MASTERY TEST

Now take the mastery test. Do not guess. Some questions may have more than one correct answer. As soon as you complete the test, correct it. Note your successes and failures so that you can read the chapter to meet your learning needs.

1. The percentage of formed elements in blood is called the ________________
2. The intercellular material of blood is ________________
3. Plasma represents ____% of a normal blood sample.
4. Cellular components of the immune system and formed elements of blood originate from a common stem cell known as a hematopoietic stem cell.
   a. True
   b. False
The biconcave shape of red blood cells
a. provides an increased surface area for gas diffusion.
b. moves the cell membrane closer to hemoglobin.

A normal red cell count is _______ for an adult female and _______ for an adult male.

Red blood cells cannot reproduce because they lack a _______.

Red blood cell counts are important clinically because they provide information about
a. blood viscosity. b. bone marrow volume. c. oxygen carrying capacity. d. dietary intake.

In an adult, red blood cells are produced in
a. the spleen. b. red marrow. c. yellow marrow. d. the liver.

Which of the following represents the correct order of appearance of cells in red blood cell production?

a. erythrocytes, hemocytoblasts, erythroblasts  b. hemocytoblasts, erythroblasts, erythrocytes
c. erythroblasts, hemocytoblasts, erythrocytes  d. hemocytoblasts, erythroblasts, erythrocytes

Red blood cell production is stimulated by a hormone, ____________, that is released from the kidney in response to low oxygen concentration.

Does statement a explain statement b?

a. Vitamin B₁₂ and folic acid are necessary to cell growth and reproduction. b. The rate of red blood cell reproduction makes this process especially dependent on vitamin B₁₂ and folic acid.

A lack of vitamin B₁₂ is usually due to
a. dietary deficiency. b. a disorder of the stomach lining. c. liver damage. d. kidney malfunction.

Damaged red blood cells are destroyed by reticuloendothelial cells called
a. leukocytes. b. macrophages. c. neutrophils. d. granulocytes.

The heme portion of damaged red blood cells is decomposed into iron and
a. biliverdin. b. bilirubin. c. bile.

The most numerous type of white blood cell is the
a. neutrophil. b. eosinophil. c. monocyte. d. lymphocyte.

The white blood cell that has the longest life span is the
a. basophil. b. lymphocyte. c. thrombocyte. d. eosinophil.

The normal white blood cell count is _______ to _______ cells per cubic millimeter (mm³) of blood.

The most mobile and active phagocytic leukocytes are
a. eosinophils. b. neutrophils. c. monocytes. d. basophils.

Does statement a explain statement b?

a. All formed elements of blood derive from a common stem cell. b. In leukemia, overproduction of white blood cells leads to decreased production of red blood cells and platelets.

The blood element concerned with the control of bleeding and the formation of clots is the ____________
Match the functions and characteristics in the first column with the appropriate plasma proteins from the second column.

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<table>
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<tbody>
<tr>
<td>1. largest molecular size</td>
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<td>2. significant in maintaining osmotic pressure</td>
<td>b. globulins</td>
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<tr>
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<tr>
<td>5. plays a part in blood clotting</td>
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23. All of the following nutrients are present in plasma except
a. polysaccharides.  c. chylomicrons.
b. amino acids.  d. cholesterol.

24. List the plasma proteins.

25. The gases that are normally dissolved in plasma include
a. sulfur dioxide.  c. oxygen.
b. carbon dioxide.  d. nitrogen.

26. An increase in the blood level of nonprotein nitrogen can indicate
a. positive nitrogen balance.  c. pathologic cell metabolism.
b. a kidney disorder.  d. poor nutrition

The most abundant plasma electrolytes are
a. calcium.  c. potassium.
b. sodium.  d. chlorides.

The vasospasm that occurs in severed blood vessels is due to all of the following except
a. direct stimulation of the vessel wall.  c. stimulation of pain receptors in injured tissue around the vessel.
b. release of norepinephrine.  d. release of serotonin from platelets.

A platelet plug begins to form when platelets are
a. exposed to air.  c. exposed to calcium.
b. exposed to a rough surface.  d. crushed.

The basic event in the formation of a blood clot is the transformation of a soluble plasma protein, ________, to a relatively insoluble protein, ________.

Substances believed necessary to activate prothrombin are thought to include
a. calcium ions.  c. phospholipids.
b. potassium ions.  d. glucose.

Prothrombin is a plasma protein that is produced by
a. the kidney.  c. the pancreas.
b. the small intestine.  d. the liver.

33. Once a blood clot begins to form, it promotes still more clotting. This is an example of a ________ feedback system.

34. Widespread activation of the clotting mechanism, which uses up the supply of clotting factors and platelets, is called ________.

35. Laboratory tests used to evaluate the blood coagulation mechanisms are the ________, ________, and the ________.

36. Retraction of the clot, pulling the edges of the severed vessel closer together, is due to the action of
a. serum formation.  c. vitamin K.
b. platelets.  d. vitamin C.

An enzyme that may be used to dissolve blood clots is ________. 
Match the functions and characteristics in the first column with the appropriate plasma proteins from the second column.

1. largest molecular size
   - a. albumins

2. significant in maintaining osmotic pressure
   - b. globulins

3. transports lipids and fat-soluble vitamins
   - c. fibrinogen

4. antibody(ies) of immunity
5. plays a part in blood clotting

All of the following nutrients are present in plasma except
a. polysaccharides.  
   b. amino acids.  
   c. chylomicrons.  
   d. cholesterol.

List the plasma proteins.

The gases that are normally dissolved in plasma include
a. sulfur dioxide.  
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a. positive nitrogen balance.  
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Prothrombin is a plasma protein that is produced by
a. the kidney.  
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Once a blood clot begins to form, it promotes still more clotting. This is an example of a ______________ feedback system.

Widespread activation of the clotting mechanism, which uses up the supply of clotting factors and platelets, is called ________________.

Laboratory tests used to evaluate the blood coagulation mechanisms are the ________________, ________________, and the ________________.

Retraction of the clot, pulling the edges of the severed vessel closer together, is due to the action of
a. serum formation.  
   b. platelets.  
   c. vitamin K.  
   d. vitamin C.

An enzyme that may be used to dissolve blood clots is ________________.
38. Factors that prevent coagulation in a normal vascular system include all of the following except
   a. smooth, unbroken endothelium in blood vessels.
   b. a blood plasma protein called antithrombin.
   c. heparin.
   d. vitamin K.

39. The application of medicinal leeches has been used as an adjunctive therapy to microsurgery to maintain the patency of small veins.
   a. True
   b. False

40. The hereditary disease that is almost exclusively male and is due to the lack of one of several clotting factors is ____________.

41. The clumping together of red blood cells when unlike types of blood are mixed is due to antibodies in the plasma and antigens in the
   a. thrombocytes.
   b. erythrocytes.
   c. basophils.
   d. eosinophils.

42. A person with type A blood has
   a. antigen A and antibody B.
   b. antigens A and B.
   c. antibodies A and B.
   d. neither antibody A nor antibody B.

43. Antibodies for Rh appear
   a. spontaneously as an inherited trait.
   b. only rarely for poorly understood reasons.
   c. only in response to stimulations by Rh antigens.

44. An Rh-negative mother, carrying a fetus who is Rh-positive, may have an infant with a blood problem called ____________.

45. An Rh-negative mother who delivers an Rh-positive baby is given ____________ within 72 hours of delivery to prevent the condition in question 46.

46. Which of the following blood types is a universal donor?
   a. O
   b. AB
   c. A
   d. B
14 Mastery Test Answers

1. hematocrit
2. plasma
3. 55
4. a
5. a, b, c
6. 4,200,000–5,400,000; 4,600,000–6,200,000
7. nucleus
8. c
9. b
10. d
11. erythropoietin
12. yes
13. b
14. b
15. a
16. a
17. b
18. 5,000 to 10,000
19. b, c
20. yes
21. platelet or thrombocyte
22. 1. c, 2. a, 3. b, 4. b, 5. c
23. a
24. albumins, globulins, fibrinogen
25. b, c, d
26. b
27. b, d
28. b
29. b
30. fibrinogen, fibrin
31. a, c
32. d
33. positive
34. disseminated intravascular coagulation
35. prothrombin time, partial prothrombin time
36. b
37. streptokinase
38. d
39. a
40. hemophilia
41. b
42. a
43. c
44. erythroblastosis fetalis
45. Rhogam
46. a