Anatomy & Physiology

2014-2015 Holt Invitational
Division B

School Name: Answer Key

Team member's Names: _____

_____

Cardio - 37
Integ - 40
Immune - 25

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Multiple Choice
Write the letter of the best choice for each question below.

D 1. Which of these is **NOT** a function of the cardiovascular system?
a. transporting cells that attack disease-causing microorganisms
b. carrying oxygen, glucose, and other needed materials to cells
c. carrying waste products away from cells
d. controlling many body processes by means of chemicals

B 2. Needed substances are carried to the body cells by
a. enzymes. b. blood. c. water. d. food.

C 3. The function of the atria is to
a. pump blood to the lungs.
b. pump blood to the body.
c. receive blood that comes into the heart.
d. deliver oxygen to body tissues.

D 4. A pacemaker adjusts the heart rate to correspond to the body's
a. creation of waste products.
b. need for carbon dioxide.
c. ability to fight disease.
d. need for oxygen.

B 5. Blood vessels that carry blood away from the heart are called
a. veins. b. arteries. c. capillaries. d. lymphatic vessels.

A 6. When blood flows into the right atrium from the body, it contains
a. little oxygen and a lot of carbon dioxide.
b. a lot of oxygen and little carbon dioxide.
c. a lot of both oxygen and carbon dioxide.
d. little of either oxygen or carbon dioxide.

C 7. In which vessels are materials exchanged between the blood and the body cells?
a. veins b. arteries c. capillaries d. lymphatic vessels

A 8. What causes blood pressure?
a. the force with which the ventricles contract
b. the rate at which blood flows through the heart
c. the speed at which oxygen is returned to blood in the lungs
d. the strength of the muscles in the walls of the capillaries

C 9. Which component of blood carries oxygen to the body cells?
a. plasma b. platelets c. red blood cells d. white blood cells

C 10. If a person's blood lacked platelets, what process could not take place?
a. carrying oxygen to cells
b. carrying glucose to cells
c. clotting of blood
d. transfusing of blood

A 11. Blood types are determined by
a. marker molecules on red blood cells.
b. the kinds of blood that are available for transfusion.
c. marker molecules on white blood cells.
d. the presence of fibrin in plasma.

A 12. What is the blood type of a person whose plasma contains only anti-B clumping proteins?
a. type A b. type B c. type AB d. type O

C 13. What eventually happens to fluid that leaks from capillaries into the surrounding tissues?
a. It undergoes chemical reactions and becomes fatty tissue.
b. It replaces dead body cells.
c. It returns to the blood through the lymphatic system.
d. It replaces dead red blood cells.

A 14. What is the function of lymph nodes?
a. to trap disease-causing bacteria
b. to make new lymph
c. to transfer oxygen
d. to return lymph to the bloodstream

D 15. Atherosclerosis is a condition in which
a. veins experience a buildup of fatty material.
b. muscles in capillary walls lose their ability to contract.
c. capillaries widen and release too much fluid.
d. artery walls thicken as the result of a buildup of fatty materials.

C 16. Why is atherosclerosis especially serious when it develops in the coronary arteries?
a. It can then go on to affect the aorta.
b. It can make red blood cells die.
c. It can lead to a heart attack.
d. It can limit the functioning of white blood cells.

B 17. Exercise is important for cardiovascular health because it
a. increases blood pressure.
b. strengthens heart muscle.
c. slows the heartbeat.
d. reduces sodium in the blood.

C 18. To maintain cardiovascular health, foods high in fat should be avoided because
a. they make the blood flow more rapidly than normal.
b. they decrease the force with which the ventricles can contract.
c. they can lead to atherosclerosis.
d. fat in the diet harms red blood cells.

B 19. Which of these heart structures prevents blood from flowing backward?
a. aorta b. valve c. septum d. coronary artery

A 20. When the ventricles contract, blood is pumped
a. out of the heart. b. into the heart. c. through the septum. d. into veins.

D 21. Which chamber of the heart pumps oxygen-poor blood to the lungs?
a. left atrium b. right atrium c. left ventricle d. right ventricle

C 22. What instrument is used to measure blood pressure?
a. thermometer b. stethoscope c. sphygmomanometer d. blood bank

B 23. Hypertension is a condition in which
a. blood pressure is consistently lower than normal.
b. blood pressure is consistently higher than normal.
c. fatty deposits build up on artery walls.
d. some of the heart muscle dies.

A 24. Which component of blood is 90 percent water?
a. plasma b. platelets c. red blood cells d. white blood cells

D 25. The function of white blood cells is to
a. carry carbon dioxide.
b. increase blood pressure.
c. carry wastes away from body cells.
d. fight disease.

B 26. What layer or layers of veins have muscles?
a. the outer layer only
b. the middle layer only
c. the inner layer only
d. all three layers

B 27. How many loops does the human circulatory system contain?
a. one b. two c. three d. four

C 28. Which of the following steps will **NOT** help prevent atherosclerosis?
a. avoiding smoking
b. exercising regularly
c. eating foods that contain a lot of sodium
d. avoiding foods that are high in saturated fats

B 29. Lymph vessels located in the small intestine that has a function of absorbing fats and fat-soluble vitamins are known as:
a. lingual b. lacteals c. lymphocytes

C 30. The lymphatic and endocrine gland located in the chest area playing an important role in the body's immune system is known as the:
a. spleen b. thyroid c. thymus

B 31. Another name for the nasopharyngeal tonsils is:
a. palates b. adenoids c. sinuses

A 32. The lymphatic tissue that filters microorganisms and other foreign material from the blood and stores and removes old red blood cells is called:
a. spleen b. thymus c. tonsils

B 33. Any substance such as a virus, bacterium, or toxin that the body regards as foreign is known as an:
a. adenoid b. antigen c. adenoma

A 34. A phagocytic cell that protects the body by eating invading cells is called a:
a. macrophage b. erythrocyte c. antigen

C 35. Intercellular or interstitial fluid is a thin, watery fluid formed when plasma diffuses into tissue spaces and is called:
a. platelets b. pus c. lymph

A 36. The organ made up of lymphatic tissue located on the left side behind the stomach is the:
a. spleen b. thymus c. liver

C 37. Vaccinations for diphtheria, measles, mumps, pertussis, etc. is known as:
a. natural active immunity b. autoimmunity c. artificial active immunity

A 38. A disease-fighting protein developed by the body in response to the presence of foreign matter is known as:
a. antibody b. T cell c. allergen

B 39. The larger tube that drains purified lymph from most of the body is known as the:
a. subclavian artery b. thoracic duct c. ureter

C 40. An enlargement of the spleen is known as:
a. microsplenic b. splenectomy c. splenomegaly

B 41. A chronic, malignant disease of the lymph nodes is known as:
a. Lupus b. Hodgkin's disease c. adenitis

C 42. Specialized lymph nodes located in the intestines that help protect against invading organisms in the digestive tract are known as:
a. T cells b. lymphocytes c. Peyer's patches

A 43. The _____ T cell remembers an invading antigen and is ready to fight that same antigen if it is ever found again.
a. Memory b. Helper c. Red

D 44. Which of the following functions is associated with the skin?
a. fat production
b. vitamin C production
c. regulation of body pH
d. protection against ultraviolet radiation of the sun

C 45. The integumentary system has many functions, one of which is:
a. protection from cancer.
b. production of Vitamin E.
c. detection of painful stimuli.
d. regulation of acid-base balance.

B 46. The layer of epithelium that covers the skin is called the
a. dermis. b. epidermis. c. hypodermis. d. mesodermis.

B 47. Which of the following statements concerning the hypodermis is false?
a. Hypodermis is referred to as subcutaneous tissue.
b. Hypodermis is composed of dense connective tissue with collagen and elastin fibers.
c. The main cell types of the hypodermis are fibroblasts, fat cells, and macrophages.
d. The hypodermis attaches the skin to underlying bone and muscle.

D 48. The dermis
a. contains no blood vessels.
b. functions as padding and insulation.
c. is divided into three distinct layers.
d. is responsible for most of the skin's structural strength.

C 49. When comparing the dermis with the hypodermis,
a. the dermis has more fat cells than the hypodermis.
b. the dermis is a more vascular tissue than the hypodermis.
c. the dermis is divided into two layers; the hypodermis is not.
d. the dermis contains melanocytes; the hypodermis does not.

D 50. The sloughing off of older cells from the surface of the skin is called
a. pollination. b. keratinization. c. melaninization. d. desquamination

D 51. Keratinocytes
a. produce skin pigments in cell organelles called melanosomes.
b. are found in both the dermal and the epidermal layers of the skin.
c. are special cells of the immune system.
d. are responsible for the permeability characteristics of the epidermis.

D 52. Which of the following statements concerning the epidermis is true?
a.The dermis is superficial to the epidermis.
b. The epidermis contains numerous blood vessels.
c. The most numerous cells in the epidermis are the melanocytes.
d. The epidermis is nourished by blood vessels located in the dermis.

C 53. Keratinization
a. occurs in the dermis.
b. results in the formation of new epidermal cells.
c. produces a layer of cells that resist abrasion.
d. determines skin color.

B 54. Which of the following represents the correct order of the layers of the epidermis from the deepest to the most superficial?
a. stratum basale, stratum granulosum, stratum lucidum, stratum spinosum, and stratum corneum
b. stratum basale, stratum spinosum, stratum granulosum, stratum lucidum, and stratum corneum
c. stratum lucidum stratum granulosum, stratum corneum, stratum basale, and stratum spinosum
d. stratum spinosum, stratum basale, stratum lucidum, stratum corneum, and stratum granulosum

D 55. Thick skin
a. has three different epidermal strata.
b. has fewer layers of cells in the stratum corneum than thin skin.
c. is found covering most of the body.
d. is found in areas subject to pressure or friction such as palms.

D 56. Fingerprints and footprints are produced by projections into the epidermis called
a. striae. b. cleavage lines. c.melanocytes. d. papillae.

B 57. Parallel curving ridges of dermis that shape the overlying epidermis into fingerprints
a. are associated with thin skin.
b. improve the grip of the hands.
c. decrease friction on surfaces where they are located.
d. are caused by the pattern of the reticular layer of the dermis.

A 58. Skin color is the result of
a. the quantity of melanin in the skin.
b. the number of keratinocytes in the skin.
c. the amount of fat in the hypodermis.
d. the thickness of the stratum basale.

D 59. If you accidentally cut your arm and see connective tissue and fat, which layers were cut?
a. stratum corneum b. stratum basale c. dermis d. all of these layers

C 60. Light-skinned races such as Caucasians have
a. more melanocytes than races with darker skins.
b. fewer melanocytes than races with darker skins.
c. approximately the same number of melanocytes as races with darker skins.
d. more melanin in their skin.

C 61. Delicate unpigmented hairs that cover the fetus in early development are called
a. terminal hairs. b. primary hairs. c. lanugo hairs. d. vellus hairs.

C 62. The portion of a hair that protrudes above the surface of the skin is the
a. hair bulb. b. hair root. c. hair shaft. d. hair follicle.

C 63. The length of hair is determined by
a. the size of the hair bulb.
b. the angle of the hair root.
c. the rate of hair growth.
d. the length of the resting stage.

D 64. Baldness
a. occurs only in men.
b. is related to estrogen levels.
c. is related to levels of growth hormone.
d. is more common in men than in women.

B 65. When the arrector pili muscles contract
a. the body is able to lose heat.
b. "goose bumps" form on the skin.
c. the hair on your arms and legs begins to curl.
d. the sweat glands empty their contents onto the surface of the skin.

A 66. Sweat glands
a. aid in cooling the body.
b. serve as "anchors" for the arrector pili muscles.
c. produce a secretion that oils the hair and skin.
d. produce a secretion that protects the body from growth of bacteria.

B 67. Sweat
a. is a hypertonic fluid.
b. is produced by a merocrine or apocrine gland.
c. contains only water.
d. reaches the body only through the hair follicles.

B 68. The nail root and the nail body attach to the
a. lunula. b. nail bed. c. nail groove. d. hyponychium.

D 69. Nail cells are produced by the
a. lunula. b. cuticle. c. nail body. d. nail matrix.

A 70. Intact skin provides protection because
a. it forms a physical barrier against the entry of microbes.
b. its secretions keep the skin slightly alkaline.
c. the skin contains components of the excretory system.
d. the skin enhances water loss from the body.

A 71. An increase in body temperature causes
a. sweating.
b. arterioles in the dermis to constrict.
c. arrector pili muscles to contract.
d. an increase in keratinization of the skin.

B 72. Which of the following will help cool the body?
a. absorption of ultraviolet light rays by the skin
b. evaporation of sweat from the skin's surface
c. contraction of the arrector pili muscles
d. decreased blood flow to the skin

C 73. An abrasion of the skin results in which of the following?
a. fluid retention by the kidney
b. increased melanin production
c. portal of entry for microorganisms
d. loss of cell regeneration ability

B 74. On coming inside from the cold, students notice that their cheeks are red. This results from
a. constriction of the blood vessels in the epidermis of the cheeks.
b. dilation of the blood vessels in the dermis of the cheeks.
c. damage to the epidermis by the cold.
d. constriction of the sweat glands in the cheeks.

D 75. Which vitamin begins its synthesis in the skin exposed to ultraviolet light?
a. vitamin A b. vitamin B c. vitamin C d. vitamin D

C 76. Eskimos wear a great deal of clothing and have limited exposure to U.V. light, but do not suffer from vitamin D deficiency. A possible explanation is
a. they do not need vitamin D.
b. their exposure to U.V. light in the summer will last for a year.
c. they get enough vitamin D in their diet of fish and marine mammals.
d. they do not require sunlight for vitamin D formation.

C 77. Which of the following skin changes is usually associated with aging?
a. Skin becomes thicker.
b. There is an increase in the number of elastic fibers in the skin.
c. Loss of subcutaneous tissue contributes to sagging of the skin.
d. Localized increase in sebaceous glands leads to dry skin.

C 78. With aging, individuals tend to feel colder and usually need the thermostat in their home set higher in the winter to feel warm enough. This is probably because the elderly
a. no longer experience hot flashes at night.
b. exhibit a decrease in melanin production.
c. experience a decrease in the thickness of their subcutaneous fat layer.
d. have less blood flowing to the skin.

True or False

Please write a T or F on the blank to show that the statement is true or false.

T 79. The function of the lymphatic system is to remove waste and excess fluid from the tissues.

F 80. Lymph nodes range in size from a pinhead to a golf ball.

T 81. The thymus gland ceases to function after puberty.

F 82. The lingual tonsils are found on the back of the throat.

F 83. The spleen destroys thrombocytes and produces leukocytes.

F 84. The complement protein destroys invading cells by ingesting them.

T 85. B cells produce antibodies to react with antigens.

F 86. Older people have less acquired immunity than children and teens.

T 87. Intact skin means that there are no cuts, scrapes, or open sores.

T 88. The enlarged pouch-like storage area for purified lymph before it enters the blood is called the cisterna chyli.

Diagrams/Short Answer

Refer to figure 1 to answer the following questions.

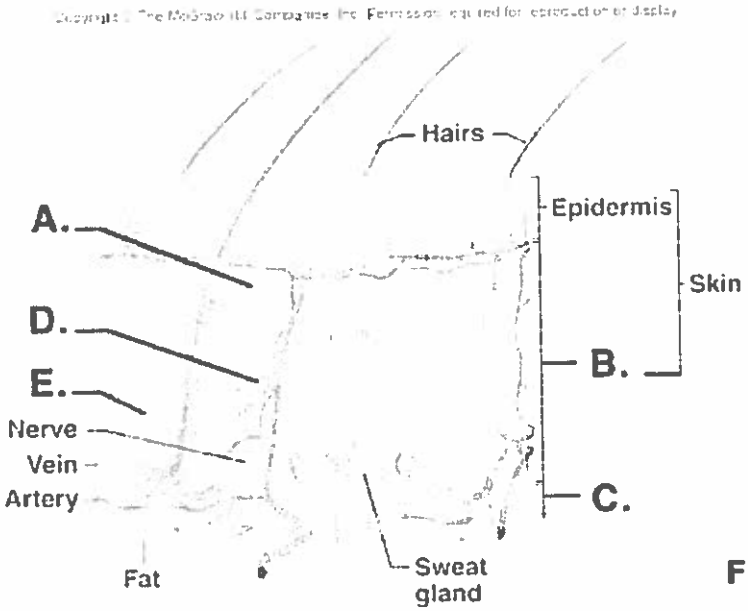


Figure 1

D 89. What does structure "A" represent in figure 1?
a. hair follicle b. arrector pili c. dermis d. sebaceous gland

C 90. What does structure "B" represent in figure 1?
a. hair follicle b. arrector pili c. dermis d. hypodermis

D 91. What does structure "C" represent in figure 1?
a. hair follicle b. arrector pili c. dermis d. hypodermis

B 92. What does structure "D" represent in figure 1?
a. hair follicle b. arrector pili c. dermis d. hypodermis

A 93. What does structure "E" represent in figure 1?
a. hair follicle b. arrector pili c. dermis d. hypodermis

Refer to figure 2 to answer the following questions.

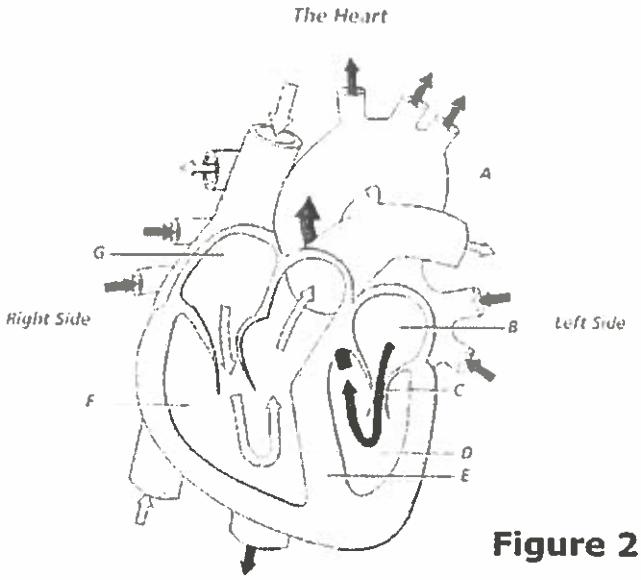


Figure 2

94. What is the name for the structure labeled A, **and** to which locations does it carry blood?

Aorta → from heart to the body

95. Identify structure B in Figure 2.

Left Atrium

96. Identify structure G, **and** give the letter and name of the structure into which blood flows after leaving G.

Right Atrium → blood flows to F (right ventricle)

97. Identify the structure labeled D, **and** when blood enters structure D, is the blood low or high in oxygen? Explain.

Left Ventricle → high in O_2 because it just left the left atrium, which just got blood from lungs

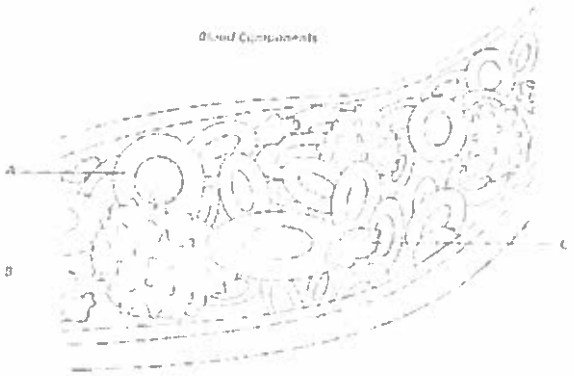
98. Identify structure E. What would happen to a person who had a hole in this structure?

Septum → this would mix O_2 rich blood with O_2 deficient blood. Less O_2 would go to body cells

Refer to figure 3 to answer the following questions.

99. Identify the type of cell shown by A.

Red blood cells



100. What is the function of the type of cell indicated by A?

Carry O_2 to the body

101. What is the function of the type of cell indicated by B?

white blood cells → they help fight against diseases and foreign objects

Figure 3

102. Which type of cell does blood contain more of—A or B?

A - Red Blood Cells