Review for lab & lecture final exams

**What you will be given or to which you will have access**
Optical mineralogy texts (you may not use the texts with photomicrographs of minerals — e.g., Deer, Howie & Zussman, Kerr or Nesse

**What you will need to know for the quiz**
Anything you needed to know for the two quizzes
Know Franciscan metamorphism and Franciscan Complex rocks inside and out (we’ve been on two exclusively Franciscan field trips since the second quiz — Fort Point and the GGNRA/Ring Mountain trip)
Know inside and out what a tectonic mélange is
The origin of basalts — “primary” versus “evolved” basalts, their tectonic environment and differences in chemistry resulting from physical or chemical processes in the mantle and crust
Mantle composition, rock types, and mineralogy
Basic chemistry of basalts and mantle rocks – i.e., major, trace, and rare earth element chemistry, trends of rock evolution from primary to evolved
Compatible vs. incompatible elements and what they tell you about a melt/magma
Understand what you did and learned from the “Basalts lab” (key is already online)
Arc magmatism — why are melts generated, where are they generated, what compositions do you expect?
Differences between island arc and continental arc magmatism
Physical processes controlling arc magma compositions — fractional crystallization, assimilation, etc.
Physical and chemical controls on melt-generation (e.g., lower peridotites solidus when fluid is present)

**What you may bring with you to the lab exam**
One 8.5x11” sheet of paper with notes (on both sides if you wish)
Any optical mineral identification tables or texts (no photomicrographs)