

Exam I - Environmental Geology
Fall 2010

Name _____
Row# _____

Short essays - Use diagrams and words to describe the following. Note that many questions in this exam have multiple parts. Answer **four (4)** of the following 5 short essays. Make sure you answer **all** parts of each question. Please pass all exams in by 9:50.

1 – Outline the genesis of oil and gas. [9 pts.]

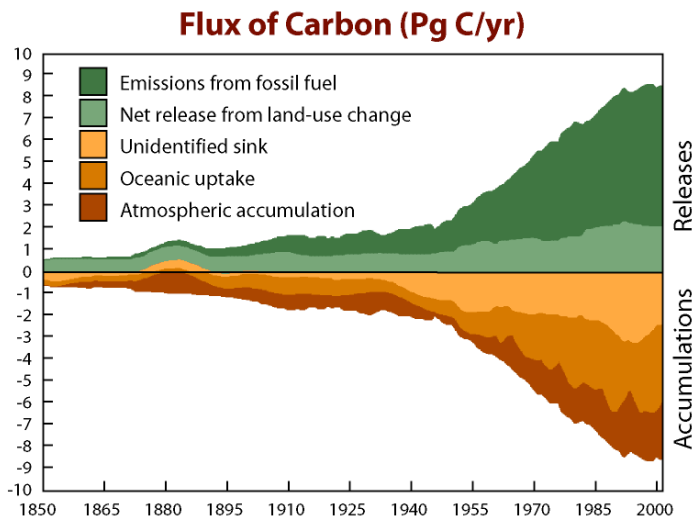
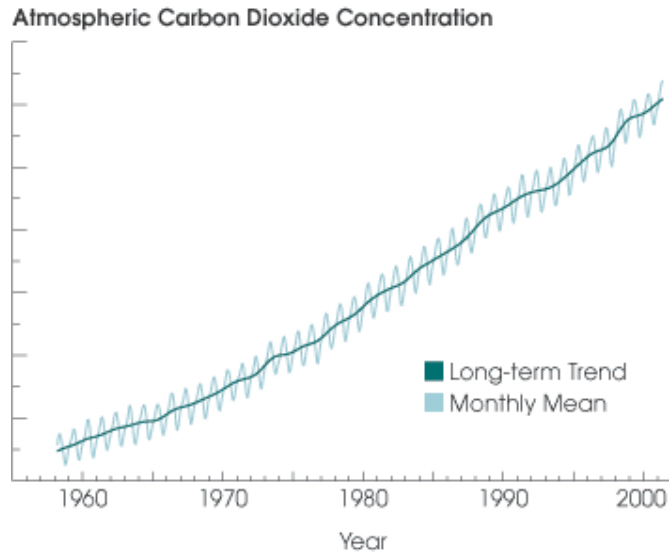
How do tar sands and oil shales fit into this discussion? [4 pts.]

When we think about the future which is the more plentiful resource oil and gas, or coal? [2 pts]

2 – The Big Bang is the start of it all. Outline the beginning of the universe and how ultimately the proto-Earth came into being. Be sure to include a discussion of *differentiation*. [10 pts.]

How does the observation that the night sky is dark fit into the origin of the Universe discussion? [5 pts.]

3 - Diagram the modern carbon cycle. Be sure integrate the graphs below into your discussion [15 pts.]



4. Draw a soils profile and make it dynamic, show how the soil interacts with the various spheres (Hydro-, lithos-, atmos- bios). [9 pts.]

Outline two weathering reactions – one that produces a secondary mineral and the other that produces ions through dissolution. How do the products of these reactions fit into the soil profile above? [6 pts.]

5 – Radiometric dating allows geoscientists to place events into an absolute timescale.

For our class that focuses on the last several thousand years, radiocarbon is the most important method. Outline how C-14 dating works trace the production of C-14 in the ATM to the carbon that is ultimately dated. What are the chemical changes that take place [10 pts.]

An archaeologist finds a bone with 25% of its original C-14 remaining in the sample. What is the approximate age of the bone? [5 pts.]

Definitions – Fully describe with words or diagrams **eight (8)** of the following **ten** definitions. Give some detail as they are worth 5 points each.

1 - Geothermal gradient

2 – Marie Curie

3 –The importance of Mollisols and Histosols

4 – The breakdown of the albedo of earth

5 - Uniformitarianism

6 – Norm Borlaug

7 – Ocean acidification

8 – The four revolutions in the geosciences

9 – The Era, Period and Epoch in which we live

10 - Five soil-forming factors

BONUS Which team of geologists gave a talk on the geology of the Haiti earthquake yesterday? [1 or 2 pts.]