

Mansoura University

Second Term 2012

Faculty of Science

The Fourth Level

Physics Department

Date: 26 June 2012

Subject: Physics 433
Geophysics Group

Time Allowed: Two Hours.

Course: PHYSICS of Materials

Full Mark: [60Mark]

Each Question [20Mark]

Q.1.a) Distinguish between single crystals, polycrystalline, and non-crystalline materials. [6Mark]

b) Analyze the behavior of a piece of rubber when subjected to stress.

[5Mark]

c) Justify why ?(i) air is a poor conductor, (ii) Certain glassy semiconductors have shown switching properties , and (iii) Insulators Material has interesting electrical properties . [9Mark]

Q.2.a) Specify the factors affecting the properties of ordinary polycrystalline materials. [7Mark]

b) Discuss the applications of ferroelectric and piezoelectric materials.

[8Mark]

c) Summarize the effects of radiation on materials. [5Mark]

Q.3.a) Formulate the types of magnetic materials. [5Mark]

b) Explain Why? (i) Ionic crystals are usually quite soluble in polar liquids, (ii) Ionic polarization not exists in covalently bonded materials, and (iii) Diamond is poor electrical conductor but it has a good thermal Conductivity.

[15Mark]

Best Wishes

Prof.Dr. Mustafa Kamal

المستوى الرابع - جبر فيزياء - فيزياء هوية ف ٤٢٤



Mansoura University
Faculty of Science
Physics Department

Final Examination May 2012

Academic level : Fourth level Program: Geo

Time: 2 Hours

Subject: Physics 434

Date: June 2012

Course : Atmospheric Physics (General Meteorology)

Full Mark: 60 Marks

Answer ALL the following questions:

[1] Draw the horizontal and vertical cross sections of general wind circulation. (12 Mark)

[2] Define the following Terms:

(a) Mixing Ratio

(b) Relative Humidity

(c) Dry Adiabatic Lapse Rate

(d) Saturated Mixing Ratio

(12 Mark)

[3] (a) Find out an equation of the virtual temperature. (6 Mark)

(b) Calculate the virtual temperature of moist air at 45°C having a mixing ratio of 17 g kg^{-1} . (6 Mark)

[4] Discuss the stability and instability conditions in the atmosphere and give an examples. (12 Mark)

[5] (a) What are the types of air masses. (6 Mark)

(b) Classify the cloud types and write on the rainy clouds. (6 Mark)

Good Luck

Examiner : Prof. Yehia Hafez

Prof. Y. Y. Hafez



Environmental Geophysics and Archaeo-geology (404 جف)

Answer the following questions

PART I (Archaeo-geology)

Complete the following:

(20 marks)

1. Geophysical survey is used to create non-portable archeological features, especially when their measurably with their surroundings
2. Unlike other archeological methods, geophysical survey is neither..... nor
3. In archaeogeophysics an appropriate,, and are essential for success, and must be adapted to the geology and archaeological record of each site.
4. Most commonly applied instruments in archeology are,, and.....
5. Gradiometer configuration is preferred because it provides better resolution of and hidden objects.
6. The is the most common type of magnetometers used for survey
7. For Materials k is negative, and k is positive for..... Materials and very strong for the..... materials.
8. The determination of and of the earth magnetic field in particular location, can be used to constrain the of archeological materials.
9. In resistance survey a variety of probe are used, most having probes, often mounted on a rigid frame.
10. Some EM conductivity instruments are capable of measuring and of archeological objects.

2- Choose YES or NO and correct the wrong

(10 marks)

- a. Gradiometer surveys based on measuring the total intensity earth's magnetic field
- b. EM survey in archeological uses transmitter (Tx) for long wave length.
- c. For GPR survey, clay and silts often problematic because their low electrical conductivity causes increasing of signal strength
- d. In moist and/or clay-laden soil and soil with high electrical conductivity, penetration is sometimes only a few centimeters.

- e. EM surveys require direct contact with the ground, and are relatively of lower speed than resistance instruments.
- f. Archaeomagnetic dating requires an undistributed feature that having high remnant magnetic moment from the last time it had passed through Curie point.
- g. GPR uses a low-frequency (usually polarized) x-rays and transmits in the ground.
- h. Twin-probe array is the most successful array for archaeological use.
- i. The data logger keeps track of survey position for zig-zag and parallel traverses and displays current grid, line number and line position.
- j. When clay is heated, the microscopic iron particles within it require induced magnetic vertical to the earth's magnetic field

PART II (Environmental Geophysics)

Answer the following two questions

First Question

(18 Marks, 9 for each)

- a) Define the term "*bedrock*" from environmental point of view and discuss the best geophysical methods used in locating it, how and why?
- b) Discuss briefly the advantages and disadvantages of the use of magnetic method to locate joints in buried metal pipelines.

Second question

(12 Marks, 4 for each)

Write short notes on the role of geophysical techniques used in evaluation each of the following:

- a) Landfill sites
- b) Location of buried cavities and mineshafts
- c) Settlement and subsidence



Final Exam in Petroleum Geology of Egypt (G410)

Answer the following questions

Q1. Write on the petroleum geology of the Gulf of Suez giving an example and determine the differences between Kareem and Belaium crudes. (20 Mark)

Q2. Compare between the geologic events of both the Gulf of Suez and the North Western Desert during the Cretaceous Period. (20 Mark)

Q3. Complete the following:

(20 Mark)

- A Petroliferous province is defined as and the provinces of Egypt are.....
- Miocene in the Gulf of Suez could be differentiated into two groups known as and, the formations of the first are , and..... and those of the second are , and
- All folding through-out the Gulf of Suez has been produced either by or by
- The stratigraphy of the Gulf of Suez could be differentiated into the first is from to and important as the second phase is the and important for.....
- During the Permian and Triassic periods almost the whole Western Desert remained as a except for a few tracts equipied by
- In the Western Desert the Upper Cretaceous transgression started in the from the north and spread as It represents the Known in the geologic history of

All the best

بسم الله الرحمن الرحيم

Mansoura University

Faulty of Science

Department of Geology



Date: 5 June 2012

Final semester

Academic year 2011/2012

4th Level, Geophysics Program

Full Marks: 60 marks

Time allowed: 2 hrs

Final Exam in Hydrogeology and Geomorphology of Egypt (G402)

Answer the following questions:

Question One: Discuss in brief only ONE of "A-E": (20 marks "4x5")

- Methods for drilling water wells.
- Analytical methods of pumping test data.
- Graphical presentations of hydrochemical analyses.
- The types of springs in Sinai Peninsula, Egypt.
- Geomorphologic provinces in Sinai Peninsula, Egypt.

Question Two: Compare between the following: (16 marks "4x4")

- Physical and chemical weathering.
- Gaining (effluent) and losing (influent) streams.
- The two very highly potential aquifers west of Nile Delta, Egypt.
- The different types of the coastal plains west of Nile Delta, Egypt.

Question Three: (24 marks)

- What techniques might be used to halt saltwater intrusion? (4 marks)
- Give simple sketches for the following: (6 marks "2x3")
 - Hydrologic cycle.
 - Unconfined and perched aquifers.
 - The foreshore-beach-nearshore profile.
- Put true or false for the following: (7 marks "1x7")
 - Permanent hardness can be removed by boiling.
 - Parabolic dunes form when there is limited sand.
 - An ideal tracer should be safe in terms of human health.
 - Groundwater moves much more slowly than surface water.
 - Wadi El-Arish has a very large catchment area in Sinai Peninsula.
 - The main depressions of the structural plain west of Nile Delta are Abu Mina and El Marbut depressions.
 - A graben is a long and fairly narrow upland raised by upthrust between two faults.
- Complete the following: (7 marks "1x7")
 - Coasts are of two types: &
 - The stream types are:
 - From Darcy's law; the Flow Rate (Q) =
 - Groundwater is developed for use through: ..., ... & ...
 - The major ion constituents in groundwater are: ..., ..., ..., & ...
 - The most important groundwater reservoirs in Egypt are: ... & ...
 - The longitudinal orientation of El Heneishat sand dune chains is mainly controlled by