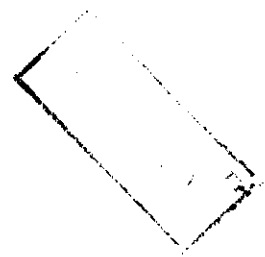


American University of Beirut  
Geology 201  
Section 2  
Final Exam



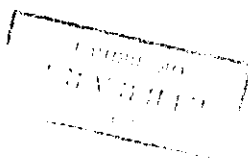
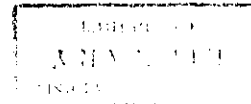
5 Feb. 2000

Student name: \_\_\_\_\_

**Part I**

Choose the best answer (45 pts).

1. Convection is the heat transfer that allows:
  - a. the hot, less dense material to rise
  - b. the cool surface material to sink
  - c. both of the above
  - d. none of the above
  
2. A mineral is generally:
  - a. organic
  - b. inorganic
  - c. glassy
  - d. amorphous
  
3. The smallest unit of an element that retains its physical and chemical properties is:
  - a. the electron
  - b. the neutron
  - c. the proton
  - d. the atom
  
4. After gaining an electron, an atom is called:
  - a. a cation
  - b. an anion
  - c. a positive ion
  - d. none of the above
  
5. Indicate which of these minerals is harder than the other three:
  - a. Talc
  - b. Gypsum
  - c. Calcite
  - d. Quartz
  
6. The tendency of a crystal to break along flat planar surfaces is:
  - a. fracture
  - b. crystal habit
  - c. streak
  - d. cleavage



7. Under high pressure and temperature, a rock is transformed in the solid state into:

- a. a sediment
- b. a sedimentary rock
- c. an igneous rock
- d. a metamorphic rock

8. Which rocks solidify before reaching the surface:

- a. extrusive igneous rocks
- b. intrusive igneous rocks
- c. country rocks
- d. tuff

9. When increasing the silica content of a rock, it:

- a. decreases its viscosity
- b. decreases its melting temperature
- c. becomes mafic
- d. none of the above

10. The settling velocity of a particle in a fluid is proportional to:

- a) its density
- b) its size
- c) none of the above
- d) both of the above

11. Which of these environments is not part of the grouping "Continental Environments":

- a) alluvial
- b) continental shelf
- c) desert
- d) lake
- e) glacial

12. Extremely finely crystalline quartz is:

- a) a flint
- b) an opal
- c) a gypsum

13. Indicate which type of rocks is formed under a high intensity of metamorphism

- a) schist
- b) shale
- c) slate
- d) phyllite

14. The direction of the intersection of a rock layer with a horizontal surface is:

- a) the dip
- b) the strike
- c) the outcrop
- d) the shearing

15 A crack along which there is no appreciable movement is:

- a) a joint
- b) a fault
- c) a fold

**Part II.**

Answer only 6 of the following 11 questions (55 pts):

1. Draw a table representing the major 6 chemical classes of minerals. Give for each class its name, its possible defining anions and an example
2. Draw a table representing the common minerals of igneous rocks. Give in this table the mineral name, its chemical composition, its silicate structure and its compositional group
3. Define and describe fractional crystallization, with a figure representing the two stages in the evolution of a magma differentiated by fractional crystallization
- 4 Review the sills and the dikes (with schematic figures)
- 5 Review the processes that make up the sedimentary stages of the rock cycle, and draw a figure representing them
6. Review the sedimentary structures (with figures)
7. Draw a table showing the major classes of clastic sediments and sedimentary rocks. Indicate the different classes of particle size, the name of the corresponding sediment and the corresponding rock
8. Review the major kinds of sandstone, and draw figures representing the mineralogy of the four major groups of sandstone
9. Review the kinds of metamorphism and draw a figure indicating the metamorphic rocks formed in different plate tectonic settings
- 10 Draw and label a figure indicating the types of faults. Give for each type of faults the name of the fault type. Indicate with large arrows the direction of the forces applied and with small arrows the directions of the block movement
11. Review the mass wasting (definition, rapid and slow movements)