

Biology 112

Exam 5 Questions

Chapter 13: Cardiovascular System

1. Define with respect to circulation: systemic circuit; pulmonary circuit.
2. Identify the location of the heart. Define: base of heart; apex of heart.
3. Identify the relative position & tissue composition of: fibrous pericardium; serous pericardium. What are the 2 layers of the serous pericardium?
4. Identify the 3 layers of the heart wall & the major tissue composition of each.
5. Define: atrium; auricle; ventricle; papillary muscle; chordae tendineae.
6. Identify the major vessel(s) from which the following receive blood: right atrium; left atrium.
7. Identify the major vessel(s) into which the following pump blood: right ventricle; left ventricle.
8. Identify the general function of the: atrioventricular valves; semilunar valves.
9. Identify the valve that prevents backflow between: right ventricle & right atrium; left ventricle & left atrium; pulmonary trunk & right ventricle; aorta & left ventricle.
10. Trace the pathway of blood through the heart (knowing this pathway will help with several test questions).
11. For coronary circulation, identify: the tissue served; the major artery; the major vein.
12. What might be the cause of prolonged blockage to coronary circulation? What might be the result?
13. Define: systole; diastole. What produces the 2 sounds of the heartbeat?
14. Trace the sequence of excitation of the cardiac conduction system (pathway of cardiac muscle cell activation from atria to ventricles).
15. For the above cardiac conduction system, identify the location of: autorhythmic (pacemaker) cells; the bundle branches; the Purkinje fibers.
16. What is measured by electrocardiography? Identify the heart event associated with: P wave; QRS complex; T wave.
17. Identify the following regulatory factors for heart rate: the brain region that serves as the control center for heart rate; the nervous system division that increases heart rate; the nervous system division that decreases heart rate; 2 hormones that increase heart rate.
18. Identify the 3 layers of a blood vessel wall & the major tissue composition of each.
19. Which layer of a blood vessel wall is: thickest in arteries; responsible for vasoconstriction & vasodilation?
20. Identify the major function of: arteries; capillaries; veins.
21. For capillaries, define: precapillary sphincter; hydrostatic pressure; osmotic pressure. Identify the layer(s) present in a capillary wall.
22. Identify 2 mechanisms that facilitate blood transport through veins.
23. Define: hypotension; hypertension.
24. Define: cardiac output; stroke volume; heart rate.
25. Define peripheral resistance. Identify the primary factor contributing to peripheral resistance in blood vessels.
26. Define: baroreceptor; chemoreceptor.

27. What is the primary control region in the brain for blood pressure regulation? Where is the control center for long term blood pressure autoregulation (renin-angiotensin mechanism)?
28. Identify the effect on blood pressure of the following chemicals: epinephrine; norepinephrine; antidiuretic hormone; aldosterone; atrial natriuretic peptide (ANP); nitric oxide (NO).
29. Identify the major arteries in systemic circulation that deliver blood to the: head; arms; legs.
30. Identify the major veins in systemic circulation that take blood away from the: head; arms; legs.

Chapter 14: Lymphatic System & Immunity

31. List the 3 major functions of the lymphatic system.
32. Which blood vessel type do lymphatic vessels most resemble? Why?
33. Identify the blood vessel that directly receives lymph from lymphatic circulation.
34. Identify the location & function of the thymus.
35. Identify the location & functions of the spleen.
36. Define: red pulp; white pulp; sinuses.
37. Define: pathogen; antigen; antibody; interferon.
38. List the components of the nonspecific defenses that form the: mechanical barriers; chemical barriers.
39. Identify the 4 signs of inflammation. What is the function of histamine & what cell types secrete it?
40. Describe phagocytosis. Identify the 2 primary phagocytes & where they function.
41. Identify the 3 major components of the specific defenses (2 cell types & a protein class).
42. Where are B cells & T cells produced? Where does each cell mature?
43. What cell type is primarily involved with the: cellular immune response; humoral immune response?
44. What is the function of MHC/HLA proteins in the cellular immune response?
45. Identify the function of: helper T cells; cytotoxic T cells; memory T cells.
46. Identify the function of: B cells; plasma cells; memory B cells.
47. List the 5 classes of antibodies & give the major function of each.
48. Identify the antibody type(s) with the following features: cross the placenta; most abundant in plasma; activate complement; cause inflammation; cause agglutination.
49. Give an example of each of the following types of acquired immunity: naturally acquired active immunity; naturally acquired passive immunity; artificially acquired active immunity; artificially acquired passive immunity.
50. Define: allergy; hypersensitivity; autoimmunity; graft (tissue) rejection.

Chapter 15: Digestion & Nutrition

51. Identify the major organs of the GI tract (alimentary canal). What are the accessory digestive organs?
52. Identify the major layers of the wall of the GI tract & the major tissue composition of each.

53. Identify the location & function of the following: taste buds; palate; palatine tonsils; uvula.
54. Identify the location of the following tooth components: crown; root; enamel; periodontal ligament.
55. What is the function of saliva in digestion? Identify the 3 major salivary glands & the location of each.
56. Identify the major function of the following in digestion: pharynx; esophagus; stomach; small intestine; large intestine.
57. Identify the major function of the following in digestion: epiglottis; cardiac sphincter; pyloric sphincter; ileocecal sphincter.
58. Identify the major function of the following in digestion: pepsin; gastrin; hydrochloric acid. Where are these chemicals produced?
59. Identify the major function of the following in digestion: pancreatic juice; bicarbonate ion; secretin; cholecystokinin.
60. Identify the major function of the following in digestion: liver; gallbladder; bile salts. What lipid is used to synthesize bile salts?
61. Identify the 3 major components of the small intestine (in order of digestion).
62. Identify the major components of the large intestine (in order of digestion).
63. Define & identify the major: macronutrients; micronutrients.
64. Define calorie. Give the calories per gram available from: carbohydrates; proteins; lipids.
65. Identify the major function(s) for each of the following macronutrients: carbohydrates; lipids; proteins.
66. Identify the major form(s) for each of the following macronutrients: carbohydrates; lipids; proteins.
67. Define: aerobic cellular respiration; beta oxidation; deamination.
68. Identify the major vitamin types & give the primary function of each.

Chapter 15: Respiratory System

69. Define: ventilation; external respiration; internal respiration.
70. Give the location & function of the following: nasal conchae; paranasal sinuses; pharynx.
71. Give the location & function of the following: larynx; vocal cords; glottis; epiglottis.
72. Trace the pathway of air through the respiratory tract (from nasal cavity through lungs).
73. Identify the location & function of the alveoli.
74. Identify the serous membrane surrounding the lungs. List 2 differences between the right & left lungs.
75. Identify the 2 major muscles involved in breathing.
76. Indicate the pressure & volume changes (increase or decrease) that occurs in the lungs during: inspiration; expiration.
77. Define: tidal volume; inspiratory reserve volume; expiratory reserve volume; residual volume; vital capacity.
78. Identify the brain regions involved in control of breathing. What is a typical value for normal quiet breathing rate?

79. What types of chemicals stimulate the: central chemoreceptors; peripheral chemoreceptors?
80. What is the effect of increased carbon dioxide on the blood? How can excess carbon dioxide be eliminated from the blood?
81. What is the respiratory membrane? How do gases move across it?
82. How is oxygen primarily transported in blood (specifically what does it bind to)?
83. What factors increase oxygen release from the blood?
84. Identify 3 forms of carbon dioxide transport in blood? Which form is most prevalent?
85. What forms the primary buffering system in blood? What enzyme is involved?