Blood

<u>Multiple choice</u>: Choose the single best answer

1. Erythrocytes
   a. carry oxygen from the lungs to the cells of the body.
   b. carry nutrients from the digestive system to the body's cells.
   c. protect the body against infection.
   d. removes nitrogenous wastes from the tissues.
2. Fibrinolysis is
   a. activating fibrinogen.
   b. dissolving clots.
   c. forming thrombi.
   d. drawing together the damage tissues.
3. _____ are the most abundant proteins in plasma.
   a. Fibrinogens
   b. Globulins
   c. Albumins
   d. Lipoproteins
4. The most numerous leukocytes in the blood are the _____.
   a. monocytes
   b. neutrophils
   c. lymphocytes
   d. eosinophils
5. An increase in erythropoiesis will occur when
   a. carbon dioxide levels in the blood increase.
   b. oxygen levels in the blood decrease.
   c. carbon dioxide levels in the blood decrease.
   d. oxygen levels in the blood increase.
6. Platelets are cell fragments of the _____.
   a. megakaryocytes
   b. erythroblasts
   c. lymphoblasts
   d. myeloblasts
7. The percentage of blood that contains formed elements is the
   a. packed white cell volume.
   b. hematocrit.
   c. differential cell count.
   d. viscosity.
8. An erythrocyte is almost completed filled with
   a. porphyrin.
   b. hemoglobin.
   c. fibrinogen.
   d. albumin.
9. An individual with type AB blood
   a. has an AB antigen on the erythrocyte.
   b. can receive blood from type A, type B, but not type O.
   c. has a very common blood type.
   d. does not have any antibodies against the A and B antigens.
10. Neutrophils
    a. are capable of phagocytosis.
    b. are active in fighting infections.
    c. are capable of diapedesis.
    d. all of the above.
11. All of the following are characteristics of red blood cells except
    a. red blood cells do not have mitochondria.
    b. red blood cells are packed with hemoglobin.
    c. red blood cells are the most numerous of the formed elements.
    d. red blood cells have a nucleus.
12. Blood type is determined by
    a. the chemical characteristic of the hemoglobin.
    b. the type of antibodies found in the plasma.
    c. the type of antigen found on the red blood cells.
    d. none of the above.

13. Functions of the blood include all of the following, except
    a. protection.
    b. preventing blood loss.
    c. transport of nutrients and wastes.
    d. all of the above are functions of blood.
14. _____ is responsible for controlling erythropoiesis.
    a. Colony-stimulating factor
    b. Erythropoietin
    c. Calvin factor
    d. None of the above.

Fill-in-the-Blanks: Complete the following statements. The answer may be a single word or a phrase.

1. In the adult, the majority of leukocytes are the _____.
2. The main function of albumin in plasma is to _____.
3. The three main classes of plasma proteins are _____, _____ and _____.
4. An excessive number of red blood cells is referred to as _____.
5. _____ refers to the ability of leukocytes to squeeze through capillary walls.
6. The red blood cells, white blood cells and platelets are blood components known as _____.
7. The fluid portion of the blood is the _____.
8. When the blood-clotting proteins are removed from the plasma, the plasma is then known as _____.
9. The antibodies belong to a major group of plasma proteins called _____.
10. The protein that transports oxygen within red blood cells is _____.
11. Erythrocytes are formed in the bone marrow through a process known as _____.
12. The iron-containing group of the hemoglobin molecule that binds to oxygen molecules is known as the _____ group.
13. After breakdown, the hemoglobin pigment of red blood cells is eventually converted to a bile pigment known as _____.
14. The production of red blood cells is regulated by a hormone known as _____.
15. An alternative name for white blood cells is _____.
16. The principal function of the neutrophil is _____.
17. When the monocytes enter the tissues, they change into large, phagocytic cells called _____.
18. A general reduction of white blood cells in the body is referred to as _____.
19. Platelets are produced in the bone marrow by large cells called _____.
20. Thrombin is responsible for activating the conversion of fibrinogen to _____.
21. The primary function of the leukocytes is _____.
22. A person who has blood type A may donate blood to a person who has blood type __ or blood type ____.
23. The _____ can transport carbon dioxide as well as oxygen.
24. A cell fragment that is an important part of the blood clotting mechanism is the _____.
25. _____ is a plasma protein that plays a role in the formation of a blood clot.
26. The universal recipient blood type is _____.
27. The _____ is a leukocyte associated with allergic reactions.

True or False

1. The globulin proteins are involved in maintaining the osmotic pressure of the blood.
2. Hemoglobin is found within red blood cells.
3. Erythroblastosis fetalis can occur when a mother who is Rh-positive is carrying an infant who is Rh-negative.
4. Transfusion of type O blood always triggers a transfusion reaction.
5. Diapedesis is the process by which red blood cells move out of the capillaries into the tissues.
6. A person with type B blood could receive blood from a person with either type B or O blood.
7. Red blood cells are capable of changing their shape.
8. Platelets are important for blood clotting and hemostasis.
9. Type O blood is considered to be the universal recipient.
10. Type O blood contains both antigen A and antigen B on the red blood cells.

11. The type of plasma protein that makes up more than half of the protein in plasma is fibrinogen.
12. The synthesis of plasma proteins takes place in the liver.
13. Globulins play an important role in the body's defense process.
14. The life span of circulating red blood cells is about 1 year.
15. Heme is broken down into iron and bilirubin.
16. Serum and plasma mean the same thing.

Cardiovascular Structure & Function

<u>Multiple choice</u>: Choose the single best answer

1. The pulmonary veins deliver blood to the _____.
   a. aorta
   b. left atrium
   c. lungs
   d. pulmonary circuit
   e. right atrium
2. Blood from the head, neck, chest, shoulders and arms drains into the
   a. subclavian veins.
   b. internal jugular vein.
   c. inferior vena cava.
   d. superior vena cava.
   e. brachiocephalic artery.
3. Blood carrying the nutrients from the digestive tract enters the _____ through the _____.
   a. liver; hepatic vein
   b. kidney; renal vein
   c. liver, hepatic portal vein
   d. inferior vena cava, hepatic portal vein
4. The biggest influence of blood osmotic pressure is the concentration of
   a. erythrocytes.
   b. urea in the blood.
   c. plasma proteins in the blood.
   d. leukocytes.
   e. sodium in the blood.
5. The two brachiocephalic veins join to form the
   a. superior vena cava.
   b. inferior vena cava.
   c. internal carotid artery.
   d. subclavian vein.
6. Cardiac output will increase with each of the following factors, except
   a. increased sympathetic stimulation.
   b. increased venous return.
   c. decreased vagus stimulation.
   d. increased glucagon levels.
7. Blood pressure will not increase with an increase
   a. force of cardiac contraction.
   b. cardiac output.
   c. peripheral resistance.
   d. stimulation of the parasympathetic nervous system.
8. The main function of the _____ is the exchange of nutrients and gases between the blood and the tissues.
   a. capillaries
   b. arterioles
   c. venules
   d. arteries
9. Aldosterone can influence venous return by
   a. increasing the blood pressure.
   b. increasing sodium reabsorption.
   c. increasing urine output.
   d. decreasing blood volume.
10. When considering the blood flow through capillaries, the hydrostatic pressure
    a. forces fluid out of the capillary into the interstitial space.
    b. forces fluid from the interstitial space into the capillaries.
    c. does not have any effect.
    d. is balanced by the capillary osmotic pressure.
11. Structures directly involved in the pulmonary circulation are
    a. superior vena cava, right atrium, and left ventricle
    b. right atrium, aorta, left ventricle
    c. left ventricle, aorta, and inferior vena cava
    d. right ventricle, pulmonary artery, and left atrium
12. Venous return is assisted by all of the following except
    a. Breathing.
    b. valves in the veins.
    c. urine output.
    d. skeletal muscle contractions.

13. Using the following list of structures and vessels, place in the correct order the flow of blood returning to the heart from the head.

1.	left atrium	5.	superior vena cava
2.	aorta	6.	right atrium
3.	right ventricle	7.	pulmonary veins
4.	pulmonary trunk	8.	left ventricle

a. 5, 6, 3, 4, 7, 1, 8, 2
b. 6, 3, 4, 7, 1, 8, 2, 5
c. 2, 6, 3, 4, 7, 1, 8, 5
d. 5, 6, 3, 7, 4, 1, 8, 2

14. The second heart sound is the result of
a. AV valves closing.
b. AV valves opening.
c. semilunar valves opening.
d. semilunar valves closing.

15. The amount of blood pumped from each ventricle during a single contraction is the
a. end-systolic volume.
b. cardiac output.
c. stroke volume.
d. end-diastolic volume.

16. The contraction of the papillary muscles will
a. prevent the atrioventricular valves from reversing into the atria.
b. eject blood from the atria into the ventricles.
c. close the semilunar valves.
d. eject blood from the ventricles.
e. close the atrioventricular valves.

17. The circumflex branch and the anterior descending artery are branches of the
a. right coronary artery.
b. left coronary artery.
c. interventricular artery.
d. aorta.

18. Cardiac output is increased when
a. sympathetic stimulation increases,
b. venous return increases,
c. stroke volume increases,
d. all of the above,

19. The conduction system of the heart consists of the (1) AV bundle, (2) Purkinje fibers, (3) SA node, (4) bundle branches, and (5) AV node. The sequence in which the action potential moves through these components are
a. 3, 5, 4, 1, 2
b. 3, 5, 1, 4, 2
c. 3, 1, 5, 4, 2
d. 3, 1, 4, 2, 4

20. On an electrocardiogram the depolarization of the ventricles is represented by the
a. P wave
b. QRS complex
c. PR interval
d. T wave

<u>Fill-in-the-Blanks:</u> Complete the following statements. The answer may be a single word or a phrase.

1. The amount of blood returning to the heart is the _____.
2. The _____ circuit carries blood to and from the lungs.
3. The _____ circuit carries blood to and from tissues and organs.
4. Blood returning to the heart from the capillaries of the lungs enters the _____ through the _____.
5. The relaxation phase of the cardiac cycle is called _____.
6. _____ are blood vessels that carry blood away from the heart.
7. The _____ is an internal wall that separates the two ventricles.
8. The only vein in the adult that carries oxygen-rich blood is the _____.
9. The muscle layer of the heart is the _____.
10. The contraction phase of the cardiac cycle is called _____.
11. _____ are blood vessels that carry blood towards the heart.
12. The superior portion of the heart where the major blood vessels enter and exit is the _____.
13. The receiving chambers of the heart are the _____.
14. Blood returns to the heart from the lungs by the _____.
15. The valve between the right atrium and the right ventricle is the _____.
16. The valves within the pulmonary artery and aorta are referred to as the _____.

17. Arteries that supply blood to the tissue of the heart are the _____.
18. The sinoatrial node (SA node) is commonly known as the _____.
19. The smallest blood vessels that carry blood to the cells of the tissues are the _____.
20. The tissue lining a vein often folds inward to a form a _____.
21. The first branches of the aorta are the _____.
22. The valve between the left atrium and the left ventricle is the _____ or the _____.
23. The only artery in the adult that carries oxygen-poor blood is the _____.
24. The vein that carries nutrients from the gastrointestinal tract to the liver is the _____.
25. Blood returning to the heart from the body organs enters the _____ through the _____.
26. The semilunar valves prevent blood from flowing backwards into the _____.
27. The aorta receives blood from the _____.
28. The mitral valve prevents blood from flowing backward into the _____.
29. The action potential in the heart is temporarily delayed in the _____.
30. In the fetal heart the _____ allows blood to flow from the right atrium into the left atrium, bypassing the lungs.
31. Cardiac output is equal to _____ multiplied by _____.
32. The first major branch of the aortic arch is the _____.
33. The _____ is a connection between the pulmonary artery and aorta of the fetus.
34. The blood vessels responsible for the greatest amount of resistance to blood flow are the _____.
35. The three factors influencing cardiac output are _____, _____ and _____

True or False

1. The myocardium receives its blood supply from the coronary arteries.
2. The atria receive blood returning to the heart.
3. The mitral valve has chordae tendinae but the tricuspid valve does not.
4. The aortic semilunar valve opens when pressure in the aorta is higher than the ventricular pressure.
5. All arteries of the systemic circulation branch from the superior vena cava.
6. Arterial pressure in the pulmonary circulation is much higher than in the systemic circulation because of its proximity to the heart.
7. The pulmonary circulation does not directly serve the metabolic needs of body tissues.
8. An increase in blood viscosity will cause an increase in peripheral resistance.
9. The internal layer of the tissue in the heart is the epicardium.
10. The ductus arteriosus allows fetal blood to bypass the nonfunctioning fetal liver.
11. The pacemaker of the heart is the SA node.
12. Blood flow from the pulmonary arteries leads to the lungs.
13. Both veins and arteries contain semilunar valves.
14. The walls of veins are much thinner than arteries.
15. Increased baroreceptor stimulation causes increased sympathetic activity to the heart.
16. The blood-pumping action of respirations and skeletal muscle contractions are both important factors promoting the return of venous blood to the heart.
17. Diastolic pressure is the force of blood pushing against artery walls when the ventricles are contracting.
18. The contraction phase of the cardiac cycle refers to diastole.
19. Cardiac output is determined by multiplying stroke volume and heart rate.

Lymphatics and Immunity

Multiple choice: Choose the single best answer

1. To move the fluid inside the vessels lymphatics and veins depend on the
   a. contractions of skeletal muscles.
   b. differences in thoracic pressures due to respiration.
   c. two-way valves.
   d. all of the above
   e. a and b only
2. The majority of the activity of the thymus occurs during
   a. middle age.
   b. fetal development.
   c. childhood.
   d. old age.
3. The _____ drains lymph from the right upper extremity and the right side of the head and chest.
   a. right lymphatic duct
   b. thoracic duct
   c. cisterna chyli
   d. right lumbar trunk
4. The _____ release antibodies in response to an antigen.
   a. memory cells
   b. T lymphocytes
   c. plasma cells
   d. lymph nodes
5. When a lymphatic vessel is blocked or ineffective due to the removal of a lymph node there is
   a. atrophy of the tissues distal to the blockage occurs due to inadequate delivery of lymph.
   b. abnormally high lymph drainage from the distal region results.
   c. an increased pressure in the lymphatics proximal to the blockage.
   d. severe localized edema distal to the blockage.
6. Clusters of lymph nodes can be found in all of the following locations except the
   a. head region.
   b. axillary region.
   c. cervical region.
   d. inguinal region.
7. A function of the lymphatic system is the
   a. transport of red blood cells to the blood vascular system.
   b. transport of excess tissue fluid to the cardiovascular system.
   c. maintenance of blood pressure in the venous circulation.
   d. excretion of excess dietary fat.
8. Which of the following is a method of passive immunity?
   a. immunization
   b. passage of IGG antibodies across the placenta
   c. infection with the actual virus
   d. none of the above
9. An inflamed area becomes red and hot because of
   a. increased phagocytic activity.
   b. Vasoconstriction.
   c. vasodilation.
   d. complement activation.
10. _____ cells are the only T-lymphocytes that can directly attack and kill other cells.
    a. Helper
    b. Cytotoxic
    c. Suppressor
    d. Memory
11. A component of the second line of defense against infection is
    a. cilia.
    b. mucus.
    c. keratin.
    d. phagocytosis.
12. Cancer cells and virus-infected body cells can be killed by _____ without activating the immune system.
    a. T lymphocytes
    b. B lymphocytes
    c. natural killer cells
    d. autolysis

Fill-in-the-Blanks: Complete the following statements. The answer may be a single word or a phrase.

1. The lymphoid organs found on either side the throat at the hard palate are the _____ .

2. Immunity is when the body is able to fight a pathogen because _____ are activated.
3. Antibodies attach to the _____.
4. The only antibody that can cross the placenta is _____.
5. The B cells that produce antibodies are the _____.
6. The first line of defense of the immune system is the _____.
7. The four signs of inflammation are _____, _____, _____ and _____.
8. _____ are the most active phagocytes in the body.
9. The thoracic duct empties in the _____.
10. Nodules located in groups along the lymphatic vessels are the _____.
11. Digested fat in the small intestine is absorbed into the _____,
12. The _____, _____ and _____ are considered lymphoid tissue.
13. Lymph is moved through the lymphatic vessels due _____, _____ and _____.
14. Cellular immunity is the responsibility of the _____.
15. Humoral immunity is also known as _____.
16. An infant receives antibodies from the mother, this is _____ immunity.
17. An allergic response is caused by the _____ antibody.
18. The _____ is responsible for removing damaged red blood cells and platelets from the blood.

True or False

1. The lymphatics function to absorb the excess interstitial fluid and return it to the bloodstream.
2. Lymph always flows away from the heart.
3. Digested fats are absorbed from the intestine by the lacteals.
4. The cisterna chyli collects lymph from the lumbar trunks draining the upper limbs and from the intestinal trunk draining the digestive organs.
5. The two most important functions of the lymphatic system are the maintenance of fluid balance in the internal environment and immunity.
6. The lymph vessels form a closed ring, or circuit.
7. Even though some lymph nodes occur in clusters, most occur as single nodes.
8. Thymosin stimulates lymphocytes to develop into mature T cells.
9. Soluble proteins secreted by plasma cells are called antibodies.
10. Complement is a chemical produced by cells after they become infected by a virus.
11. Phagocytosis is a nonspecific defense mechanism.
12. The inflammatory response is the body's first line of defense.
13. Natural killer cells are a group of neutrophils that kill many types of tumor cells and cells infected by different kinds of viruses.
14. Antigens are macromolecules that induce the immune system to take certain actions.
15. Passive immunity generally lasts longer than active immunity.
16. The immune mechanism that provides a defense by acting against cancer is termed nonspecific immunity.
17. T cells secrete antibodies.
18. Allergy is hypersensitivity of the immune system to harmful environmental antigens.

Respiratory Structure & Function

<u>Multiple choice</u>: Choose the single best answer

1. The partial pressure of oxygen in the peripheral tissues is approximately
   a. 100 mm. Hg.
   b. 90 mm. Hg.
   c. 80 mm. Hg.
   d. 50 mm. Hg.
   e. 40 mm. Hg.
2. Carbon dioxide is a waste product that is normally eliminated by the
   a. urinary system.
   b. respiratory system.
   c. digestive system.
   d. integumentary system.
3. The function of the _____ is to warm, humidify and filter the inspired air.
   a. lungs.
   b. upper respiratory tract.
   c. bronchi
   d. alveoli.
   e. lower respiratory tract.
4. During inspiration air flows into the lungs because
   a. the pressure in the lungs is less than the environmental pressure.
   b. contraction of the diaphragm decreases the volume of the pleural cavity.
   c. the pressure in the lungs is greater than the environmental pressure.
   d. the volume of the lungs decreases with inspiration.
   e. the respiratory control center initiates active expansion of the thorax.
5. The respiratory and digestive systems share the _____.
   a. nasal cavity
   b. trachea
   c. larynx
   d. pharynx
6. During swallowing the _____ covers the opening to the larynx to prevent choking.
   a. cricoid cartilage
   b. cuneiform cartilage
   c. epiglottis
   d. thyroid cartilage
7. When _____ leaves the erythrocytes _____ enters the cells. This is known as the chloride shift.
   a. carbonic acid; chloride
   b. chloride ions; bicarbonate ions
   c. bicarbonate ions; chloride ions
   d. chloride ions; hydrogen ions
   e. hydrogen ions; chloride ions
8. The majority of oxygen in the blood is
   a. carried by white blood cells.
   b. dissolved in plasma.
   c. bound to the plasma proteins
   d. bound to hemoglobin.
9. The approximate partial pressure of carbon dioxide in the alveoli is
   a. 75 mm. Hg.
   b. 40 mm. Hg.
   c. 100 mm. Hg.
   d. 46 mm. Hg.
   e. 60 mm. Hg.
10. Oxygen and carbon dioxide is exchanged between the blood and the alveoli by
    a. facilitated diffusion.
    b. osmosis.
    c. active transport,
    d. diffusion.
11. The most important stimulus for breathing is
    a. oxygen.
    b. carbon dioxide.
    c. pH.
    d. nervous stimuli.
12. The majority of carbon dioxide is carried in the blood
    a. as carbonic acid.
    b. dissolved in the plasma.
    c. bound to hemoglobin.
    d. as bicarbonate ion.
13. Contraction of the _____ muscles can produce expiratory movements.
    a. internal intercostals
    b. diaphragm
    c. external intercostals
    d. serratus anterior

14. During normal quiet breathing
    a. inspiration and expiration require energy.
    b. neither inspiration nor expiration require energy.
    c. inspiration is active and expiration is passive.
    d. expiration is active and inspiration is passive.
15. The inhaled air that reaches the alveoli is the
    a. dead space ventilation.
    b. alveolar ventilation.
    c. dead space.
    d. effective ventilation.

Fill-in-the-Blanks: Complete the following statements. The answer may be a single word or a phrase.

1. The normal stimulus to breathe is _____.
2. The _____ center in the brainstem is primarily responsible for breathing.
3. The cartilaginous flap that closes the larynx during swallowing is the _____.
4. Gas exchange occurs in the _____.
5. The two main functions of the respiratory system are _____ and _____.
6. Pulmonary vessels, nerves and airways enter or leave the lung at the _____.
7. Most of the carbon dioxide in the blood is transported as _____.
8. When blood carbon dioxide levels increases, the rate of breathing _____.
9. The normal PCO_2 in the peripheral tissues is _____ mm Hg..
10. The amount of air moved in and out of the lungs during normal quiet breathing is the _____.
11. The amount of air that actually participates in gas exchange is the _____.
12. Air flows in and out of the lungs due to a _____.
13. Surface tension in the alveoli is decreased by _____.
14. A deficiency of oxygen in the tissues is known as _____.
15. Inspiration is the result of an increase in _____ caused by the contraction of the _____.
16. The functions of the upper respiratory tract are _____, _____ and _____ of the air.
17. The partial pressure of oxygen in the pulmonary artery is _____ mm Hg..
18. The partial pressure of carbon dioxide in the aorta is _____ mm Hg..
19. If a student takes a maximal inspiration followed by a maximal expiration this would be his _____.
20. The hemoglobin in arterial blood has a saturation of _____.
21. The partial pressure of oxygen or carbon dioxide is the result of the gas _____ in the blood.
22. The partial pressure of oxygen in the renal artery is _____ mm Hg..

True or False

1. The functions of the nasal conchae are to enhance the air turbulence in the cavity and to increase the mucosal surface area exposed to the air.
2. The pleura are thin serous membranes that divides into parietal and visceral pleura.
3. During normal quiet breathing, approximately 750 ml of air moves into and out of the lungs with each breath.
4. At high altitudes, all partial pressure values of gases decrease in proportion to the decrease in atmospheric pressure.
5. Labored breathing is termed dyspnea.
6. The largest amount of carbon dioxide is transported in the bloodstream in the form of carbonic anhydrase.
7. Physiologically, the most important stimulus for breathing in a healthy person is the carbon dioxide level in the blood.
8. The paired lungs are located in the mediastinum.
9. Volume changes in the lungs lead to pressure changes in the lungs.
10. The diaphragm is a component of the lower respiratory tract.
11. The lingual tonsils are the tonsils most commonly removed by a tonsillectomy.
12. The pharynx serves as a passageway for both food and air.
13. The trachea collapses between respirations.
14. The parts of the thoracic cavity occupied by the lungs are called the pleural cavities.

15. Surfactant is a unique fluid that helps to increase the surface tension within the alveoli.
16. The main function of bronchioles is air distribution.
17. The space between the lungs occupied mainly by the esophagus, trachea, large blood vessels, and heart is the mediastinum.
18. The rings of cartilage that form the trachea are incomplete rings that prevent it from collapsing and shutting off the vital airway.