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<th><strong>UNIT 7 BLOOD AND CIRCULATION REVIEW</strong></th>
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1. Which type of blood vessel has thick walls in order to withstand high pressure?  
   A. vein  B. artery  C. arteriole  D. capillary

2. **Use the following characteristics to answer the question:**  
   • one-way valves  • thin elastic layer  • near skeletal muscle  
   These characteristics describe which type of vessel?  
   A. vein  B. artery  C. arteriole  D. capillary

3. Blood vessels that allow diffusion of gases through their thin walls are the  

4. The **main** function of capillaries is to  
   A. return blood to the heart.  
   B. prevent the backflow of blood.  
   C. take blood away from the heart.  
   D. exchange nutrients and wastes with tissues.

5. Which of the following blood vessels has a thin elastic layer?  

6. Capillary beds are equipped with sphincter muscles in order to  
   A. prevent the backflow of blood.  
   B. expand and recoil with each heart beat.  
   C. divert blood toward areas of increased metabolic activity.  
   D. hold blood in the beds until nutrient and waste exchange is complete.

7. Which of the following **best** describes a vein?  
   A. Thin-walled, elastic, and equipped with valves.  
   B. Thick-walled, elastic, and equipped with valves.  
   C. Thin-walled, muscular, and supplied with nerves.  
   D. Thick-walled, muscular, and supplied with nerves.

8. The function of an artery is to  
   A. transport blood toward the heart.  
   B. transport blood away from the heart.  
   C. connect the right and left atria directly.  
   D. carry carbon dioxide to the tissue cells.

9. A blood vessel that transports blood out of a capillary bed is a(n)  

10. The most muscular chamber of the heart is the  
    A. left atrium.  B. right atrium.  C. left ventricle.  D. right ventricle.

11. Based on its function, the heart is often referred to as a "double pump". Which of the following would explain this?  
    A. The heart has two sets of valves.  
    B. The heart is controlled by both nerves and hormones.  
    C. The heart moves blood through two circulatory pathways.  
    D. The heart moves blood containing both nutrients and wastes.

12. The structures attached to the atrioventricular valves are called  

13. The **main** function of the valves in the heart is to  
    A. prevent back-flow of blood.  
    B. divide the heart into four chambers.  
    C. control the volume of blood leaving the heart.  
    D. control the volume of blood entering the heart.

14. Blood leaves the right ventricle via the  
15. An irregular heartbeat where contraction of the atria does not always result in contraction of the ventricles, likely indicates a problem with the

16. A condition called tachycardia exists when a person's heart rate is abnormally high. Which of the following explains how tachycardia may arise?
A. The Purkinje fibres are over-stimulating the pacemaker.
B. The sinoatrial (SA) node is receiving increased stimulation.
C. There is increased stimulation by the parasympathetic nervous system.
D. Impulses from the sinoatrial (SA) node are not reaching the atrioventricular (AV) node.

17. The atrioventricular (AV) node stimulates the

18. The coordinating structure responsible for an intrinsic heart beat is the

19. What happens during atrial diastole?

20. Use the following information to answer the question.
   1. Systole of the ventricles.
   2. Opening of the atrio-ventricular valves.
   3. Electrical impulse sent from the SA node.
   4. Atria fill with blood.
   The order in which the events above occur during one heartbeat (the cardiac cycle) is
A. 2, 1, 3, 4  B. 2, 3, 4, 1  C. 4, 1, 3, 2  D. 4, 3, 2, 1

21. The blood vessels that carry blood to and from the head are the
A. iliac arteries and veins.
B. subclavian arteries and veins.
C. carotid arteries and jugular veins.
D. anterior (superior) and posterior (inferior) vena cavae.

22. The path followed by blood on one circuit through the heart is
A. ventricle, atrioventricular valve, semilunar valve, atrium.
B. atrium, atrioventricular valve, ventricle, semilunar valve.
C. atrium, ventricle, atrioventricular valve, semilunar valve.
D. atrium, semilunar valve, ventricle, atrioventricular valve.

23. Which of the following is a characteristic of pulmonary circulation?
A. Blood leaves the heart via the aorta.
B. Blood in the arteries is deoxygenated.
C. Blood in the veins is travelling to the lungs.
D. Blood in capillaries absorbs high levels of carbon dioxide.

24. The blood vessel that carries blood from the lungs to the heart is the

25. Blood leaves the liver by way of the

26. Blood with a high oxygen concentration can be found in both the
A. renal artery and the pulmonary artery.
B. umbilical vein and the pulmonary vein.
C. pulmonary vein and the umbilical artery.
D. pulmonary artery and the umbilical artery.

27. Which of the following is a characteristic of systemic circulation?
A. Highly oxygenated arterial blood.
B. Highly oxygenated venous blood.
C. Increased blood pressure in the veins.
D. Decreased blood pressure in the arteries.
28. A red blood cell leaves the aorta, makes a circuit through the body and arrives back in the capillaries of the alveoli. The correct sequence of organs through which the cell may have travelled is
A. lungs, heart, small intestine, liver.
B. small intestine, heart, liver, lungs.
C. liver, lungs, small intestine, heart.
D. small intestine, liver, heart, lungs.

29. Which of the following would describe the path of the blood in the pulmonary circuit?
A. Right ventricle → pulmonary trunk → pulmonary vein → left atrium.
B. Left ventricle → pulmonary vein → pulmonary trunk → right atrium.
C. Right ventricle → pulmonary vein → pulmonary artery → left atrium.
D. Right atrium → pulmonary trunk → aorta → vena cava → right atrium.

30. The correct path of blood from the heart to the head and back to the heart again is
A. right ventricle, vena cava, carotid artery, jugular vein, left atrium.
B. left ventricle, aorta, jugular vein, vena cava, carotid artery, right atrium.
C. left ventricle, aorta, carotid artery, jugular vein, vena cava, right atrium.
D. right atrium, carotid artery, aorta, jugular vein, vena cava, left ventricle.

31. The artery that provides oxygen and nutrients to heart tissue is the

32. In which of the following vessels would blood contain the highest concentration of carbon dioxide?

33. Which of the following is a characteristic of systemic circulation?
A. Highly oxygenated arterial blood.
B. Increased blood pressure in the veins.
C. Low carbon dioxide concentration in the veins.
D. Increased concentration of reduced hemoglobin (HHb) in the arterial blood.

34. A red blood cell is located in an artery in your right arm. How many capillary beds must this cell pass through before it is returned to the left ventricle?
A. one  B. two  C. three  D. four

35. An increase in which of the following would cause hypotension?
A. heart rate  B. cardiac output  C. arteriole dilation  D. reabsorption of water by the kidneys

36. Hypertension would be indicated by a blood pressure reading of
A. 100 / 80  B. 120 / 50  C. 120 / 80  D. 150 / 110

37. Which of the following is normal resting systolic blood pressure for an adult?
A. 50 mm Hg  B. 80 mm Hg  C. 120 mm Hg  D. 180 mm Hg

38. Blood pressure will be at its highest when

39. The highest blood pressure in the aorta occurs when the
A. atria contract.
B. heart muscle is relaxed.
C. blood is pushed to the ventricle.
D. blood is pumped from the heart.

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41. Capillary beds are equipped with sphincter muscles in order to
A. prevent the backflow of blood.
B. expand and recoil with each heart beat.
C. divert blood toward areas of increased metabolic activity.
D. hold blood in the beds until nutrient and waste exchange is complete.
42. The function of the nodes in the lymphatic system is to
   - A. filter debris.
   - B. produce platelets for clotting.
   - C. break down worn-out red blood cells.
   - D. help maintain a constant blood pressure.

43. Blood capillaries and lymph capillaries both
   - A. filter bacteria.
   - B. have one-way valves.
   - C. contain red blood cells.
   - D. have walls which are one-cell thick.

44. Lymph enters the circulatory system at the
   - A. jugular vein.
   - B. umbilical vein.
   - C. subclavian vein.
   - D. pulmonary vein.

45. Which of the following is **not** found in the lymphatic system?
   - A. Veins.
   - B. Nodes.
   - C. Arteries.
   - D. Capillaries.

46. Which of the following would occur as a result of the oval opening in the heart remaining open after birth?
   - A. Blood pressure in the lungs would increase.
   - B. Impulses from the sinoatrial (SA) node would stop.
   - C. Blood in the right atrium would mix with blood in the left atrium.
   - D. A greater amount of blood would flow into the pulmonary system.

47. Which of the following structures in fetal circulation functions to deliver blood, which is high in waste, to the placenta?
   - A. Venous duct.
   - B. Umbilical vein.
   - C. Pulmonary veins.
   - D. Umbilical arteries.

48. Which of the following structures in fetal circulation functions to deliver blood, which is high in waste, to the placenta?
   - A. Venous duct.
   - B. Umbilical vein.
   - C. Pulmonary veins.
   - D. Umbilical arteries.

49. How do the oxygen and nutrient levels in the adult vena cava compare to those levels in the fetal vena cava?
   - A. The fetal oxygen and nutrient levels are higher.
   - B. The adult oxygen and nutrient levels are higher.
   - C. The fetal nutrient levels are higher, while the oxygen levels are lower.
   - D. The adult nutrient levels are higher, while the oxygen levels are lower.

50. The function of the cardiac sphincter is to prevent backflow of acid chyme from the
   - A. esophagus to the mouth.
   - B. stomach to the esophagus.
   - C. duodenum to the stomach.
   - D. colon to the small intestine.

51. The sequence of structures through which the nerve impulse passes to cause contraction of the heart is
   - A. AV node – SA node – Purkinje fibres.
   - B. Purkinje fibres – AV node – SA node.
   - C. Purkinje fibres – SA node – AV node.
   - D. SA node – AV node – Purkinje fibres.

52. Thick walls, elastic tissue and smooth muscle are characteristics of
   - A. veins.
   - B. arteries.
   - C. arterioles.
   - D. capillaries.

53. Blockages in which of the following blood vessels reduces blood flow to the heart muscle?
   - A. Aorta.
   - B. Carotid artery.
   - C. Coronary artery.
   - D. Pulmonary artery.

54. A blood vessel which has numerous valves is a(n)
   - A. vein.
   - B. artery.
   - C. arteriole.
   - D. capillary.

55. High blood pressure can be the result of
   - B. increased sodium absorption.
   - C. decreased aldosterone release.
   - D. increased opening of capillary beds.

56. Which of the following blood vessels provides nutrients to the heart tissue?
   - A. Aorta.
   - B. Carotid artery.
   - C. Coronary artery.
   - D. Inferior vena cava.
The SA node (pacemaker) of the heart is located in the wall of the  
A. left atrium.  B. right atrium.  C. left ventricle.  D. right ventricle.

**BLOOD**

1. Which of the following is a function of red blood cells?  
   A. clot blood  B. carry oxygen  C. fight infection  D. regulate osmotic pressure

2. The major component of human blood is  

3. Use the following information to answer the question:  
   - transport gases  
   - maintain body temperature  
   - protect the body against blood loss  
   - produce hormones that stimulate metabolism  
   - carry digestive enzymes to the small intestine  
   How many of these are functions of the blood?  
   A. two  B. three  C. four  D. five

4. A foreign substance that stimulates an immune response is a(n)  

5. Which of the following correctly matches structure with function?  
   A. platelets — provide immunity  
   B. plasma proteins — carry oxygen  
   C. red blood cells — carry carbon dioxide  
   D. white blood cells — initiate blood clotting

6. Plasma is composed mostly of  

7. All of the following are components of plasma except  

8. Red blood cells originate in the  
   A. liver.  B. lymph nodes.  C. bone marrow.  D. capillary beds.

9. The main function of platelets is to  

10. An important function of white blood cells is to  

11. Blood proteins are made in the  

12. Blood which lacks platelets would not be able to  

13. Blood which lacks platelets would not be able to  

14. Use the following information to answer the question  
   1. Calcium activates an enzyme.  
   2. Fibrin binds platelets to form a "plug."  
   3. Thrombin converts fibrinogen to fibrin.  
   4. Platelets and damaged cells release an activator.  
   The correct sequence of events leading to the formation of a blood clot is  
   A. 1, 2, 3, 4.  B. 2, 1, 3, 4.  C. 3, 4, 1, 2.  D. 4, 1, 3, 2.

15. Which of the following is directly involved in the conversion of prothrombin to thrombin?  
    A. Fibrin.  B. Carbonic anhydrase.  C. Calcium ions (Ca^{2+}).  D. Magnesium ions (Mg^{2+})
16. Arrange the following steps in the sequence which occurs during an inflammatory reaction.
   1. Pus forms at injury site.
   2. Damaged cells release histamines.
   3. Increased permeability of the capillary wall.
   4. Swelling and redness at injury site.
   A. 1, 2, 4, 3  B. 2, 1, 3, 4  C. 2, 3, 4, 1  D. 3, 4, 2, 1

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   A. 1, 2, 4, 3  B. 2, 1, 3, 4  C. 2, 3, 4, 1  D. 3, 4, 2, 1

18. What occurs when an antigen enters the body?
   A. There is increased platelet production.
   B. Red blood cells phagocytize the antigen.
   C. Antibodies change shape to fit the antigen.
   D. Specific antibodies are produced and released.

19. The presence of bacteria in the blood will cause the body to produce

20. Rapid production of lymphocytes in the lymph nodes would indicate the presence of

21. A foreign substance entering the circulatory system is called a(n)

22. A person with type AB blood has  A.
   A. antigens and B antibodies.
   B. both A and B antigens and A and B antibodies.
   C. no A or B antigens but both A and B antibodies.
   D. both A and B antigens but no A or B antibodies.

23. Which of the following blood transfusions is compatible?
   A. Donor type A and recipient type O.
   B. Donor type A and recipient type B.
   C. Donor type O and recipient type B.
   D. Donor type AB and recipient type O.

24. Erythroblastosis could occur when a second or third child is born to which of the following couples?
   A. Rh positive male and Rh positive female.
   B. Rh negative male and Rh positive female.
   C. Rh positive male and Rh negative female.
   D. Rh negative male and Rh negative female.

25. An Rh negative mother is pregnant for the first time with an Rh positive fetus. Just prior to birth some fetal blood cells cross the placenta into the mother. Which of the following will occur?
   A. The fetus will die before birth.
   B. The mother will become Rh positive.
   C. The mother will produce Rh antibodies.
   D. The fetal red blood cells will become Rh negative.

26. Which chamber of the heart pumps oxygenated blood into the aorta?
   A. left atrium  B. right atrium  C. left ventricle  D. right ventricle
27. Use the following information to answer the question:
   1. Vesicle fuses with a lysosome.
   2. Bacterium is taken into the macrophage.
   3. Digestion of the bacterium occurs.
   4. Vesicle is formed around the bacterium.
Which of the following is the correct sequence to describe what happens to a bacterium after a type of white blood cell called a macrophage encounters it? A. 1, 3, 2, 4 B. 1, 4, 2, 3 C. 2, 3, 4, 1 D. 2, 4, 1, 3

28. Which of the following would increase the rate of a metabolic reaction in the mouth?
   A. Adding lead ions.
   B. Increasing the pH to 12.
   C. Decreasing the temperature to 10 °C.
   D. Increasing the enzyme concentration.

29. Which of the following organs has a portal system associated with it?

30. The osmotic return of fluid from the tissues to the blood occurs at the

31. The vein carrying the highest concentration of oxygen is the

32. Red blood cells are formed by
   A. muscle tissue. B. nervous tissue. C. epithelial tissue. D. connective tissue.

33. When blood enters a vein from a venule, the blood pressure will
   A. increase because of increased heart rate.
   B. decrease because of increased vessel diameter.
   C. increase because of stretch receptor stimulation.
   D. remain constant due to the steady pumping of the heart.

34. A substance that combines with calcium in the blood may affect the circulatory system's ability to
   A. fight infection.
   B. maintain blood pressure.
   C. transport oxygen to tissues.
   D. clot blood at damaged sites.

35. Which of the following are needed to begin blood clotting?
   A. Red cells and platelets.
   B. White cells and red cells.
   C. Platelets and plasma proteins.
   D. White cells and plasma proteins.

36. A person complains of constant fatigue and a lack of energy. The most likely cause of these symptoms is not enough
Answers:

**CIRCULATORY SYSTEM**
1. B
2. A
3. D
4. D
5. C
6. C
7. A
8. B
9. C
10. C
11. C
12. D
13. A
14. B
15. B
16. B
17. B
18. B
19. A
20. D
21. C
22. B
23. B
24. C
25. C
26. B
27. A
28. D
29. A
30. C
31. C
32. D
33. A
34. B
35. C
36. D
37. C
38. D
39. D
40. D
41. C
42. A
43. D
44. C
45. C
46. C
47. D
48. D
49. A
50. B
51. D
52. B
53. C
54. A
55. B
56. C
57. B

**BLOOD**
1. B
2. A
3. B
4. B
5. C
6. B
7. D
8. C
9. D
10. C
11. A
12. A
13. A
14. D
15. C
16. C
17. C
18. D
19. C
20. A
21. B
22. D
23. C
24. C
25. C
26. C
27. D
28. D
29. C
30. C
31. D
32. D
33. B
34. D
35. C
36. D