

Review for Exam 1

1. Define “pure”, applied, environmental and geological geophysics.
2. What are three reasons to do geophysical surveys?
3. Be able to list four geophysical methods and the physical property / properties they use.
4. Review the handout about the utility of different geophysical methods. You should be able to match an application type to the kind of geophysical survey best suited to the problem.
5. What is the nonuniqueness problem?
6. What are the typical steps taken in designing a geophysical survey? Be able to describe them.
7. What are some sources of “noise” in a geophysical survey?
8. What is the difference between coherent and random noise? Give an example of each.
9. How are geophysical data typically collected? What are some factors that you would need to consider in deciding how to proceed?
10. Geophysical data are typically processed and then displayed before interpretation. What are some display methods that can be used?
11. Interpretation is often accompanied by modeling. Describe the two basic types of modeling that can be used.
12. Answer Questions 2, 3, 4, 5, 7, and 8 at the end of Chapter 2 (p.12).
13. What are the wavelength, amplitude, frequency and phase of a wave?
14. What is a sinusoid? What are the spatial quantities used to describe it? What are the corresponding temporal quantities?
15. What is the Nyquist frequency or Nyquist wavelength? How is it determined? Why is it important?
16. What is Fourier’s theory? Why is it useful to think of geophysical signals in terms of harmonic or sinusoidal signals?
17. What type of information can Fourier analysis provide?
18. What are harmonics? Be able to draw a picture illustrating some (see p.15).
19. What typically happens to an anomaly as the source body gets deeper?
20. What is the difference between a High, Low and Band Pass filter?
21. Why are digital 1-D and 2-D filters used?
22. What is aliasing? Be able to draw a figure similar to 3.11 on p.20 to describe it.
23. Answer Questions 3, 4, 5, 6, and 7 at the end of Chapter 2 (p.22-23).