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| **Environmental Geology - Exam #2.1** | **Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |

Winter 2017 – 92 possible; exam is out of 85

Here is an opportunity to really solidify your understanding of some of the topics we have discussed in class. Answer the following questions carefully and completely, but WITHOUT SEARCHING THE INTERNET. Your answers should reflect our in-class discussions. Of course they should also be YOUR OWN ANSWERS, because plagiarism is not acceptable. Your response is due by 10:00:00 a.m. tomorrow (Friday, Jan 27, 2017); remember, your email will have a time stamp!! If you want credit for this exercise, you must circle the time (noted above) that your response is due to prove that you have read these instructions. This exercise is optional, and the grade you receive will REPLACE the points you earned on the written part of Exam #2.

PLEASE read through all of the questions below before you start to answer! **Points for each are noted in parentheses.** Try to craft a response that ***shows you understand the depth of the question***. Draw pictures whenever you can to HELP explain. After you are done, please go back and RE-READ THE QUESTION, and then READ YOUR ANSWER OVER to see whether it answers the question!

1. (15) Explain the Glacial Budget, using appropriate words/terms that imply Input and Outgo (just like a monetary budget uses words like “income” and “expenditures”). Then explain how changes in the glacier’s budget reflects changes in climate. What evidence do we have that Earth’s climate goes through glacial and interglacial epochs?
2. (24) In light of our in-class discussions about Temperature, critique the following responses to the given questions; explain what is correct, incorrect, or incomplete about each response:
   1. What is the definition of temperature **that we discussed and use**?  
      Temperature is the amount of energy in a volume of space.
   2. In light of that definition, is it appropriate to assign a temperature to a 1-m3 volume of empty space? ***Why or why not***? Explain fully.  
      Yes because energy is everywhere, and the particles always have SOME energy.
   3. **Why** does air cool as it rises? (simple, yet important?) Explain fully.  
      Air rises and cools because the air is thinner up above, and the increased temperature means the particles can push themselves apart and cool, and then they sink, creating a circulation cell.
   4. Why does air that is warmer than its surroundings rise at all? A picture “might be necessary” to help you explain in detail, for full points…  
      Warm air molecules are more dense, so they rise and become less dense and therefore cool, and then they sink again. The sinking motion creates higher pressure at the surface of the Earth, which also helps push the warm air molecules up.