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	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY			
	FINAL EXAMINATION FOR SENIOR (LEVEL FOUR) GEOPHYSICS STUDENTS			
	HYDROGEOLOGY (GP4109)	TOTAL ASSESSMENTS MARKS: 150	TIME ALLOWED: 2 HOURS	Feb. 2021

Answer the following questions (sketch maps and diagrams should be drawn whenever possible):

1- Write short notes on the followings:- (30 Marks)

- a- Time-drawdown analysis (Jacob-method) to determine transmissivity and storage coefficient of water-bearing formation.
- b- Pollution of groundwater originates from irrigated agriculture.

2- Discuss the followings: (45 Marks)

- a- Aquifer and aquifer types.
- b- Darcy's law and hydraulic conductivity.
- c- The factors affecting the groundwater flow system.
- d- Two methods for tube wells drilling and two methods of well development.

3- Write on the followings:- (25 Marks)

- a- Nubian Sandstone Aquifer.
- b- Moghra aquifer.

4.1. Write on the followings: - (20 Marks)

- a- Sources of salinity in groundwater
- b- Classification of water quality for irrigation purposes according to sodium adsorption ratio (SAR)

4.2. State whether "True" or "False"; if false give the correct statement (15 Marks)

- A. Over-pumping, surging and jetting are the most common techniques in well disinfection.
- B. The principal effects of calcium are the reduction of soil permeability and hardening of the soil.
- C. A difficulty in identifying when the water table is encountered during rotary drilling.
- D. Cable tool requires more water for drilling than rotary rig and can drill in a wide range of formations, with faster drilling.
- E. The corrosion resisting materials commonly used in well screens are stainless steel and PVC pipes.

4.3. Select the correct answer

(15 Marks)

A) Well completion includes

1. Selection of drilling method
2. Placement of well casing, screens and gravel pack
3. Locating the best site for well drilling
4. Maximizing the well yield

B) The functions of the well casing are

1. Maintain an open hole from the ground surface to the aquifer.
2. Prevent well contamination.
3. Permits water to enter the well from the saturated aquifer.
4. All the above factors

C) The main functions of the gravel packs are

1. Maintain separation of aquifers.
2. Prevent well contamination.
3. Provides an annular zone of high permeability.
4. All the above factors

D) Graphic representations of hydrochemical analyses results are useful for

1. Emphasizing similarities and differences.
2. Detecting the mixing of water of different compositions
3. Identifying the occurring of chemical processes.
4. All the above purposes


E) Air rotary is considered an efficient drilling method in

1. Sticky clay formations
2. Unconsolidated material
3. Fissured limestone formations.
4. All the above formations

Good Luck ☺☺

Examiners: Prof. Mohamed G. Atwia, Prof. Zenhom E. Salem,

Dr. Mohamed M. El-Horiny

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY			
	<u>THEORETICAL EXAMINATION IN GEOPHYSICS FOR 4-LEVEL STUDENTS, SPECIALGEOPHYSICS</u>			
1989	COURSE TITLE:	<u>INTEGRATION OF GEOPHYSICAL DATA</u>		COURSE CODE: GP:4204
DATE:	/ 1 / 2021	TERM : FIRST	TOTAL ASSESSMENT MARKS: 150	TIME ALLOWED:2 HOR

ANSWER THE FOLLOWING QUESTIONS

PART : 1

- 1- Explain the role of gravity and magnetic methods in exploration purposes.
- 2- Illustrate how can the potential geophysical methods integrate with the:
 - a) Revealing subsurface structures.
 - b) Engineering projects .

Geophysical Integration – Part II

Answer the following questions:

- 1- Geophysical integration relates to techniques used in geophysical imaging and inversion to account for diverse sources of information, in order to better constrain the geophysical problem.
Mention some types of geophysical integration with brief discussion.


2-Write briefly on the following:

- a. Synthetic seismogram
- b. Procedure of well and seismic data tie.
- c. Seismic section

WITH OUR BEST WISHS

EXAMINERS: Prof./ Mohamed Refaat Soliman

Prof. / Mohamed Salem

 1968	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY		
	EXAMINATION OF FOURTH LEVEL GEOPHYSICS STUDENTS		
	COURSE TITLE:	SEISMIC STRATIGRAPHY	COURSE CODE: GP4105
DATE:	MARCH 6, 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS: 150
			TIME ALLOWED: 2 HOURS

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

1. Compare between the following by drawing: (40 marks)
 - 1- SU and CC.,
 - 2- MFS and MRS,
 - 3- LST and HST,
 - 4- FSST and TST.


2. Write notes about the following with drawing. (35 marks)
 - a- Shoreline trajectories in downstream-controlled settings.
 - b- Downstream-controlled and upstream-controlled areas.

3. Mention all seismic reflection parameters commonly used in seismic stratigraphy and their geologic significance. (15 marks)

4. Discuss each of the following :- (30 marks)
 - a. External geometry of seismic facies units.
 - b. Types of unconformities.

5. Write short notes on the following:- (30 marks)
 - a. Internal reflection configuration.
 - b. Seismic stratigraphic terminology.

EXAMINERS	DR. MOATAZ BARAKAT
	DR. MOHAMAD SOBHY

 1968	TANTA UNIVERSITY - FACULTY OF SCIENCE - DEPARTMENT OF GEOLOGY			
	EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OF GEOPHYSICS			
	COURSE TITLE:	ENVIRONMENTAL AND ENGINEERING GEOPHYSICS		COURSE CODE: GP 4103
DATE:	24 MARCH, 2021	TERM: FIRST	TOTAL ASSESSMENT MARKS: 150	TIME ALLOWED: 2 HOURS

PART 2 (ONE HOUR – 75 Marks)

Answer the Following

1- Choose the Correct: (2.5 mark each)

1. For engineering and environmental investigation, the frequency of electromagnetic wave is
a- high b-low c- medium
2. To determine the stiffness of soil we use velocity of -----waves
a- primary b- secondary c- both
3. Unconvincing of civil engineers for the successes geophysical survey is due to
a-Poor planning of survey b- unsuitable geophysical technique c- both
4. The shear wave velocity equals to
a. $V_s = \sqrt{\frac{\mu}{\rho}}$ b. $V_s = \sqrt{\frac{\rho}{\mu}}$ c. $V_s = \sqrt{\frac{\rho G}{\mu}}$
5. The skin depth (target depth) in case of EM survey based on
a. frequency b. shape of the transmitter T_x and receiver R_x c. both
6. Contamination of the ground water gives -----resistivity values.
a. increase b. decrease a. doesn't affect
7. For Wenner configurations ρ_a is plotted as a function of a current electrode spacing)
a. 1/3 b. 1/2 c. 1/5
8. For Schlumberger configurations q_a is plotted as a function of L (1/2 current electrode spacing).
a. 1/3 b. 1/2 c. 1/5
9. For EM, errors in apparent resistivity measurements can be caused by the following.
a. highly heterogeneous ground b. Electromagnetic coupling c. both
10. Shear modulus of water saturated sandstones is -----dry sandstones
a. greater than b. smaller than c. equals to
11. Refracted seismic survey successes when the velocity of overburden ----- bed rocks.
a. smaller than b. equals to c. greater than

12. Caves of could be easily identified by using -----
a. conventional resistivity b. conventional seismic. c. seismic or electric tomography

2- Choose False or True

(2.5 mark each)

- 1- Seismic reflection surveys are common for site investigations
- 2- Vertical electrical sounding surveys are preferable for deeper investigations.
- 3- Surface seismic waves are more destructive for buildings than body waves.
- 4- For environmental and engineering purposes, geophysical techniques can assess deep variability of the near-surface materials beneath a site.
- 5- The EM methods based on occurrences of conductive object
- 6- Seismic tomography is based on the predicted velocity contrast and target parameters.
- 7- Resistivity tomography ERT can differentiate between stiffness and strength of clay and bedrock.
- 8- Love and Rayleigh waves generally attenuate rapidly with increasing depth.
- 9- In DC resistivity method, the depth of investigation based on array configuration.
- 10- Seismic tomography is highly recommended for engineering and environmental applications.
- 11- Down-hole seismic techniques is the best methods for use in geotechnical investigations.
- 12- Resistivity of compacted clays is greater than unconsolidated soil.
- 13- The rigidity of the crystalline bedrocks is greater than overlying sediments.
- 14- Poisson's ratio is equals to longitudinal strain/transverse strain.
- 15- Arrival times of the reflected waves are greater than refracted waves.
- 16- Shear waves velocity is essential for detection of soil and rockhead stiffens.
- 17- Down-hole seismic techniques represent the best methods for use in geotechnical investigations.
- 18- Seismic surveys are widely used for cave detections than resistivity methods.

انتهت الأسئلة

With my Best Wishes

Prof. Hosni Ghazala

EXAMINERS	Prof. Hosni Ghazala	Prof. Mohamed R. Soliman
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**TANTA UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF GEOLOGY**

THEORETICAL EXAMIN. OF GEOPHYSICS FOR 4TH LEVEL STUDENTS PECIAL GEOPHYSICS

COURSE TITLE:	"ENGINEERING AND ENVIRONMENTAL GEOPHYSICS "	COURSE CODE: GP:4103
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DATE:	/ 1 / 2020	TERM : FIRST	TOTAL ASSESSMENT MARKS: 75	TIME ALLOWED: 2H
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PART: ONE

1-ANSWER THE FOLLOWING QUESTIONS:

- 1-Write about the role of gravity and magnetic methods in revealing and treating the environmental and engineering problems . (20 marks).
- 2- What are the types of surface and subsurface pollution. (20 marks).

11- MCQ EXAMINE: Choose the correct answer: (18)

- 1-Gravity method used for (underground water ; minerals ; radioactive) searching .
- 2-Magnetic methods mainly used for (subsurface cavities ; copper – zinc; iron ores). Searching .
- 3-Microgravity method used (proton precision; La –Coste and Romberg ; Scintrex CG-5) instrument.
- 4- For oil contaminated area, the favorable searching geophysical method is the (gravity ; magnetic ; electric) .

11- TRUE AND FALSE EXAMINE: (17 Marks).

- 1-Electrical method can used for searching underground water . ().
- 2-Magnetometer can be affected by all types of iron ores. ().
- 3-All metals reflect a positive gravity contours; while all non-metals reflect negative magnetic readings. ().
- 4- For construction a basement configuration map ; we use (radiometry; Magnetic ; electric) method. ().

EXAMINER: PROF.DR./ Mohamed Refaat Soliman

PART: TWO