

1. Blood is a connective tissue comprised of cellular elements and an extracellular matrix comprised primarily of water. What is the name of the blood's extracellular matrix?
- (a) hematocrit.
 - (b) fibrinogen.
 - (c) buffy coat.
 - (d) plasma.
 - (e) none of these answers.

ANSWER: d

2. Albumin belongs to the group of _____ in the blood plasma.
- (a) hormones.
 - (b) electrolytes.
 - (c) proteins.
 - (d) gases (O₂, CO₂, N₂).
 - (e) red blood cells.

ANSWER: c

3. The amount of blood in the human body is about _____ liters.
- (a) 2
 - (b) 5
 - (c) 10
 - (d) 12
 - (e) 15

ANSWER: b

4. The red cell count is normally about _____ million cells per cubic millimeter.
- (a) 2
 - (b) 5
 - (c) 10
 - (d) 15
 - (e) 20

ANSWER: b

5. Which is not a function of plasma proteins?
- (a) plasma proteins are responsible for the blood colloid osmotic pressure.
 - (b) provide a source of readily available amino acids to be utilized by the tissue cells for the synthesis of new tissue proteins.
 - (c) antibodies are gamma globulins important in the body's defense mechanism.
 - (d) plasma proteins play a role in buffering changes in pH in the body fluids.
 - (e) the presence of plasma proteins in the blood is the primary factor responsible for preventing excessive loss of plasma from the capillaries into the interstitial fluid.

ANSWER: b

6. The buffy coat which represents < 1% of the whole blood is comprised of
- (a) erythrocytes and platelets.
 - (b) leukocytes and platelets.
 - (c) leukocytes and clotting factors.
 - (d) platelets and clotting factors.
 - (e) clotting factors and albumins.

ANSWER: b

7. What advantages does the biconcavity of the erythrocyte impart on the cell?
- (a) it increases the overall surface area.
 - (b) it increases the flexibility of the cell.
 - (c) it prevents toxins from entering the cell.
 - (d) all of these answers.
 - (e) none of these answers.

ANSWER: a

8. In question #7 (above) why is this important?
- (a) in prevents osmolarity changes.
 - (b) it increases the rate of gas exchange.
 - (c) it provides additional area for endocytosis.
 - (d) it encourages cellular respiration.
 - (e) none of these answers.

ANSWER: b

9. The function of plasma albumins is
- (a) contributing to the clotting process.
 - (b) body defense.
 - (c) maintenance of the blood's osmotic pressure.
 - (d) transport of lipids.
 - (e) transport of metal minerals.

ANSWER: c

10. Which plasma globulins are the antibodies?
- (a) alpha.
 - (b) beta.
 - (c) gamma.
 - (d) delta.
 - (e) sigma.

ANSWER: c

11. If the hematocrit is 40, then the volume occupied by the
- (a) red blood cells is 60% of the total blood volume.
 - (b) white blood cells is 40% of the total blood volume.
 - (c) red blood cells is 40% of the total blood volume.
 - (d) plasma and other cellular elements is 40% of the total blood volume.
 - (e) more than one of these.

ANSWER: c

12. Antibodies are
- (a) gamma globulins.
 - (b) a type of plasma protein.
 - (c) produced by B lymphocytes.
 - (d) two of these answers.
 - (e) all of these answers.

ANSWER: e

13. Which is not found within erythrocytes?

- (a) carbonic anhydrase.
- (b) glycolytic enzymes.
- (c) hemoglobin.
- (d) mitochondria.
- (e) bicarbonate ions.

ANSWER: d

14. Carbonic anhydrase is crucial for
- (a) CO₂ transport in blood.
 - (b) conversion of CO₂ into bicarbonate ion.
 - (c) production of NO.
 - (d) both (a) and (b) above.
 - (e) both (a) and (c) above.

ANSWER: d

15. Which of the following statements concerning erythrocytes is incorrect?
- (a) erythrocytes do not contain any organelles.
 - (b) erythrocytes may take on many different shapes.
 - (c) erythrocytes originate from the same undifferentiated pluripotential stem cells as leukocytes and platelets.
 - (d) erythrocytes are unable to utilize the O₂ they contain for their own ATP formation.
 - (e) erythrocytes only live about 5 days.

ANSWER: e

16. Which organ removes most of the worn-out red blood cells from the circulation?
- (a) bone marrow.
 - (b) kidney.
 - (c) large intestine.
 - (d) pancreas.
 - (e) spleen.

ANSWER: e

17. Erythrocytes
- (a) do not contain a nucleus.
 - (b) survive an average of 120 days.
 - (c) do not have the ability to use O₂ for energy production despite the fact that they transport O₂ to all the other tissues of the body.
 - (d) do not contain a nucleus and survive an average of 120 days.
 - (e) all of these answers.

ANSWER: e

18. Which is the most abundant type of cellular element in the blood?
- (a) erythrocytes.
 - (b) neutrophils.
 - (c) leukocytes.
 - (d) lymphocytes.
 - (e) platelets.

ANSWER: a

19. Erythrocytes

- (a) are large cells.
- (b) participate in the clotting of blood.
- (c) defend the body against foreign substances.
- (d) possess binding sites for oxygen and CO₂
- (e) possess all of the organelles found in other cell types.

ANSWER: d

20. In addition to transporting oxygen hemoglobin transports

- (a) some carbon dioxide.
- (b) nitric oxide.
- (c) buffered hydrogen ions.
- (d) both (a) and (b) above.
- (e) all these answers.

ANSWER: e