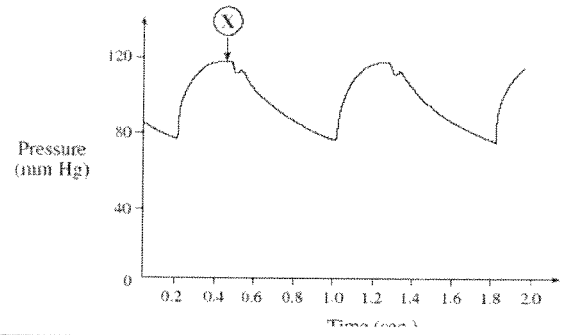


Biology 12

Review: Circulation – C3 – C7

1. What accounts for the blood pressure recorded at X?

- A. The AV valves are opening. B. The ventricles are in diastole.
C. The ventricles are contracting. D. Blood is entering the ventricles.



2. Through which vessel would blood move most slowly?

- A. W B. X C. Y D. Z

Blood vessel	Average blood pressure (mm Hg)	Total cross-sectional area (cm ²)
W	100	2.5
X	1	8
Y	20	2500
Z	60	40

3. What two vessels carry blood to the anterior vena cava?

- A. the jugular vein and the iliac vein B. the jugular vein and the subclavian vein
C. the hepatic portal vein and the renal vein D. the coronary vein and the pulmonary vein

4. Which of the following maintains the osmotic pressure of the blood?

- A. urea B. protein C. glycogen D. phospholipids

5. The structures attached to the atrioventricular valves are called chordae tendineae.

6. What is the main function of the heart valves? to stop back flow of blood

7. The atrioventricular (AV) node stimulates the A. aorta. B. Purkinje fibers. C. sinoatrial (SA) node. D. atrioventricular valves.

8. What is the coordinating structure responsible for an intrinsic heart beat? medulla oblongata

9. Which type of blood vessel has thick walls in order to withstand high pressure? arteries

10. What happens during atrial diastole? A. Atria fill with blood. B. Semi-lunar valves close. C. Ventricles fill with blood. D. Atrioventricular valves open.

11. Use the following characteristics to answer the question: • one-way valves • thin elastic layer • near skeletal muscle
These characteristics describe which type of vessel? vein

12. 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.

13. 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.

14. What is the function of an artery? take blood away from the heart

15. What is the name of the blood vessel that transports blood out of the capillary? venule

16. What chamber of the heart is the most muscular? left ventricle

17. 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.

18. 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
4, 3, 2, 1

19. A red blood cell leaves the aorta, circuits through the body and arrives back in the capillaries of the alveoli. What is the correct sequence of vessels and organs through which the cell traveled?
aorta → arteries → arterioles → capillaries → venules → vein → venae cavae

20. How is pulmonary circulation different from systemic circulation?
→ RA → RV → pulmonary artery

21. Explain how nutrients and oxygen in the blood move first into the tissue fluids, and then into the cells. (four points) *arteriole*

22. Through which vessel does blood leave the liver? *hepatic vein*

23. Describe the correct path of blood from the heart to the head and back to the heart again
heart → aorta → carotid artery → arteriole → capillary → venule → jugular vein → heart
arteriole
capilla
arteriole
vein
cava

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

25. 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.

26. What is the function of nodes in the lymphatic system? *contain lymphocytes to fight infection*

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

28. Through which structure does the lymphatic system join up with the circulatory system?

29. 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.
right lymphatic duct / thoracic duct → subclavian vein

30. What is the function of red blood cells, white blood cells, and platelets, and where are each of these made?

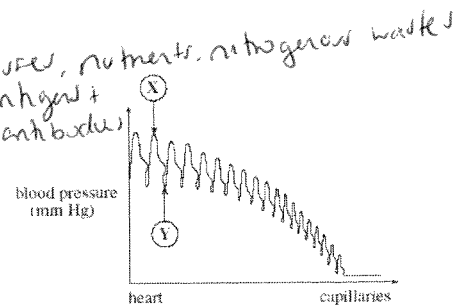
31. A foreign substance that stimulates an immune response is a(n) antigen.
carry O₂ *fight infection* *clot wounds*

32. Where are blood proteins made?

33. What is blood plasma composed of?
liquid - 92% water
plasma protein, salts, gases, nutrients, nitrogenous wastes
hormones, vitamins, antigen + antibodies

34. a) Name and explain what is occurring in the heart to cause the conditions shown on the graph at point X and point Y.

point X: systole
explanation: *ventricles contract*
point Y: diastole
explanation: *ventricles relax*

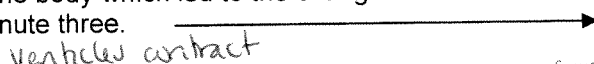


b) Explain why blood pressure decreases as blood flows from the arteries to the capillaries. *- distance from the heart*
- more surface area.

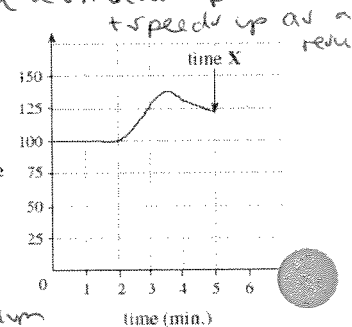
c) Why is it important that blood flows very slowly in the capillaries? *(for gas exchange to occur)*

d) Explain why blood velocity increases slightly as it moves from the capillaries to the veins. *- less S.A. - blood moving in a smaller space*
→ speeds up as a result

35. Describe the mechanisms at work in the body which led to the changes that occurred between minute two and minute three.



average of systolic and diastolic blood pressure (mm Hg)



36. Explain how a damaged AV valve on the left side of the heart could cause fluids to build up in the lung tissues.

blood can move back from the left ventricle

37. Explain how the Purkinje fibres function to control heartbeat.

AV node → causes muscles in + around the ventricles to contract

38. How is the structure of an arteriole related to its function?

smaller
more surface area.
muscular walls → contracts to carry blood to the capillaries - speeds out + slow down
back up the pulmonary ven.