic spectrum, gamma rays is located between the zone of cosmic and x-rays

g. U minerals are resistant to chemical weathering and tend to concentrate in placers and black sands.

h. Th deposits occur in a variety of rock types and exhibit a wider variation than U deposits.

i. U, Th and K mineralization decreases with increasing silica continent.

j. Radiometric method is based on measurements of potential effects of three naturally occurring radioactive K, U and Th

2- Define the following: (15 mark)

a- Compton scattering of gamma rays

b- Pair production and photoelectric effects

c- Radioactive series

d- Line and continuous spectrum.

e- Dead time

3- Mention the reasons: (15 mark)

a. Gamma rays are commonly measured in radiometric prospecting.

b. Sodium Iodide crystal is most common detector.

c. Interpretation of radiometric data is easier than other geophysical method.

d. Needs for calibration of the radiometric instruments.

e. Radon detectors is important

4- Write on the Following: (20 mark)

a. Application of radiometric methods

b. Radiation effects on rocks and minerals.

c. Disintegration theory.

d. Radioactive series of U, Th and K.

Best Wishes

Prof. Dr. Hosni Ghazala Prof. Adam El-Shaaht . Prof. Adel Genidi Dr.Ahmed El-Galadi*

الفرقة : الرابعة شعبة :جيوفيزياء المادة: تحليل مركب ر ٤٠١	كلية العلوم قسم الرياضيات	دور يناير ٢٠١٥ الزمن : ساعتان التاريخ: ٢٠ /١/ ٢٠١٥

أجب عما يأتى : (الدرجة الكلية ٨٠)

السؤال الأول : أختار الإجابة الصحيحة من بين القوسين مع الإثبات

أ) الدالة $f(z)=\sin\bar{z}$ (تحليلية – ليست تحليلية عند اى نقطة في المستوى) (١٠ درجات)

ب) الدالة $f(z)=z^n$ (شاملة – مورمورفية) (١٠ درجات)

السؤال الثاني :

أ) اثبت أن جاكوبى التحويل يعطى بالعلاقة :

$$\frac{\partial(u,v)}{\partial(x,y)}=|f'(z)|^2$$ (١٠ درجات)

حيث $f(z)$ دالة تحليلية فى منطقة ما R.

ب) أدرس : اتصال – اشتقاق – تحليلية – النهاية عند $z=0$ للدالة

$$f(z)=|z|^2$$ (١٠ درجات)

السؤال الثالث : أكمل

أ) التحويل $w=\frac{1}{z}$ ينقل الخط المستقيم $x+y-2=0$ إلى ..... (١٠ درجات)

ب) المرافق التوافقي للدالة $u=xy$ هو ..... (١٠ درجات)

السؤال الرابع: أ) إذا كانت $f(z)$ دالة تحليلية والمشتقة $f'(z)$ متصلة عند جميع النقاط داخل وعلى المنحنى البسيط المغلق C فإن $\oint_c f(z)dz=0$ (٥ درجات)

ت) أحسب التكاملات الأتية:

(i) $\int_{|z|=1}\frac{\cos^2 z}{z^3}dz$ (٨ درجات)

(ii) $\int_{|z|=3}\frac{dz}{z^2+16}$ (٧ درجات)

مع تمنياتي بالنجاح

أ.د/ حنان السيد درويش

Mansoura University Faculty of Science Geology Department First Term Exam 13 Jan 2015		Subject: Geophysics (402) كود المقرر (جف402) المستوى الرابع Course: Engineering and Marine Geophysics Time: 2 hours Full Mark: 80

هام: الإمتحان على صفحتين

A. Engineering Geophysics (40 degrees)

I- Put YES or NO and correct (the underlined word) if needed: (one degree for each point)

1. In GPR engineering applications, the antennae frequency is lower than that used for geological applications.
2. Gravity measurements can be used to detect the sites of leakages associated with man-made dams.
3. The gravity method is considered an excellent tool for detailed investigation of construction sites.
4. Resistivity method can be used to ensure that reinforcement mesh has been placed at the correct level within concrete slabs.
5. In GPR geological applications, the fine resolution is more important than penetrated depth.
6. Seismic refraction method can be used for detecting a collapsed doline.
7. Deposits of gravel, particularly if unsaturated have been successfully prospected for by seismic refraction method.
8. The micro-gravity surveys can be used for archaeological investigations.
9. Resistivity method can be used for detecting sink holes.
10. In engineering applications, the target dimension and depth are small.
11. Seismic refraction method can be used in the investigation of road pavements.
12. GPR method is suitable for assessing rock rippability.
13. The speed of GPR radiowaves in air is around three times faster than in solid materials and thus produces a pronounced velocity pull-up effect in a void.
14. (a. gravity, b. seismic refraction, c. electric resistivity, d. GPR, e. all) methods can be used for landfill investigations.
15. Where there is a density contrast between infill material and the surrounding rock (a. gravity, b. seismic refraction, c. electric resistivity, d. GPR, e. all) methods can be used to locate backfilled quarries.
16. For detecting sink holes (a. gravity, b. seismic refraction, c. electric resistivity, d. GPR, e. all) methods are applicable.
17. To detect buried faults (a. gravity, b. seismic refraction, c. electric resistivity, d. GPR, e. all) methods can be used.
18. In engineering applications using seismic refraction methods, the length of the survey line is (a. 10's km, b. 10's m, c. 100's m, 1000'm) choose.
19. (a. gravity, b. seismic refraction, c. electric resistivity, d. GPR, e. all) methods are useful for detecting underground water.
20. Engineering applications of GPR include (a. road pavement analysis, b. location of reinforcement in concrete. c. location of pipes and cables, d. concrete testing, e. all) choose.

II) Write on FOUR of these topics: (Five degrees for each item)

1. The suitable geophysical surveys to ground water problems.
2. The suitable geophysical surveys to construction materials.
3. The application of geophysical methods on the foundations of structures.

4. The application of geophysical methods on the dams and reservoirs.
5. The measured geophysical parameters needed for assessment of soil and rock properties.

B. Marine Geophysics (40 degrees)

III-i) Put YES or NO and correct (the underlined word) if needed: (one degree for each sentence)

1. The bubble-oscillation period is inversely proportional to the depth of the bubble center.
2. Capacities of air-guns range from 1 to 2000m^3 or more and operate at a pressure of 5000 lb/in^2.
3. In marine shooting, an array of air-guns having equal capacities are fired in synchronism.
4. The stretch section is used to depress the hydrophone cable to its operating depth and to provide isolation from the pitching and tossing motion of the ship.
5. The controller is set for the desired depth, and a pressure gauge actuates the wings when the actual depth of the cable begins to deviate from that for which the setting was made.
6. Remote-reading magnetic compasses and high-frequency acoustic signal generators are used to obtain both the shape and position of the cable relative to the ship.
7. The frequency of the marine seismic source is proportional to the penetrated depth.
8. In deep-water exploration, bottom-reference cables or cables which lie on the bottom are used.
9. Where natural or artificial impediments occur, distributed hydrophone systems can be used for seismic data acquisition.
10. The OBC seismic data has improved signal content and bandwidth compared to conventional towed streamers.

III-ii) Complete the following: (one degree for each sentence)

1. A delayed effect of the shock wave is an oscillatory flow of water, which gives rise to subsequent pressure pulses designated as .....
2. In ..... source, the mesh made by the perforations in the spherical enclosure has the effect of breaking up the bubble.
3. The bubble in ..... is recorded by a detecting hydrophone on the injector device for final processing.
4. ..... refraction is a self-contained system for receiving sound waves in the water and transmitting them to a distant receiving point (on the ship) by radio.
5. The hydrophone is made of a ..... material.
6. Stressing hydrophone creates an e.m.f., its voltage is proportional to the ..... of the ground motion.
7. CDP is a multiple channel and a .....fold coverage.
8. The ..... of reverberation is ¼ of the reciprocal of the one-way time through the water layer.
9. The bubble-oscillation period is ..... to the maximum radius of bubble.
10. Efficiency of any marine seismic source is maximum at ....., which occurs at depths equal to any odd number of quarter wavelengths.

IV) Write on FOUR of these topics: (Five degrees for each item)

1. Correlate between air-gun and water gun
2. Correlate between single- and multiple-channel streamer cables
3. 3D marine seismic shooting
4. Noise dominant in marine seismic surveying
5. Feathering problem in marine seismic surveying

لجنة التصحيح: أ. د. إبراهيم كرات* أ. د. حسنى غزاله أ. د. حمدى صيصه أ. د. حسنى حمدان

Mansoura University
Faculty of Science
Geology Department
Date: 10/01/2015

Final Exam. (Jan 2015)
Fourth Level (Geophysics Program)
Subject: G409
Course: Stratigraphy of Egypt طبقات مصر
Time allowed: 2 hours **Full Mark: 60**

Answer the following questions: (20 marks for each question)

1. a. Give an account on the Neogene-Quaternary subsurface succession in the Nile Delta area. **(6 marks)**

b. Compare between the Jurassic successions in Northern Sinai and in the subsurface of the north Western Desert. What is the economic importance of these deposits? **(7 marks)**

c. Arrange the following rock units from older to younger; mention the age and dominant lithology of each. **(7 marks)**

-The Nukhul Formation - The Qatrani Formation - The Araba Formation
- The Sudr Chalk - The Araif El Naga Formation.

2. a. Illustrate a composite stratigraphic column for the Cretaceous - Paleogene succession in the Kharga Oasis area. **(8 marks)**

b. Complete the following sentences: **(6 marks**, 0.5 mark for each space)

1. The Lower Cretaceous fluviatile deposits exposed in the Gulf of Suez region are named the ---------- Formation which are followed by a marine unit named the ---------- Formation in Northern Sinai.
2. The Pre-Carboniferous succession penetrated by drilling in the Gulf of Suez Province is subdivided by the working oil companies into ---------- and the ---------- rock units.
3. The ---------- Formation ranges in age between the Coniacian and the Santonian, overlying the ---------- Formation and its type locality is Wadi Matulla in west-central Sinai.
4. The Permo-Carboniferous succession exposed in the Northern Galala is known as the ---------- Formation whereas the Permo-Triassic red beds are usually referred to as the ---------- Formation.
5. In Egypt, Devonian deposits are recorded only from the Western Desert and are named the ---------- Formation in the Oweinat area and the ---------- Formation in the subsurface of Siwa area.
6. In the subsurface of the north Western Desert, the Paleocene-Middle Eocene rocks are included into a carbonate unit known as the ---------- which is overlain by a marl-shale unit of Late Eocene-Oligocene age named the ---------- Formation.

c. Describe the Eocene-Oligocene stratigraphy in the Fayoum-Wadi Rayan Province. **(6 marks)**

3. a. Mark right (√) or wrong (X) and correct the false words. **(7 marks)**

1. The Bahariya Formation is Cenomanian in age and is widely distributed in the Gulf of Suez region.
2. The oolitic limestone ridges are well developed along the northwestern coastal plain of Egypt and are of Cretaceous age.
3. The Qiseib Formation is Permo-Triassic in age, composed mainly of a red bed clastic succession and is widely distributed in the Fayoum Province.
4. The Burg El Arab Formation is Early Carboniferous in age and is subdivided into four members of which three are payzones for oil and gas.
5. The Miocene evaporites known from the Gulf of Suez region are included in the Gharandal Group.
6. Nummulitic " *gizehensis*" limestone's are characteristic deposits for the Carboniferous of Egypt and are well developed in the Greater Cairo area.
7. The Abu Roash Formation is mainly Turonian in age and is subdivided by the working oil companies into three members, composed essentially of carbonate rocks.

b. Write short notes on the Eocene rock stratigraphy in the Nile Valley. **(7 marks)**

c. Compare between the Miocene rock stratigraphy along the Red Sea and the Mediterranean coastal plains. **(6 marks)**