Bio 122 – Review Answers

***Chapters 9 & 10***

1. The sperm cells are created in the testes. They are stored in the epididymis until they are ready to leave the body. When they exit, they will travel through the vas deferens which will merge with the urethra and cells will exit through the penis.
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. Not all cells that are made from the zygote become a part of the embryo – some tissues are formed outside of the embryo. The amnion tissue will become the amniotic sac, responsible for cushioning and protecting the fetus, and the chorion will become the placenta, responsible for attachment to the uterine wall and nutrient/waste exchange.
2. LH/FSH are responsible for the onset of puberty, as well as triggering the production of estrogen during the menstrual cycle. Estrogen is responsible for triggering the maturation of a follicle cluster during the menstrual cycle and also serves as a messenger responsible for the thickening of the uterine lining. Oxitocin is responsible for the onset of labour contractions at the time of birth and prolactin is responsible for the production of milk in the breast tissues after childbirth.
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) Follicles are cells that surround an egg cell in the ovary. When they mature, they release the egg cell so that it is available to be fertilized.

d) Ovulation is the release of an egg cell from the ovaries into the Fallopian tubes during the menstrual cycle.

e) Gastrulation is the developmental process of creating different layers of tissue in an embryo. The external layer of tissue becomes skin, the internal layer becomes the lining of organs and the middle layer becomes tissues.

f) Neurulation is the process of infolding tissues in the embryo to make room for the nervous system.

g) The placenta is formed from the chorion tissues and is responsible for attaching the embryo to the mother’s uterine lining and providing nutrient and waste exchange during the embryo/fetus’ development.

h) The amniotic sac forms from the amnion tissues and is responsible for protecting and containing the embryo/fetus during its development.