Suggested practice problems, Summer 2009

Week 1:

1) Visit http://www.emc.maricopa.edu/faculty/farabee/BIOBK/BioBookCELL2.html and supplement your notes about cell structure and function with the information from this page. Then answer all 18 review questions.

2) Visit http://www.cem.msu.edu/~reusch/VirtualText/react1.htm#rx1 and supplement your notes about organic reactivity with information from this page. Then answer all the practice problems that you think are relevant considering your background in OChem (e.g. identification of electrophiles and nucleophiles)

3) Write a brief essay discussing what are the advantages of having a nuclear membrane found in eukaryotic cells over the nucleoid structure in prokaryotes

4) We know that photosynthesis in plants and in single-celled algae occurs in chloroplasts, and the thylakoid membranes support the proton gradient needed for synthesis of ATP. How can photosynthetic cyanobacteria carry out photosynthesis without having chloroplasts in them?

5) Describe the cellular localization, molecular composition, and biological function of ribosomes

6) Solve textbook problems:
   1.1(d,e) The size of the Cells
   1.2 Components of E. coli
   1.3(a) Genetic Information in E. coli
   1.8 Drug Activity and Stereochemistry
   1.9 Separating Biomolecules

Week 2:

1) Visit http://www.anaesthesiamcq.com/AcidBaseBook/ABindex.php and supplement your notes about acid-base chemistry based on Chapters 1 and 2 on this website. Briefly discuss why is the acid-base chemistry so extensively presented under Anaesthesia Education Website.

2) The strength of bases is often expressed via a basicity constant $K_b$ in a direct analogy with the acidity constant $K_a$. What is the pH of a 0.100 M solution of ammonia ($K_b = 1.8 \times 10^{-5}$). See http://www.files.chem.vt.edu/chem-ed/courses/equil/acidbase/sample.html if you need help.

3) Solve textbook problems
   2.2-2.6 in Chapter 2 are trivial … do not waste your time but I assume you know this stuff
   Chapter 2: 2.8, 2.16, 2.18, 2.25, 2.26, 2.29
   Chapter 3: 3.2, 3.5, 3.13, 3.17, 3.18,