

Biology 211

Final Exam Study Questions

Chapter 16: The Endocrine System

1. Identify the hormones produced by the anterior pituitary & briefly describe the function of each.
2. Identify the hormones released by the posterior pituitary & briefly describe the function of each. Where are these 2 hormones produced?
3. Identify the hormones produced by the thyroid gland & briefly describe the function of each. Where in the gland is each produced?
4. Identify the hormone produced by the parathyroid gland & briefly describe its function.
5. What region of the adrenal gland that produces the corticosteroids? In which specific region are the following produced: mineralocorticoids, glucocorticoids, adrenal androgens? Briefly describe the function of: aldosterone, hydrocortisone.
6. Where in the adrenal gland are the catecholamines produced? Briefly describe the function of: epinephrine & norepinephrine.
7. Where are insulin & glucagon produced (gland & region)? Briefly describe the function of each.
8. Where is melatonin produced? What appears to be its function?
9. What hormones are produced in the thymus & what is their general function?

Chapter 17: Blood

10. Define: hematocrit, plasma, formed elements of blood.
11. Identify the major proteins in blood plasma.
12. What is the life span of red blood cells (erythrocytes)? Where are red blood cells broken down? What happens to the heme, iron & amino acids of hemoglobin?
13. Briefly describe the appearance & major function of: neutrophils, eosinophils, basophils, lymphocytes & monocytes. Which is the most & least abundant in blood?
14. Where does erythropoiesis & leukopoiesis occur? Which leukocytes are formed by the myeloid & lymphoid cell lines?
15. What are platelets, what is their function & which cell type forms them?
16. Give the function of the following in hemostasis: thrombin, plasmin, fibrin.
17. What blood group antigens are on the surface of red blood cells from an individual with blood type: A, B, O, AB.

Chapter 20: The Lymphatic System

18. What is the function of lymphatic vessels? Which general tissues do not contain lymphatic capillaries?
19. Give the general function of: B lymphocytes, T lymphocytes, macrophages.
20. Identify the general function(s) of: lymph nodes, spleen, thymus.

Chapter 21: The Immune System: Innate & Adaptive Body Defenses

21. Give the general function of: complement, interferons.
22. Define: antigen, self-antigen (MHC/HLA proteins), antigen-presenting cell (APC).

23. Distinguish among: naturally-acquired & artificially acquired active & passive immunity.
24. Give the general function & any special structure for: IgA, IgD, IgE, IgG, IgM.
25. Give the general function of: cytotoxic T cells, helper T cells, cytokines.
26. Identify the primary cause of: SCID, AIDS, immunodeficiencies (generally).

Chapter 18: The Cardiovascular System: The Heart

27. What is the major tissue type found in each of the 3 layers of the heart wall?
28. Trace the path of blood through the heart, indicating chambers, valves & vessels.
29. What tissue is served by coronary circulation?
30. Define: intercalated disc, desmosome, gap junction.
31. Follow the sequence of excitation in impulse conduction through the heart.
32. Where are the primary pacemaker cells located? Where are the bundle branches & Purkinje fibers?
33. Describe the electrical events in the heart indicated by the: P wave, QRS complex, T wave of the EKG.

Chapter 19: The Cardiovascular System: Blood Vessels

34. What is the major tissue type found in each of the 3 layers of blood vessel walls?
35. Describe the basic function & characteristics of arteries, veins & capillaries.
36. Distinguish among the 3 types of capillaries (structure & location).
37. Identify 3 factors leading to increased peripheral resistance. Which factor is most likely to alter resistance?
38. Define: systemic blood pressure, systolic pressure, diastolic pressure.
39. What is the normal range for arterial, capillary & venous blood pressure?
40. What are the arterial blood pressure values that indicate hypotension & hypertension?

Chapter 22: The Respiratory System

41. What type of epithelial tissue is found in the mucosa of the: nasal cavity, nasopharynx, oropharynx, laryngopharynx, trachea?
42. Describe the significance of the: epiglottis, glottis.
43. Describe the tissue changes that occur in the walls of the conducting zone passageways (cartilage, epithelium & smooth muscle).
44. What structures compose the respiratory membrane? What is the function of the type I & type II alveolar cells?
45. What are the primary muscles controlling inspiration & expiration?
46. Define the pressure-volume relationship in the lungs during inspiration & expiration.
47. Define the respiratory volumes: TV, IRV, ERV, RV, VC, TLC.
48. How does nitric oxide control local blood flow & blood pressure (what does it bind to & what is its effect on blood vessels)?
49. What are the forms of carbon dioxide transport in blood?
50. What is the cause of: obstructive emphysema, chronic bronchitis, asthma, tuberculosis?

Chapter 23: The Digestive System

51. What is the primary blood supply to the digestive organs?
52. Distinguish among the layers of the wall of the GI tract (tissue type & location).
What are the sublayers of the mucosa?
53. Define: gingiva, enamel, dentin, pulp cavity.
54. List the cells of the gastric glands & the product each secretes.
55. List the 3 components of the small intestine & the order in which food travels.
56. Define: crypts of Lieberkuhn, Peyer's patches, mesentery.
57. Describe the function in digestion of (the product secreted/stored by): liver, gallbladder, pancreas.
58. Identify the primary component(s) of: bile salts, bilirubin, pancreatic juice.
59. What type of epithelial tissue is found in the mucosa of the: esophagus, stomach, small intestine, large intestine, anal canal?
60. Detail the path of food from the mouth to the anal canal.

Chapter 24: Nutrition, Metabolism & Body Temperature Regulation

61. Describe the major role(s) of: carbohydrates, lipids, proteins.
62. Describe the major role(s) of: B vitamins, phosphorus, potassium, iodine, iron.
63. Where in the cell does each of the following occur: glycolysis, Krebs cycle, electron transport, lipid metabolism, protein metabolism?
64. What is the fate of acetyl coA from glycolysis (what molecule is it converted to) in the presence & absence of oxygen?
65. What is the role of the following in aerobic cellular respiration: acetyl coA, NADH & FADH₂, oxygen, hydrogen ions?
66. How can each of the following be used for energy (what molecules are they converted to): glycerol, fatty acids, amino acids?
67. What types of cellular molecules are synthesized from cholesterol?
68. What is the role of: very low density lipoproteins, low density lipoproteins, high density lipoproteins?

Chapter 25: The Urinary System

69. Describe the location in the kidneys of the following regions: renal hilus, renal cortex, renal medulla, renal pelvis.
70. In which region are the following located: renal pyramids, renal columns, glomerulus, collecting duct?
71. List the components of a nephron.
72. What is tubular secretion? What types of molecules are generally secreted from the kidney tubules?
73. What types of molecules can act as diuretics & what process is inhibited by each?
74. What is the function & location of: ureters, urinary bladder, urethra?
75. What is the function & location of: detrusor muscle, internal urethral sphincter, external urethral sphincter?

Chapter 26: Fluid, Electrolyte & Acid-Base Balance

76. What are the major sources of water intake & water output?
77. Describe the function of: aldosterone, ADH, ANP.

78. Describe the effect on blood pressure of increased: aldosterone, ADH, ANP.
79. Why is water reabsorbed along with sodium?
80. How does aldosterone affect potassium ion reabsorption?
81. Define: buffer, acidosis, alkalosis.

Chapter 27: The Reproductive System

82. Where in the testes are sperm produced?
83. Trace the path of sperm through the male duct system (epididymis through penile urethra).
84. What is the primary function of: seminal vesicle, prostate gland, bulbourethral gland?
85. What is the role of each of the following in spermatogenesis: interstitial cell, spermatogonium, secondary spermatocyte, spermatid?
86. Define: diploid, haploid, meiosis, spermatogenesis, oogenesis.
87. Describe the cell & its chromosome number resulting from: meiosis I, meiosis II, spermiogenesis in males.
88. Describe the reproductive system function of: ovary, uterine tube, uterus.
89. Define: follicle, corpus luteum, oocyte, ovum, polar body.
90. Describe the cells & their chromosome number resulting from: meiosis I, meiosis II, complete meiosis (meiosis I & II) in females.
91. What is the signal for: completion of meiosis I, completion of meiosis II in females? Which cell is ovulated?
92. Describe the major event & days associated with the 3 phases of the ovarian cycle.
93. Describe the major event & days associated with the 3 phases of the uterine cycle.

Chapter 28: Pregnancy & Human Development

94. What components of the sperm cell are retained following entry of sperm into oocyte?
95. Define: zygote, cleavage, morula, blastocyst.
96. What is the chorion? What 2 tissue types compose the placenta?
97. What is the function of the following during & after childbirth: oxytocin, prostaglandins, prolactin?

Chapter 29: Heredity

98. Define: allele, autosome, genotype, phenotype.
99. Define: homozygous, heterozygous, carrier.
100. Define & give an example of: incomplete dominance, codominance, sex-linked inheritance.