

Second Hour Exam

Name: _____

Please answer five of the six questions. If you answer all six questions only the first five will count towards your score. Make sure you explain your answers.

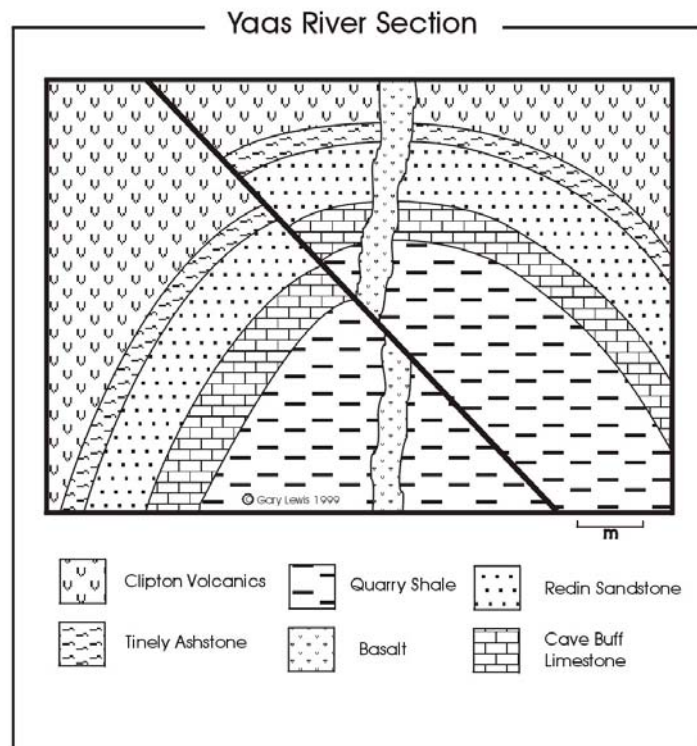
Just as a reminder: if you attended the seminar on NRM imaging check here:

1. Formation of Continents

- a) Draw a **detailed** sketch of a subduction zone and explain the occurrence of partial melting, the emplacement of batholiths and volcanoes. Be as precise as possible. (5 points)
- b) How do continents form from island arcs? Give an example. (2 points)
- c) Which processes drive plate movement? How could you test your hypothesis? (3 points)

2. The Age of the Earth

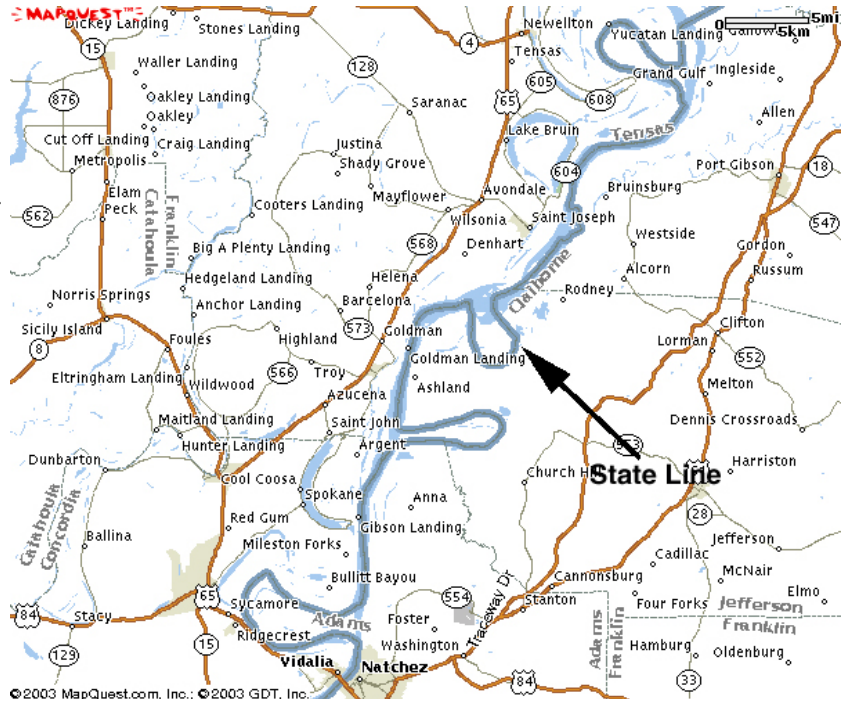
- According to geologists, what is the age of the earth ? (1 point)
- How can we date rocks using radioactive decay ? (4 points)
- Explain the sequence of events that led to the stratigraphic sequence shown below (5 points)



3. Mass Wasting and Fluvial Systems

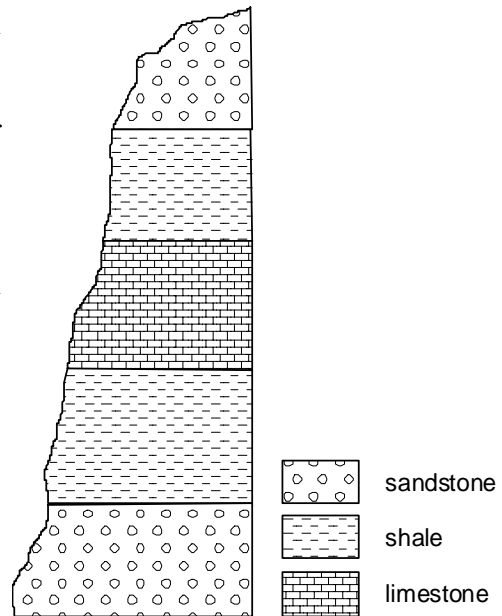
- a) Describe and explain the influence of water on slope stability. (2 points)
- b) How can sedimentary structures can be used to reconstruct fluvial environments? (3 points)
- c) How do sediments change along the course of a stream ? (3 points)

d) The figure to the right shows part of the state line between Louisiana and Alabama, which in some locations coincides with the course of the Mississippi river. Why is the state line so crooked? Can you explain what happened? (2 points)



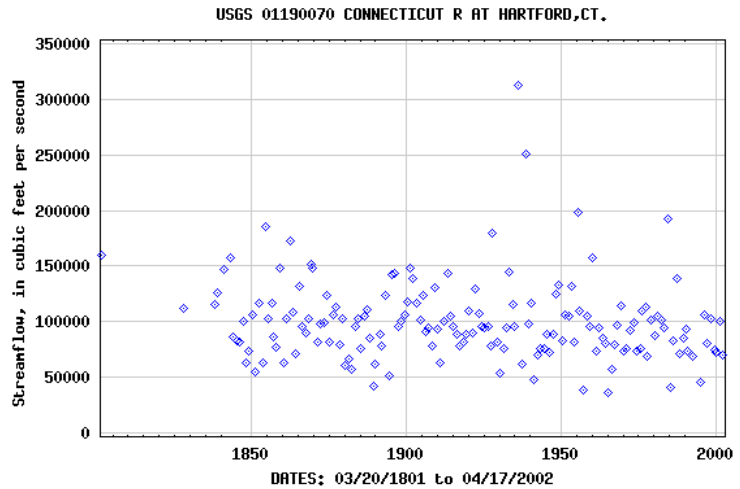
4. Coastal Processes

- a) Describe how sediments change as you go from a river delta into the deep ocean. (3 points)
- b) A geologist discovers the sequence of marine/coastal rocks shown at right. Can you explain what happened? (3 points)
- c) Which factors affect beach development and how do beaches change over time? (3 points)
- d) What can humans do to stabilize beaches? (2 points)



5. Flood Hazards

- a) The figure to the right shows peak stream flow from the Connecticut river over the last 175 years. Based on these data, what can you say about the change in flooding severity over the last 175 years? (3 points)



- b) A hydrograph curve shows stream discharge as a function of time. Sketch the hydrograph curve of a typical storm event. What causes the particular shape of the curve? (3 points)
- c) Explain how and why urban development within a watershed affects the shape of a hydrograph curve? What are the consequences of urban development for people who live downstream? (4 points)

6. Global Climate Change

- a) Explain two methods that allow us to reconstruct past climates. (3 points)
- b) How does the atmosphere insulate the Earth? (4 points)
- c) What factors influence the climate of a planet? (3 points)