

NOTE: The correct answer has been highlighted.

NAME _____

Principles of Geology – GEO 102
Exam 1 – Fall 2003

PART I (60%)– Individual Portion (BLUE SCANTRON) Multiple choice (20-pts.) – You will have exactly 20 minutes to complete this portion. Read each question carefully. There is only one correct answer per questions. Choose the best answer and write your answer on the line next to the question AND fill in the correct letter on the scantron. This is the closed book and non group portion.

PART II (40%)– Group Portion (RED SCANTRON) Multiple choice (20-pts.) – Once the BLUE SCANTRONS have been collected, you may get into groups and use your notes to retake the exam. NOTE: Please be courteous to your fellow students and try to be as quite as possible. As mentioned above, there is only one correct answer per questions. Although this is a group portion you may disagree with your group. Choose the best answer by filling in the correct letter on the scantron. When you leave, turn in your SCANTRON. Keep this question sheet for your reference.

_____ 1. Which of the following is a mineral?

- A. Natural gas (CH_4)
- B. Coal (C)
- C. Table Salt (Halite NaCl)
- D. Liquid Water (H_2O)
- E. Plastic

_____ 2. _____ bonds are found between individual silicate-oxygen tetrahedrons and _____ bonds are found between silicon-oxygen tetrahedrons (anions) and cations.

- A. Ionic; covalent
- B. Metallic, ionic
- C. Covalent; ionic
- D. Van der Waal; metallic
- E. Non of the above

_____ 3. If you had to predict **WHERE** an earthquake was going to occur along a chosen fault, which technique would you use?

- A. Call the psychic hotline
- B. Seismic gap analysis
- C. Time Pattern Sequencing
- D. Play pin the fault on the map

_____ 4. Geologists believe that there exists an outer liquid core and a solid inner core because of

- A. A shadow zone created by S-waves that cannot move through liquids
- B. A shadow zone created by P-waves that cannot move through liquids
- C. A shadow zone created by P-waves as a result of differential velocities due to a change in material
- D. A & B
- E. A & C

_____ 5. An injection of magma from a subducting plate has just been emplaced into the continental crust. Before any crystallization occurs, the magma's composition changes through the process of

- A. Magma mixing
- B. Crystal settling
- C. Elastic Rebound
- D. Country (Host) rock assimilation**
- E. None of the above

_____ 6. If a magma generated from a subducting plate moves up into the continental crust, the composition of the magma will become

- A. More mafic
- B. More felsic**
- C. Less viscous
- D. Hotter
- E. None of the above

_____ 7. The Earth is a(n)

- A. Open System
- B. Closed System**
- C. Isolated System
- D. None of the above
- E. All of the above

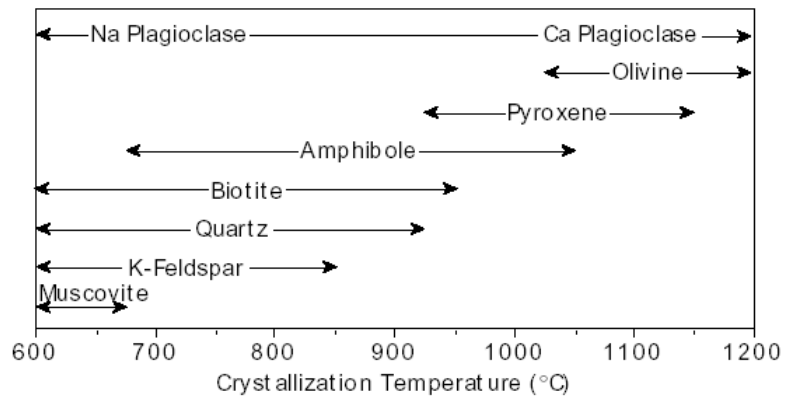


Figure 1: Order of crystallization based upon cooling temperature for Question 8

_____ 8. Based upon Figure 1 above, which mineral would be the most stable at the Earth's surface if we consider only temperature?

- A. Amphibole
- B. Pyroxene
- C. Olivine
- D. Ca Plagioclase
- E. Quartz**

_____ 9. Which of the following could be used to support the hypothesis that the continents were once connected in a giant continent called "Pangea"?

- A. The presence of fossil of land dwelling reptiles on continents separated by oceans.
- B. The geographic distribution of the *Glosseropturis* fossil
- C. The location of similar rocks and mountain chains on continents separated by oceans
- D. The paleoclimatic evidence
- E. All of the above**

_____ 10. The youngest oceanic crust is typically found

- A. At subduction zones
- B. Near the edges of continents
- C. At Mid-Ocean Ridges**
- D. In the middle of oceanic plates
- E. None of the above

_____ 11. As the complexity of the silicate structure increase, the ratio between Si and O (Si:O) becomes

- A. Becomes smaller (There are fewer Si for every oxygen, i.e. 1:4)
- B. Becomes greater (There are more Si for every oxygen, i.e. 1:2)
- C. Stays the same
- D. It depends upon whether the mineral forms intrusively or extrusively

_____ 12. You have just found a large exposure of igneous rock. You interpret the rock as being part of a batholith. What type of texture would the rock have?

- A. Aphanetic
- B. Glassy
- C. Vesicular
- D. Aphanitic Porphyry
- E. Phaneritic

_____ 13. At transform faults

- A. New continental crust is created
- B. New oceanic crust is created
- C. Oceanic crust is destroyed
- D. Continental crust is destroyed
- E. Movement of mid-ocean ridges is facilitated.

_____ 14. The viscosity of magma is dependent on:

- A. Iron content
- B. Aluminum content
- C. Type of eruption
- D. Silica content
- E. None of the above

_____ 15. The most common gas expelled from lava is

- A. Sulfur dioxide
- B. Carbon dioxide
- C. Nitrogen
- D. Water Vapor
- E. Silicon dioxide

_____ 16. Which of the following is **NOT** a major process at divergent plate margins?

- A. Oceans basins develop
- B. Eruption of andesitic magma
- C. Shallow focus earthquakes
- D. Fissure eruptions of basalt

_____ 17. Of the following, which is **NOT** true concerning the following statement: “The most violent and explosive volcanoes _____”

- A. Are found along convergent boundaries
- B. Have a high silica content
- C. Are found at hotspots
- D. Have magmas with high viscosities
- E. Have magmas with a high percentage of dissolved gases

_____ 18. The density of the Earth is

- A. Dependent upon the location of the moon.
- B. Uniform throughout and is 5.5 g/cm^3
- C. Lowest in the Earth's crust
- D. Lowest in the Earth's core
- E. None of the above

_____ 19. The magnetic signature of a rock

- A. Is recorded as the temperature in the rock cools below 580°C
- B. Reveals the latitude (position) of the rocks when it was formed
- C. Indicates the Earth's polarity (direction of magnetic field) when the rock formed
- D. None of the above
- E. All of the above

_____ 20. Based upon the chart at the right,

- A. The composition of Island arcs should be identical to the composition of MOR oceanic crust
- B. The composition of Island arcs should be identical to the composition of oceanic islands (hotspots)
- C. The composition of MOR oceanic crust should be identical to the composition of oceanic islands (hotspots)
- D. All of the above
- E. None of the above

