Biology 112
Exam 6 Questions

Notes for exam 6 for Spring 2007: the last 10 questions on chapter 20 will be included in your grade only if they improve your grade. Exam 6 will be in class Thursday, April 26 and available in the testing center until Thursday May 3 (no penalty).

Chapter 17: Urinary System

1. Identify the location of the kidneys. What protective structure surrounds each kidney?
2. Identify the relative location of the 3 major kidney regions: renal cortex; renal medulla; renal pelvis.
3. Define: hilum; renal papilla; minor calyx; major calyx.
4. Trace the path of urine in the kidneys from the collecting ducts to the ureter.
5. Trace the path of blood into the kidney from the renal artery to the interlobular artery.
6. Identify the major components of a nephron.
7. What is the function of the collecting ducts? Where are they located?
8. Identify the major function of the: glomerular capillaries; peritubular capillaries.
9. Give the direction (into or out of the capillary) and approximate values (in mm Hg) for: glomerular hydrostatic pressure; capsular hydrostatic pressure; colloid osmotic pressure.
10. Give the function of the following in regulation of filtration rate: macula densa; juxtaglomerular cells.
11. What is the outcome of renin release in the kidneys?
12. Define: tubular reabsorption; tubular secretion.
13. In what part of a nephron are most substances reabsorbed & secreted?
14. During kidney filtration, what substances are primarily: reabsorbed; secreted?
15. Identify the function of the following hormones on reabsorption: aldosterone; antidiuretic hormone (ADH).
16. Identify the 2 major nitrogen-containing wastes secreted by the kidneys.
17. Identify the major function of the following: ureter; urinary bladder; urethra.
18. Define micturition reflex. What part of the nervous system controls this reflex?
19. Identify the function of the: internal urethral sphincter; external urethral sphincter.

Chapter 18: Water, Electrolyte & Acid-Base Balance

20. Where is most of the fluid in the body (inside or outside cells)? What makes up extracellular fluid?
21. What are the major molecules found in: extracellular fluid; intracellular fluid?
22. How does sodium reabsorption lead to increased blood volume/pressure?
23. What & where is the primary regulatory mechanism for: water intake; water output?
24. What hormone(s) primarily regulate: blood sodium levels; blood volume; blood calcium levels?
25. Identify the major metabolic sources of the following acids: carbonic acid; lactic acid; sulfuric acid; keto acids.

26. Identify the major blood-buffer systems. What is the acidic & basic component of the bicarbonate buffer system?
27. Define with respect to blood pH: acidosis; alkalosis.
28. Identify the cause of: respiratory acidosis; metabolic acidosis.
29. Identify the cause of: respiratory alkalosis; metabolic alkalosis.

Chapter 19: Reproductive System

30. What are the male & female sex cells (gametes) & where are they produced?
31. Identify the primary function of the: spermatocytes; interstitial cells; Sertoli cells.
32. What are the normal diploid & haploid numbers of chromosomes in humans?
33. What occurs during: meiosis I; meiosis II? During which division is the chromosome number reduced fro diploid to haploid?
34. During spermatogenesis, what cells result from: meiosis I; meiosis II?
35. What is spermiogenesis? What is the function of the acrosome & flagellum of the mature sperm cell?
36. Trace the pathway of sperm from the testes to the penile urethra.
37. Describe the function of the secretions from: seminal vesicles, prostate gland, bulbourethral gland.
38. What is the primary function of the dartos & cremaster muscles of the scrotum?
39. What are the names of the erectile tissues in the penis? What material do they fill with that causes their erectile behavior?
40. Give the site of release & basic function in the male reproductive system of the following hormones: GnRH, FSH, LH, testosterone.
41. What is the primary function of the ovaries? Where are ovarian follicles located?
42. Give a brief description of each of the following cells seen during oogenesis: oogonium, primary oocyte, secondary oocyte, ovum (egg cell), polar body.
43. During oogenesis, at what stage of meiosis do the primary oocyte & secondary oocyte arrest, (stop oogenesis) & what signals are required to proceed?
44. Define: follicle; ovulation; corpus luteum.
45. Where does fertilization generally occur in the female duct system ? Where are the fimbriae located & what is their function?
46. Identify the location & function of the: uterus; vagina; urethra.
47. What are the 3 layers of the uterine wall & what is the tissue composition of each? Which layer is built up & shed during the uterine cycle?
48. Give the site of release & basic function in the female reproductive system of the following hormones: GnRH, FSH, LH, estrogen, progesterone.
49. Define: ovarian cycle; uterine cycle.
50. What type of glands are the mammary glands? What product do they secrete & where within the glands is it produced?

Chapter 20: Pregnancy, Growth, Development & Genetics

51. Define: fertilization; zygote; zona pellucida.
52. What events surrounding fertilization lead to formation of the zygote?
53. What is the function of the following hormones during pregnancy: human chorionic gonadotropin (hCG); estrogen & progesterone; relaxin; placental lactogen.
54. Define: cleavage; embryonic stage; fetal stage.

55. What is the function of the placenta? What is the source of cells that form the placenta?
56. Identify the function of the following in the embryo: amnion; umbilical cord; yolk sac; allantois.
57. Identify the function of the following in the embryo: umbilical vein; umbilical arteries.
58. What is the function of the following hormones during childbirth: oxytocin; prostaglandins?
59. What is the function of the following hormones during the postnatal period: prolactin; oxytocin?
60. Define: genotype, phenotype, homozygous, heterozygous.