

AP Study Guide C19
The Cardiovascular System: The Blood
Tortora / Derrickson

1. What is the distinction between the cardiovascular and circulatory system?
2. What are the three primary functions of blood?
3. What type of tissue is blood?
4. What is the structure of blood?
5. What term is used to describe the matrix of blood tissue?
6. What do we mean by the term “formed elements”?
7. What are the “seven” formed elements?
8. What are the three main plasma proteins? Functions? Produced by?
9. What do we call plasma when fibrinogen is removed from the plasma?
10. What is hematocrit? Why is it important?
11. What are the reference benchmarks as described in class for these blood items: pH, hematocrit, RBC concentration, platelet concentration, WBC concentration.
12. What are platelets? Where and how are they formed? Function?
13. What are erythrocytes? Where are they formed? Function?
14. What is the “buffy coat” in the hematocrit?
15. How are WBC classified? (two group types)
16. Where will WBC spend most of their time following their formation and circulating in the blood?
17. What are neutrophils? Function?
18. What are eosinophils? Function?
19. What are basophils? How do basophils “change” and what do we call them after they change? Function?

20. What is a monocyte? How do monocytes change and what do we call them after they change? Function?
21. What is viscosity?
22. How is blood viscosity influenced by blood hematocrit? Why is this important?
23. What is the largest factor in determining the viscosity of blood?
24. What is the osmolarity of blood? Why is this important? What component of blood plays a major role in determining blood osmolarity?
25. What happens when blood osmolarity is too high or too low? Where within the circulatory system do these effects take place?
26. What is hemopoiesis?
27. Where in fetal development and in the newborn does hemopoiesis take place?
28. Where does hemopoiesis take place in adult life?
29. What is the stem cell name responsible for hemopoiesis called? What term describes the intermediate stage?
30. What is the primary function of the RBC?
31. What is the diameter of a RBC? What is the diameter of a capillary? How do RBC pass through a continuous capillary?
32. What two cytoskeleton proteins play a key role in the life cycle of a RBC?
33. How long will a RBC circulate in the blood? Where is the graveyard for RBC? Why?
34. What cell “recycles” RBC? Where does this take place?
35. What is erythropoietin? What is the homeostatic mechanism which regulates erythropoiesis?
36. How long does it take to produce a new RBC?
37. What are immature RBCs called and what cytoplasmic organelle persist during this phase?
38. What is hemoglobin? Form and function?

39. What is the difference between fetal and adult hemoglobin?
40. What are the three critical nutrients required for RBC production?
41. How is the heme from hemoglobin eliminated from the body?
42. Why is iron important and how is it managed by the human body?
43. Where in blood is carbonic anhydrase located? Function?
44. What is the chloride shift? Importance?
45. What is hypoxia? What is hypoxemia?
46. What is polycythemia? Primary vs secondary?
47. How will polycythemia affect blood viscosity and heart function?
48. What is anemia? Different forms: hemorrhagic, hemolytic, iron deficiency, pernicious, and sickle cell.
49. Explain why hypoxia caused by emphysema can not be reversed by erythropoiesis.
50. How many WBC are in a microliter of blood? Why is this important?
51. Where are leukocytes born? How long do they stay in the blood? Where do they go?
52. What type of information is contained in a complete blood count report?
53. What is leukopoiesis?
54. What is leukopenia? Leukocytosis?
55. What is thrombopenia? Thrombocytosis?
56. What is hemolysis?
57. What is hemostasis?
58. What role do platelets play in hemostasis?
59. What are the seven functions of platelets?
60. Where are 40% of the platelets stored in the body? Why?

61. Explain the three stages of hemostasis:
62. What is prostacyclin?
63. What two mechanisms can activate hemostasis? Which mechanism is faster?
64. What is fibrinogen? How is it converted to fibrin? Why is this important?
65. What is clot retraction? When does this occur?
66. What is platelet derived growth factor?
67. What is fibrinolysis?
68. What is a thrombus? Thrombosis?
69. What is an embolism?
70. What is an infarction?
71. What is blood typing? Use these terms to explain: antigen (agglutinogen) and antibody (agglutinin)
72. Why is it true to say that your cells are sugar coated?
73. What is agglutination? Is this dangerous? Why?
74. In the ABO system what is the most common and rarest blood type?
75. What is the universal donor?
76. What is the universal recipient?
77. What is the danger of mismatching a blood transfusion?
78. How many RBC can a single agglutinin bind to at one time?
79. How is the Rh factor different than the ABO system?
80. What is RhoGam?
81. Are anti-D agglutinins present at birth? When do they form?
82. What is the hemolytic disease of the newborn?