

Study questions for Final Exam Petrology 2004

Since the last exam, we have covered in lecture types of metamorphism and their classification, stable mineral assemblages including:

- late stage magmatic alteration
- metamorphic facies and grades
- isograds
- compatibility diagrams such as AFM and ACF diagrams
- metamorphism of siliceous dolostones and of pelites,
- the concept of petrogenetic grids
- thermodynamics for calculating reaction slopes in P-T space
- paired metamorphic belts
- origin of plate tectonics and continental crust

We have used class handouts and referred to the following portions of the Winter text:

Ch. 18.7, Ch. 21, 22, table 23-1, Ch. 24, 25, Ch. 26.9, Ch. 26.11, Ch. 27.1, Fig. 28-2, Ch. 29.1.
(note: not necessarily an exhaustive list)

Sample questions:

Discuss (perhaps with the aid of supporting diagrams):

- The superposition of AFC or AFM diagrams onto P-T diagrams to make a "petrogenetic grid."
- The parent rocks of: phyllite; greenstone; tremolite-diopside marble
- Why some minerals might not be shown in metamorphic AFM projections, but are implied to be present?
- The protolith (basaltic, argillaceous, or calcareous) and metamorphic facies for the following mineral assemblages:
 - a. chlorite, actinolite, epidote, albite
 - b. calcite, plagioclase, diopside
 - c. glaucophane, lawsonite, pumpellyite, chlorite, jadeite
 - d. garnet, orthoclase, labradorite, quartz, kyanite (or sillimanite)
 - e. calcite, wollastonite, grossular
 - f. chlorite, muscovite, albite, quartz
- Metamorphic/tectonic processes which produce outcrops of blueschist and ophiolite at the earth's surface.
- Metamorphic / tectonic processes which operate in subduction zones
- The origin of Precambrian terranes on Earth
- Appropriate mineral assemblages at different P - T conditions for different rock types.
- Remember to review your fellow students' term project presentations and be prepared to discuss!