Mansoura University
Faculty of Science
Geology Department
Date: 3 / 1 / 2016
Time: Two Hours

First term Exam 2015L2016
Subject: Optical Mineralogy and Rock Forming Minerals (ج-ج-)
Second Program Geology
Total Marks: 60 Marks

First Part- OPTICAL MINERALOGY

Answer the following questions: **(10 Marks for each)**

1- Draw the followings :--
   a- Behaviour of light in Nicol prism. b- Interpretation of Becke line.
   c- Critical Angle & Total Reflection

2- Write in detail on the followings :-
   a- Pleochroism. b- Twinkling c- Extinction

3- Describe in detail the followings :-
   a- Double Refraction b- Interference Colours c- Relief

Second Part- ROCK-FORMING MINERALS

Answer the Following Questions; **(15 Marks for each)**

1- Complete the following; **(5 Marks for each)**

i- The General Chemical Formula of Silicate Minerals ……,, and give symbols explanation X=……, Y=……, Z=…… and w=…… .

ii- Silicate minerals classification with example of related minerals is ……

iii- General chemical formula of amphibole minerals is …… and the paragenesis of hornblende is ……

iv- The varieties of alkali feldspars and its paragenesis are……, also the varieties of plagioclase feldspars and its paragenesis are…… .

2- **Answer with X or √ and give the appropriate correction.** **(2 Marks for each)**

i- Mica minerals are like biotite, muscovite, chlorite and serpentinite and used as gemstone.

ii- Olivine minerals like forsterite and diopside occur in dunite and basalt.

iii- Pyroxene minerals are 1- ortho-pyroxene like enstatite, aegirine and clino-pyroxene like augite and diopside.

iv- Ionic radius and charge control the ionic substitution.

v- SiO_2 polymorphic group are like quartz varieties, plagioclase and K-feldspars.

لجنة التصحيح: ** أ.د./ أحمد عبد اللطيف **د./ شعبان مشعل

Mansoura University		First Term, 2015-2016
Faculty of Science		January, 2016
Physics Department	Geophysics, 2nd Level	Time: 2 hours.

Vibrations & Waves, (Ph. 229)

Full Mark: 60 Marks

Answer the following Questions:

1. a)	Study the critical damped oscillations in an electrical system..	10 Marks
b)	Find the wavelength and the velocity of a wave given in two directions by: $\varphi = 9 \sin (3x + 4y - 2t)$.	10 Marks
2. a)	Mass of 5 kg is attached with spring has k=500 dyne / cm. After it has the equilibrium position, a force given by 30 sin 20t is applied on it. Find its position at time t and its velocity. Discuss the phase.	7.5 Marks
b)	Prove that $\varphi = 5 \cos\theta + 10 \sin\theta - ct$ represents a wave in two directions which makes an angle θ with x-axis.	7.5 Marks
3. a)	Study the coupled oscillations in case of mono atoms system.	10 Marks
b)	Find the wavelength and the velocity of the two dimensions wave given by: $\varphi = 10 \sin (3x+4y- 5t)$.	5 Marks
c)	A spring is hanged vertically from its upper end. Its lower end is connected by a mass of 3 kg. Then it is pulled down a distance of 1.5 cm from its steady state position, if the spring constant =k 1000N/ m. study its motion.	10 Marks

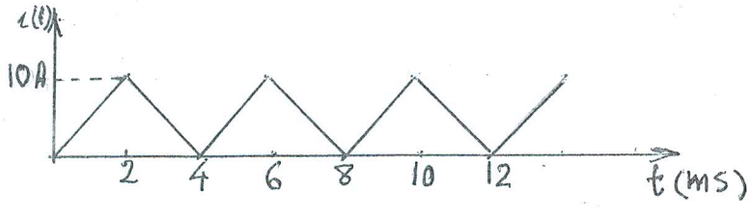
With our best wishes,

Dr. Safaa Abdel-Maksoud & Prof. Dr.A.Oraby

Mansoura University Faculty of Science Physics Department Subject: Physics		1st term Exam 2nd level Geophysics Date : January 2015 Time allowed : 2 hours
Course (s): Physics: Ac and electric circuits ph228		Full Mark: 60Mark

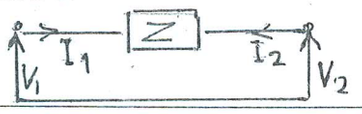
Answer the following Questions:

[1] a- A current waveform shown in figure below exists in a pure inductor of L=1 mh. Sketch the voltage waveform. (13)



b-1- Write down the necessary functional equations for the hybrid parameters of the 2-port network (V_1 and I_2).

2- For the given one element circuit Find the h-parameters (matrix)

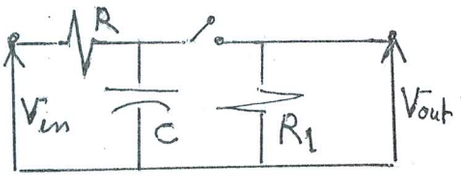


(7)

[2] Define each of the following :

a-The cut off frequencies . b-The resonant frequency. c-The quality factor of a filter. (3)

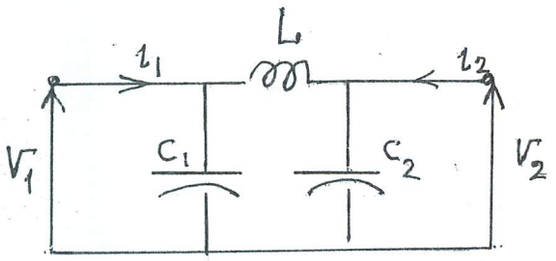
b- Drive an expression for the voltage transfer function $H(s) = V_o/ V_i$ for the given filter, Determine the filter parameters then express $|H(j\omega)|, < H(j\omega)$



(17)

[3]

For the given Network find :
[Y] parameters and [Z] parameters
Given that:(L=1H, $C_1=C_2$ = 1 F)



(20)

Good luck

Dr. Aziza Atta

Mansoura University
Faculty of Science
Department of Geology

2nd Level, Geology & Geophysics
Final exam, Petrology (G 203)
Time allowed: **TWO Hours**
Academic Year: 2015-2016
Date: 20/1/2016

Please answer ALL questions

1- Complete the missing parts in the following sentences (15 marks)

1- Phyllite is low-grade metamorphism of ....., ..., ..., or .....

2- Volatiles of magma include ....., ..., ...

3- Conglomerate is a ..... that contains ..... clasts. The space between the clasts is generally filled with ..... and/or a chemical cement that binds the rock together.

4- Light bands of gneiss include ....., ..., ..., whereas dark bands contain ..... and .....

5- Rhyolite is equivalent to .....; its texture is ..... and may contain ..... of orthoclase, mica and quartz.

6- Pumice is highly ..... and is of ..... composition.

7- Lopoliths are ..... or ..... concordant bodies with top ..... and ..... bottom.

8- Matrix of sandstone is composed of ..... whereas matrix of conglomerate includes.....

9- Foliation of metamorphic rocks forms by ..... and .....

10- Allochems of limestone include ....., ..., ..., ...

2- Tick (√) or (X) and correct the false sentences (15 marks)

1- Granitic magmas considered as secondary and highly evolved magma. ( )

2- Thermal expansion is a significant form of mechanical weathering. ( )

3- Matrix was deposited at the same time as the framework grains or infiltrated shortly after. ( )

4- Sedimentary structures are formed after deposition of sediments. ( )

5- Plate tectonic plays a minor role in the generation of most magma. ( )

6- Laccolith is a discordant body with convex bottom and flat upward. ( )

7- Hydrolysis is the reaction of any substance with water. ( )

8- The migration of ripples, dunes and sand-waves gives cross-stratification. ( )

9- Non-marine carbonates include chalk, limestone and oolitic limestone. ( )

10- Non-foliated metamorphic rocks are composed of equidimensional grains. ( )

(Flip the paper)

Mansoura University
Faculty of Science
Department of Geology

2nd Level, Geology & Geophysics
Final exam, Petrology (G 203)
Time allowed: **TWO Hours**
Academic Year: 2015-2016
Date: 20/1/2016

3- Compare between each of the following (use drawing if it is possible) (15 marks)

1- Porosity and permeability.

2- Sandstone and limestone.

3- Phacoliths and lopoliths.

4- Granite and diorite.

5- Gneiss and phyllite.

4- Do as shown **(15 marks)**

1- Migmatites. **(Write short notes)**

2- Tuff and volcanic breccia. **(Give a short description)**

3- Frost wedging. **(Describe and illustrate with drawing)**

4- Sedimentary rocks. **(What can tell us?)**

5- Heat can metamorphose rocks. **(Determine sources of heat)**

With my best wishes
Dr. Tarek Anan

لجنة التصحيح: أ.د. أمين مصطفى غيث د. طارق إبراهيم عنان*

MansouraUniversity
Faculty of Science
Department of Geology

Final Exam : Jan., 2016
Course: GF-201
Time: 2 hours & Mark: 60

Answer the following questions:

Q1: Mark (T) for the true and (F) for the wrong sentences AND correct the wrong: (20 Marks)

1. Station spacing should be greater than the depth of the body of interest ( )

   Correction: .....

2. Gamma = 10^{-9} Tesla = 10^{-5} Gauss = nT. ( )

   Correction: .....

3. The inducing magnetic field is much smaller than the anomalous magnetic field. ( )

   Correction: .....

4. The value of gravity acceleration of anybody on the earth is a function of mass. ( )

   Correction: .....

5. The effect of rotation of the earth on gravitational acceleration is maximum at poles. ( )

   Correction: .....

6. Accurate topographical map is very necessary in gravity prospecting. ( )

   Correction: .....

7. 1 gu = 0.1 mgal = 10^{-6} m/s^2. ( )

   Correction: .....

8. Gravitational potential is due to dipole effect. ( )

   Correction: .....

9. **g** is a scalar field while **U** is a vector. ( )

   Correction: .....

10. Free-air anomaly map is similar to topography. ( )

    Correction: .....

11. Resistivity of the dry sand is higher than the resistivity of clay. ( )

    Correction: .....

12. Derivative filters are used to enhance small scale anomalies. ( )

    Correction: .....

13. One VES-curve can detect vertical dyke. ( )

    Correction: .....

Q2: Complete: (20 Marks)

1. Types of resistivity surveys include ..... and .....
2. Near surface ferruginous sandstone ..... the underline magnetic anomalies.
3. Gravity methods measure the .....contrast while magnetic methods measure the contrast in .....
4. (Δg_F) = ...
5. Bougeur correction (C_B) = ... while bougeur anomaly (Δg_B) = ...
6. Approximate Gravity anomaly for horizontal slab z =.....
7. RTP-technique is used to .....
   .....
8. The main physical ideas behind measuring gravity acceleration are ....., ... and .....
9. The general equation of gravity Anomaly Over a Buried bodies of complex = ...
10. Igneous rocks always have ..... density that sedimentary rocks.
11. The value of inclination at the magnetic equator is equal to ..... and the magnetic field is directed ..... .
12. Saline water has a resistivity values .....than fresh water.
13. Basaltic intrusion gives ..... magnetic anomaly.
14. The general formula of determining resistivity of the earth for a four electrodes system is .....

Q3: (20 marks)

a- Starting with the gravitational acceleration due to a point mass, deduce the gravitational acceleration over bodies of more complex shapes. (5 marks)

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b- Explain with drawing how to use Schlumberger electrode array to obtain VES data: (5 M)

c- Discuss <u>TWO</u> of the following : (10 marks, 5 for each)

1. Measuring gravitational acceleration.
2. Fluxgate magnetometer.
3. The noises in resistivity data and how can be eliminated.

---------------------------------- END OF EXAM. ----------------------------------

Best Wishes:

Dr. Ahmed ElGalladi