

GEO 143 Pacific NW Rocks & Minerals

Mid Term II: Study Guide

Minerals:

What is an atom, an ion, and an isotope? What are the components of an atom? Which ones have mass? What is the atomic number? What is the atomic mass? What are the charges for the different sub-atomic particles? What are orbital shells? What reside in orbital shells? What is the valence shell? What is the octet rule? What is a molecule? What is a compound? What are the three different kinds of atomic bonds?

What is a mineral? What is a crystal? What is a rock? How does cooling time affect crystal size? What are the three main types of properties used to identify minerals? The first type has three properties, the second type has four properties, and the third type has one property: what are these specific properties? What happens when you place acid on a carbonate? Other than Oxygen, what is the most abundant element in continental crust? What are the four main mineral classes? What is the most abundant mineral class? This most abundant mineral class has a unique molecular configuration that allows it to form 5 different molecular configurations, leading to minerals with different properties. What are these 5 different configurations? Which configuration leads to the strongest minerals? What is the net electronic charge of this most abundant mineral class? What types of ions tend to bond with this most abundant mineral class (what is the charge of these ions and what elements)? What is an example of two elements that can substitute for each other? Name a mineral that this can take place within (there are several examples).

Rocks:

What are the two main compositions of rocks (different names for granitic and basaltic)? What is their general composition (relates to their names)? What are some other variations between these two main types of rocks? What are the four kinds of rocks (you already are given granitic and basaltic, what are the other two)? What is texture and what controls it? What are the six kinds of texture? What is Bowen's Reaction Series? What are the two "series?" What minerals comprise these two series (one series has one set of minerals, the other series has another set)? What controls the stability (what weathers faster or slower) of minerals at the Earth's surface?

Rock Cycle:

There are three kinds of rocks in the rock cycle, what are these? Can you describe the rock cycle (the major pathways)?

Volcanoes and Volcanic/Plutonic rocks:

What are some things that control the composition of magma? Think about the evolution of a magma chamber (partial melting, assimilation, etc.). What causes columnar jointing? What are the different types of geological formations that are based on the different shapes of magma bodies? What controls the viscosity of lava/magma? What controls the shape of volcanoes? What are the different types of volcanoes?

Sediments and Sedimentary Rocks:

What are the three types of sedimentary rocks? Name some examples of each of these three types of sedimentary rocks. How might the sedimentary rock tell us about the environment it was deposited in?

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What is particle size? How does this control the type of sedimentary rock? What is sorting? What is rounding (vs. angularity) and what controls rounding (sphericity)? What are the two steps in lithification? What is bedding? What is cross bedding? What is a turbidity current and what is a turbidite?

Metamorphism and Metamorphic Rocks:

What is the most important agent that drives metamorphism? What are the two sources for this agent? What are some other factors that control metamorphism? What is confining pressure? What is differential stress? What is compressional stress? What is foliation? What is the difference between foliated and non-foliated? Name some foliated rock types. Name some non-foliated rock types.