Microbiology 2730
Study Guide #2
Winter Semester 2008
E. Hoffman

LABORATORY SECTION

Metric System

See handouts and class notes for these questions

1. You should be able to work out the types of metric conversion problems that are attached to this study guide.

2. You should be able to use a metric ruler to measure the following line to the nearest tenth of a centimeter.

_____

3. You should be able to use a graduated cylinder and a pipette to deliver a specified amount of water (or other fluid) to a container. Example, 10milliliters

4. You should be able to use a metric balance to determine the weight of an object to the nearest tenth of a gram.

5. What is a meniscus? When determining the volume of a fluid which shows a concave meniscus, where on the "curve" do you "read" the volume?

Cells

For information concerning the laboratory on "cells" please see your handouts as well as class notes.

1. You should be able to list the types of cells that you have seen in laboratory.

2. You had the opportunity to view examples of 3 living organisms which consisted of but a single cell. What were those living organisms?

3. One of the above organisms was green in color and hence capable of carrying out the process of photosynthesis. What was that organism?

4. Of the living cells that you viewed in the laboratory which of them were surrounded by a well developed cell wall?

5. One of the living organisms that you viewed in this laboratory was an example of a colonial form of life?

6. Which of the 4 living organisms that you viewed in this laboratory were protozoa? Which were algae?

7. Which of the 4 living organisms viewed in this laboratory showed cilia? Which showed flagella?

8. Which of the 4 living organisms exhibited pseudopodia?

LECTURE SECTION

1. R. Koch
    a. Robert Koch was trained not as a research scientist but as a ___.
    b. Koch achieved his initial fame from a research project that resulted in his identification of the microbe responsible for the disease, ___.
    c. The procedure that Koch followed in the above-mentioned project is now usually referred to as Koch's Postulates. There are 4 steps to these postulates. You should be able to cite them.
    d. As mentioned in class, the above-mentioned work resulted in instant fame for Koch and very soon he was in Berlin and had a staff of people working under him. In 1882, after less than a year of work, he announced to the world that he had isolated the causative agent responsible for the disease, ___. This work probably represents the pinnacle of his fame.
    e. Koch is of enormous importance to the field of ____ microbiology because of the organization and innovations that he brought to this area of study.

2. For many of you enrolled in this course, the principle reason for studying microorganisms is their ability to cause human illness. Your textbook notes several additional reasons that the study of microbes can be both interesting and valuable. You should be able to cite 2 additional reasons these interesting forms of life.

3. A, now common term, in medical microbiology, is that known as new or emerging disease. There are several reasons cited in your textbook to explain this type of situation. You should be able to cite 2 such reasons.

4. A very short amount of time was spent discussing major microbial groups. During this discussion, you were introduced to taxonomic category known as the domain.
   a. The domain has grown out of the work of ____ which was published in the late ___.
   b. At the present time, the scientific community recognizes the existence of ___ domains.
   c. What are the names of these domains?

5. During my brief comments on major groups of "microbes", I subdivided the microbial world into 8 groups. What were those groups? Describe each in terms of size range and nutritional style. Which of these groups are considered to be living microbes by the authors of your textbook?

6. The newest member of the 8 groups mentioned above is the prions.
   a. These "things" are really malformed ___ molecules.
   b. You should be able to briefly describe how an existing prion can produce additional new prions. Which of these groups are considered to be actual living microorganisms according to the authors of your textbook?
   c. At the present time, animal diseases (including those of man) involve cell death in the ___ systems of animals, more specifically the ___ (name of organ).
   d. Probably the most famous of the prion diseases is that known as Mad Cow Disease. The country that has had the greatest experience with this problem is ___.
   e. Our current understanding is that while the Mad Cow Disease prion can jump the species barrier this apparently happens rather ___. At the present time, only ___ people around the world have actually come down with the human version of this illness.

7. The scientific name which has been assigned to the bacterium which is the causative agent of bubonic plague is *Yesinia pestis.* To what genus does this bacterium belong? To what species does it belong?