

Exam 1

1. Fill in the blanks! Use one letter per blank and don't skip any blanks. Use the letters that I've included as clues. When you're done, the *first letters of each answer*, read downwards, will give you the answer to this question: Who used seismic waves to demonstrate the existence of the Earth's core in 1910? (15 pts. total)

____ _ **L** ____ _

Very large igneous intrusion that may form mountains

____ _ **I** ____ _

Removal of solid material by wind or water action

____ _ **A** ____ _

Fault whose footwall moves upwards relative to the hanging wall

__ **O** _____

Have you ever had a better Earth Science class than this, yes or no?

____ **B** ____ _

Type of lake produced when a stream cuts off a loop

____ _ **R** ____ _

Intrusive mafic igneous rock

____ _ ____ _ **L** ____ _

Smallest repeating pattern of atoms in a crystal (2 words)

____ _ **N** ____ _ ____ _

Lateral fault that connects two rift zones, two subduction zones, or a rift zone with a subduction zone

____ _ **A** ____ _ ____ _

Contour lines on a topographic map represent this

____ **E** ____ ____ **D** ____ _ ____ _

Mixture of superheated gas and ash that rolls down the slope of a volcano at up to 125 miles per hour (2 words)

____ _ ____ _ **V** ____ _

The lowest level to which a stream can erode (2 words)

____ _ ____ _ **I** ____ _

Rhyolite, basalt and andesite are ____.

____ _ **T** ____ _

Scale for measuring energy released by an earthquake

____ _ **I** ____ _

Intrusive felsic igneous rock

And the name of the geophysicist who discovered the Earth's core was

“ _____ ”

2. You have before you a map. . .

[This question relied on interpreting a hand-drawn map that was never scanned in as a computer file. For this reason, I've had to delete the question from the on-line version of the exam. Sorry, folks.]

Now that you've done that, answer any two of the following five questions. Each questions should require a paragraph of two. Be concise, yet detailed and informative. Grammar, spelling, punctuation, and style all count. (20 pts. each.)

3. You are working for a huge international mining corporation, which mines and markets all manner of products that can be extracted from the earth. Your job is to find and develop new mining enterprises for the corporation. Since it's expensive to start up a new mining project, your job depends on finding new projects that promise high profits.

You have a choice of three sites where your corporation might start mining:

- Castle Rock, Utah—thick layers of sandstone and shale
- Snake River, Idaho—massive basalt flows
- Kingston Peak, California—contact zone between a large granite intrusion and surrounding sedimentary rocks

All three of these could yield one or more valuable products. Briefly list the resources that you could reasonably find at each one, at least in theory. Then decide which one is likeliest to yield the highest return on investment—in other words, which one should have the most valuable resources. There could be several right answers here—I'm mostly concerned with how well you support your choice with facts.

4. “But, teacher!” says one of your students, “like, how do they *know* that the Earth has, like, this core of liquid iron? I mean, like, we can't dig down there, so like, how do they, like, know that?” Answer this student's question, giving at least two lines of evidence.

5. There are a lot of reverse faults in the Ouachitas. In the Ozarks, however, most of the faults are normal. Explain why.

6. The massive Mississippi Delta flood of 1927 was so devastating that the US and state governments took certain steps to prevent a second major flood. The problem is that some of these flood control measures may end up making the Delta less safe from flooding in the long run. Explain.

7. “Continental drift” was proposed in the 1910s by Alfred Wegener, but it wasn't until the 1950s and 1960s that plate tectonics became widely accepted. Why was there a delay of roughly 50 years? What new evidence became available?

SPECIAL SECRET BONUS QUESTION: What's the specific name for the bluish-brown variety of granite that can be seen alongside Interstate 530/US Highway 65-167, starting at mile marker 1 just south of Little Rock and continuing for a few miles southward?