	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY		
	EXAMINATION FOR THIRD LEVEL GEOPHYSICS STUDENTS		
	COURSE TITLE:	SEISMIC DATA PROCESSING AND INTERPRETATION	COURSE CODE: GP 3107
DATE:	MARCH 23, 2020	TERM: FIRST	TOTAL ASSESSMENT MARKS:100 TIME ALLOWED: 2 HOURS

Answer the following questions (Illustrate your answers with clear drawings).

(تصحيح الكتروني)

1. Choose the best answer

(50 degree)

- 1) Seismic data contains two types of information, one of them is unwanted data and should be processed to remove which called:
  - a. Signal
  - b. Noise
  - c. Filter
  - d. S/N
  
- 2) A seismic processing step that used to correct the rapid decay of signal energy and bring overall amplitudes up to fairly constant level:
  - a. Static Correction
  - b. Dynamic Correction
  - c. NMO
  - d. Gain Recovery
  
- 3) Time-shift of traces in order to correct for surface topography and weathered layer, this process called:
  - a. Static Correction
  - b. CMP Stack
  - c. Zero-Offset
  - d. Editing
  
- 4) Key seismic processing step that used to repositions the reflections to their true subsurface locations:
  - a. Dynamic Correction
  - b. Muting
  - c. DMO
  - d. Migration

- 5) Removing out the unwanted data by zeroing each trace before a certain time, which increase with increasing offset, this process called:
  - a. Editing
  - b. Muting
  - c. DMO
  - d. Migration
  
- 6) It is a filtering process which removes a wavelet from the recorded seismic trace by reversing the process of convolution
  - a. Deconvolution
  - b. Static Correction
  - c. Gain Recovery
  - d. NMO
  
- 7) A spectrum that used to represent the amplitude number versus the frequency called;
  - a. Amplitude Spectrum
  - b. Phase Spectrum
  - c. Noise Spectrum
  - d. Dip Spectrum
  
- 8) Representation of the data in mathematical form and transform data from Time into Frequency, this transform called;
  - a. Laplace Transform
  - b. Gamma Transform
  - c. Fourier Transform
  - d. Inverse Fourier Transform
  
- 9) Velocity from one surface or other reference to another surface, called:
  - a. Average Velocity
  - b. Interval Velocity
  - c. RMS Velocity
  - d. Stacking Velocity
  
- 10) Velocity from surface (or other datum) to a specified depth
  - a. Average Velocity
  - b. Interval Velocity
  - c. RMS Velocity
  - d. Stacking Velocity

2. Explain the different steps to form 3D structural modeling from the available seismic data and wells. (20 degree)


3. Write short notes on the following:- (30 degree)

a. Reflection Coefficient (RC).

b. Vertical seismic profile (VSP).

c. 2-Dimensional and 3-Dimensional seismic surveying.


EXAMINERS	DR. MOATAZ BARAKAT
	DR. RAMY AMAD EL-DIN

	<b>TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY</b>		
	<b>EXAMINATION FOR THIRD LEVEL GEOPHYSICS STUDENTS</b>		
<b>COURSE TITLE:</b>	<b>PETROPHYSICS</b>		<b>COURSE CODE: GP3109</b>
<b>DATE:</b>	<b>MARCH 2021</b>	<b>TERM: FIRST</b>	<b>TOTAL ASSESSMENT MARKS: 150</b>
			<b>TIME ALLOWED: 2 HOURS</b>

**Answer the following questions:**

- 1) Write on the following: (30 marks)
  - a) Radiogenic heat production.
  - b) Physical processes of heat energy transfer.
  - c) Importance of radiation for studying reservoir characteristics.
  
- 2) Complete the following statements: (20 marks)
  - a) .....packing is the most open of grain arrangement of grains and .....packing is the closest arrangement of grains and has a porosity of .....% per unit volume.
  - b) The resistivity of rocks depends on the factors: 1-.....  
2-..... 3-.....
  - c) Rock wettability is classified into 1-..... 2-..... 3-.....
  - d) The unit of permeability is the ..... which is defined as .....
  - e) Porosity is defined as .....
  
- 3) Discuss the following relations: (35 marks)
  - a) Porosity- permeability.
  - b) Formation resistivity factor- cementation factor.
  - c) Porosity- seismic wave velocity.
  
- 4) Write short notes on: (20 marks)
  - a) Rock density sedimentary rocks.
  - b) Capillary pressure and its application in geology.
  
- 5) Put (√) or (x) and correct the wrong sentence: (15 marks)
  - a) Magnetic susceptibility is a measure of the induced magnetization. ( )
  - b) Magnetic fabric of sedimentary rocks depends mainly on their remanant magnetization. ( )
  - c) Maximum magnetic susceptibility defines the main fluid flow direction in a sedimentary rock.( )
  - d) Primary magnetic fabric of sedimentary rocks is characterized by a strong anisotropy. ( )
  - e) Pore magnetic fabric helps in defining the maximum permeability direction. ( )
  
- 6) Discuss the following:
  - a) Types of induced magnetization. (07 marks)
  - b) Necessity of collecting standard shape oriented samples for magnetic fabric studies. (08 marks)
  - c) Use of magnetic susceptibility in 3D petrophysical characterization of sedimentary rock fabrics. (15 marks)

<b>EXAMINERS</b>	<b>PROF. NADER H. EL GENDY</b>	<b>PROF. ABDELAZIZ L. ABDELDAYEM</b>
	<b>DR. SHADIA A. M. SAAD</b>	

	<b>TANTA UNIVERSITY - FACULTY OF SCIENCE - DEPARTMENT OF GEOLOGY</b>			
	<b>EXAMINATION FOR JUNIORS (THRID YEAR) STUDENTS OF GEOPHYSICS</b>			
1969	<b>COURSE TITLE:</b>	<b>FIELD SEISMIC METHODS</b>		<b>COURSE CODE: GP 3105</b>
<b>DATE:</b>	<b>4 MARCH, 2021</b>	<b>TERM: FIRST</b>	<b>TOTAL ASSESSMENT MARKS: 100</b>	<b>TIME ALLOWED: 2 HOURS</b>

**Answer the following questions**

1- "Seismic noise is a non-interpretable or unwanted component of signals recorded by seismometers."

**What are the types of seismic noises? (20 Marks)**

**2- How seismic waves are generated on land (onshore) environment? (20 Marks)**

**3- Choose the Best Answer (60 Marks)**

1- In 3-dimensional seismic data (3D) acquisition.....

- a. Geophones are placed vertical in the well.
- b. Geophones are placed in a two-dimensional array on the Earth surface.
- c. Geophones are placed in a one-dimensional array on the Earth surface.

2- What is wrong in the following?

- a- The propagation velocity of the seismic waves depends on elasticity of the medium.
- b- The propagation velocity of the seismic waves depends on plasticity of the medium.
- c- The propagation velocity of the seismic waves depends on density of the medium.

3- An abrupt change in the speed of seismic waves is an indication that the.....

- a. waves are passing through material of the same velocity
- b. waves are going into a material with different properties
- c. waves are passing through material of the same density

4- Nearly all geophones currently used for seismic recording in marine (offshore) are of the electromagnetic type.

- a. True
- b. False

5- High-Pass filter is only allowed passing.....

- a- the certain bandwidth between lower and higher frequencies
- b- the low frequencies and cut higher frequencies
- c- the high frequencies and cut lower frequencies

6- ..... seismic data applied to determination of sonic velocities of strata penetrated by hole.

- a. Four-dimensional
- b. One-dimensional
- c. Two-dimensional


7- The geometry of an array (or geophone group) is designed to:

- a. Cancel certain unwanted signals and enhance the reflected events.
- b. Cancel certain unwanted signals.
- c. Enhance the reflected events.

- 8- What is correct in the following?
- Temperature tends to increase the speed of seismic waves and pressure tends to lower the speed.
  - Temperature and pressure does not affect the speed of a seismic wave.
  - Temperature tends to lower the speed of seismic waves and pressure tends to increase the speed.
- 9- The sample interval unit used during the digital recording is.....
- Centimetre
  - millimeter
  - millisecond
- 10- Noise on a seismic reflection profile can be defined as the deflection of a seismic trace caused by anything other than energy reflected once from an interface.
- True
  - False
- 11- Nearly all hydrophones currently used for seismic recording in onshore environment are pressure-sensitive phones (piezoelectric).
- True
  - False
- 12- If P-wave and S-wave were to go from a solid to a liquid - what would happen to their velocity?
- P-wave and S-wave increase
  - P-wave and S-wave decrease
  - P-wave decrease and S-wave decrease to zero
- 13- The interface between layers of contrasting acoustic properties is termed .....
- the reflector
  - unconformity surface
  - datum plane
- 14- A characteristic of compressional waves and shear waves is that they both.....
- cause rock particles to vibrate in the same direction
  - travel faster through more dense solid materials
  - travel through liquid and solid materials
- 15- ..... is to determine the changes occurring in the reservoir as a result of hydrocarbon production or injection of water or gas into the reservoir by comparing the repeated datasets.
- Two-dimensional seismic acquisition
  - Four-dimensional seismic acquisition
  - One-dimensional seismic acquisition

EXAMINERS	Prof. Mohamed A. Salem	Prof. Moataz Kh. Barakat
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☺ *Good Luck* ☺

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY		
	THEORETICAL EXAMIN .IN GEOPHYSICS FOR 3 <sup>TH</sup> LEVEL STUDENTS – SPECIAL GEOPHYSICS		
1959	COURSE TITLE:	" <u>ELECTROMAGNETIC METHODS -1</u> " ( 3 <sup>RD</sup> LEVEL)	COURSE CODE: GP: 3103
DATE:	18 / 3 / 2021	FIRST TERM	TOTAL ASSESSMENT MARKS: 100 TIME ALLOWED: 2H

-1- Answer the following questions:

marks : 100

- 1-Write about the main characteristics of electromagnetic Field. (20)
- 2- Write about the ionizing electromagnetic Waves . ( 20 )

**11- Answer The Following Sheet**

**A- MCQ EXAMINE : CHOOSE THE CORRECT ANSWER : ( 30 Marks).**


- 1- Electromagnetic spectrum consists of ( one field or two fields or three fields ) .
- 2-The photon energy can be measured in ( gravity or magnetic or electromagnetic ) field
- 3-The ionizing radiation waves are present in ( microwaves or normal light or X-rays).
- 4- The electromagnetic spectrum consists of two fields that spread ( parallel to each other *or* perpendicular fields ).
- 5-The very active photon can be present in ( microwaves or infrared waves or gammas wave

**111- TRUE AND FALSE EXAMINE: ( 30 Marks).**

Put sin ( √ ) for correct answer an put sin ( X ) for false answer:

- 1- The electromagnetic field depends on ( the density of rock or magnetic susceptibility or the radiation ). ( ) .
- 2- The frequency of wave is directly proportional with the wave length . ( ) .
- 3- The electromagnetic field is an interaction between electricity and magnetic. ( ) .
- 4- The wave length of near- infrared is lesser than that of far –infrared ( ) .
- 5- The microwave and radiowave play an important role in communication. ( ) .

**EXAMINERS: Prof.Dr. / Mohamed Refaat Soliman .**

 1968	<b>TANTA UNIVERSITY</b> <b>FACULTY OF SCIENCE</b> <b>DEPARTMENT OF GEOLOGY</b>			
	<b>EXAMINATION FOR THIRD LEVEL GEOPHYSICS STUDENTS</b>			
<b>COURSE TITLE:</b>	<b>SEISMIC METHODS (2)</b>		<b>COURSE CODE: GP 3101</b>	
<b>DATE:</b>	<b>MARCH 25, 2021</b>	<b>TERM: FIRST</b>	<b>TOTAL ASSESSMENT MARKS:150</b>	<b>TIME ALLOWED: 2 HOURS</b>

**Answer of the following questions (Illustrate your answers with clear drawings).**

**1. Write short notes on the following:- (30 degree)**

- a. Vertical seismic profile (VSP) and its application in seismic exploration.
- b. Types of seismic waves.
- c. Seismic stacking.

**2. Compare between the reflection and refraction methods (advantage and disadvantage). (35 degree)**

**3. Explain the time-distance curve in case of reflection method in two horizontal layers. (35 degree)**

**4. Discuss the following:- (50 degree)**

- a. Synthetic seismograms.
- b. 2D & 3D shooting.
- c. Snell's law and critical angle
- d. Common mid-point.
- e. Ray paths of multiple reflections.

<b>EXAMINERS</b>	<b>DR. MOATAZ BARAKAT</b>
	<b>DR. RAMY AMAD EL-DIN</b>