GEO 215 Minerals & Rocks

Final Exam Review

This exam will be heavy on metamorphic, but the other two rock types will be well-represented. See the review for Test #1 for Sedimentary and Igneous topics.

GENERAL

- Study mineral formulas. You cannot say that you know minerals if you do not know of what they are made. Minerals are the essence of rocks; you cannot say that you know rocks if you do not know minerals.
- Read assigned material in your text; some questions will be taken from these. It is also a good idea to use other sources, like those available in the 110 lab, to supplement your knowledge.
- Do not wait until the night before the test to study; academic studies have shown that people learn best – and retain information best – when they learn things over a long length of time. Also, sleep is important. Pulling all-nighters will reduce your ability to reason and recall information at test time.

SPECIFIC

- Know the three agents of metamorphism; which one is most important?
- Know the classification of metamorphic rocks, textural and chemical. Do these terms mean anything to you? Pelitic, mylonite, phyllite, hornfels, granulite, porphyroblast, slip cleavage, quartzofeldspathic?
- Know about GRADE, prograde and retrograde metamorphism, and how to assess it. that means having a working knowledge of the minerals that tell you about grade: chlorite, biotite, hornblende, staurolite, almandine-pyrope, cordierite, Al_2SiO_5 polymorphs (andalsite, kyanite, sillimanite), etc.
- What is a facies and what is a facies series? Which facies series tells you that tectonically the rocks occur in a subduction trench? Is it possible to produce granite magmas from amphibolite or granulite facies rocks. What are Barovian zones, and do we have any in NYS?
- Speaking of zones, what are they and how are they defined? What are the restrictions that must be observed when mapping zones?
- Be able to associate various metamorphic rocks or facies with specific tectonic regimes. For example, what facies series is commonly associated with convergent arc areas? Mid-oceanic ridges? Trenches?
- Know about metamorphic reactions. What reaction describes the transition from schist to gneiss in pelitic rock? How does the bulk composition of a rock influence the stability fields of minerals found in them? What factors make the mineral corundum rare (and its gem stones even more rare)?
- What is a protolith? In general, calcsilicates are derived from what specific sedimentary protolith? In a sedimentary sense, why would that protolith be

fairly common world-wide? Is it possible for granite gneiss to have a pelitic protolith? How could you deduce such a protolith for a granitic gneiss?

- How are the various textures in metamorphic rocks produced? slatey cleavage, slip cleavage, mylonite, porphyroblasts ...
- Which of these minerals tell you that a metamorphic rock was under high pressure during formation? Jadeite, Pyrope, Ophacite, Glaucophane?
- Which of these minerals tells you that a rock was formed at high temperatures? Sillimanite, Cordierite, Corundum, Diamond, Staurolite?
- What's the difference between contact metamorphism and regional? Is the sanadinite facies regional or contact? [What is the formula for sanidine?]
- Why is Dutchess County, NY famous to metamorphic petrologists? Is it possible to obtain metamorphic bedrock samples (not just glacial) in Chautauqua County?

FINAL EXAM IS WEDNESDAY December 20, 2006: 8:30-10:30 a.m.

IT IS WORTH 200 POINTS and will show me whether or not you have what it takes to continue in your respective programs. DO NOT BLOW IT OFF!