

ES734/834 HOUR EXAM III, 2004

Do questions #1, 2 and 3 plus two others.

1. Define the terms “resistance”, “resistivity” and “apparent resistivity”. In what units is each expressed? How is each measured in the field or lab?
2. What does the term “equivalence” mean with respect to a resistivity sounding? Explain the physical conditions that lead to equivalence of “H” curves.
3. Compare and contrast the resistivity sounding method and the seismic refraction method with regard to determining water table and bedrock depth in New Hampshire.
4. What is a resistivity “pseudosection”? How is one produced? What is it used for?
5. Explain the basic concepts, the pros and the cons of these two inversion methods for resistivity soundings: least-squares (Marquart) and smoothest (Occam).
6. Explain the basic concepts, the pros and the cons of these two inversion methods for resistivity soundings: Monte Carlo and genetic algorithm.
7. Write a non-trivial question and grading key about the resistivity method. Answer your question and grade it.