

ESC 115 Physical Geology

Fall, 2016

Test 1

The first 12 questions refer to the slides we will view together in class. The 13th slide is a reference to help you with the test. Please use the space provided to answer the questions.

1. **4 pts** James Hutton spent many hours looking at these rocks at Siccar Point, Scotland. Explain the role these rocks played in the development of uniformitarianism. How is that different from catastrophism?
2. **4 pts** What is the mineral shown? How does it relate to the history of Dubuque? (Give at least three details about Dubuque's history.)
3. **2 pts** Why does Minnesota have so many lakes? Explain. (Don't give a one-word answer.)
4. **5 pts** Dubuque is located in the white area of the slide shown, surrounded by shades of green. What is the white area? What are two ways the geologic history indicated by the map is important to Dubuque? How does the slide help you understand why Dubuque is so different from Des Moines? Name two ways.
5. **2 pts** Were the rocks shown transported by water or by glaciers? How do you know?
6. **4 pts** Explain the process you would go through to attempt to determine if the mineral shown is a) quartz, b) calcite c) gypsum, or d) halite.

7. **4 pts** Demonstrated in the slide is one type of bonding common in minerals. Please name all four. For **extra credit**, name an associated mineral for each of the bond types.
8. **4 pts** What is the process shown? What are three other characteristics of water that result from hydrogen bonds?
9. **7 pts** Shown are independent silica tetrahedra with iron and magnesium atoms between them. (a) Why are silicate minerals important? (b) What are three ways they vary depending on the amount of magnesium and iron? (You may create a chart if desired such as we did together in class. Think of the meat and fat.)
10. **6 pts** (a) Explain at least two differences between continental and oceanic crust. (b) What properties of rocks account for the difference? Name at least two.
11. **6 pts** Briefly summarize three stories from this section and explain their relevance to geology. You need to provide at least two sentences per story.
12. **3 pts** What is the difference in relative dating and absolute dating? Give an example of how you would use each in describing yourself and a sibling.

13. **3 pts** Pick one environmental issue Iowa faces, either discussed in this class or in the news. What is or can be done about it?
14. **5 pts Thought question:** How does geology relate to the making of underwear in North Carolina? Provide at least three steps. What does the phrase *resistant rocks stand high in relief* mean? Why have most textile mills now left that area?
15. **3 pts Thought question:** How does geologic history connect to agriculture in Iowa? Show the connection through at least three steps.
16. **3 pts** Phosphorus is a nutrient essential for growth but can be a problem when it pollutes our waterways. Explain why Iowa faces a problem with nutrient pollution.
17. **4 pts** Water contains hydrogen and oxygen. Oxygen has two isotopes, one heavier than the other. What is an isotope? How do the different isotopes affect evaporation? How can we take advantage of this to determine past conditions?
18. **3 pts** What is the difference between a rock and a mineral? What are two properties of a mineral?

19. **3 pts** What are evaporites? Name two.
20. **6 pts** Name three minerals that are **not** silicates and explain why each is important.
21. **9 pts** Sketch and label the rock cycle, including the processes that form the rocks.
22. **5 pts** What are two things that contribute most to you doing well in this course? What are three things that do not contribute or get in the way of your success? Think a bit more than just saying, “not studying.”
23. **5 pts** What was one review question not used on the test that you prepared for? Answer it.