

Practice Problems: Midterm I

I do not design exam questions based on practice problems in the book. However, your chances of doing well on the exam are poor if you do not know how to solve the following textbook problems:

Chapter 1: Problems 1d, 1e, 2a, 2c, 3a, 4, 7, 8, 9, 11, 12, 13

Chapter 2: Problems 2, 3, 5-16 (may ignore trivially simple 10 and 11)

Chapter 3: Problems 1, 2, 3, 4, 5, 7, 9, 11, 12, 13, 14, 15, 16

Chapter 4: Problems 1, 2, 4, 5, 6, 8, 9

Further practice:

Visit <http://www.emc.maricopa.edu/faculty/farabee/BIOBK/BioBookCELL2.html> and supplement your notes with information from this page. Then answer all 18 review questions.

What are some of the advantages of having a nuclear membrane in eukaryotic cells over the nucleoid structure in prokaryotes?

How can photosynthetic bacteria carry out photosynthesis even though they do not have chloroplasts?

Describe the localization, function, and composition of ribosomes.

What is the final pH of a solution when 100 mL of 0.1 M NaOH is added to 150 mL of 0.2 M acetic acid? The pK_a of acetic acid is 4.76. You may assume that the remaining acid is essentially undissociated.

An unknown peptide was determined to have a molar absorptivity at 280 nm of $10,000 \text{ M}^{-1}\cdot\text{cm}^{-1}$. A 1 mL solution of the peptide (1 cm cuvette) has an absorbance of 0.5 at 280 nm. Upon addition of concentrated DTNB to the 1 mL solution of peptide and incubating at 37 °C, the solution turns dark yellow. The absorbance of the solution at 412 nm (1 cm cuvette, 37 °C) is 1.38. Calculate the number of cysteine residues in this peptide. *Note: You need to look up one number from your lecture notes in order to solve this questions.*