Instructions: For your exam 4 homework, you must complete two of the essay questions below, and turn them in on the day of the exam. Essay questions turned in after the exam WILL NOT be accepted unless prior arrangements have been made. I will select two questions for the exam. You need only answer one of the selected questions on the day of the exam.

1. Sketch a cross section of a hill whose slopes are at the angle of repose. Discuss how this situation would limit where you could build a house, or a road, on the hill.

2. Draw a sketch cross section of two of the following: a) rock fall, b) rock slide, c) slump, or d) creep. On your sketches, draw and label as many factors as you can that would permit this type of mass wasting to occur.

3. Sketch the components of the hydrologic cycle. On your sketch, label and describe the main processes (e.g. evaporation) that are occurring.

4. Sketch a meandering stream, showing the channel, floodplain, and terraces. Indicate on your sketch: a) where water flow is the fastest, b) where erosion and deposition occur, and c) where would be the safest place to build a bridge across the river.

5. Sketch and describe how porosity and permeability influence whether a rock is a good aquifer. Give specific examples of rocks with high/low porosity and high/low permeability.

6. Draw and label a concept sketch showing how a cone of depression forms. You may do this with a single sketch or two sketches (before and after). Discuss some factors that influence whether a cone of depression forms from pumping in a well.

7. Discuss some possible causes of glaciations, and briefly describe Earth’s recent glacial history.

8. Draw sketches illustrating the following three causes for a desert: 1) position with respect to prevailing winds and a mountain range, 2) proximity to a cold ocean current, and 3) position with regards to global air circulation flow. The sketches may be either cross sections, maps, or some of each.

9. Sketch a cross section illustrating the formation of porphyry copper deposits (like those here in Arizona). List all the factors that help determine whether this deposit could be mined.

10. Describe how petroleum forms and migrates and where you might look for it. Sketch and label at least three petroleum traps.