**Example Study Guides for Lab Tests**

*Basic Principles:*

* The Study Guide is to prepare students for the lab test. Decide exactly what you will test on and tell them.
* The Study Guide will also shape student behavior during the lab (assuming the study guide is an excellent predictor of the lab test). Remember, what you test on is what they will do. This is the reason some instructors use open lab book tests – everything students are supposed to do during the lab is fair-game on the test. Consider this principle carefully regardless of the testing method you use.
* If this is your first try at Lab Study Guides, then do a couple for the first labs and try them out before doing the rest of the semester’s labs.

We have a few examples of weekly quiz study guides and midterm test study guides. They are only partial examples of study guides developed by our lab teachers. Our philosophy is to give general concept suggestions and let teachers develop their own “tailored” approach.

**Example Study Guide for Weekly Quizzes**

Measurement

Basically, know how to do everything in Exercise #1.

Be able to use the “factors of ten” multiplication rule and division rule (moving the decimal point).

Define *milli, centi*, and *kilo.*

Be able to convert between centi, milli, and kilo measurements using the rules for moving the decimal point.

Be able to convert decimal fractions and simple fractions into percents.

Be able to weigh an object accurately to the nearest 0.1 of a gram.

Microscope

Questions 1–14 on page 62.

Memorize the size of the field of view at low, medium, and high magnifications.

Approximately how big is the dot over the letter i compared to the field of view at high magnification (43x objective lens)?

Determine which threads are top, middle, and bottom. (Practice with different slides because they’re not all the same.)

Be able to find the *exact* wing vein intersection in your microscope slide when you are shown a picture of that intersection.

Cells

Define prokaryotic and eukaroytic.

When you see the color of plants, what structures are you actually seeing?

If you can’t actually see the central vacuole inside the Elodea cell, then how do you know that it is there?

Draw a picture of an Elodea cell showing the dominant structures that can be seen, and draw them in such a way that demonstrates that the central vacuole is present even though you can’t see it (because it is clear). Label your drawing.

Draw a picture of the stomata showing guard cells, chloroplasts, and the opening for air flow. Label your drawing.

What organelles in the stomata guard cells are absent in the skin cells of the leaf?

Field Trip

What about the natural habitat of the coastal sage community is indicated when we see Yellow Mustard, Anise, and Tree Tobacco?

There are three primary strategies that coastal sage plants use to survive the challenges of this environment. Describe how the following plants illustrate the three approaches:

1. Jajoba and Lemonade Berry
2. California Sagebrush
3. Annual Plants

Imagine that you have to describe the Coastal Sage Community to someone who is familiar with many plants but has never seen anything like this community. List two features that we agreed would give the person a very good description.

As we observed the Coastal Sage Community, what three physical factors did we agree were the most important in controlling the types of plants growing there?

Compare the general difference in vegetation on:

South-Facing Slopes

North-Facing Slopes

Describe the growing quality of the soil in this habitat.

What does large groves of cactus indicate has happened in the Coastal Sage Community of San Diego?

chemistry of water

Questions 1-4 on p. 91.

Questions 1-6 on p. 93.

Define diffusion and osmosis.

enzymes

All of the questions in Exercise #1.

Describe how the speed of the enzyme-controlled reaction was changed by each of the six experimental conditions studied during your lab.

Study Guide for Lab midterm Test #1

Part 1: Open Book Questions

Test #1 is designed to give you an idea how the midterm lab tests will operate. The OPEN BOOK part of the lab test is 50% of your score, and covers the first two labs so far (Measurement and Microscope). You can answer the test questions using your lab book. The purpose is to test how well you completed the labs. During the lab ask questions when you don’t understand any lab book questions. (You will see them on the test!) Make sure that you have drawn good pictures—I may ask you to copy them as part of the test. The number one comment I hear after this test is, “I should have done a better job filling out my lab book.”

Part 2: Memory and Skill Questions (50%)

**\*** Skill questions

• Memory questions

Measurement

• Basically, know how to do everything in Exercise #1.

• Be able to use the “factors of ten” multiplication rule and division rule (moving the decimal point).

• Define *milli, centi*, and *kilo.*

• Be able to convert between centi, milli, and kilo measurements using the rules for moving the decimal point.

• Be able to convert decimal fractions and simple fractions into percents.

**\*** Be able to weigh an object accurately to the nearest 0.1 of a gram.

Microscope

• Questions 1–14 on page 62.

• Memorize the size of the field of view at low, medium, and high magnifications.

• Approximately how big is the dot over the letter i compared to the field of view at high magnification (43x objective lens)?

**\*** Determine which threads are top, middle, and bottom. (Practice with different slides because they’re not all the same.)

**\*** Be able to find the *exact* wing vein intersection in your microscope slide when you are shown a picture of that intersection.

Study Guide for Lab midterm Test #2

Part 1: Open Book Questions

This OPEN BOOK part of the lab test is 80% of your score, and covers all of the labs so far in the class (Measurement through Respiration). You can answer the test questions using your lab book. The purpose is to test how well you completed the labs. Make sure that you have drawn good pictures—I may ask you to copy them as part of the test. The number one comment I hear after this test is, “I should have done a better job filling out my lab book.”

Part 2: Memory and Skill Questions (20%)

**\*** Skill questions

• Memory questions

Cells

**\*** Be able to make and stain a *one-cell-thick* layer of onion cells.

**\*** Be able to make a *single-cell layer* leaf peel slide showing the stomata.

**\*** Be able to make a *single-cell layer* peel of a flower petal, and determine where the color is found (in the plastids or the cytoplasm water).

**\*** Practice the above slide preparations until you can do a perfect one-cell-thick slide. Otherwise, you won’t get credit on the exam.

• How big are each of the following compared to the dot over the letter “i”: onion cell, cheek cell, and paramecium? (State the size as a percent of the diameter.)

• Define prokaryotic and eukaryotic.

• What organelles do the guard cells contain that are absent in the skin cells of the leaf?

Chemistry OF WATER

• What is a hydrogen bond?

• What is a calorie?

• Questions 1–6 on page 97.

• Define *diffusion*.

• Define *osmosis*.

Enzymes

• All of the questions in Exercise #1.

Photosynthesis

• Know the equation for photosynthesis.

• Define *chromatography,* and explain how it works.

• Have a complete understanding of Exercise #3.

Respiration

• Know the equation for respiration.

• Draw a graph of the respiration rate at different environmental temperatures (5°C and  
20°C) for both an ectotherm and an endotherm.

• Questions 1–7 on page 144.

Study Guide for Final Exam

Part 1: Open Book Questions

This part of the exam is 80% of your score, and covers all of the labs after Respiration. You can answer the test questions using your lab book. Make sure that you understand all lab book questions and that you have drawn good pictures.

Part 2: Memory and Skill Questions (20%)

**\*** Skill questions

• Memory questions

Sameness and Variety

**\*** Using the chromosome bead package referred to in Exercise #4, be able to show metaphase of mitosis and metaphase of meiosis.

**\*** Be able to find and name all five stages of mitosis in the onion root tip.

Genetics

• All questions will be from the lab packet.

Surrounded by Microbes

• Be able to list the three basic characteristics of each of the three Domains that you studied in this lab.

• Be able to name the subgroups in each Domain that you studied in this lab.

**\*** Using a live pond culture, be able to find a true algae and a cyanobacteria, and be able to discuss how you tell them apart.

Swamp Things

• You must be able to diagram the *life cycles* of the *moss* and the *fern*. Include rough sketches to indicate that you do know what the generation and reproductive structures look like. Also, in the life cycles, you must use the terms *spores, gametes, sporophyte,* and *gametophyte.*

Invaders of Dry Land

• Be able to diagram the life cycle of a *cone plant* including: the gametophyte, the sporophyte, cones (both male and female), pollen and egg, and seeds.

• Be able to diagram the life cycle of a *flowering plant* including: the gametophyte, the sporophyte, flower (both pistil and stamen), pollen and egg, and seeds.

Survey of Animals

• Be able to fill in the “boxes” of the *Invertebrate* and *Chordate* Family Trees.

**\*** Be able to identify the group name (from the Family Trees) of any specimen shown to you.

Human Evolution

• Be able to show the “Time Trails of *Homo Sapiens*” on a World Map. Include in your map the five geographical/racial groups and the general time frame of separation points.

Field Trip (Coastal Sage—H Street)

• Be able to answer any of the questions on the Field Trip Guide.