

Study Guide for Quiz 1

This exam covers material up through the end of primary productivity (middle of Lecture 6 on 9/23). The format will be short answer, so you'll be required to write a couple of sentences, do a calculation, sketch a profile, or interpret some data. A couple of questions may be discussion questions, requiring you to write a paragraph. The questions at the end of each handout are designed to help you think about the lecture material and make sure you understand the concepts, but they do not necessarily cover all the material you will need to know.

Assigned readings:

You should be very familiar with the readings from the textbook:

Chapters 1 and 25, and pages 97-102 (C₃/C₄/CAM plants).

For the following assigned readings, I do not expect you to memorize the details, but I do expect that you have read them and understand them well enough to explain the main point of each.

<u>Lecture</u>	<u>Articles</u>
1	Vernadskii, Remmert, Rowe
2	Luria, Kaiser, Stevens & McKinley, Pace, Newman & Banfield, Sarbu
3	Field, Noble
4	Chisholm, Falkowski
5	Nemani

In addition, newspaper articles have been handed out with most lectures. While you will not be asked specific questions about these articles, you can use information from them as examples to help you on your exam.

Specific concepts:

Tree of life/Evolution

Energy Transformations. For each kind of organism (oxygenic and anoxygenic photosynthesizers, chemolithoautotrophs, aerobic and anaerobic respirers, fermenters), you should know the energy source, electron donor and acceptor, C source, and example organisms (e.g., sulfate reducing bacteria, methanogens, etc).

Redox chemistry (as it relates to organism metabolism)

Definitions associated with primary productivity (e.g., GPP, NPP, NCP, R_A, R_H, MRT, k, P:B, LAI, etc.), and general differences between aquatic and terrestrial ecosystems for these parameters

Measurement techniques for productivity

Major limiting factors for marine, freshwater and terrestrial systems

Depth profiles/thermal stratification/thermoclines

Light intensity/absorption coefficients/compensation points

Redfield ratio and Redfield's explanation for nutrient distributions in the world's oceans

General concepts:

You should be able to discuss the following general concepts with examples from readings and class discussions:

The interplay between individual and community

The interplay between organisms and their abiotic surroundings, on local and global scales

Unifying principles at different levels and emergent properties at different levels

Shifts in community structure caused by abiotic environmental factors