

Biology 112

Final Exam Study Questions

Chapter 1

1. Define: atom; molecule; cell; tissue; organ.
2. Define: metabolism; anabolism; catabolism; homeostasis.
3. Identify the major function of the following systems: integumentary system; skeletal system; muscular system; nervous system; endocrine system; cardiovascular system; lymphatic system; immune system; respiratory system; digestive system; urinary system; reproductive system.
4. Know basic definitions & be able to apply them for directional terms.
5. Identify the major cavities within the dorsal, ventral & thoracic body cavities.

Chapter 2

6. Define: atom; proton; neutron; electron; atomic number; atomic mass.
7. Define: ionic bond; (nonpolar) covalent bond; polar covalent bond. Give an example of each type of bond and identify the types of atoms that prefer each bond type.
8. Define: oxidation, reduction, endergonic reaction, exergonic reaction.
9. Distinguish between organic molecules & inorganic molecules. What element(s) does every organic molecule contain?
10. Identify the properties & building blocks for: carbohydrates, lipids, proteins, nucleic acids.

Chapter 3

11. Describe the composition & function of the plasma membrane. Distinguish among: simple diffusion, facilitated diffusion, filtration.
12. Describe the function of: rough ER, smooth ER, Golgi complex.
13. Describe the function of: lysosome, ribosome, mitochondrion.
14. Distinguish among interphase & the stages of mitosis (prophase, metaphase, anaphase & telophase).

Chapter 4

15. Define: dehydration synthesis; hydrolysis.
16. Define: enzyme; coenzyme; substrate; active site.
17. Describe the function of the following in aerobic cellular respiration: glucose; oxygen; NAD & FAD.
18. Define: replication; transcription; translation. Where does each occur in a cell?

Chapter 5

19. Give a brief description & location for each of the epithelial tissue types.
20. Distinguish among the following connective tissue types: areolar, adipose, reticular, dense regular, dense irregular, cartilage.
21. List the 4 basic tissue types & indicate the major function of each.

22. Identify the major cell type(s) present in: blood, bone, cartilage, dense connective tissue.

Chapter 6

23. Define: epidermis, dermis, hypodermis (subcutaneous layer).
24. Distinguish among the cell types in the epidermis: keratinocytes, melanocytes. Briefly describe the location & composition of the 5 layers (strata) of skin.
25. Distinguish among the primary 3 pigments contributing to skin color.
26. Describe the mechanism for heat promotion & heat loss in skin. Where is the regulatory center for thermoregulation?

Chapter 7

27. Define: compact bone, spongy bone, osteon, trabeculae.
28. Define: epiphysis; diaphysis; periosteum.
29. What is the effect of the hormones parathyroid hormone (PTH) & calcitonin on blood calcium?
30. Identify the number of bones & major bone groups in the axial & appendicular skeletons.
31. Distinguish among the cranial bones & sutures.
32. Know the numbers of cervical, thoracic & lumbar vertebrae.
33. Identify the bones with special features (non-articulating, articulating with all bones of a region, only movable bone of skull, etc.)
34. Distinguish among the shoulder & hip bones.
35. Know the numbers of carpals, tarsals, metacarpals & metatarsals & phalanges.
36. Distinguish among the arm bones & leg bones.
37. Distinguish among the movements from synovial joints.
38. Distinguish among the types of synovial joints: hinge, pivot, ball & socket. Give an example of each.

Chapter 8

39. Distinguish among the types of muscle: smooth, skeletal, cardiac.
40. Give the function in muscle contraction of: acetylcholine, actin, myosin, tropomyosin, troponin.
41. Distinguish among the abdominal wall muscles & chest muscles.
42. Distinguish among the back muscles & breathing muscles.
43. Distinguish among the arm muscles (know flexors & extensors).
44. Distinguish among the leg muscles (know flexors & extensors).

Chapter 9

45. Define: cell body (soma), Nissl body, neurofibril, dendrite, axon.
46. Distinguish among the neuroglia of the central nervous system: astrocytes, microglia, ependymal cells, oligodendrocytes.
47. Define: myelin sheath, neurilemma, node of Ranvier, gray & white matter.
48. Identify the total number of spinal nerves & the number of spinal nerves in each of the following regions: cervical, thoracic, lumbar, sacral & coccygeal.
49. Know the components of the brain stem & diencephalon.

50. Identify the position & function of: hypothalamus, medulla oblongata, cerebellum, limbic system.
51. Distinguish among the 3 layers of the meninges.
52. Distinguish among the somatic, autonomic & sympathetic & parasympathetic divisions of PNS.

Chapter 10

53. Distinguish among the 5 types of sensory receptors: mechanoreceptors, thermoreceptors, photoreceptors, chemoreceptors, nociceptors. Which receptor type is involved in: smell, taste, vision, hearing
54. Distinguish among the 4 types of tongue papillae (location on tongue & taste sensed by each).
55. Identify the function in vision of: iris, ciliary body, rods, cones, fovea centralis.
56. List the components of the 3 ear regions: outer ear, middle ear, inner ear.

Chapter 11

57. Identify the hormones produced by the anterior pituitary & briefly describe the function of each.
58. Identify the hormones released by the posterior pituitary & briefly describe the function of each. Where are these 2 hormones produced?
59. Identify the hormones produced by the thyroid & parathyroid gland & briefly describe their function.
60. Where are the following hormones produced: insulin & glucagon; melatonin; cortisol; epinephrine?

Chapter 12

61. Define: hematocrit, plasma, formed elements of blood.
62. Briefly describe the appearance & major function of: neutrophils, eosinophils, basophils, lymphocytes & monocytes. Which is the most & least abundant in blood?
63. What are platelets, what is their function & which cell type forms them?
64. Give the function of the following in hemostasis: thrombin, plasmin, fibrin.
65. What blood group antigens are on the surface of red blood cells from an individual with blood type: A, B, O, AB.

Chapter 13

66. Trace the path of blood through the heart, indicating chambers, valves & vessels.
67. What tissue is served by coronary circulation?
68. Follow the sequence of excitation in impulse conduction through the heart.
69. Describe the electrical events in the heart indicated by the: P wave, QRS complex, T wave of the EKG.
70. Describe the basic function & characteristics of arteries, veins & capillaries.

Chapter 14

71. Give the general function of: B lymphocytes, T lymphocytes, macrophages.
72. Identify the general function(s) of: lymph nodes, spleen, thymus.

73. Distinguish among: naturally-acquired & artificially acquired active & passive immunity.
74. Give the general function of: IgA, IgD, IgE, IgG, IgM.
75. Give the general function of: cytotoxic T cells, helper T cells, cytokines.

Chapter 15

76. Describe the function in digestion of: esophagus; stomach; small intestine; large intestine.
77. Describe the function in digestion of (the product secreted/stored by): liver, gallbladder, pancreas.
78. Identify the primary component(s) of: bile salts, bilirubin, pancreatic juice.
79. Detail the path of food from the mouth to the anal canal.

Chapter 16

80. What type of epithelial tissue is found in the mucosa of the: nasal cavity, nasopharynx, oropharynx, laryngopharynx, trachea?
81. What are the primary muscles controlling inspiration & expiration?
82. Define the respiratory volumes: TV, IRV, ERV, RV, VC, TLC.
83. What are the forms of carbon dioxide transport in blood?
84. Describe the major role(s) of: vitamin A, B vitamins, vitamin C, vitamin D, vitamin E.

Chapter 17

85. Describe the location in the kidneys of the following regions: renal hilus, renal cortex, renal medulla, renal pelvis.
86. List the components of a nephron.
87. What is tubular secretion? What types of molecules are generally secreted from the kidney tubules?
88. What is the function & location of: ureters, urinary bladder, urethra?

Chapter 18

89. What are the major sources of water intake & water output?
90. Describe the function of: aldosterone, ADH.
91. Why is water reabsorbed along with sodium?
92. Define: buffer, acidosis, alkalosis.

Chapter 19

93. Where in the testes are sperm produced?
94. Trace the path of sperm through the male duct system (epididymis through penile urethra).
95. What is the primary function of: seminal vesicle, prostate gland, bulbourethral gland?
96. Define: diploid, haploid, meiosis, spermatogenesis, oogenesis.
97. Describe the cell & its chromosome number resulting from: meiosis I, meiosis II, spermiogenesis in males.

98. Describe the reproductive system function of: ovary, uterine tube, uterus.
99. Define: follicle, corpus luteum, oocyte, ovum, polar body.
100. What is the signal for: completion of meiosis I, completion of meiosis II in females?
Which cell is ovulated?