Bio 122 – Review Answers

***Chapters 9 & 10***

1. Both types of digestion break down food particles into useable substances for the body. Chemical digestion, however, creates new substances whereas physical digestion simply changes the size or the appearance of the food.
2. The nervous system is a body-wide communication system that acts rapidly and has the ability to process stimuli information before reacting appropriately. The endocrine system is almost completely dependent on internal stimuli, reacts more slowly but can have longer effects. The nervous system uses electrical impulses to carry information, whereas the endocrine system uses hormones.
3. Steroid hormones are made of cholesterol and have the ability to pass through a cell membrane. Once they enter a cell, they bind to a receptor, creating a complex which can then enter the nucleus. Once in the nucleus, the complex binds to a particular gene and activates or deactivates it.

Non-steroid hormones are made or proteins and do not have the ability to pass through a cell membrane. Instead, they bind to receptors on the cell membrane, which in turn activate an enzyme inside the cell. The enzyme will travel to the nucleus, bind to a gene and activate or deactivate it.

1. The human body uses it’s gallbladder to store bile produced by the liver. Without a gallbladder, the liver continuously pumps bile into the small intestine, and there is no “on-demand” reserve. The human body can survive without a reserve of bile.
2. Herbivores have a longer small intestine because of the cellular structure of the food they eat. Cellulose (found in the cell wall of plant cells) is a very tough molecule to digest and the extra time spend in the small intestine allows the digestive process to break it down properly, and absorb it into the bloodstream.
3. Voluntary actions are actions that a person chooses to do, such as talking, writing, brusing hair, etc… Voluntary actions are controlled by the CEREBRUM.
4. Involuntary actions are actions that a person does not or cannot, such as peristalsis or heart rate. Most involuntary actions are controlled by the brain stem. Some are controlled by the spinal cord.
5. A) homeostasis is the body’s ability to maintain all internal conditions consistent.

b) Hormones are proteins that affect cellular activity. They act as the messengers of the endocrine system

c) Enzymes are chemicals that control (speed up or slow down) chemical reactions in the body.

d) Villi are small finger-like projections of the small intestine that increase the surface area to allow for increased absorption of nutrients into the blood stream.

e) Peristalsis is the involuntary muscle contractions that keep food moving through the digestive system (and keep it going in the right direction!).

f) Chyme is the name given to the unrecognizable soft, squishy substance that enters the small intestine. At this stage of digestion, it is no longer called food.