


9

صوبه صبا

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF GEOLOGY		
	FINAL EXAMINATION for level 4 (Geology) Students		
	COURSE TITLE:	Isotope Geology	COURSE CODE: GE4121
DATE:	JAN., 2015	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

1- Answer the following questions

(36 marks)

1-Discuss how can determine the ages of:

- a) deposition of sedimentary rocks,
- b) determine the age of metamorphism,
- c) fresh younger alkali feldspar granites,
- d) shear and fault zone,
- e) age of older rocks,
- f) age of fossils.

2- Compare between the advantages of U-Pb and K- Ar method for dating

3- What is the difference between isochron, errochron, Concordia, Discordia

4- Discuss the applications of oxygen and Hydrogen isotopes in igneous rocks, stratigraphy and ore deposits.

5- Explain the epsilon Nd, initial Nd, epsilon Sr, initial Sr ratios in basic and acidic igneous rocks

6- What is the different analytical techniques used for dating zircon

2- Put \checkmark or \times marks and correct the wrong ones:-

(39 marks)

1- U- Pb method used for dating unmetamorphosed sedimenatry rocks containing Rb- Bearing minerals such as glauconite, clay minerals and K- feldspar

2- The half life time of Sm is very short

3- The Sm- Nd method is useful for dating terrestrial rocks, stony meteorites and lunar rocks

4- The volcanic rocks in continental margin have low $^{87}\text{Sr}/^{86}\text{Sr}$ ratios

5- U- Pb method used minerals such as biotite, alkali feldspar and hornblende

6- K- Ar method is applicable for certain K- bearing minerals and rocks. It includes biotite, muscovite and hornblende.

7- Depltd mantle (DM) is characterized by very low $^{143}\text{Nd}/^{144}\text{Nd}$ ratios and high $^{87}\text{Sr}/^{86}\text{Sr}$ ratios.

8- Lu- Hf method is useful for dating basic rocks

9- Isobars are elements have the same atomic number and different in atomic mass

10- negative epsilon Nd indicate crustal origin

11- CP measures the isotopic ratios and determines the age.

12- Initial ratios is the measured ratios by instruments such as SHRIMP or Finngan Mat 262 mass spectrometer

13- Stable isotope stratigraphy depends on Osmium and sulfur isotopes

من فضلك انظر حلقه

3- Complete the followings:

(25 Marks)

- 1- The absolute age determination depends on
- 2- Nd model age is the age
- 3- The granites have ^{18}O oxygen isotopes whereas contain initial $^{87}\text{Sr}/^{86}\text{Sr}$ ratios between and
- 4- SMOW is the standard used for and isotopes.
- 5- Sandstones contain high ^{18}O isotopes due to presence of some minerals such as
- 7- SHRIMP is used for measured the..... isotopes in some minerals such as..... whereas the LA-abilitation ICP used for measure the
- 8- Uranium- Lead system has ahalf life time and used for determine the age of rocks, whereas the K- Ar system havehalf life and used for
- 9- U- Pb system decays whereas K- Ar decays.....
- 10- isotopes is used for measure heat of formation whereas theis used for measure the crystallization age.

Examiners:

<i>Prof. Mohamed F Ghoneim</i>	<i>Prof Mohamed M Abu Anbar</i>
<i>Prof Hassan Harraz</i>	<i>Dr Ismael AbdelRasol</i>

Good Luck

