

Biology 235 Study Guide for Exam 1

What this guide is intended to do: guide you, this means that you will have to do some digging for information from lecture notes to the text book.

What it is not intended to do: give you point by point items to memorize.

We have studied a few key aspects to human physiology and as such you should have an understanding of:

- homeostatic components and pathways
- the hierarchy of organization
- the importance of function and structure together
- atoms and bonding
- how bonding types are involved in molecular structure
- biomolecules – I don't expect you to memorize the molecular structure of all of the biomolecules, however I do want you to know their functions and to understand this you also will need to understand their structure.
- the functional aspects of cell components (review your organelle, nuclear, inclusions and cytoskeletal functions)
- cell membrane dynamics
 - what components are found in cell membranes and how they influence membrane properties as well as interactions between cells and tissue forming
- the importance of and how membrane potentials are formed
 - also be familiar with the various forms of membrane potentials
- why it is necessary for substances (ions, molecules...) to move within and between fluid compartments and how movement within and between fluid compartments occurs
- how diffusion, osmosis, facilitated diffusion, bulk flow, active and secondary active transport, vesicular transport mechanisms work
- metabolism and the basic types of metabolic reactions that occur in the body
- the process of ATP production and the systemic importance of this process.

Essay Questions

There will be three essay questions chosen from the following:

1. Explain how homeostatic mechanisms work, and include examples of each.
2. Explain the hierarchy of organization ending at the human population.
3. Compare and contrast the formation of covalent and ionic bond types and give examples of each.
4. Discuss the formation of membrane potentials; include in your discussion the general distribution of ions, membrane channels and what carrier proteins are involved in maintaining the membrane potential.
5. Discuss active vs. passive forms of membrane transport, include in your discussion the differences between, any similarities and be able to give actual examples.
6. Describe the events leading to aerobic production of ATP.