

Hertentamen Sedimentaire Systemen - Part II: Stratigraphy

Wednesday 31 August 2005

You have ample time for this part of the exam. So take your time before answering the questions. But first fill in your name and studentnumber:

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Question 1: a) Describe shortly the two directions in the development of early ideas in stratigraphy between roughly 1700 and 1850.

b) Name the (same) most important limitation of both these directions.

c) What direction is superior in that respect, and why?

Question 2: a) Describe shortly the controversy between the theories of Lyell and Cuvier and how are they named?

b) Which of these two contradictory views is correct, and why?

Question 3: a) What is the fundamental difference between the geological map you prepared yourself of the Aliaga area in Spain during the first years fieldwork and the map of the Ardennes and the southern part of the Netherlands that you used during the practicals of System Earth?

b) Why are these geological maps fundamentally different?

Question 4: a) Give the definition of a partial range biozone.

b) In what type of deposits are radiolarians biostratigraphically important, and why?

c) What is wrong with the following statement, and why? Mosasaurus is a marine reptile found in late Maastrichtian rocks excavated in the southern part of Holland. This reptile lived in upper Cretaceous time.

Question 5: a) What is the relation between biostratigraphy and chronostratigraphy?

b) Why would biostratigraphers tend to develop regional biozonal schemes?

Question 6: a) Describe shortly the graphical correlation method.

b) Where is the graphical correlation method used for?

Question 7: a) What is the difference between phyletic gradualism and punctuated equilibrium?

b) Which evolution pattern do you consider more useful in biostratigraphy, and why?

c) Why would punctuated equilibrium occur at all?

Question 8: a) Give the simplest formula for calculating the age of rock samples in radiometric dating?

b) Why is it called the simplest formula and when will it not work?

c) How does the formula look in that case?

Question 9: a) Why is a calibration needed in radiocarbon dating and how is it constructed?.

b) Radiocarbon dating can sometimes results in different ages based on the dating of a single sample. Explain why.

Question 10: a) What are the three factors which together determine whether successive sequences will reveal an aggradational, progradational or retrogradational pattern. Why?

b) What is ment with the 'carbonate factory' and what role does it play in the sequence stratigraphy of carbonate shelves?

c) What are the main differences with classical sequence stratigraphic model of siliciclastic shelves?