

Physical Geology Study Guide for Exam I Topics

Chemistry and Stuff

- 1) Chemical Bonds: Ionic, Covalent and Polar Covalent
 - a. Ionic Bonds: Transfer of Electrons
 - b. Covalent Bonds: Sharing of Electrons
 - c. Polar Covalent: the water molecule
- 2) Isotopes and their Importance to Geology
 - a. Definition of isotopes
 - b. Radiometric dating with isotopes

Minerals

- 1) Criteria for Something to be Called a Mineral
- 2) Silicates
 - a. Nesosilicates
 - b. Sorosilicates
 - c. Cyclosilicates
 - d. Inosilicates
 - e. Phyllosilicates
 - f. Tectosilicates
- 3) Nonsilicates
 - a. Ores
 - i. Sulfides
 - ii. Oxides
 - iii. Hydroxides
 - b. Evaporites
 - i. Halides
 - ii. Sulfates
 - iii. Borates
 - c. Others
 - i. Carbonates
 - ii. Phosphates
 - iii. Native Elements
- 4) The Physical Properties of Minerals

Igneous Rocks

- 1) Felsic vs. Mafic Magmas
- 2) Bowen's Reaction Series
- 3) Volcanism: Felsic and Mafic
- 4) Igneous Intrusions

Sedimentary Rocks

- 1) Sedimentary Environments
- 2) Types of sedimentary rocks
 - a. Clastic
 - b. Chemical
 - c. Organic
- 3) Transgression and Regression
- 4) Sedimentary Structures
 - a. Stratification
 - b. Cross-bedding
 - c. Graded Bedding
 - d. Ripple Marks and Mud Cracks

Metamorphism

- 1) Regional vs. Contact Metamorphism (Where does it occur?)
- 2) Factors Influencing Metamorphism
 - a. Temperature
 - b. Pressure
 - c. Composition of Pore Fluids
- 3) Metamorphic Facies
 - a. Zeolite
 - b. Greenstone
 - c. Greenschist
 - d. Blueschist
 - e. Hornfels
 - f. Amphibolite
 - g. Granulite
 - h. Eclogite

I will ask you eight essay questions from this list of topics. You will be only required to answer five of those questions. There will also be a bonus question. The essay section of the test is worth 50 points. The multiple choice part of the exam is also worth 50 points.