

Base your answers to questions 8 and 9 on the blood-typing chart below and on your knowledge of biology.

Individual	Antigens on Red Blood Cells	Antibodies in Plasma
1		anti-B
2	B	

8. Individual 1 has blood type (1) A (3) AB (2) B (4) O




9. Which antibodies, if any, are in the plasma of individual 2? (1) anti-A, only (2) anti-B, only (3) both anti-A and anti-B (4) neither anti-A nor anti-B

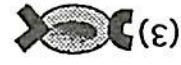
10. The method used to determine blood type in the ABO blood group is based on the fact that anti-A antibodies will clump red blood cells that contain antigen A, and anti-B antibodies will clump red blood cells that contain antigen B. If anti-A antibodies are added to a drop of blood and no clumping occurs, the blood type is most likely (1) AB, only (3) A or B (2) A or AB (4) B or O

11. Which antigens are present on the red blood cells of a person who has type O blood? (1) A, only (3) both A and B (2) B, only (4) neither A nor B

- Oxygen transport in humans involves the bonding of oxygen with (1) white blood cells (2) platelets (3) hormones (4) hemoglobin molecules
- Which part of the blood is correctly paired with its function? (1) red blood cells - fight infection (2) plasma - transports wastes and hormones (3) platelets - produce antibodies (4) white blood cells - carry oxygen
- The lack of which blood component interferes most with the transport of oxygen in humans? (1) white blood cells (3) platelets (2) red blood cells (4) antibodies
- Bleeding from a small cut soon stops due to the release of enzymes from (1) platelets (2) activated antibodies (3) hemoglobin (4) white blood cells
- Red blood cells are produced in the (1) bone marrow (3) liver (2) lymph nodes (4) arteries
- Which cells are able to carry on the process of phagocytosis? (1) nerve cells (3) red blood cells (2) epidermal cells (4) white blood cells
- A pulse can be detected most easily in (1) an artery (3) a capillary (2) a vein (4) a lacteal

12. Which diagram best represents a blood cell from a person with type O blood?

Blood Group Key	
	Blood cell
	Antigen 1
	Antigen 2



13. Which statement best describes arteries?
 (1) They have thick walls and transport blood away from the heart.
 (2) They have thick walls and transport blood toward the heart.
 (3) They have thin walls and transport blood away from the heart.
 (4) They have thin walls and transport blood toward the heart.

14. The diagrams below represent cross sections of vessels found in the human circulatory system.

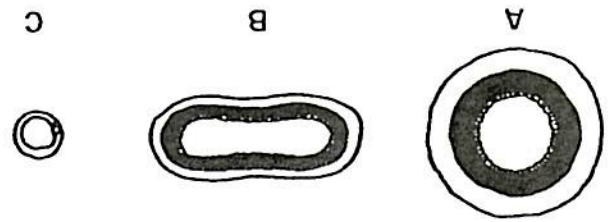
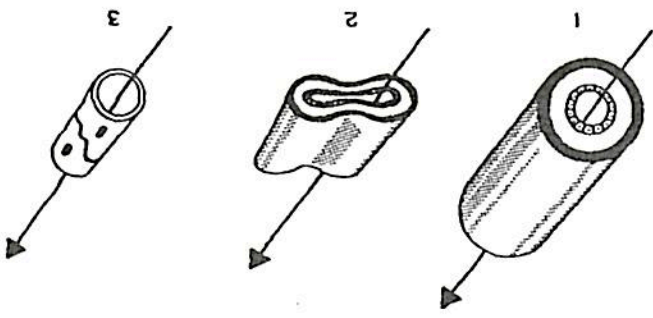


Diagram A most likely represents
 (1) vein
 (2) a lymph vessel
 (3) a capillary
 (4) an artery

Base your answers to questions 15 and 16 on the diagrams below which represent three common types of blood vessels and on your knowledge of biology.



15. Through the walls of which vessel does gas exchange occur?

- (1) 1
- (2) 2
- (3) 3

16. Which vessel contains valves and transports blood back to the heart?

- (1) 1
- (2) 2
- (3) 3

17. Exchange of soluble compounds, gases, and wastes through the intercellular fluid occurs between cells and

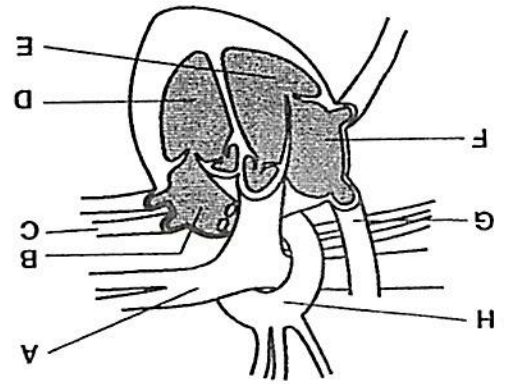
- (1) valves
- (2) capillaries
- (3) veins
- (4) arteries

18. Veins are blood vessels that

- (1) deliver blood to the cells of the body
- (2) contain striated muscle
- (3) carry blood toward the heart
- (4) readily exchange materials between the

blood and body cells

Base your answers to questions 19 and 20 on the diagram below of the human heart and on your knowledge of biology.



19. Which sequence represents part of the normal pathway of blood?

- (1) D → B → F → E → A
- (2) G → E → F → H → D
- (3) B → D → H → G → F
- (4) C → B → D → A → G

20. Systolic pressure is most directly related to the contraction of

- (1) A
- (2) F
- (3) E
- (4) D

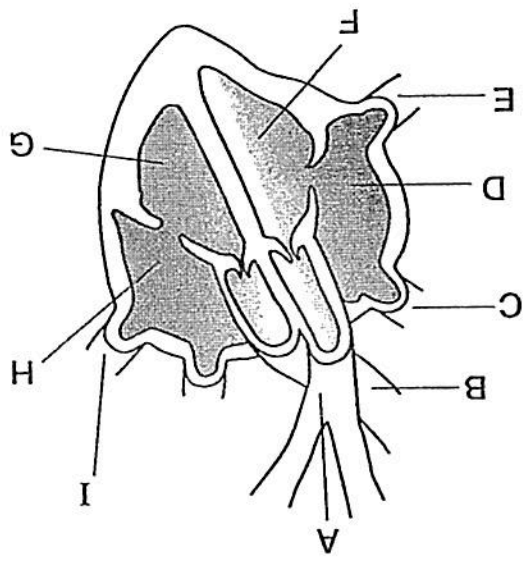
21. For blood to pass through the heart from the left atrium to the left ventricle, it must first pass through

- (1) an artery
- (2) a valve
- (3) a vein
- (4) a capillary

22. To determine heart rate, a student should count the pulsations per minute in

- (1) a vein
- (2) a capillary
- (3) an artery
- (4) a lymph vessel

23. Base your answer to the following question on the diagram below of the human heart and on your knowledge of biology.



A blockage in structure A would directly reduce blood flow to the

- (1) heart
- (2) lungs
- (3) liver
- (4) brain

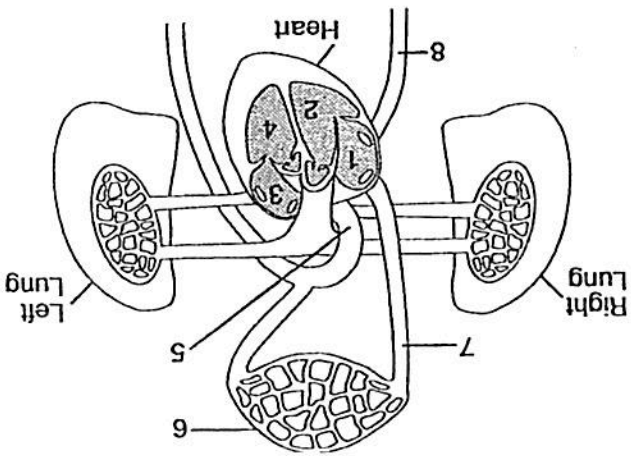
24. Which statement most accurately describes the human heart?

- (1) It has two atria and one ventricle, and it pumps blood directly into veins.
- (2) It has one atrium and one ventricle, and it is composed of cardiac muscle.
- (3) It has one atrium and two ventricles, and it is composed of visceral muscle.
- (4) It has two atria and two ventricles, and it pumps blood directly into arteries.

25. The flow of blood to and from the lungs is referred to as

- (1) pulmonary circulation
- (2) systemic circulation
- (3) autonomic circulation
- (4) somatic circulation

Base your answers to questions 31 and 32 on the diagram below which represents a portion of the human circulatory system and on your knowledge of biology.



31. Which chamber of the heart pumps deoxygenated blood to the lungs?

- (1) 1
(2) 2
(3) 3
(4) 4

32. Which chamber of the heart receives oxygenated blood from the lungs?

- (1) 1
(2) 2
(3) 3
(4) 4

33. High blood pressure can usually be reduced if a person

- (1) eats a diet high in salt and reduces physical activity
(2) eats a diet high in saturated fats and reduces stress
(3) reduces physical activity and decreases the consumption of complex carbohydrates
(4) exercises regularly and lowers the amount of saturated fats consumed

Base your answers to questions 26 through 28 on the circulation system list below. Choose the circulation that best describes the below statement.

Circulation

- (1) Pulmonary circulation
(2) Systemic circulation
(3) Coronary circulation
(4) Lymphatic circulation

26. Cardiac muscle tissue is supplied with nutrients and oxygen.

- (1) 1
(2) 2
(3) 3
(4) 4

27. Oxygen is delivered to the liver from the heart.

- (1) 1
(2) 2
(3) 3
(4) 4

28. The concentration of carbon dioxide in the blood decreases, and the concentration of oxygen increases.

- (1) 1
(2) 2
(3) 3
(4) 4

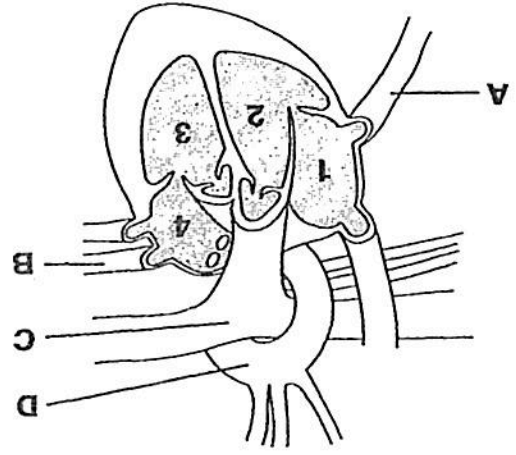
29. The concentration of oxygen is highest in the blood flowing through the

- (1) superior vena cava (3) pulmonary vein
(2) inferior vena cava (4) pulmonary artery

30. Leukemia is a disease of the

- (1) liver
(2) heart
(3) bone marrow
(4) islets of Langerhans

34. Base your answer to the following question on the diagram below of the human heart.



Deoxygenated blood from the body is returned to the heart by way of structure (1) A (3) C (2) B (4) D

35. Which organic compounds are needed for the synthesis of the plasma membrane, contain a large amount of stored energy, and have been linked to cardiovascular diseases?
 (1) complex carbohydrates
 (2) saturated fats
 (3) simple sugars
 (4) polyunsaturated fats

36. An insufficient amount of hemoglobin is most closely associated with the disorder known as

- (1) angina
- (2) anemia
- (3) coronary thrombosis
- (4) high blood pressure

37. A person who consumes large amounts of saturated fats may increase his or her chances of developing

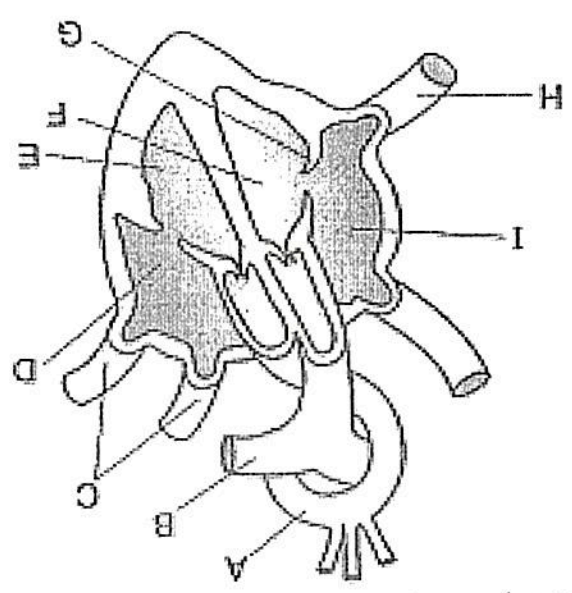
- (1) meningitis
- (2) hemophilia
- (3) viral pneumonia
- (4) cardiovascular disease

38. A type of "heart attack" in which a narrowing of the coronary artery causes an inadequate supply of oxygen to reach the heart muscle is known as

- (1) anemia
- (3) angina pectoris
- (2) leukemia
- (4) cerebral palsy

PART B:

39. Using the diagram label the parts of the heart A-I.



- A. _____
- B. _____
- C. _____
- D. _____
- E. _____
- F. _____
- G. _____
- H. _____
- I. _____

40. Heart Order Question Place the following parts of the heart in the order as blood would pass through.

- | | |
|-------|--------------------|
| _____ | left ventricle |
| _____ | right atrium |
| _____ | pulmonary veins |
| _____ | right ventricle |
| _____ | aorta |
| _____ | pulmonary arteries |
| _____ | left atrium |
| _____ | vena cava |

Directions: For the following questions circle the correct answer. If you read these directions the answer to 47 is 2, the answer to 48 is 3 and the answer to 49 is 1. If you read these directions you deserve the points and should not share the directions with the people around you.

41. All the following carry deoxygenated blood EXCEPT the (1.) superior vena cava (2.) inferior vena cava (3.) aorta (4.) pulmonary arteries
42. Oxygenated blood enters the human heart at the (1.) left atrium (2.) right atrium (3.) left ventricle (4.) right ventricle
43. The upper chambers of the human heart are called (1.) atria (2.) ventricles (3.) valves (4.) chordae tendinae

44. Which chamber pumps blood into the pulmonary arteries? (1.) left atrium (2.) left ventricle (3.) right atrium (4.) right ventricle
45. Which chamber receives blood from the pulmonary veins? (1.) left atrium (2.) left ventricle (3.) right atrium (4.) right ventricle

46. Which structure would normally contain oxygenated blood? (1.) right ventricle (2.) tricuspid valve (3.) right atrium (4.) aorta

47. Which structure would normally contain deoxygenated blood? (1.) left ventricle (2.) pulmonary arteries (3.) pulmonary veins (4.) left atrium

48. Which of the following heart chambers has the thickest and most muscular wall? (1.) left atrium (2.) right atrium (3.) left ventricle (4.) right ventricle

49. The dividing wall of the heart is called the (1.) septum (2.) vena cavae (3.) ductus arteriosus (4.) pericardium

1.	4	22.	3
2.	2	23.	2
3.	2	24.	4
4.	1	25.	1
5.	1	26.	3
6.	4	27.	2
7.	1	28.	1
8.	1	29.	3
9.	1	30.	3
10.	4	31.	2
11.	4	32.	3
12.	4	33.	4
13.	1	34.	1
14.	4	35.	2
15.	3	36.	2
16.	2	37.	4
17.	2	38.	3
18.	3		
19.	3		
20.	4		
21.	2		