



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

1. a. 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? (8 marks)
- b. Mark right (✓) or wrong (X) and **correct the false** words. (6 marks)
 1. The Miocene evaporites known from the Gulf of Suez region are included in the Gharandal Group.
 2. The oolitic limestone ridges are well developed along the northwestern coastal plain of Egypt and are of Cretaceous age.
 3. The Qatrani Formation is Permo-Triassic in age, composed mainly of a red bed clastic succession and is widely distributed in the Fayoum Province.
 4. The Raised Beaches and Coral Reef terraces exposed along the Red Sea coastal plain are of Pleistocene age.
 5. Nummulitic "*gizehensis*" limestone's are characteristic deposits for the Carboniferous of Egypt and are well developed in the Greater Cairo area.
 6. Economic phosphate deposits are well developed in Central Egypt, named the Duwi Formation of Miocene age.
- c. Explain how the Carboniferous successions exposed on both sides of the Gulf of Suez can be correlated? (6 marks)
2. a. Give an account on the Neogene-Quaternary subsurface succession in the Nile Delta area. (7 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 ----- Shale ranges in age between the Paleocene and the Eocene, underlying the ----- Formation and its type locality is Gabal Awaina in the Nile Valley.
 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. Compare between the Miocene rock stratigraphy along the Red Sea and the Mediterranean coastal plains. (7 marks)
3. a. Illustrate a composite columnar succession for the surroundings of Kharga and Dakhla Oases. (8 marks)
- b. Write short notes on the Eocene rock stratigraphy in the Fayoum Province. (5 marks)
- c. Arrange the following rock units from older to younger; mention the age and dominant lithology of each. (7 marks)
 - The Bahariya Formation - The Sudr Chalk - The Siwa Group - The Nukhul Formation
 - The Abu Roash Formation - The Araif El Naga Formation.

Good Luck Mahmoud Kora



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 (26.25%) (A and B), Q2 (30 %) (A and B), Q3 (43.75%), and (A and B).
In your answers use labeled diagrams and provide specific, named examples wherever possible. No aids allowed.*

Q1-A) MATCHING

(15 MARKS)

Directions: Fill in the blank next to each item with the correct corresponding **letter in capital letters (A-O)**. For each item there is only **one correct** answer. Each matching question will be worth **1 mark**.

1. Match

Answer	Theme items		Option
	1. Dominant clay mineral and detrital mineral content	A	Gamma-Ray, Neutron, Density and Sonic Logs.
	2. , the difference between the SGR and the CGR	B	dropping rapidly in temperature.
	3. The borehole environmental corrections consist of	C	represents the contributions of only the thorium and potassium in API units.
	4. Well logging is defined as	D	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.
	5. Depositional environment and condensed sequences	E	Resistivity Logs.
	6. The theoretical concepts of well-logging techniques were developed with the assumption	F	Sonic Logs.
	7. Well logs provide	G	is the total contribution of the three elements in API units.
	8. The CGR, or computed gamma ray curve	H	is the contribution, in API units, of uranium.
	9. Calculation of primary porosity	I	abundant smectite in the clay mineral mixture.
	10. Well logging interpretation	J	Use of the Th/U ratio.
	11. Water saturation calculations	K	of an infinite, homogeneous, and isotropic medium.
	12. The SGR, or standard gamma ray,	L	use of the Th/K ratio.
	13. If gaseous hydrocarbons enter the well, the gas expands on entering the borehole	M	a record of characteristics of rock formations traversed by a measurement device in the well bore.
	14. Clay volume calculation	N	removing that part of the signal caused by deviation of the actual environment from the ideal.
	15. A frequent cause of tight spots is	O	continuous, in situ measurements of parameters related to porosity, lithology, presence of hydrocarbons, and other rock properties of interest.



Q1-B) TRUE/FALSE

(6 MARKS)

Directions: Read the statement completely and determine if the statement is **true** or **false**. Each True/False question is worth **1 mark**.

- _____ 1. The best known use of borehole temperature measurements, simply as BHT values, is for calculating organic matter maturity.
- _____ 2. 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.
- _____ 3. 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.
- _____ 4. Typical sonic tool transmitters (transducers) are either magnetostrictive or, more commonly, piezoelectric and translate an electrical signal into an ultrasonic vibration.
- _____ 5. When a rock with high thermal conductivity is encountered, it will show a high thermal gradient
- _____ 6. The borehole's actual diameter and shape depend on the formation drilled.

Q2-A) MULTIPLE CHOICE (SINGLE ANSWER)

(6 MARKS)

Directions: Read each question and all the answers thoroughly and then identify the choice that best answers the questions below. For each question there is only **one correct answer**. Place the correct answer (**A-D**) in **capital letters**. Each multiple choice question will be worth **1 mark**.

- ☐ 1. 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
- ☐ 2. 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. Histogram
- ☐ 3. If gaseous hydrocarbons enter the well, the gas expands on entering the borehole, rapidly in temperature.
A. expanding
B. decreasing
C. increasing
D. dropping
- ☐ 4. A sand zone with 10 % porosity, 12 % clay volume and water saturation of 30%, the hydrocarbon saturation is
A. 90%
B. 88 %
C. 70 %
D. 22
- ☐ 5. The best known use of borehole temperature measurements, simply as BHT values, is for calculating
A. depositional environment
B. organic matter maturity
C. overpressure
D. gaseous hydrocarbon



☐ 6. 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

Q2-B) MULTIPLE CHOICE (MULTIPLE ANSWERS)

(18 MARKS)

Directions: Read each question and all the answers thoroughly and then identify the choice that best answers the questions below. For each question there are **multiple correct answers**. Place the correct answer (**A-D**) in **capital letters**. Each multiple choice question will be worth a total of **2 marks**.

☐ 1. The clay material may be distributed in sand formations in three different forms: ..., ..., and

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

☐ 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. Typically the temperature tool will give not just the ---- temperature but also, a temperature ----.

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

☐ 4. The unwanted logging effects of the borehole-compensated sonic are.....

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

☐ 5. 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. eccentric
D. centered

☐ 6. Sonic values are given inand the value is called the

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

☐ 7. 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 phosphorites

☐ 8. Thegives 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



9. The unwanted logging effects of the long spaced sonic are.....

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

Q3-A) FILL IN THE BLANK

(16 MARKS)

Directions: Read the statement below completely and thoroughly then fill in the blank using the words provided in the word bank. Each answer will be worth a **TOTAL of 1 mark**. The fill in the blank answer section is worth a **combined 16 marks**.

formation fluids

mudcake

'drillers

separate

twice

Once

equal

increase

magnetic markers

caving

bit

logger's

expand

more

breakouts

on gauge

temperature gradient

odometer

cave

cuttings

1. Logger's depth, generally the more accurate, is measured with the wireline cable. There are two ways, by using ----(1)---on the cable and by direct measurement with an---(2)-----.
2. This persistent rise is usually expressed in terms of a----(3)-----, that is in °C increase per kilometre of depth (°F/100 ft).
3. In boreholes, two sets of independent depth measurement exist side by side; ----(4)-----depth' and --(5)-----depth'.
4. A Section drilled to----(6)----is usually in the case of hard, consolidated, and impermeable formations.
5. In circular boreholes, the four-arm device caliper logs are --(7)---. They ---(8)--- in noncircular holes as one caliper reads the long axis and the other reads the short axis.
6. The density-caliper reading is then the hole drilled diameter minus --(9)--- the mudcake thickness
7. Freshwater-based mud causes---(10)---caving than saltwater-based mud.
8. 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 ---(11)-----.
9. The principal functions of drilling muds are: to remove the ----(12)---, to prevent ----(13)----- from flowing into the borehole, to prevent the borehole walls from ---(14)---, and to cool the ---(15)---.
10. The microlog-caliper reading is then the hole drilled diameter minus --(16)--- the mudcake thickness.


Q3-B) SHORT ANSWER

(19 MARKS)

Directions: The short answer section is worth a **combined 19 marks**.

1. List a step by step procedure to analyze well logs. Be specific and detailed. (5 Marks)
2. Geochemical behavior of potassium, thorium and uranium and natural radioactivity. (5 Marks)
3. Source-rock identification. (5 Marks)
4. Compare between the unwanted environmental effects of gamma ray and sonic logs. (4 Marks)

BEST WISHES

الاختبار النهائي الفصل الدراسي الأول يناير 2014 الزمن ساعتان التاريخ 1 / 1 / 2014	 كلية العلوم - قسم الرياضيات	جامعة المنصورة كلية العلوم قسم الرياضيات المستوى الرابع برنامج جيو فيزيكا تحليل مركب (401) اجب عما يلي:
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(الدرجة الكلية 80 درجة)

1- اثبت انه اذا كانت الدالة $f(z) = u+iv$ تحليلية علي منطقة ما فان كلا من u, v دوال توافقية.

(10 درجات)

ب- اوجد نهاية \overline{z}/z عندما $z \rightarrow 0$ ان وجدت . (10 درجات)

2- ا- ناقش تفاضلية وتحليلية الدالة $f(z) = z^2$. (10 درجات)

ب- اوجد صورة جزء الدائرة $0 \leq \arg z \leq \pi/4, |z|=2$ تحت تأثير الدالة $w=1+i$. (10 درجات)

3- ا- اوصف مجموعة النقاط في المستوى المركب $z=t+it^2, 0 \leq t \leq 2$. (10 درجات)

ب- احسب $\int_c (3y+2x)dx + (3x-5y)dy$ حيث c هو الخط الواصل بين النقطتين $(0,3), (2,4)$.

(10 درجات)

4- ا- احسب التكاملات $a- \int_c e^{2z} dz / (z+2)^2$ $c: |z-3|=3$, $b- \int_c z dz / (z-2)(z+4)$ $c: |z-1|=3$

(10 درجات)

ب- اوجد صورة المستطيل المحدد بالمستقيمات $x=0, y=0, x=3, y=4$ تحت تأثير الدالة $f(z)=1/z$. (10 درجات)

مع اطيب التمنيات بالتوفيق د. عديله عثمان

Mansoura University
Faculty of Science
Geology Department
Second Term Exam
5 Jan 2014



Subject: Geophysics (402) (جف 402)
Course: Engin. and Marine Geophysics
المستوى الرابع

Time: 2 hours
Full Mark: 80

هام: الإمتحان على صفتين

A. Engineering Geophysics (40 Degrees)

I-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. Permafrost can be located by electric resistivity method.
3. Rock rippability; is the ease with which the rock may be excavated using machines, electric resistivity method is suitable for assessing it.
4. 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.
5. Gravity method can be used in the investigation of road pavements.
6. The micro-gravity surveys can be used for archaeological investigations.
7. In Engineering applications, the target dimension and depth are large.
8. In GPR geological applications, the fine resolution is less important than penetrated depth.
9. Seismic refraction can be used for detecting a collapsed doline.
10. Deposits of gravel, particularly if unsaturated, have low resistivity and have been successfully prospected for by resistivity methods.

I-ii) Choose the correct answer: (one Degree for each point)

1. is useful for detecting underground water. (a. gravity, b. seismic refraction, c. electric resistivity, d. GPR, e. all methods)
2. The method is considered an excellent tool for detailed investigation of construction sites where massive ice is suspected. (a. gravity, b. seismic refraction, c. electric resistivity, d. GPR, e. all methods)
3. can be used for landfill investigations. (a. gravity, b. seismic refraction, c. electric resistivity, d. GPR, e. all methods)
4. Where there is a density contrast between infill material and the surrounding rock can be used to locate backfilled quarries. (a. gravity, b. seismic refraction, c. electric resistivity, d. GPR, e. all methods)
5. For detecting buried faults can be used. (a. gravity, b. seismic refraction, c. electric resistivity, d. GPR, e. all methods)
6. An Air-filled cavity could be detected by (a. gravity, b. seismic refraction, c. electric resistivity, d. GPR, e. all methods)
7. For detecting sink holes, methods are applicable. (a. gravity, b. seismic refraction, c. electric resistivity, d. GPR, e. all methods)
8. Detection of buried foundations is suited by (a. gravity, b. seismic refraction, c. electric resistivity, d. GPR, e. all methods)
9. In engineering applications using seismic refraction methods, the length of the survey line is (a. 10's m, b. 100's m, c. 10's km, d. all depths)
10. 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)

II) Write on these FOUR topics: (5 Degrees for each topic)

Applications of geophysical methods in:

1. Foundations of structures
2. Dams and reservoirs.
3. Route surveys.
4. Coastal and offshore engineering.

B. Marine Geophysics (40 Degrees)

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

1. The bubble-oscillation period is proportional to the depth of the bubble center.
2. Capacities of air-guns range from 1 to 5000m³ or more and operate at a pressure of 2000 lb/in².
3. In marine shooting, an array of air-guns having small capacities are fired in synchronism.
4. The stretch cable 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 effects of excessive feathering upon data quality depend on the dip and structural relief of the reflecting formations.
6. 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.
7. 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.
8. CDP is a multiple channel and a single-fold coverage.
9. The surface layer reverberation is caused by multiple refractions (both at the source and receivers) that bounce back and forth between the top and bottom of the water layer.
10. All marine reflection work is carried out with CDP shooting.

III-ii) Complete the following: (one Degrees For each point)

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. The is used when sharp, clean, bubble-free impulses are needed and greater source power is not as important.
5. 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.
6. In, because the collapse of the surrounding water is into a void, there is no gas or air to be compressed.
7. The hydrophone is made of a material.
8. Stressing hydrophone creates an e.m.f., its voltage is proportional to the of the ground motion.
9. The process by which the cable drifts away from the line of motion of the ship is known as
10. The of reverberation is $\frac{1}{4}$ of the reciprocal of the one-way time through the water layer.

IV) Write on these FOUR topics: (5 Degrees for each topic)

1. Air-gun.
2. Noise in marine seismic surveying.
3. 3D seismic shooting using two ships.
4. Correlate between single- and multiple-channel streamer cables.

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



Answer the following questions

1- Join I, II and III columns to construct reasonable phrases

(20 marks)

I	II	III
Non imaging type of sensors, are used to record a spectral quantity or a parameter as a function of time or distance	together for the area of sidelap between the adjacent images,	the detection of change by a comparison of reflectance values,
Digital mosaics can be approached by matching the digital data of adjacent images	the TM sensor records reflected and emitted electromagnetic energy from the visible, reflective-infrared, middle-infrared, and thermal-infrared regions of the spectrum	They are mostly used for ground observation and in study of atmosphere and meteorology
Radiometric correction to compensate for sun elevation differences	(such as Gamma radiation, magnetic field, temperature measurement etc.)	TM has higher spatial, spectral and radiometric resolution than MSS
The Thematic Mapper TM scanner is a multispectral scanning system much like the MSS, except that	between image dates and for differences in solar calibration is an essential precursor to	the computer operator compared histograms for corresponding bands of each image adjusted the histograms to match.

2- Describe in detail the following:

(30 marks)

- a- Main Advantages of Landsat imagery.
- b- Data Input and Editing in GIS.
- c- Photo Interpretation Elements.

3- Complete the following

(10 marks)

- a-(1)..... refers to the wavelength interval that is recorded by a detector.
- b-(2)..... are prepared by dividing the DN value in one band by the corresponding value in another band for each pixel.
- c- The digital image is consisting of small equal areas or picture elements(3)..... arranged in regular rows and columns in raster array pattern.
- d-(4)..... a collection of geographic features in a map.
- e-(5)..... is a valuable means of data compression, and of producing a set of de-correlated images from an originally highly correlated data set.

Good luck

Dr. Nahla Abd El Ghaffar

د. نهلة إبراهيم عبد الغفار

لجنة الممتحنين أ.د. صلاح يوسف البيلي



Radiometric Final Exam (4th level Geophysics) 2013/2014

طرق التنقيب الإشعاعية جف ٤٠٣ (المستوى الرابع برنامج الجيوفيزياء) ١٥ / ١ / ٢٠١٤ مساء

Answer the Following Questions

(Total mark 60)

1- Complete the following: (20 mark)

- The most common radiometric unit is ----- that can be converted to -----.
- Radon detectors based on measuring ----- emitted from ----- which is a ----- of U^{238} and U^{235}
- Absolute background is -----than ----- background
- Geiger Muller measures -----radiation while -----measure Gamma rays
- NaI crystal is characterized by -----, -----, and -----
- Radiation effects on rocks and minerals depend on -----, -----, and -----
- Absolute background reflects the -----rays which is affected with ----- and -----
- Differential spectrometer measures ----- and ----- limits of the energy spectrum for U and Th and K
- Thorium mineralization are common -----deposits and -----minerals.
- NaI detector has the properties of -----, -----, -----and -----.

2- Define the following: (20 mark)

- Dead time background corrections.
- K-capture and Compton scattering
- Mitamictization and discoloration
- Differential and integral spectrometers

3- Write briefly one of the Following: (20 mark)

- Radiometric survey
- Calibration and calibration pads.
- Geochemistry of U mineralization.
- Advantageous and disadvantageous of radiometric surveys.

Best Wishes

Prof. Hosni Ghazala*

Prof. Dr. Omar Hegab

Prof. Dr. Adel Genidi

Dr. Ahmed El- Galadi



Answer the Following Questions

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

- 1- The Pleistocene ended at 12Ka BP.
- 2- The mountain building is one of the extraterrestrial processes causes climatic change.
- 3- The glacier starts to move when the snow line is at lower latitude.
- 4- A streamlined hills deposited in the glacial valley are kams.
- 5- Glacial varve is deposited in marshes.
- 6- The permafrost is known for mid-latitude climatic zone.
- 7- The interglacial stage in northwest Europe is characterized by mixed oak forest.
- 8- The steric change is responsible for the greater part of sea level rise.
- 9- In large tropical basins precipitation is normally low compared with evapo transpiration.
- 10- Large river systems require a large drainage basin with abundant precipitation.
- 11- The subaqueous delta is that part of the delta plain which lies above the low tide limit.
- 12- The prodelta clays grade landward and upward into silts and sands of the delta front.
- 13- High nearshore wave power produces straight delta shorelines with poorly-sorted sands.
- 14- High tidal range deltas have mud-filled channels in the delta plain.
- 15- The upper Nile delta plain is characterized by a lagoon belt.

(15 marks)

Question Two: Complete

- 1- The Quaternary events are reflected in.....and.....evidences.
- 2- Milankovitch attributed climatic changes to variations in.....,.....and.....
- 3- The terminal part left after glacier retreat is occupied by.....and.....
- 4-and.....are two landforms associated with permafrost
- 5- The terminal part of glacial valley is occupied by.....and.....
- 6- The Quaternary of low latitude area is subdivided into.....and..... stages
- 7- The Quaternary of the classical Alpine system is subdivided on the basis of.....
- 8 - The ice cap is always depleted in
- 9- Deltaic deposits are shaped by marine agents such as.....and.....
- 11- The sand bodies of tide dominated deltas are oriented.....to the coast and.....to flow
- 12- Most of the Nile sediments consist of.....and..... which are carried in suspension
- 13- Dominance by.....and..... results in cuspate delta
- 14- The modern Mississippi Delta is dominated by.....processes result in an elongate delta
- 15- The modern Nile Delta began to exist with.....transgression following the.....glacial stage

(15 marks)

Question Three: Choose the correct answer:

- 1- Chronostratigraphically the Quaternary is
a) epoch b) stage c) period
- 2- The continental glacier is
a) ice sheet b) ice shelf c) ice stream
- 3- Pingo is a periglacial morphology formed on
a) tills b) active layer c) loess
- 4- The kettle lake is formed in
a) outwash plain b) ground morain c) drumlin field
- 5- The global change of sea level due to melting of ice sheet is
a) eustatic b) hydrostatic c) isostatic
- 6- The peat deposits are widespread during Holocene in the
a) Boreal chronozone b) Atlantic chronozone c) sub -Atlantic chronozone

- 7- The shrinkage of pluvial lake indicates that the climate was
 - a) warm-wet
 - b) warm- dry
 - c) cold- dry
- 8- The last glacial stage in the Quaternary of northwest Europe is
 - a) Weichselian
 - b) Wurm
 - c) Wisconsinan
- 9- High and persistent wave power produces delta shoreline
 - a) straight
 - b) indented
 - c) smooth outline
- 10- All distributary mouth bar deposits display a sequence which is
 - a) fining upward
 - b) coarsening upward
 - c) no trend
- 11- Drainage basin with tropical climate produced sediments high in
 - a) bed load
 - b) suspended load
 - c) evaporates
- 12- Sand bodies formed under low nearshore wave power are normally
 - a) well sorted
 - b) moderately poor sorted
 - c) poorly sorted
- 13- Sand bodies in the alluvial valley take the shoestring form when variations in discharge are
 - a) small
 - b) moderate
 - c) large
- 14- In deltas where discharge is much higher than wave power the produced sand body is
 - a) at high angle to coast
 - b) parallel to coast
 - c) oblique to coast
- 15- Compared with the Mississippi, which has same drainage basin area as Nile, the Nile gives
 - a) lower discharge
 - b) higher discharge
 - c) equal discharge

(15 marks)

Question Four: Answer two only of the following

- a- Write in the morphological, lithological and biological evidences of Quaternary in the periglacial zone.
- b- Write briefly on the different geochronometric dating methods used in Quaternary.
- c- Discuss the primary forces which control the geometry and distribution of river mouth bar sand bodies.

(15 marks)

Good Luck
