Biology 112 – Exam Review Answers

***Exam Review Sheet #1***

1. Redi’s experiment on spontaneous generation is considered a controlled experiment because he did not only cover a jar with cheesecloth to prove that flies did not come from meat, he also left one jar uncovered as a “control” – an experiment against which he could compare his results to show the effects of the one variable he changed.
2. Pasteur created the special “swan-necked” flask to disprove the theory of spontaneous generation. The flask allow in air, which came in contact with the broth, but did not allow in microorganisms that may have been travelling in the air. This proved that micro-organisms did not come from the broth, not the air.
3. Scientists test only one variable at a time during an experiment so that they will know to what they can attribute their results. Any change in the experiment would be the result of the one thing that was done differently. If multiple variables are used, the results cannot be clearly attributed to any one variable and the cause of the change may remain unknown.
4. Light Microscopes:

Advantages: Light, portable, cheaper

Disadvantages: Not as powerful

Electron Microscopes:

Advantages: Very powerful, offer internal structure view, as well as external 3D images

Disadvantages: Very expensive, very large, not portable.

1. See answer to question #3. If multiple variables are used, the results cannot be clearly attributed to any one variable and the cause of the change may remain unknown.
2. The modern cell theory states that:

* All living things are made of cells.
* The cell is the basic unit of structure and function
* Cells can only come from other living cells.

1. A prokaryotic cell has no nucleus, and tends to be smaller and simpler (less organelles).

A eukaryotic cell has a nucleus and tends to be more complex.

1. All cells have: A cell membrane, lysosomes, vacuoles, ribosomes, mitochondria, endoplasmic reticulum, golgi apparatus, cytoskeleton,

In addition to this, animal cells have centrioles and plant cells have a cell wall and chloroplasts.

Also, all eukaryotic cells will have a nucleus and nucleolus. Prokaryotic cells do not have these structures.