

المستوى الثانى
كيمياء / الجيولوجيا



TANTA UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF GEOLOGY

EXAMINATION FOR SOPHOMORES STUDENTS
OF
SPECIAL GEOLOGY AND CHEMICAL-GEOLOGY

COURSE TITLE: **APPLIED MINERALOGY** COURSE CODE: **GE2214**


DATE: 29/5/ 2017 JUNE, 2017 TERM: SECOND TOTAL ASSESSMENT MARKS: 100 TIME ALLOWED: 2 HOURS

Answer the following questions

- 1) What is (20 marks)
- a) Transparent Alumina
 - b) Fumed Silica
 - c) Lely process
 - d) Carborundum
 - e) Hard Gypsum
 - f) Dewatering
 - g) Cryolite
 - h) Delamination
 - i) Silicones
 - j) Drying process
- 2) Write brief on only four of the following: (30 marks)
- a) Integrated Production Model with Value Added Product Sales
 - b) Commercially Grades of Kaolin
 - c) Biomedical Applications of Cationic Clay Minerals
 - d) Mineral processing and its stages
 - e) Production Process of Silicon Carbide
- 3) Different types of: (20 marks)
- a) Separation Methods
 - b) Roasting Operations
 - c) Gravity Concentration Processes
 - d) Leaching Methods
- 4) Draw Flow chart of only four of the following: (30 marks)
- a) Beneficiation of Black Sand
 - b) Zirconium Sponge from zircon
 - c) Titania
 - d) Extraction of Aluminium
 - e) Magnesium hydroxide
 - f) Beneficiation Process of Kaolin

Prof. Dr. Hassan E. Harraz

1

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY		
	EXAMINATION For The Second Level of Special Geology Students		
	COURSE TITLE	Metamorphic Petrology (1)	COURSE CODE: GE2206
DATE:	24/5/ 2017	SEMESTER: TWO	TOTAL ASSESSMENT MARKS :100
			TIME ALLOWED: 2 hrs.

Part I (50 marks)

Answer the following questions. Illustrate your answer, whenever possible.

1. Shale represents very sensitive rock during progressive regional metamorphism. **Explain** (20 marks)
2. Write a concise article on main factors controlling the classification of metamorphic rocks. (20marks)
3. Tick TRUE or FALSE of the following statements, and CORRECT the false one.
 - a. All metamorphic rocks display non-foliated textures; this is due to regional metamorphism.
 - b. Skarn is relevant to dynamic metamorphism.
 - c. Migmatization represents the earliest mechanism of metamorphic differentiation.
 - d. Granulose texture is related to regional metamorphism.
 - e. The main products of basaltic rocks after regional metamorphism are metabasalts and amphibolites. (10 marks)

Part II Metamorphic Petrology (50 marks)

Answer the following questions. Illustrate your answer, whenever possible:


- 2- Discriminate between the following:
- a- Lower and upper limit of metamorphism -----(5 marks)
 - b- Diagnostic minerals of low grade and high grade metamorphism----- (5 marks)
 - c- Hornfelse facies and facies of regional metamorphism----- (16 marks)
 - d- Decussate texture and gnissose textures of metamorphic rocks----- (5 marks)
 - e- Rock names of foliated and cataclastic (dynamic) metamorphic rocks----- (5 marks)
 - f- Regional metamorphism at arc-trench zone and regional metamorphism at subduction zone----- (14 marks)

Examiners: Prof. Prof. Mohamed Tharwat Salah Heikal &

Prof. Gaafar A. El Bahariya

Good Luck!

Handwritten signatures: f. Heikal and Gaafar

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY			
	EXAMINATION For The Second Level of Chemistry-Geology Students			
	COURSE TITLE	Metamorphic Petrology (1)		COURSE CODE: GE2206
DATE:	24/5/ 2017	SEMESTER: TWO	TOTAL ASSESSMENT MARKS :100	TIME ALLOWED: 2 hrs.

Part I (50 marks)

Answer the following questions. Illustrate your answer, whenever possible.

1. Shale represents very sensitive rock during progressive regional metamorphism. **Explain** (20 marks)
2. Write a concise article on main factors controlling the classification of metamorphic rocks. (20marks)
3. Tick TRUE or FALSE of the following statements, and CORRECT the false one.
 - a. All metamorphic rocks display non-foliated textures; this is due to regional metamorphism.
 - b. Skarn is relevant to dynamic metamorphism.
 - c. Migmatization represents the earliest mechanism of metamorphic differentiation.
 - d. Granulose texture is related to regional metamorphism.
 - e. The main products of basaltic rocks after regional metamorphism are metabasalts and amphibolites. (10 marks)

Part 2 (50 Marks)

4. Tick \checkmark or \times marks and correct the wrong ones:- (marks): (20 marks)


- A) Megmatites are metamorphic rocks formed in low grade metamorphism
- B) Omphacite is a variety of amphiboles occur as index mineral in schist.
- C) Augen texture occur in gneisses and mylonites formed at high pressure and low temperature in metamorphic terrains.
- D) Charnokite rocks, composed mainly of chlorite and feldspar formed in shear zone
- E) Porphyroclasts are characterized for autometamorphism as in serpentinites.
- F) Granulite facies is characterized by low pressure and temperature and formed in subduction zone at low pressure, temperature and depth around 3 kb.
- G) Megma is formed due to anatexises at low pressure and temperature.
- H) Porphyroblasts and brecciation are textures characterized for rocks in hornfels facies (thermal metamorphism).
- K) Wollostonite marble is a metamorphic rocks formed after ultrabasic rocks at high pressure.
- J) Potash feldspar and garnet occur in high grade metamorphic rocks.

5- Define the followings: (30 Marks)

- | | |
|--|---|
| a- Eclogite facies | b- Dynamic metamorphism |
| c- Metamorphic index minerals for amphibolites facies, granulite facies, blue schist faies | |
| d- Different types of migmatites | e- Different Facies of thermal metamorphism |

WISHING SUCCESS FOR THE ALL

Examiners: Prof. Mohamed Th. S. Heikal & Prof. Mohamed M. Abu Anbr

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY			
	EXAMINATION For The Second Level of Chemistry-Geology Students			
	COURSE TITLE	Metamorphic Petrology (1)		COURSE CODE: GE2206
DATE:	24/5/ 2017	SEMESTER: TWO	TOTAL ASSESSMENT MARKS :100	TIME ALLOWED: 2 hrs.

Part I (50 marks)

Answer the following questions. Illustrate your answer, whenever possible.

1. Shale represents very sensitive rock during progressive regional metamorphism. **Explain** (20 marks)
2. Write a concise article on main factors controlling the classification of metamorphic rocks. (20marks)
3. Tick TRUE or FALSE of the following statements, and CORRECT the false one.
 - a. All metamorphic rocks display non-foliated textures; this is due to regional metamorphism.
 - b. Skarn is relevant to dynamic metamorphism.
 - c. Migmatization represents the earliest mechanism of metamorphic differentiation.
 - d. Granulose texture is related to regional metamorphism.
 - e. The main products of basaltic rocks after regional metamorphism are metabasalts and amphibolites. (10 marks)

Part 2 (50 Marks)

4. Tick \checkmark or \times marks and correct the wrong ones:- (marks): (20 marks)

- A) Megmatites are metamorphic rocks formed in low grade metamorphism
- B) Omphacite is a variety of amphiboles occur as index mineral in schist.
- C) Augen texture occur in gneisses and mylonites formed at high pressure and low temperature in metamorphic terrains.
- D) Charnokite rocks, composed mainly of chlorite and feldspar formed in shear zone
- E) Porphyroclasts are characterized for autometamorphism as in serpentinites.
- F) Granulite facies is characterized by low pressure and temperature and formed in subduction zone at low pressure, temperature and depth around 3 kb.
- G) Megma is formed due to anatexises at low pressure and temperature.
- H) Porphyroblasts and brecciation are textures characterized for rocks in hornfels facies (thermal metamorphism).
- K) Wollostonite marble is a metamorphic rocks formed after ultrabasic rocks at high pressure.
- J) Potash feldspar and garnet occur in high grade metamorphic rocks.

5- Define the followings: (30 Marks)

- | | |
|--|---|
| a- Eclogite facies | b- Dynamic metamorphism |
| c- Metamorphic index minerals for amphibolites facies, granulite facies, blue schist faies | |
| d- Different types of migmatites | e- Different Facies of thermal metamorphism |

WISHING SUCCESS FOR THE ALL

Examiners: Prof. Mohamed Th. S. Heikal & Prof. Mohamed M. Abu Anbr



TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY			
EXAMINATION For The Second Level of Special Geology Students			
COURSE TITLE	Metamorphic Petrology (1)	COURSE CODE: GE2206	
DATE:	24/5/ 2017	SEMESTER: TWO	TOTAL ASSESSMENT MARKS :100
			TIME ALLOWED: 2 hrs.

Part I (50 marks)

Answer the following questions. Illustrate your answer, whenever possible.

1. Shale represents very sensitive rock during progressive regional metamorphism. **Explain** (20 marks)

2. Write a concise article on main factors controlling the classification of metamorphic rocks. (20marks)

3. Tick TRUE or FALSE of the following statements, and CORRECT the false one.
 - a. All metamorphic rocks display non-foliated textures; this is due to regional metamorphism.
 - b. Skarn is relevant to dynamic metamorphism.
 - c. Migmatization represents the earliest mechanism of metamorphic differentiation.
 - d. Granulose texture is related to regional metamorphism.
 - e. The main products of basaltic rocks after regional metamorphism are metabasalts and amphibolites. (10 marks)

Part II Metamorphic Petrology (50 marks)


Answer the following questions. Illustrate your answer, whenever possible:

- 2- Discriminate between the following:
- a- Lower and upper limit of metamorphism -----(5 marks)
 - b- Diagnostic minerals of low grade and high grade metamorphism----- (5 marks)
 - c- Hornfelse facies and facies of regional metamorphism----- (16 marks)
 - d- Decussate texture and gnissose textures of metamorphic rocks----- (5 marks)
 - e- Rock names of foliated and cataclastic (dynamic) metamorphic rocks---- (5 marks)
 - f- Regional metamorphism at arc-trench zone and regional metamorphism at subduction zone----- (14 marks)

Examiners: Prof. Prof. Mohamed Tharwat Salah Heikal &
Prof. Gaafar A. El Bahariya
Good Luck!

Handwritten Arabic text: (1) 2 3 4 5

Handwritten letter: C

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY		
	EXAMINATION FOR SECOND YEAR STUDENTS (DOUBLE MAJOR PROGRAMS)		
COURSE TITLE:	INSTRUMENTAL ANALYSIS (1)		COURSE CODE: CH2244
DATE: JUNE 3, 2017	TERM: SECOND	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Question (1): Chose the correct answer for the following: [20 marks]

1. The radiative $T_1 \rightarrow S_0$ process is....., while radiationless $S_1 \rightarrow T_1$ process is.....
i) an internal conversion ii) an intersystem crossing iii) an absorption
iv) a phosphorescence v) a fluorescence.
2. In atomic absorption spectroscopy, which of the following statements is **FALSE**?
i) Flame is used to excite the element to a higher energy state.
ii) A hollow-cathode lamp with a cathode made of the element to be analyzed is used to produce a wavelength of light specific for the material.
iii) This light is absorbed by the ground state atoms in the flame.
iv) There is a net decrease in the intensity of the beam.
3. The term (I_t/I_0) is called.....
i) absorbance ii) opacity iii) extinction coefficient iv) transmittance
4. What is the main light source used in fluorescence spectrometer?
i) deuterium lamp ii) xenon lamp iii) hollow cathode tube iv) tungsten lamp
5. The atomization processes in flame atomic absorption spectrometer occurs in.....
i) photomultiplier tube ii) atomizer iii) nebulizer iv) flame
6. In UV-VIS absorption spectroscopy, the UV absorption causes.....
i) change of nuclear spin ii) change of electron distribution in valance shell
iii) change of configuration iv) change of electron distribution in inner shells
7. In the atomic absorption spectroscopy, the combustion gas in the air-acetylene flame is.....
i) air ii) nitrous oxide iii) acetylene iv) oxygen
8. Which of the following is not active in IR absorption spectroscopy?
i) Cl_2 ii) $CHCl_3$ iii) CH_4 iv) C_6H_6
9. Hydrogen lamp gives a continuum spectrum in the
i) IR region ii) UV region iii) Visible region iv) UV and visible regions
10. What does the notation $n \rightarrow \sigma^*$ mean?
i) Absorption; transition from a quantum level n to σ^* MO.
ii) Absorption; transition from a non-bonding MO to σ^* MO.
iii) Emission; transition from a quantum level n to σ^* MO.
iv) Emission; transition from a non-bonding MO to σ^* MO.

Question (2):

A. Answer the following:

[20 marks]

1. Illustrate with drawing the "Jablonisky diagram" and define the different processes of dissipating energy.
2. Draw a block diagram and steps of atomization in the flame of atomic absorption spectrometer.
3. Describe two light sources used for UV-VIS spectrophotometry.

B. Mark (✓) or (X) and give the reasons for each:

[10 marks]

1. The cells used for measuring VIS absorption spectra are made of quartz or glass.
2. Potassium bromide technique is used for measuring IR spectrum of solid sample.
3. Internal conversion is a radiative process from excited singlet to ground states.
4. Spectra of oxygen molecule can be recorded by Infrared spectrometer.
5. Unknown concentration of saturated hydrocarbons can be determined by UV spectrometers.

Question (3): Write short notes on each of the followings:

[20 marks]

1. Two applications of UV-VIS spectrophotometry.
2. Write the mathematical expression for fluorescence intensity and concentration at very low concentration, define each term, why the fluorescence intensity decreases at high concentrations?
3. IR principles and modes of vibration.
4. Deviation from Beer law due to chemical deviation.

Question (4):

A. Describe what it does and how it works:

[10 marks]

1. Photomultiplier tube.
2. Hollow cathode lamp.

B. Compare between each of the following:

[20 marks]


1. Electronic transition in organic and inorganic compounds.
2. Standard addition method and calibration method in photometric application of electronic absorption spectroscopy.
3. Nernst glower and Glycer lamp.
4. Potassium bromide and Nujol technique techniques in IR measurement.

===== *Best Wishes and Good luck* =====

Examiners

Prof. Dr. Ahmed Rehab

Dr. Nagy Labieb Kamal

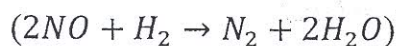
	TANTA UNIVERSITY FACULTY OF SCIENCE CHEMISTRY DEPARTMENT		
	FINAL EXAM FOR 2 nd LEVEL STUDENTS		
COURSE TITLE: CODE:	CHEMICAL KINETICS CH 2240		TIME ALLOWED: 2H
DATE: JUNE 7, 2017	TERM: SECOND	TOTAL ASSESSMENT MARKS: 100	

Answer the following questions (25 marks for each)

Question No., 1

- I) **Choose the correct answer :** (15 marks 3 for each)
- The unit of second order rate constant is
 a) s^{-1} b) $L \cdot mole^{-1} \cdot s^{-1}$ c) $L^2 \cdot mole^{-2} \cdot s^{-2}$ d) Unitless
 - The half life time of all orders is proportional to
 a) a^{1-n} b) a^{n-1}
 c) $(a-x)^{n-1}$ d) a^n
 - The integrated rate equation for the reaction $A + B \xrightarrow{\text{slow}} \text{product}$ is.....
 a) $\frac{1}{a-b} \ln \frac{a(b-x)}{b(a-x)} = kt$ b) $\frac{1}{b-a} \ln \frac{a(b-x)}{b(a-x)} = kt$
 c) $\frac{1}{b-a} \ln \frac{b(a-x)}{a(b-x)} = kt$ d) $\frac{1}{a-b} \ln \frac{a(b-x)}{b(a-2x)} = kt$
 - In the pseudo-order reaction,
 a) Concentration of one reactant is very large compared to the other.
 b) Concentration of one reactant is very small and can be neglected.
 c) Concentrations of all reactants are equal.
 d) a and b are correct
 - The rate constant of a reaction is independent on the initial concentration for:
 a) Zero order b) First order
 c) Second order d) Third order

II) The following results were obtained in the reduction of nitric oxide with H_2



$$p_0 = 340.5 \text{ mm Hg} \quad \text{at} \quad t_{1/2} = 102 \text{ s}$$

$$p_0 = 288 \text{ mm Hg} \quad \text{at} \quad t'_{1/2} = 140 \text{ s}$$

Determine the order of the reaction.

(10 marks)

Question No., 2

- What is the difference between a simple reaction and a complex reaction? (5 marks)
- It was found that the concentration of N_2O_5 in liquid bromine varied with time as follows: (20 marks)

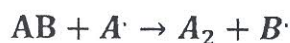
انظر خلف الصفحه

t(s)	0	200	400	600	1000
N_2O_5 (mole/L)	0.11	0.073	0.048	0.032	0.014

- a) Confirm graphically that the reaction is first order.
 b) Determine the rate constant and $t_{3/4}$.

Question No., 3

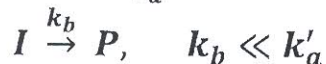
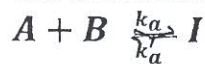
- I) Define the steps of the chain reaction. **(5 marks)**
 II) a) Rearrange the following equations according to the steps of chain reaction for the reaction ($A_2 + B_2 \rightarrow 2AB$) **(10 marks)**



- b) Write the rate equations of the formation and disappearance of $[A \cdot]$, $[B \cdot]$ and $[AB]$. **(10 marks)**

Question No., 4

- I) The reaction mechanism




Involves an intermediate I. Prove that $\frac{d[P]}{dt} = \frac{k_a k_b}{k'_a} [A][B]$. **(10 marks)**

- II) The rate of the reaction $A + 3B \rightarrow C + 2D$ was reported as 1.0 mole/L.s. state the rate of formation and consumption of the participants. **(5 marks)**
 III) What is the Arrhenius equation, Activation energy and collision number? **(10marks)**

.....
Good luck

*Examiners: Prof. Dr. Youssry El-Sheikh
 Dr. Nagla Oraiby*

Handwritten Arabic text at the top of the page.

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY		
	EXAMINATION FOR LEVEL TWO OF STUDENTS OF CHEMISTRY/BIOCHEMISTRY		
COURSE TITLE:	PRINCIPLE OF BIOCHEMISTRY II		COURSE CODE: BC2204
DATE: 14-6-2017	TERM: SECOND	TOTAL ASSESSMENT MARKS: 150	TIME ALLOWED: 2 HOURS

Answer the entire following question:

I- Clarify briefly each of the following: (35 marks)

- 1- Main different composition of intracellular and extracellular fluids
- 2- Diabetes insipidus
- 3- Addison's disease
- 1- Ascites
- 5- Overhydration
- 6- Blood buffer
- 7- Serous Fluid
- 8- Water intoxication
- 9- Causes of dehydration
- 10- Acidosis

II- Illustrate diagrammatically to be clarifying each of the following (12 marks)

- 1- Transport of CO₂ from tissue to red blood cells and transport of O₂ from hemoglobin to tissue.
- 2- Mechanism of reabsorption of sodium from kidney when blood pressure decrease

III- 1- The molecular mass of phospholipid, lipopolysaccharides and proteins are 1000, 500 and 60,000 respectively. The weight ratios of protein to total lipid in plasma membrane are equal. The weight ratios of phospholipid, lipopolysaccharides are also equal. Suppose that total lipids are phospholipids and lipoprotein. Calculate the molar ratios of three components. (6 marks)

2- The specific volume of ammonium sulfate is 0.565 ml/g. The solubility of ammonium sulfate is 706 g/1000g water (100% saturated solution). Molecular mass of ammonium sulfate is 132.

- a- What are (1) The molarity, (2) molality and (3) ismolarity of saturated and 60% ammonium sulfate?
- b- What is the amount of ammonium sulfate present in 200 ml 60% saturated? (12 marks)

3- 100 mg of Evan Blue was dissolved in 5 ml distilled water and injected intravenous to person. The volume of urine was 500 ml after 6 hours and the concentration of Evan Blue were 80 mg/L in urine and 0.015 mg/ml in plasma. The hematocrit was 40%. Calculate the total amount of blood. Mention the criteria of substance that injected to be measure intravascular. (10 marks)

See The Next Page

1. Consider the following peptide:

A-L-K-M-P-E-Y-I-S-T-D-Q-S-N-W-H-H-R

(10 marks)

Indicate the fragments generated after the following digestions:

a) trypsin

b) pepsin

2. What amino acids among the following would you expect to find a) inside, and b) at the surface of a typical globular protein in an aqueous solution of pH 7? (10 marks)

Glu Arg Val
Phe Ileu Asn
Lys Ser Thr

3. You wish to determine the sequence of a short peptide. Cleavage with trypsin yields three smaller peptides with the sequences Leu-Glu, Gly-Tyr-Asn-Arg, and Gln-Ala-Phe-Val-Lys. Cleavage with chymotrypsin yields three peptides with the sequences Gln-Ala-Phe, Asn-Arg-Leu-Glu, and Val-Lys-Gly-Tyr. What is the sequence of the intact peptide? (10 marks)

4. Draw the structure of the following peptide GWYQR. (10 marks)

5. What is the net charge (+, 0, -) of the amino acids glycine, serine, aspartic acid, glutamine and arginine at:

a) pH 2.01

b) pH 3.96

c) pH 5.68

d) pH 10.76

Glycine (pI: 5.97)

Serine (pI: 5.68)

Aspartic Acid (pI: 2.77)

Glutamine (pI: 5.65)

Arginine (pI: 10.76)

6. What is the objective of Xanthoproteic test? (5 marks)

7. How can you differentiate between tyrosine and tryptophane? (5 marks)

8. What are the biological functions of proteins. (5 marks)

GOOD LUCK

EXAMINERS	PROF. DR. EHAB M.M.ALI
	DR. THORIA A. AZIZ