Review Sheet Intro
Lester BIOL 150

General things to do to prepare for the exam:

- study the PowerPoints

- write out the answers to the learning objectives found with each PowerPoint (omit #3 from Lecture 1, that will be covered and evaluated in lab)

- listen to my lecture recordings

Chapter 1

List and describe the 5 unifying themes of biology.

Define: evolution, biology, reductionism, gene, genome, and bioinformatics.

Describe the dynamics of the two major processes of an ecosystem.

Describe how energy flows thru an ecosystem.

What are the major differences between a prokaryote and a eukaryote?

Describe the main evidence we have supporting evolution.

What were the two main points made by Charles Darwin?

What did Darwin observe?

What did Darwin infer from these observations?

Describe positive and negative feedback. How is each one beneficial to the cell?

Define taxonomy and list all 8 groups (taxons) in order starting from largest (least specific) to smallest (most specific).

Describe the three domains of life. How many are prokaryotic?

Sample Exam Questions Chapter 1:

In comparison to eukaryotes, prokaryotes _____.
A) are more structurally complex B) are larger C) are smaller D) do not have membranes

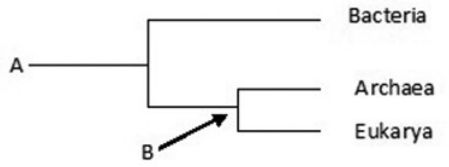
To understand the chemical basis of inheritance, we must understand the molecular structure of DNA. This is an example of the application of which concept to the study of biology?
A) evolution B) emergent properties C) reductionism D) feedback regulation

Which of the following order is correct in terms of the hierarchy of the organization?
A) Ecosystem → Biosphere → Population → Community → Organism
B) Biosphere → Ecosystem → Population → Community → Organism
C) Ecosystem → Community → Biosphere → Population → Organism
D) Biosphere → Ecosystem →Community → Population → Organism

Plants convert _____.
A) chemical energy to mechanical energy.
B) sunlight to mechanical energy.
C) sunlight to chemical energy.
D) mechanical energy to chemical energy.

Which of these provides evidence of the common ancestry of all life?
A) near universality of the genetic code
B) structure of the nucleus
C) structure of cilia
D) structure of chloroplasts

Use the following figure to answer the question.



"A" is _____; "B" is _____.
A) the most recent species to evolve on Earth; an ancestor of group "A"
B) the most recent species to evolve on Earth; the last common ancestor of Archaea and Eukarya
C) the common ancestor of all life; the common ancestor of Bacteria and Archaea
D) the common ancestor of all life; the last common ancestor of Archaea and Eukarya

You are suffering from *Streptococcus* throat infection. You share the following with the bacteria that is responsible for your condition.
A) You both belong to the same domain.
B) You both are made up of cells.
C) You both have genetic material in your nucleus.
D) You and *Streptococcus* have nothing in common.

Which of the following is true of natural selection?
A) It requires genetic variation.
B) It results in descent with modification.
C) It involves differential reproductive success.
D) It requires genetic variation, results in descent with modification, and involves differential reproductive success.

Which of the following is *not* one of Charles Darwin's observations?
A) Individuals in a population vary in their traits.
B) Many of the traits in an individual are heritable.
C) A population avoids competition by producing only as many offspring as can successfully reproduce on their own.
D) Species generally are adapted to their environments.