A. ASEXUAL AND SEXUAL REPRODUCTION

Chapter 1 – Passing on Genes
1. What are advantages and disadvantages to both sexual and asexual reproduction?
2. Where is sperm produced in males?

Chapter 2 – Egg’s Journey
1. How is the development of the ova (egg) different from sperm?
2. What structure contains the egg? What is a follicle?
3. What is ovulation? Where does the egg travel through and to? What pushes the egg along?

27.1 Sexual and Asexual Reproduction

- Reproduction, asexual reproduction, budding, fission, fragmentation, regeneration, sexual reproduction, gametes, zygotes, sperm, ovum, hermaphroditism, external fertilization, internal fertilization
1. Describe the four forms of asexual reproduction.
2. Explain three advantages of asexual reproduction.
3. What is a potential disadvantage of asexual reproduction?
4. What is the advantage of sexual reproduction?
5. What is the difference between external and internal fertilization?
27.4 The formation of sperm and ova requires meiosis
   *Spermatogenesis, primary spermatocytes, secondary spermatocytes, oogenesis, primary oocyte, secondary oocyte*
   
   1. What are the three major differences between spermatogenesis and oogenesis?

27.5 Menstrual Cycle
   *Ovarian cycle, menstrual cycle, menstruation, LH, FSH, estrogen, progesterone, follicle, corpus luteum, HCG*
   
   1. What occurs during the ovarian cycle (what are the two phases) and the menstrual cycle?
   2. Which gland/organ/cell secretes FSH, LH, estrogen, progesterone, and HCG?
   3. Explain the level of FSH and LH before ovulation. What do these hormones trigger? What releases estrogen? What type of feedback does estrogen exert on the pituitary gland?
   4. What triggers a peak in estrogen level? What does this trigger?
   5. How is the corpus luteum formed? What hormones does it release and what do the hormones trigger?
   6. What type of feedback do the two hormones have on the pituitary gland hypothalamus? What happens as a result?
   7. What happens during pregnancy? Why doesn’t bleeding occur?
B. PRINCIPLES OF EMBRYONIC DEVELOPMENT

Chapter 3 – Sperm’s Journey

1. What are three barriers that the sperm faces as it tries to reach the egg?
2. Muscle contractions help the sperm reach the egg. Where is the egg waiting to be fertilized? Where must fertilization occur?
3. What happens to the sperm when it is caught in cilia lining?
4. What is a zona?
5. How does the sperm penetrate the zona?

Chapter 4 – The First Two Weeks

1. What happens to the membrane of the egg immediately after fertilization?
2. What process does the egg finish after fertilization?
3. What happens to the zygote as it moves down the Fallopian tube?
4. What is implantation and where does it occur?
5. How many cells is the zygote at this point? What is a blastocyst and what must happen to it before implantation?
6. What danger does the blastocyst face and what does it do to protect itself?

27. 9 Fertilization results in a zygote and triggers embryonic development

27.10 Cleavage produces a ball of cells from the zygote

1. The text delineates fertilization into 7 steps. Describe these steps.
2. What are the two major phases of embryonic development?
3. What are the two important contributions of cleavage?
Chapter 5 – The Embryo Takes Shape

1. What is gastrulation and when does the embryo undergo this process?
2. What happens during gastrulation? Explain how the three layers are formed?
3. What does each layer eventually form?
4. How does the embryo transform itself into a fetus? How are genes involved?
5. How do cells “communicate” with each other? What do the chemicals do?

27.11 Gastrulation produces a three-layered embryo
Gastrulation, gastrula, ectoderm, endoderm, mesoderm
1. What occurs during gastrulation?
2. What forms out of the ectoderm/endoderm/mesoderm?

27.12 Organs start to form after gastrulation
Notochord, neural tube, coelem
1. What are the three key phases of embryonic development?

Chapter 6 – Message in the Genes

1. What is the SRY gene? What does the SRY protein do?
2. How are individual fingers formed?

27.13 Changes in cell shape…
Programmed cell death
1. How do migrating cells know where to go?
2. What happens to migrating cells once they reach their destination?
3. What is programmed cell death and why is it important?

27.14 Embryonic induction initiates organ formation
Induction
1. What is induction?

27.15 Pattern formation
1. What is pattern formation?
C. HUMAN DEVELOPMENT

Chapter 7 – Feeding the Growing Fetus
1. How does the fetus receive its nutrients? If the mother and fetus’ blood never mix, how does the fetus receive nutrients, gases, antibodies, etc?
3. Are all of the fetus’ organs functional?

27.16 The embryo and placenta
Gestation, blastocyst, trophoblast, placenta, extraembryonic membranes, HCG, chorionic villi

Chapter 8 – The Third Trimester
1. What is myelin? What is it made of and why is it important?
2. Why must the fetus leave the mother’s body?
3. What are contractions?
4. Why do women have the hardest job in the world? =)

27.17 The Third Trimester

27.18 Childbirth
labor, oxytocin, prostaglandins
1. What triggers the formation of oxytocin? What does oxytocin do and why is it a positive feed-back control system?