

# Blood Analysis

NAME \_\_\_\_\_

LAB TIME/DATE \_\_\_\_\_

## Hematocrit Determination

1. Hematocrit values are usually ( higher / lower ) in healthy males, compared to healthy females.

Give one possible explanation for this. \_\_\_\_\_

\_\_\_\_\_

2. Living at high elevations will cause a person's hematocrit to ( increase / decrease ).

Explain your answer. \_\_\_\_\_

\_\_\_\_\_

3. Long-term athletic training will cause a person's hematocrit to ( increase / decrease ).

4. What is anemia? \_\_\_\_\_

5. Anemia will cause a person's hematocrit to ( increase / decrease ).

6. Pernicious anemia is due to a lack of vitamin \_\_\_\_\_

7. How does deficiency of intrinsic factor lead to pernicious anemia? \_\_\_\_\_

\_\_\_\_\_

8. Why would a diet deficient in iron lead to anemia? \_\_\_\_\_

\_\_\_\_\_

9. Which hormone, secreted by the kidney, is responsible for increased production of red blood cells?

\_\_\_\_\_

## Erythrocyte Sedimentation Rate (ESR)

10. Sickled red blood cells have an abnormal shape and do not tend to form stacks of cells (rouleaux formation). This would ( increase / decrease ) the sedimentation rate.

11. Is the ESR test a specific test used to diagnose a disease? \_\_\_\_\_

12. The blood of a cancer patient undergoing chemotherapy is given an ESR test. The results show a slower ESR from the previous month. What might this indicate about the patient's disease?

\_\_\_\_\_

13. How can the ESR be useful in the evaluation of a patient complaining of chest pains?

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14. How can the ESR be useful in the evaluation of a female patient suffering from severe abdominal pains?

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## Hemoglobin Determination

15. What is the value, in terms of grams of hemoglobin per 100 milliliters of blood, for the following:

a. healthy male: \_\_\_\_\_

b. healthy female: \_\_\_\_\_

c. male with polycythemia: \_\_\_\_\_

d. female with iron deficiency anemia: \_\_\_\_\_

16. Explain your answer to (c) above. \_\_\_\_\_

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17. Explain your answer to (d) above. \_\_\_\_\_

18. Complete the following questions to describe hemoglobin.

How many polypeptide chains form the globin portion of the molecule? \_\_\_\_\_

Each heme group contains an atom of the element \_\_\_\_\_.

How many heme groups are contained in one molecule of hemoglobin? \_\_\_\_\_

Each hemoglobin molecule can transport \_\_\_\_\_ molecules of oxygen.

What color is oxyhemoglobin? \_\_\_\_\_

19. Hemoglobin values rise in COPD (chronic obstructive pulmonary disease). Give a possible explanation for this.

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20. Hemoglobin values decrease in renal disease. Give a possible explanation for this.

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## Blood Typing

21. Define the following terms.

agglutinogen: \_\_\_\_\_

agglutinen: \_\_\_\_\_

gene allele: \_\_\_\_\_

22. What is the most common ABO blood type in the United States? \_\_\_\_\_

23. What is the least common ABO blood type in the United States? \_\_\_\_\_

24. Most Americans are Rh ( positive / negative ).

25. *Erythroblastosis fetalis* is an uncommon condition in newborn infants. In this condition, the baby is Rh ( positive / negative ) and the mother is Rh ( positive / negative ).

26. If your blood agglutinates with both anti-A and anti-B sera, your blood type is \_\_\_\_\_.

27. If you have type O blood, which antigens are present on your red blood cells?

\_\_\_\_\_

Which antibodies are present in your plasma? \_\_\_\_\_

28. Blood type O is considered to be the universal donor type. However, if type O blood is transfused into a person with blood type B, which of the following is important to remember? \_\_\_\_\_

- Use the entire pint of type O blood for the transfusion
- Separate the type O blood into packed cells and plasma, and use only the packed cells for the transfusion
- Separate the type O blood into packed cells and plasma, and use only the plasma for the transfusion

## Total Blood Cholesterol Determination

29. Cholesterol is an essential factor in homeostasis. Name four uses that the human body has for cholesterol.

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

30. Most of the cholesterol that your body needs is made by what organ? \_\_\_\_\_

31. High blood cholesterol levels are above \_\_\_\_\_ mg/100 ml of blood.

32. What is atherosclerosis? \_\_\_\_\_

33. What is the connection between high blood cholesterol levels and atherosclerosis?

\_\_\_\_\_

34. What are lipoproteins? \_\_\_\_\_
35. Low density lipoproteins (LDLs) transport cholesterol to \_\_\_\_\_  
\_\_\_\_\_
36. High density lipoproteins (HDLs) transport cholesterol from the \_\_\_\_\_ to the \_\_\_\_\_,  
where it is broken down and becomes part of bile.
37. Cigarette smoking, stress, and coffee drinking increase levels of \_\_\_\_\_, or “bad cholesterol.”
38. Regular aerobic exercise increases levels of \_\_\_\_\_, or “good cholesterol.”