Chapter 18, The Circulatory System: Blood

“Apply What You Know” Answers

p. 674—Use Table 18.1 on page 686 to calculate: volume in liters = 80-85 mL/kg and weight of blood = approximately 8% of body weight.

p. 675—The liver produces plasma proteins involved in blood clotting, if the liver is diseased such that this production is reduced, clotting will likewise be reduced. Diseased kidneys can also inappropriately excrete proteins in the urine.

p. 680—In dehydration, the water content of the blood is reduced, so the relative amount of all solid matter is increased, including hemoglobin. The resulting high hemoglobin concentration, however, does not necessarily mean the patient has enough total hemoglobin in the blood to meet his or her metabolic needs.

p. 687—Removing the N-acetylgalactosamine from type A erythrocytes gives their agglutinogens the same antigenic structure as type O cells and render them transfusable into a recipient of any ABO blood type, substantially increasing the availability of safe donor blood for recipients who are not type O.

p. 689—In hemolytic disease of the newborn, RBCs break down and release hemoglobin, and the hemoglobin is degraded to bilirubin at such a fast rate that the liver cannot dispose of the bilirubin. It accumulates in the blood and produces jaundice. Splenomegaly, enlargement of the spleen, occurs because the spleen is one of the sites of the accelerated erythropoiesis that occurs in HDN.

p. 694—Despite their lack of a nucleus, the average RBC lives about 120 days. Granulocytes, by contrast, possess nuclei but live only about 5 days or less.

p. 702—Aspirin inhibits the enzyme cyclooxygenase and therefore interferes with the synthesis of thromboxanes. Thromboxanes are among the factors that promote platelet aggregation; thus aspirin slightly inhibits hemostasis.