

- ___ 8. While the pancreas processes cellulose and other materials in some mammals, in humans it is only noticed when it is inflamed or infected. _____
- ___ 9. The skin, lungs, and kidneys are examples of organs that make up the excretory system.

- ___ 10. Blood enters the kidneys through the renal veins. _____
- ___ 11. When you are dehydrated, the pituitary gland releases antidiuretic hormone (ADH), which causes the kidneys to reabsorb less water. _____
- ___ 12. Your nervous system receives information that a baseball is being thrown in your direction. After the information is processed by your brain, your central nervous system stimulates the muscles in your hands to catch the ball. _____
- ___ 13. Spreading out from the cell body of a neuron are short, branched extensions called axons that gather information. _____
- ___ 14. Myelin sheaths can be damaged by strokes or nutritional deficiencies. If a neuron has a damaged myelin sheath, impulses move faster through the axon than they would in a healthy neuron.

- ___ 15. When a stimulus is weaker than the threshold of a neuron, it will not produce an impulse.

- ___ 16. Densely packed nerve cell bodies found in the cerebral cortex are called white matter.

- ___ 17. Sensory receptors that alert your brain when it is cold outside are called thermoreceptors.

- ___ 18. The muscles in your stomach responsible for churning and mixing food are controlled by the somatic nervous system. _____
- ___ 19. During brain surgery, patients are sometimes kept awake. This is possible because the brain does not contain chemoreceptors. _____
- ___ 20. All of your taste buds are found on your tongue. _____
- ___ 21. The hammer, anvil, and stirrup and the two tiny sacs located behind them help the body maintain its equilibrium. _____
- ___ 22. When walking into a dimly lit room, the cones in your eyes help you find your way around.

- ___ 23. Vision occurs when photoreceptors in the retina transmit impulses to the brain, which translates these impulses into images. _____

- _____ 24. A common injury among elderly people is a broken hip. This type of injury occurs in the appendicular skeleton. _____
- _____ 25. Red marrow is made up primarily of fat cells. _____
- _____ 26. Smooth muscle contractions are responsible for pushing a baby out of its mother's uterus during childbirth. _____
- _____ 27. ATP supplies the energy for muscle contraction. _____
- _____ 28. When astronauts are in space, their muscles tend to strengthen due to the lack of gravity. _____
- _____ 29. Sunlight is needed for one of the chemical reactions that allows skin cells to produce vitamin C. _____
- _____ 30. The outer layer of the epidermis is shed every four to five weeks. _____
- _____ 31. Excessive exposure to infrared radiation in sunlight and tanning beds can cause changes in skin cells that may lead to skin cancer.
- _____ 32. After the AV node produces impulses, the ventricles contract, pumping blood out of the heart. _____

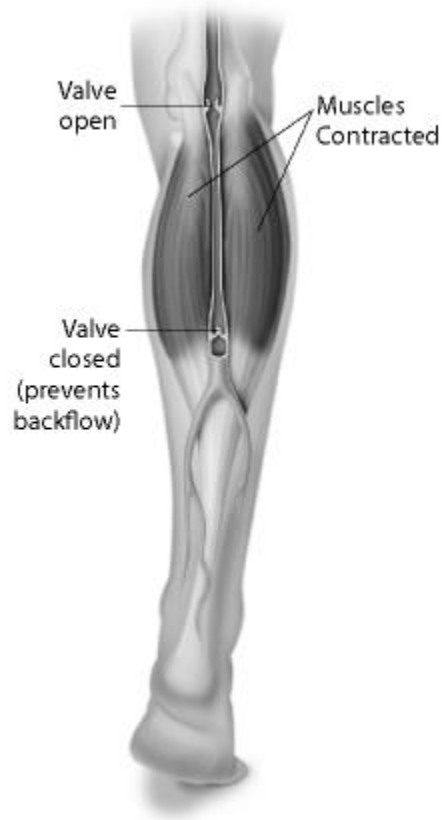


Figure 33–3

- ___ 33. In Figure 33–3, when the leg muscle contracts, blood in the veins is pushed away from the heart.

- ___ 34. When your body is exposed to the bacteria that cause strep throat, B lymphocytes produce antibodies that fight the infection. _____
- ___ 35. Lymph vessels have pumps that move lymph through the body and prevent it from flowing backward.

- ___ 36. If a person has a blood pressure reading of 150/90, he or she has normal blood pressure.

- ___ 37. HDL is the cholesterol carrier that is most likely to cause trouble in the circulatory system because it becomes part of plaque. _____
- ___ 38. The process by which oxygen and carbon monoxide are exchanged between cells, the blood, and air in the lungs is known as respiration. _____
- ___ 39. In your lungs, diffusion of oxygen from alveoli into capillaries stops when oxygen concentrations in the blood are equal to oxygen concentrations in the alveoli. _____
- ___ 40. The brain controls breathing in a center located in the medulla oblongata. _____
- ___ 41. Nicotine is an addictive stimulant that decreases heart rate and blood pressure. _____
- ___ 42. Exocrine glands release their secretions into the bloodstream. _____
- ___ 43. The pancreas produces hormones that help to keep your blood glucose levels stable after eating an ice cream sundae. _____
- ___ 44. While standing outside waiting for the school bus on a cold day, your body maintains its core temperature by decreasing the amount of thyroxine in your blood. _____
- ___ 45. The pituitary gland produces the hormones FSH and LH, which affect the development of gonads during puberty. _____
- ___ 46. Glands lining the male reproductive tract produce a nutrient-rich fluid called sperm.

- ___ 47. In a 28-day menstrual cycle, menstruation usually begins on the 14th day of the menstrual cycle.

- ___ 48. During ovulation, an increased estrogen level triggers a decrease in LH and FSH from the pituitary.

- ___ 49. The vaccine for HPV must be administered after a woman becomes infected with HPV.

- ___ 50. The process in which the blastocyst attaches to the wall of the uterus and begins to grow in the tissues of the mother is called gastrulation. _____
- ___ 51. If an egg is present in the vagina, its chances of being fertilized by a sperm released during ejaculation are good. _____
- ___ 52. Babies can have breathing problems as a result of incomplete lung development during months 7–9. _____
- ___ 53. Within a few hours after birth, the pituitary hormone oxytocin stimulates the production of milk in the breast tissues of the mother. _____
- ___ 54. Washing your hands frequently can prevent the spread of many vectors. _____

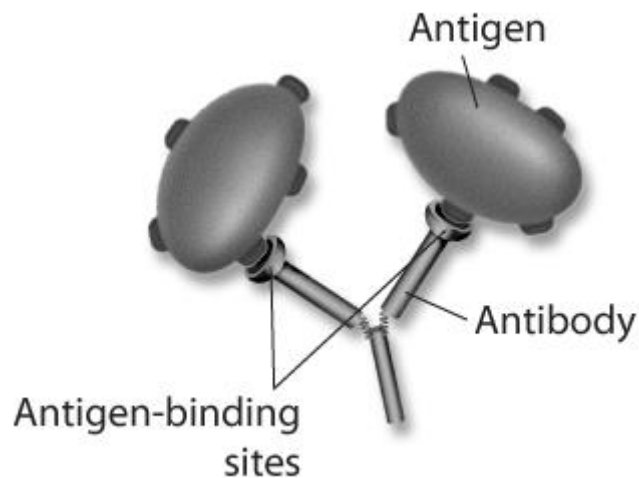


Figure 35–4

- ___ 55. Figure 35–4 shows the structures on which the entire cell-mediated immune response depends. _____
- ___ 56. In humoral immunity, memory B cells respond quickly to the body being exposed to the chickenpox virus for the second time. _____
- ___ 57. Passive immunity lasts for only a short time because the immune system eventually destroys the foreign antibody. _____
- ___ 58. One reason for the emergence of new diseases is the increase in domestic animal trade. _____
- ___ 59. Histamines can reduce the symptoms of an allergic reaction. _____
- ___ 60. Autoimmune diseases can be treated. _____

Completion

Complete each statement.

61. Specialized _____ are the basic unit of structure in living things that are uniquely suited to perform a particular function.
62. _____ is the process by which organisms maintain a relatively stable internal environment.
63. Molecules in food contain chemical energy that cells use to produce _____.
64. Calcium, iron, and magnesium are all examples of the group of nutrients called _____.
65. _____ provide information such as the amount of sodium and Calories per serving found in food products.
66. A mixture of enzymes and partially digested food known as _____ is produced in the stomach.
67. Teeth are extremely important in _____ digestion because they physically break down large pieces of food into smaller ones.
68. The pancreas produces _____, a base that neutralizes stomach acid so that the enzymes can be effective.
69. Tiny, finger-like structures called villi and microvilli increase the stomach's _____, allowing it to absorb more nutrient molecules.
70. If a person eats salty food, his or her kidneys respond by excreting excess salt into the _____.
71. During a _____, a patient receives a kidney from a compatible donor.
72. The myelin sheath that surrounds a single long axon leaves many gaps, called _____, where the axon membrane is exposed.
73. When a person loses consciousness due to a head injury from a car crash, the _____ keeps the body functioning by regulating the flow of information between the brain and the rest of the body.
74. Drugs produce changes in one particular group of synapses that use the neurotransmitter _____.
75. The turning of your head is controlled by the _____ nervous system, which is part of the peripheral nervous system's motor division.
76. The _____ contains thermoreceptors that sense changes in blood temperature.
77. The sensory organs that detect taste are called _____.

78. The _____ are the sense organs that can distinguish both pitch and loudness in vibrations that move through air.
79. Small muscles attached to the _____ of your eye change its shape to allow you to focus on near or distant objects.
80. A person who has a low concentration of _____ may have difficulty distinguishing one color from another.
81. Multicellular animals have _____, which provide structure and support within their individual cells.
82. The separate bones of a newborn infant's skull grow until they are fused together and connected by _____ joints.
83. The concept used to explain the action of filaments in muscle contraction is the _____.
84. The point of contact between a motor neuron and a muscle fiber is called a(an) _____.
85. The muscle that bends, or flexes, the elbow joint is the _____.
86. Hair and nails are part of the _____ system.
87. A person with darker skin produces more _____ than a person with lighter skin.
88. The _____ is the layer of skin that contains blood vessels and nerve endings.
89. If someone has an allergic reaction to a food that they eat, such as peanuts, part of the body's reaction is the release of the chemical _____.
90. In simple animals, diffusion and active transport across cell membranes supply the cells with _____ and nutrients, and remove waste products.

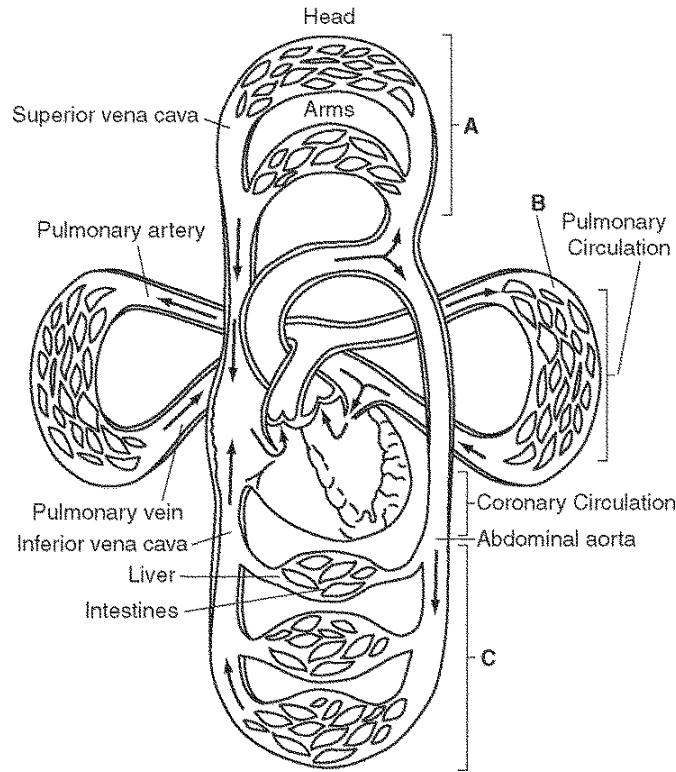


Figure 33–4

91. In Figure 33–4, A and C receive blood through _____ circulation.
92. Medical workers use a sphygmomanometer to measure _____.
93. A typical blood pressure reading for a healthy teen or adult is below _____.
94. The iron-containing protein called _____ binds to oxygen in the lungs and transports it to tissues throughout the body where the oxygen is released.
95. Plasma consists mostly of _____.
96. When your doctor feels your neck for “swollen glands” he or she is checking for swelling in the _____.
97. Fatty deposits called plaque build up in the walls of arteries, causing a condition known as _____.
98. Drugs such as _____ help people with high cholesterol by blocking the synthesis of cholesterol in liver cells.
99. Your ability to sing along to music on the radio comes from two highly elastic folds of tissues called the vocal cords, located within the _____.

100. Breathing is such an important function that your _____ system will not let you have complete control over it.
101. The _____ system is made up of glands that release their products into the _____.
102. Because steroid hormones are made of _____, they can easily cross cell membranes.
103. The thyroid gland is controlled by the _____ and the _____.
104. _____ is a period of rapid growth and sexual maturation during which the reproductive system becomes fully functional.
105. Cryptorchidism is a disorder in which one or both of the testes have not descended into the _____ by the time of birth.
106. In the female body, each egg is surrounded by a _____, which breaks open when the egg is mature.
107. If a woman is not ovulating, there is no chance of _____.
108. During _____, three germ layers form. They are called _____, ectoderm, and mesoderm.
109. Almost everything that the mother takes into her body passes through the _____ to the embryo.
110. Chickenpox, tetanus, and malaria are all examples of _____ diseases.
111. Mosquitoes that carry disease-causing organisms from person to person are called _____.
112. Any opening in the skin is a potential entrance for _____.
113. Chemicals known as _____ increase the flow of blood and fluids to the affected area as part of the body's inflammatory response.
114. When your body is infected with the cold virus, antibodies tag the pathogen's _____, which are found on their outer surface, for destruction by immune cells.
115. A _____ T cell activates other T cells and B cells, whereas a killer T cell binds to infected cells.
116. Humoral immunity is activated when _____ embedded on a few existing B cells bind to antigens on the surface of invading pathogens.
117. An English physician named _____ performed an experiment in which he developed a vaccine for smallpox.
118. Antibiotics are used to treat infectious diseases caused by _____.

119. Rheumatoid arthritis occurs when the immune system attacks the body's tissues around joints. This is an example of a(an) _____ disease.
120. A person who has _____ is likely to suffer from a number of other rare infections because the virus that causes the disease attacks the immune system.

Short Answer

121. Compare and contrast tissues and organs.
122. What are two reasons why eating is important to your body?

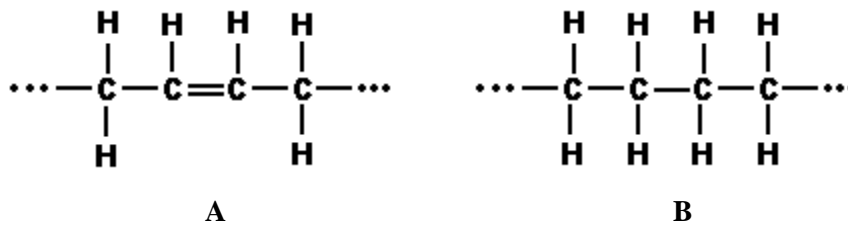


Figure 30-4

123. In Figure 30-4, which structure represents unsaturated fat? Which structure represents saturated fat? At room temperature, what state is each type of fat? State whether each fat is associated with heart problems. Give an example of each type of fat.
124. What is fiber and why is it important?

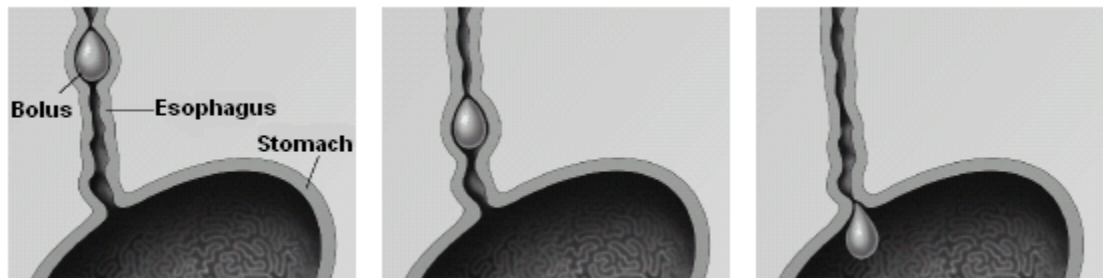


Figure 30-5

125. Name and describe the digestive process that is taking place in Figure 30-5.
126. Using the following terms, design and label a flow chart showing the path through which blood and waste flow in the kidney: *ureter*, *renal vein*, *renal artery*, *glomerulus*, *nephron*, and *collecting duct*.
127. Your doctor tests a sample of your urine and finds that it is a dark, yellow-green color. What might your doctor recommend that you do? Why?

128. A 16 year-old girl is diagnosed with kidney failure. Despite receiving dialysis treatments for three months, her doctor tells her that she needs a kidney transplant. Her brother volunteers to donate his kidney. How will he be able to survive if he donates his kidney?
129. What are three ways that kidneys maintain homeostasis?
130. What is the role of myelin sheaths in the nervous system?
131. In patients with Alzheimer's disease, early damage to the synapses in the brain can lead to short-term memory loss. If the synapse between a neuron and another cell is damaged, how will it affect an impulse?

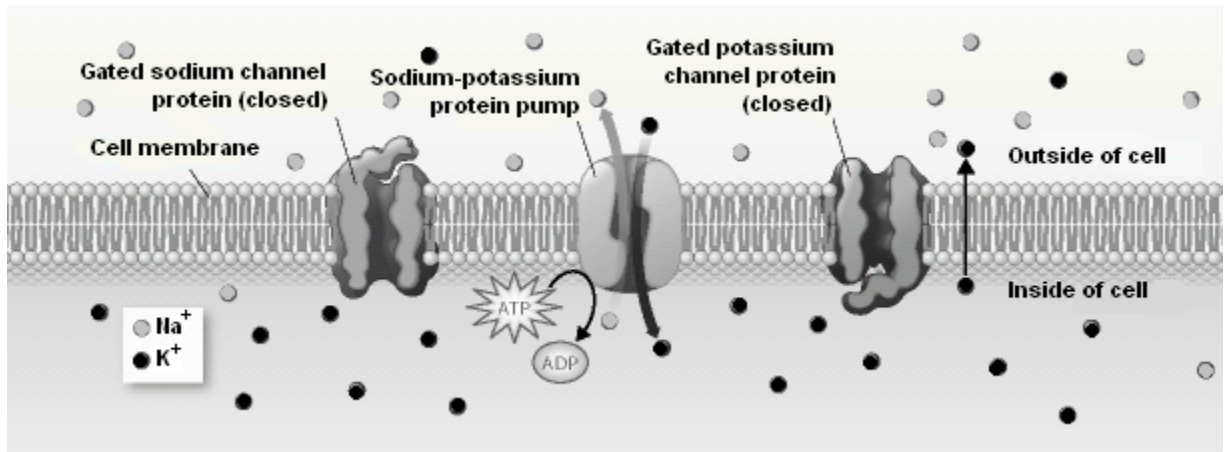


Figure 31-6

132. Figure 31-6 shows the cell membrane of a resting neuron. How do you know that the neuron is at rest?
133. Why are impulses always transmitted across the synapse in one direction?
134. Why is a severe injury to the brain stem often fatal?
135. What causes a drug user to keep increasing the amount of drug they abuse?
136. When you visit an amusement park or fair, your body is exposed to various stimuli. Describe how three sensory receptors are activated in this environment.
137. Why does your mouth feel hot when you eat a jalapeno pepper?
138. Sometimes at the end of a television cooking show, the chef describes how the final product he or she made "tastes." Why is it incorrect for him or her to refer only to the "taste" of food?
139. Describe the role of the cochlea in hearing.
140. Compare and contrast the functions of rods and cones.
141. Osteoporosis is a bone disorder that causes weak bones. It usually occurs in older adults and is more common in women than men. It occurs when a body's osteoclasts work faster than its osteoblasts. How does this lead to weak bones?

142. How would the body be affected if spongy bones had a dense, solid structure like compact bone rather than a latticework structure?

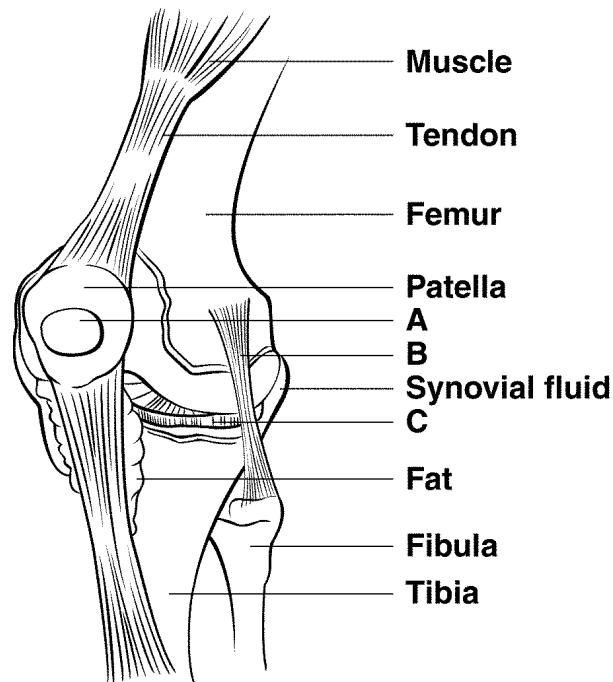


Figure 32–4

143. Briefly explain how motion would be affected if the structure labeled A in Figure 32–4 wasn't present in some moveable joints?
144. Explain which type of muscle is involved when you tie your shoelaces.
145. Each muscle fiber has an all-or-none response. How, then, can the strength of a muscle contraction vary?
146. In a left-handed person, which hand would probably have more strength? Why?
147. Based on what you know about muscles and movement, evaluate the following statement as true or false. Then briefly explain your answer.

Musicians must train their muscles in order to play instruments, just as athletes must train their muscles in order to play sports.

148. Evaluate the following statement as true or false. Briefly defend your answer.

The skin is nothing more than the outer covering of the body.

149. Compare the structures found in the epidermis with the structures found in the dermis.
150. If you were a scientist who was developing a new treatment for acne, what would your product need to do in order to be effective?

151. Why is it important to avoid tanning salons and wear a hat, sunglasses, and protective clothing whenever you spend time outside?
152. Why do larger organisms need a circulatory system?
153. Compare and contrast pulmonary circulation with systemic circulation. You may use a Venn diagram to plan your response.
154. Construct a table that shows the functions of the three types of blood vessels.
155. If the lymphatic system did not function, what would be the immediate effects on the human body?
156. Why is LDL (low-density lipoprotein) referred to as “bad” cholesterol while HDL (high-density lipoprotein) is referred to as “good” cholesterol?
157. Explain the relationship between air pressure outside the body (atmospheric pressure) and the movement of air into and out of the lungs.
158. Evaluate the following statement as true or false. Then defend your answer.

Smokers not only put their own health at risk, but also the health of their family and friends.
159. Define *target cell* and explain why all cells are not target cells for all hormones.
160. How do steroid hormones and nonsteroid hormones act differently on cells?

The Endocrine System

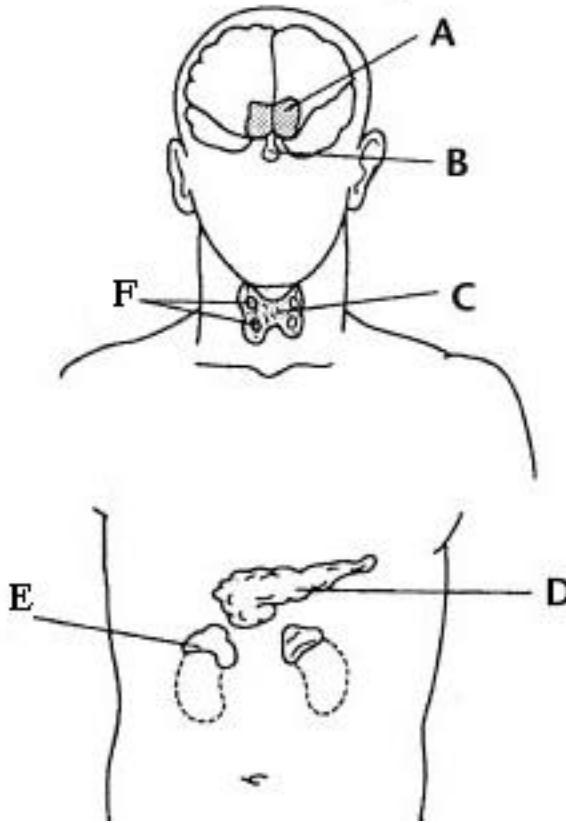


Figure 34-1

161. A woman visits her doctor with symptoms of low body temperature, lack of energy, and weight gain. What condition may be causing these symptoms? A problem with which organ in Figure 34-1 is the result of this condition?
162. How are the actions of glands and hormones in the endocrine system like a thermostat in a home heating system?
163. Construct a flow chart that shows the path through which sperm travels from the time they are produced until they are expelled from the male body.
164. Construct a Venn diagram in which you compare and contrast bacterial and viral sexually transmitted diseases. Include examples of each.
165. Many sperm may reach an egg in a Fallopian tube at the same time. What prevents more than one sperm from fertilizing an egg?
166. Sometimes during pregnancy, the placenta forms over the cervix. Why might this be a serious condition for the mother and fetus?
167. What is the role of oxytocin in childbirth?

168. Construct a graphic organizer based on the types of organisms that cause infectious diseases. The graphic organizer should include the pathogens' classification, how they infect an organism, and examples of each.
169. What are four ways you can help avoid contracting and spreading infectious diseases?
170. Construct a graphic organizer based on your body's nonspecific defenses.
171. What role do interferons play in the immune system? Are they effective against all pathogens?
172. Measles (rubeola) and German measles (rubella) are caused by different viruses. If you have recovered from rubeola, are you protected against infection with rubella? Why or why not?
173. Helper T cells are critical to the function of the immune system. If they are destroyed by an HIV infection, how will this affect the body's humoral immunity?
174. In general, what is the difference between the body's primary immune response and the body's secondary immune response?
175. Is a vaccination an example of active or passive immunity? Defend your answer.
176. Acyclovir is sometimes used to treat chickenpox and mononucleosis. This drug works by inhibiting the synthesis of viral DNA. Is acyclovir an antibiotic? Why or why not?
177. What can happen when an immune system overreacts to harmless pathogens?
178. Why is lupus classified as an autoimmune disease?
179. Zidovudine (AZT) is a drug that inhibits the enzyme HIV needs to multiply. What effect would you expect AZT to have on the number of T cells in an HIV-infected person's blood?

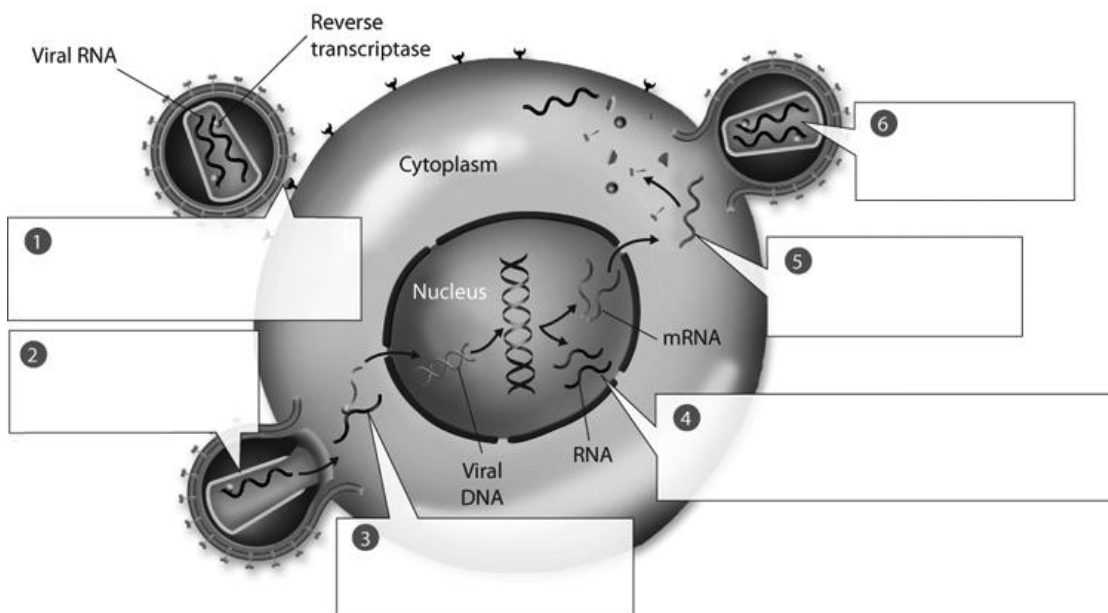


Figure 35–5

180. Figure 35–5 shows how HIV infects a cell. Fill in the boxes with a description of each step.

Other

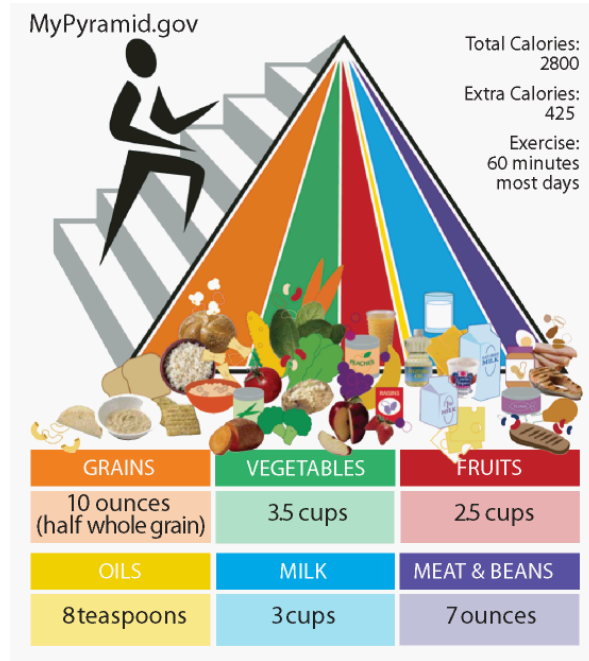


Figure 30–6

181. **Interpret Visuals** What is the significance of the figure climbing up the side of the pyramid in Figure 30–6?

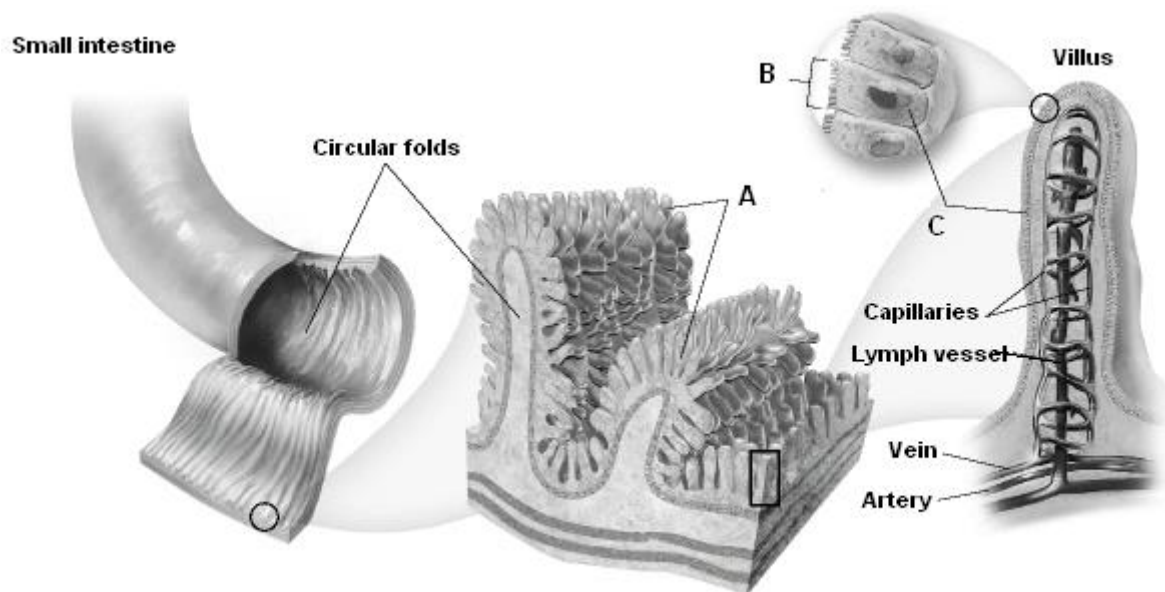


Figure 30–7

182. **Apply Concepts** Figure 30–7 shows a small intestine and two magnified pictures of its structure. What is the function of the small intestine?
183. **Interpret Visuals** In Figure 30–7, what structures are labeled A?
184. **Interpret Visuals** In Figure 30–7, what structures are labeled B?
185. **Apply Concepts** Based on your knowledge of the four tissues found in the body, which type of tissue, labeled C in Figure 30–7, would you expect to find inside the lining of the small intestine? Explain your answer.

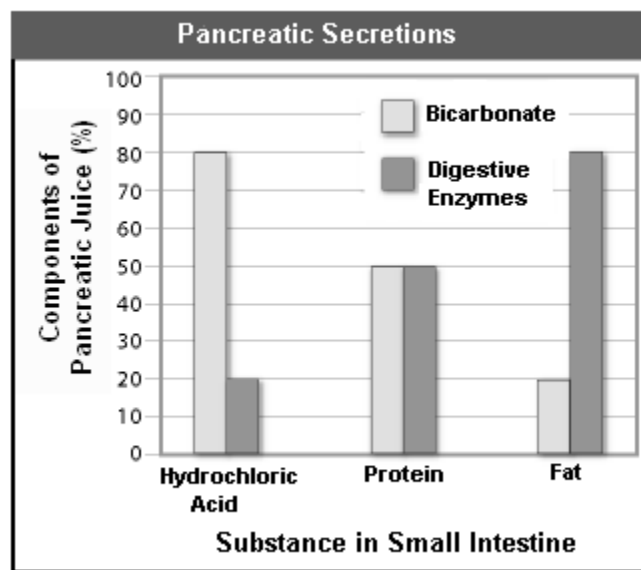


Figure 30–8

186. **Interpret Graphs** Figure 30–8 shows the secretions of the pancreas in response to three different substances in chyme. Each pair of bars represents the response of the pancreas to a different variable. What are the three variables?
187. **Interpret Graphs** In Figure 30–8, what is the specific variable that is being measured?
188. **Draw Conclusions** In response to which variable do digestive enzymes make up the highest percentage of secretions in Figure 30–8? What is the percentage?
189. **Apply Concepts** How would you explain why bicarbonate and digestive enzymes respond differently in two of the variables in Figure 30–8?

This diagram shows the structure of a synapse between the axon of one neuron and the dendrite of a neighboring neuron.

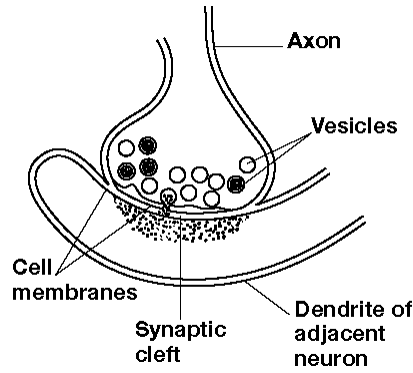


Figure 31-7

190. **Interpret Visuals** In Figure 31-7, which structures release neurotransmitters?
191. **Apply Concepts** What causes neurotransmitters to be released in Figure 31-7?
192. **Apply Concepts** Referring to Figure 31-7, after the neurotransmitters are released from the receptors on the receiving cell, what happens to the neurotransmitters?

Alcohol is a legal drug that is classified as a *depressant* because it causes the brain to slow down heart rate and breathing rate, lower blood pressure, and relax muscles. Blood alcohol concentration (BAC) is a measure of the amount of alcohol in the bloodstream. The following graphs illustrate how many alcoholic drinks consumed in one hour result in different levels of BAC in individuals of different masses. In some states, an adult driving with a BAC of 0.08% or higher is considered to be legally drunk.

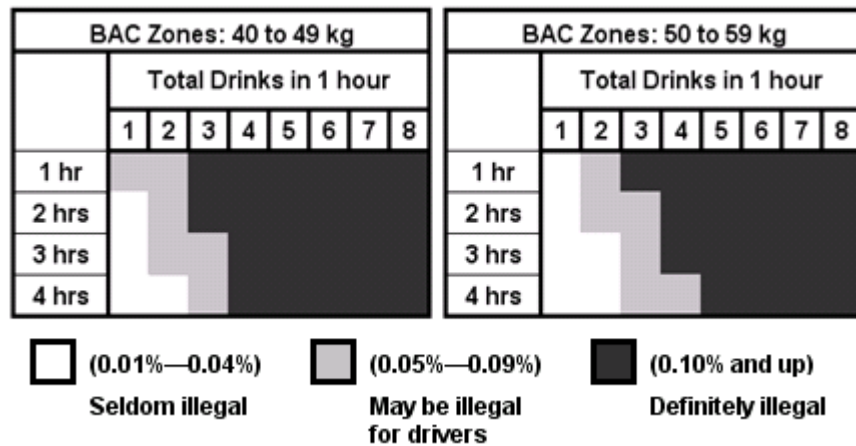


Figure 31-8

193. **Interpret Graphs** An individual has a mass of 45 kg and has had one drink. According to Figure 31-8, how long would it take for his or her BAC to be 0.04% or lower?
194. **Interpret Graphs** A 48-kg adult has had four drinks in an hour. According to Figure 31-8, could this person drive legally after three hours?

195. **Interpret Graphs** Based on Figure 31–8, how is the mass of an individual related to BAC levels?
196. **Apply Concepts** A 58-kg person has two cocktails just before dinner and a glass of wine with dinner 30 minutes later. According to Figure 31–8, how long would the individual be in the “Definitely illegal” category?

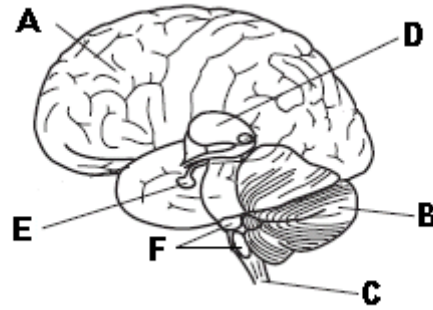


Figure 31–9

197. **Applying Concepts** Referring to Figure 31–9, which lettered structure is the control center for recognition and analysis of hunger, thirst, fatigue, anger, and body temperature?

Distribution of Bones in Adult Human Body

Axial skeleton		Appendicular skeleton	
Vertebral column:		Forelimbs:	
Cervical region	7	Hands	38
Thoracic region	12	Wrists	16
Lumber region	5	Arms	6
Sacrum	1	Shoulder girdle	4
Coccyx	1	Hindlimbs:	
Skull:		Feet	38
Cranium	8	Ankles	14
Facial portion	14	Legs	6
Middle ear bones	6	Kneecaps	2
Neck and chest regions:		Hip girdle	2
Hyoid (at base of tongue)	1		

Sternum	1
Ribs	24

Figure 32–5

198. **Apply Concepts** Look at Figure 32–5. Which part of the skeleton, the axial or appendicular, protects the internal organs of the body?
199. **Interpret Tables** Based on Figure 32–5, which two structures contain the most bones?

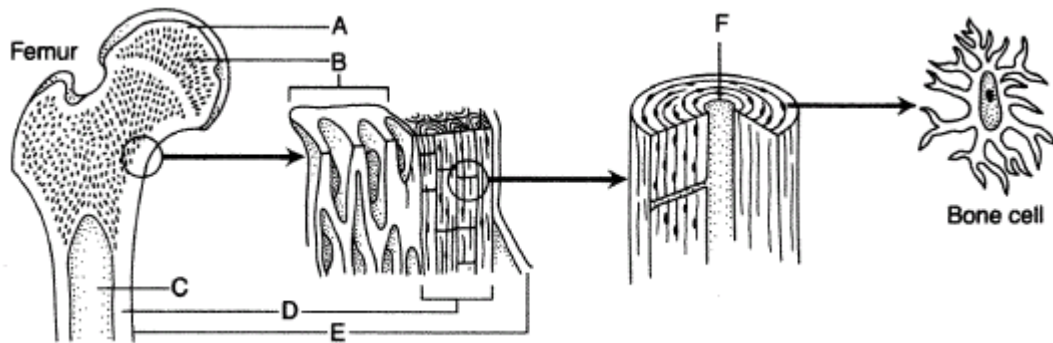


Figure 32–6

200. **Compare and Contrast** In Figure 32–6, which structures are labeled B and D? How do they compare?
201. **Apply Concepts** In Figure 32–6, which structure contains tissues that store fat? What are these tissues called?
202. **Interpret Visuals** Identify structure F in Figure 32–6. What does this structure contain?

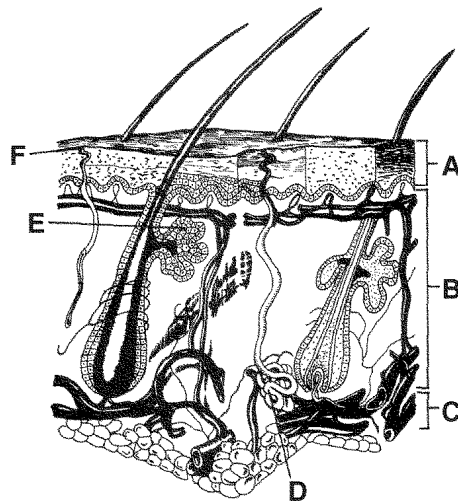


Figure 32–7

203. **Interpret Visuals** Identify the label that shows the layer of skin in which acne develops in Figure 32–7.

204. **Apply Concepts** How can the structure labeled E in Figure 32-7 lead to a pimple?
205. **Apply Concepts** In Figure 32-7, how does structure D help the body maintain homeostasis?
206. **Draw Conclusions** Use Figure 32-7 to explain why a slight scratch will probably not bleed.

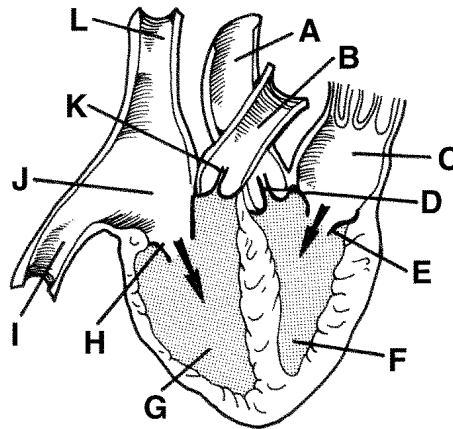


Figure 33-5

207. **Apply Concepts** What type of muscle makes up the organ shown in Figure 33-5? Why is structure F more muscular than structure G?
208. **Apply Concepts** What are the roles of the structures L and I in Figure 33-5?

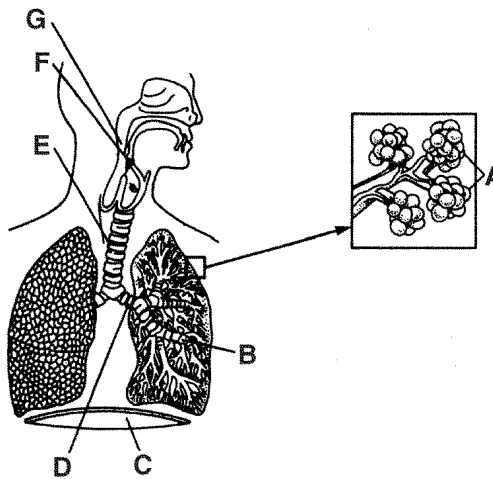


Figure 33-6

209. **Interpret Visuals** When you take a deep breath, into which structure(s) in Figure 33-6 does air move after leaving the trachea? Into what organ does the structure lead?
210. **Interpret Visuals** In Figure 33-6, what structure is labeled A? What is the role of the delicate network of capillaries that surrounds them?

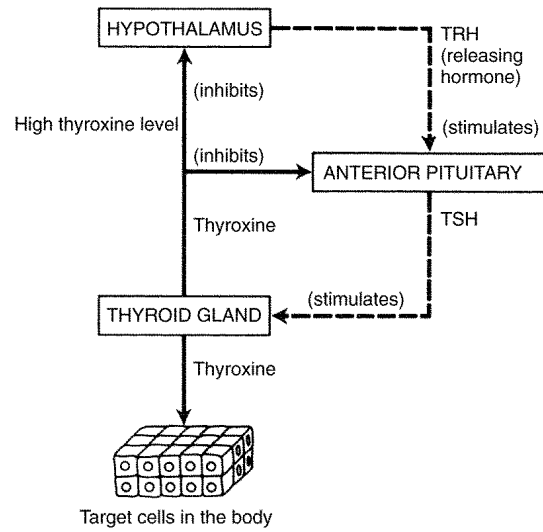


Figure 34-4

211. **Interpret Visuals** Based on Figure 34-4, what happens as the level of thyroxine increases in the blood?

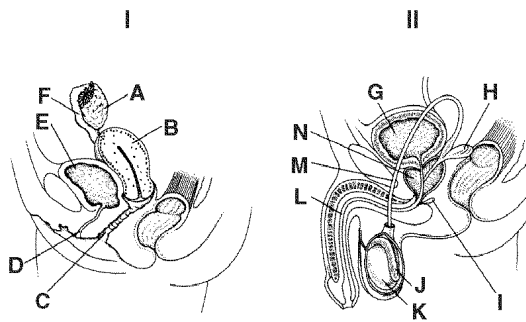


Figure 34-5

212. **Interpret Visuals** Which structure in Figure 34-5 produces sperm? Give both the name and the letter of this structure.

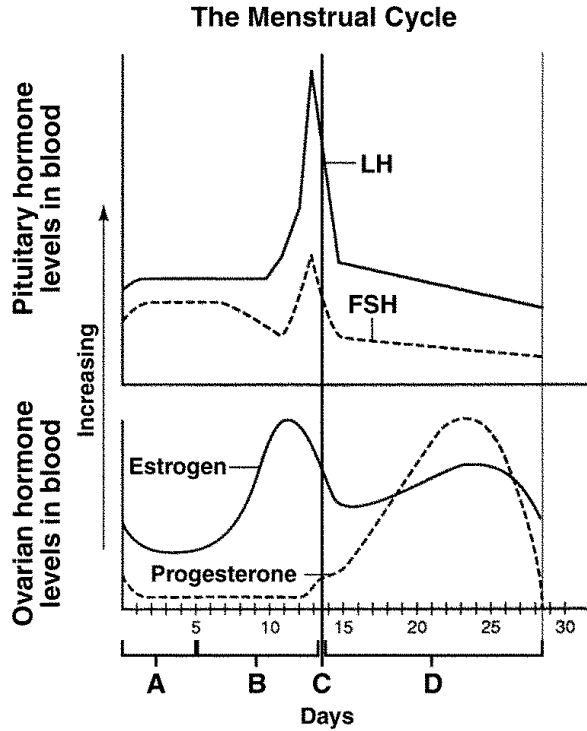


Figure 34–6

213. **Interpret Graphs** On which day or days in the cycle shown in Figure 34–6 is fertilization most likely to occur?
214. **Infer** When during the cycle shown in Figure 34–6 does a woman menstruate?
215. **Predict** How would the curve of progesterone levels in Figure 34–6 change if the egg were fertilized?

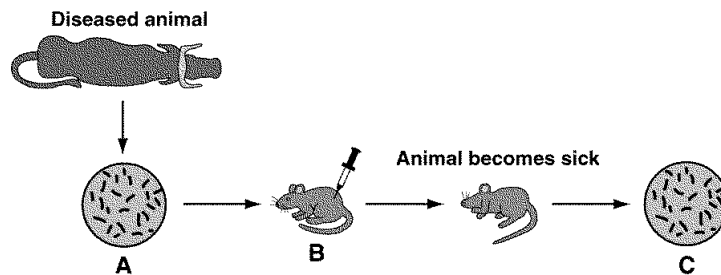


Figure 35–6

216. **Draw Conclusions** Assume that the cultures in A and C in Figure 35–6 are identical. What can you conclude from this experiment based on this information?

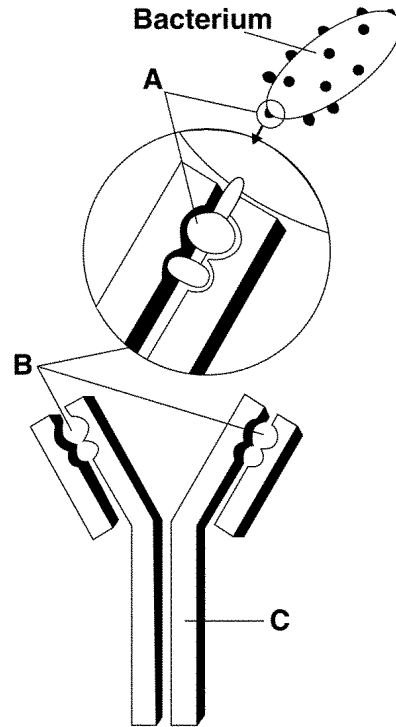


Figure 35–7

217. **Apply Concepts** Based on Figure 35–7, how is an antibody able to recognize a specific antigen?
218. **Apply Concepts** How do antibodies act as “signal flags” to other part of the immune system?

A scientist used a mathematical model that describes the interaction of the human immune system with HIV to simulate the effect of HIV drugs on HIV-infected patients. Her goal was to determine the optimal time to begin treating HIV-infected patients. Graphs A, B, and C show some of the results of the scientist’s simulation.

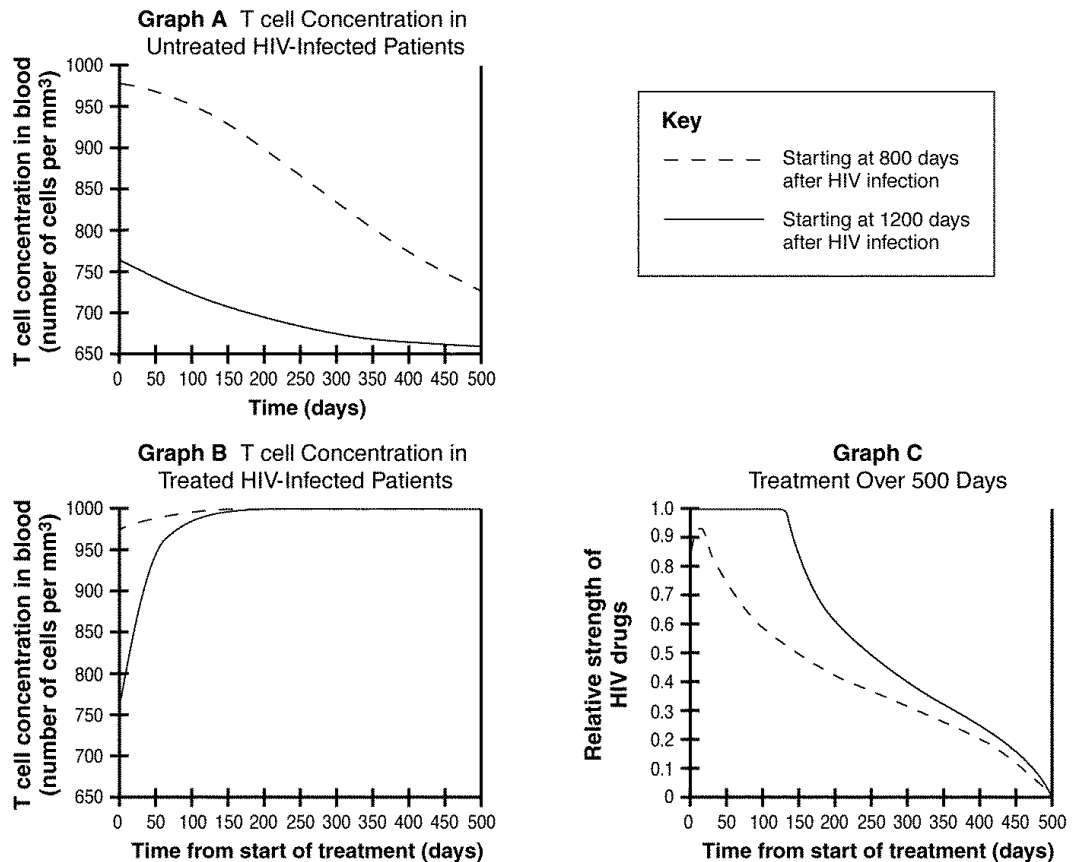


Figure 35–8

219. **Interpret Graphs** What do the two lines on Graph A in Figure 35–8 represent?
220. **Interpret Graphs** Based on Graphs A and B in Figure 35–8, what happens to T cell concentration between days 800 and 1200 during an HIV infection?

Essay

221. Name six of the body's systems and describe their functions.
222. Explain how scratching an itch is an example of feedback inhibition.
223. Write a paragraph evaluating whether your eating habits represent a balanced diet.
224. Rattlesnake venom breaks down the walls of the glomerulus. Why does a rattlesnake bite cause blood to appear in the urine?
225. How do the kidneys respond to an increased intake of water? Of salt?
226. Using the following terms, construct a graphic organizer to demonstrate the relationships among parts of the nervous system. Be sure to give a brief description of each term.

central nervous system, sensory division, somatic nervous system, nervous system, peripheral nervous system, motor division, autonomic nervous system

227. When you hear the phone ring, you pick it up to answer it. Many neurons are involved in this action. Write a paragraph describing how each type of neuron is involved.
228. Construct a table in which you describe the four types of lobes in the brain. The information in the table should include their location and function.
229. Do you think your fingertips or the palms of your hands have the greatest concentration of sensory receptors? Explain your answer.
230. Female gymnasts perform an Olympic event called the “balance beam.” In this event, they must demonstrate skills on a piece of equipment that is only four inches wide and forty-eight inches off the ground. To do this, they need a strong sense of balance. How do their bodies use their ears to determine motion and position?
231. How is an eye like a camera? How is it different?
232. Evaluate this statement as true or false: “The skeletal system is a rigid, lifeless support system for the rest of the body.” Defend your answer.
233. Why might a doctor X-ray the elbow of a very short 17-year-old boy, even if there has been no injury?
234. Getting ready for school each morning requires your body to move in a variety of ways. Each motion involves different types of joints. Describe three examples of how joints help you get ready for school. Be sure to identify the type of joint and the motion each joint produces.
235. Compare and contrast the three types of muscle tissue. Be sure to include their structures, their functions, and an example of each.
236. When a musician is playing the violin, the muscles in the upper arms are working in pairs. Describe this dual action.
237. How is the body’s circulatory system like a major transportation system in a city?
238. Just after a car accident, a teenage boy suffers from low blood pressure. Based on what you know about his blood pressure reading, what are two things his body will naturally do to help return his blood pressure back to normal?
239. Hemophilia is an inherited blood disorder in which an affected person may bleed continuously even after a minor injury. For people with hemophilia B, the disease is caused by a lack of the protein thromboplastin. Why would the lack of thromboplastin cause a person to bleed for a longer time than normal?
240. Construct a table that shows the lymphatic system’s roles in circulation, nutrient absorption, and immunity. The table should include a description of each role and a list of the major organs or structures involved.

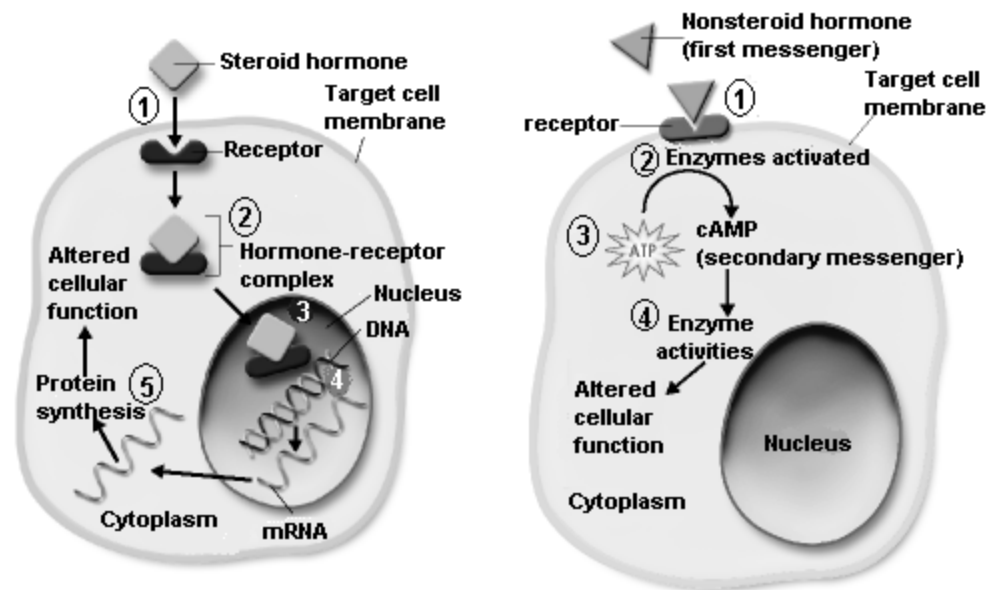


Figure 34–7

241. Using the diagrams in Figure 34–7, compare and contrast the ways that steroid and nonsteroid hormones act on target cells.
242. Explain the difference between the relationship of the hypothalamus and the anterior pituitary and the hypothalamus and posterior pituitary.
243. When you exercise vigorously, your body loses water in the form of sweat. How do feedback mechanisms in the endocrine system help you to maintain water balance?
244. Trace the path of an egg from its follicle. How does the path of a fertilized egg differ from that of an unfertilized egg?
245. Create a public service announcement that will be heard on the radio or read on the Internet in which you tell teens about the dangers of sexually transmitted diseases. Include the most common bacterial STD as well as those caused by other bacteria and viruses. State how they are spread, the damage they cause, and the way to treat and prevent them.
246. Compare and contrast human development during months 4–6 and months 7–9 after fertilization.
247. What is the germ theory of disease? Why is it incorrect to use the word “germ”? What do you think would be a better name for the theory?
248. Part of the body’s nonspecific response to disease is chemical in nature. Describe the body’s nonspecific chemical responses to pathogens.
249. In the last 100 years, the U.S. has seen a significant decline in the number of deaths caused by infectious disease. What are the two main factors that have caused this decline? How have they each contributed to this change?

250. How do you think the increase in the global trade market has affected the spread of emerging diseases? Explain.

Human Body Unit Practice Test Answer Section

MODIFIED TRUE/FALSE

1. ANS: T PTS: 1 DIF: L1
REF: p. 863 | p. 864 OBJ: 30.1.1 Describe how the human body is organized.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c BLM: comprehension
2. ANS: F, 110,000

PTS: 1 DIF: L3 REF: p. 868
OBJ: 30.2.1 Explain how food provides energy. BLM: analysis
3. ANS: F, increases

PTS: 1 DIF: L2 REF: p. 873
OBJ: 30.2.1 Explain how food provides energy. | 30.2.3 Explain how to plan a balanced diet.
BLM: comprehension
4. ANS: T PTS: 1 DIF: L1
REF: p. 870
OBJ: 30.2.2 Identify the essential nutrients your body needs and tell how each is important to the body.
STA: UT.BIO.2.1.b BLM: knowledge
5. ANS: T PTS: 1 DIF: L2
REF: p. 873 OBJ: 30.2.3 Explain how to plan a balanced diet.
BLM: evaluation
6. ANS: F, esophagus

PTS: 1 DIF: L2 REF: p. 877
OBJ: 30.3.2 Explain what happens during digestion.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c BLM: comprehension
7. ANS: F, diarrhea

PTS: 1 DIF: L2 REF: p. 881
OBJ: 30.3.2 Explain what happens during digestion. | 30.3.3 Describe how nutrients are absorbed into the bloodstream and wastes are eliminated from the body.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c BLM: comprehension
8. ANS: F, appendix

PTS: 1 DIF: L2 REF: p. 882
OBJ: 30.3.3 Describe how nutrients are absorbed into the bloodstream and wastes are eliminated from the body.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c
BLM: knowledge
9. ANS: T PTS: 1 DIF: L2
REF: p. 883
OBJ: 30.4.1 Describe the structures of the excretory system and explain their functions.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c BLM: comprehension
10. ANS: F, arteries

PTS: 1 DIF: L2 REF: p. 885

- OBJ: 30.4.2 Explain how the kidneys clean the blood. STA: UT.BIO.3.1.b | UT.BIO.3.1.c
BLM: knowledge
11. ANS: F, more
- PTS: 1 DIF: L2 REF: p. 886
OBJ: 30.4.2 Explain how the kidneys clean the blood. | 30.4.3 Describe how the kidneys maintain homeostasis. STA: UT.BIO.3.1.b | UT.BIO.3.1.c | UT.BIO.3.2.b
BLM: application
12. ANS: F, peripheral nervous system
- PTS: 1 DIF: L2 REF: p. 896 | p. 907
OBJ: 31.1.1 Identify the functions of the nervous system. | 31.3.2 Describe the functions of the motor division of the peripheral nervous system.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c | UT.BIO.3.1.b | UT.BIO.3.1.c
TOP: Foundation Edition BLM: analysis
13. ANS: F, dendrites
- PTS: 1 DIF: L1 REF: p. 897
OBJ: 31.1.2 Describe the function of neurons. TOP: Foundation Edition
BLM: knowledge
14. ANS: F, slower
- PTS: 1 DIF: L2 REF: p. 897
OBJ: 31.1.3 Describe how a nerve impulse is transmitted. TOP: Foundation Edition
BLM: analysis
15. ANS: T PTS: 1 DIF: L2
REF: p. 899 OBJ: 31.1.3 Describe how a nerve impulse is transmitted.
TOP: Foundation Edition BLM: analysis
16. ANS: F, gray matter
- PTS: 1 DIF: L2 REF: p. 902
OBJ: 31.2.1 Discuss the functions of the brain and spinal cord. STA: UT.BIO.3.1.b | UT.BIO.3.1.c
TOP: Foundation Edition BLM: knowledge
17. ANS: T PTS: 1 DIF: L1
REF: p. 906
OBJ: 31.3.1 Describe the functions of the sensory division of the peripheral nervous system. | 31.4.1 Discuss the sense of touch and identify the various types of sensory receptors in the skin.
STA: UT.BIO.3.1.b | UT.BIO.3.1.c | UT.BIO.3.1.c TOP: Foundation Edition
BLM: application
18. ANS: F, autonomic
- PTS: 1 DIF: L2 REF: p. 904
OBJ: 31.3.2 Describe the functions of the motor division of the peripheral nervous system.
STA: UT.BIO.3.1.b | UT.BIO.3.1.c TOP: Foundation Edition
BLM: application
19. ANS: F, pain receptors
- PTS: 1 DIF: L2 REF: p. 909
OBJ: 31.4.1 Discuss the sense of touch and identify the various types of sensory receptors in the skin.
STA: UT.BIO.3.1.c TOP: Foundation Edition

- BLM: analysis
20. ANS: F, Most
- PTS: 1 DIF: L2 REF: p. 910
 OBJ: 31.4.2 Explain the relationship between smell and taste. STA: UT.BIO.3.1.c
 TOP: Foundation Edition BLM: knowledge
21. ANS: F, semicircular canals
- PTS: 1 DIF: L2 REF: p. 911
 OBJ: 31.4.3 Identify the parts of the ears that make hearing and balance possible.
 STA: UT.BIO.3.1.c TOP: Foundation Edition
 BLM: comprehension
22. ANS: F, rods
- PTS: 1 DIF: L2 REF: p. 913
 OBJ: 31.4.4 Describe the major parts of the eye and explain how the eye enables us to see.
 STA: UT.BIO.3.1.c TOP: Foundation Edition
 BLM: application
23. ANS: T PTS: 1 DIF: L2
 REF: p. 912 | p. 913
 OBJ: 31.4.4 Describe the major parts of the eye and explain how the eye enables us to see.
 STA: UT.BIO.3.1.c TOP: Foundation Edition
 BLM: comprehension
24. ANS: T PTS: 1 DIF: L2
 REF: p. 922 OBJ: 32.1.1 List the structures and functions of the skeletal system.
 STA: UT.BIO.3.2.b TOP: Foundation Edition
 BLM: application
25. ANS: F, Yellow
- PTS: 1 DIF: L1 REF: p. 924
 OBJ: 32.1.2 Describe the structure of a typical bone. STA: UT.BIO.3.2.b
 TOP: Foundation Edition BLM: comprehension
26. ANS: T PTS: 1 DIF: L2
 REF: p. 929
 OBJ: 32.2.1 Describe the structure and function of each of the three types of muscle tissue.
 STA: UT.BIO.3.2.b | UT.BIO.3.2.d BLM: application
27. ANS: T PTS: 1 DIF: L1
 REF: p. 930 OBJ: 32.2.2 Describe the mechanism of muscle contraction.
 STA: UT.BIO.3.2.d TOP: Foundation Edition
 BLM: knowledge
28. ANS: F, weaken
- PTS: 1 DIF: L2 REF: p. 933
 OBJ: 32.2.3 Describe the interaction of muscles, bones, and tendons to produce movement.
 STA: UT.BIO.3.2.c BLM: comprehension
29. ANS: F, vitamin D
- PTS: 1 DIF: L1 REF: p. 935
 OBJ: 32.3.1 State the functions of the integumentary system. STA: UT.BIO.3.2.a
 TOP: Foundation Edition BLM: knowledge

30. ANS: T PTS: 1 DIF: L2
REF: p. 936 OBJ: 32.3.2 Identify the structures of the integumentary system.
STA: UT.BIO.3.2.b BLM: knowledge
31. ANS: F, ultraviolet
PTS: 1 DIF: L1 REF: p. 939
OBJ: 32.3.3 Describe some of the problems that affect the skin.
TOP: Foundation Edition BLM: knowledge
32. ANS: T PTS: 1 DIF: L2
REF: p. 951
OBJ: 33.1.2 Describe the structure of the heart and explain how it pumps blood through the body.
STA: UT.BIO.3.1.a | UT.BIO.3.1.b | UT.BIO.3.1.c BLM: comprehension
33. ANS: F, toward
PTS: 1 DIF: L2 REF: p. 952
OBJ: 33.1.3 Name three types of blood vessels in the circulatory system.
BLM: comprehension
34. ANS: T PTS: 1 DIF: L2
REF: p. 955
OBJ: 33.2.1 Explain the functions of blood plasma, red blood cells, white blood cells, and platelets.
BLM: application
35. ANS: F, valves
PTS: 1 DIF: L2 REF: p. 956
OBJ: 33.2.2 Describe the role of the lymphatic system. STA: UT.BIO.3.2.b | UT.BIO.3.2.c
BLM: comprehension
36. ANS: F, high
PTS: 1 DIF: L2 REF: p. 959
OBJ: 33.2.3 List three common circulatory diseases. BLM: evaluation
37. ANS: F, LDL
PTS: 1 DIF: L2 REF: p. 959
OBJ: 33.2.4 Describe the connection between cholesterol and circulatory disease.
BLM: comprehension
38. ANS: F, carbon dioxide
PTS: 1 DIF: L1 REF: p. 963
OBJ: 33.3.1 Identify the structures of the respiratory system and describe their functions.
STA: UT.BIO.3.1.b | UT.BIO.3.1.c | UT.BIO.3.2.a BLM: comprehension
39. ANS: T PTS: 1 DIF: L2
REF: p. 966 OBJ: 33.3.2 Describe gas exchange. BLM: analysis
40. ANS: T PTS: 1 DIF: L2
REF: p. 967 OBJ: 33.3.3 Describe how breathing is controlled.
STA: UT.BIO.3.1.b | UT.BIO.3.1.c | UT.BIO.3.2.a BLM: knowledge
41. ANS: F, increases
PTS: 1 DIF: L2 REF: p. 968
OBJ: 33.3.4 Describe the effects of smoking on the respiratory system.
BLM: knowledge

42. ANS: F, Endocrine

PTS: 1 DIF: L1 REF: p. 979
OBJ: 34.1.1 Describe the structure and function of the endocrine system.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: knowledge

43. ANS: T PTS: 1 DIF: L2
REF: p. 984 OBJ: 34.2.1 Identify the functions of the major endocrine glands.
STA: UT.BIO.3.2.a TOP: Foundation Edition
BLM: application

44. ANS: F, increasing

PTS: 1 DIF: L3 REF: p. 985
OBJ: 34.2.2 Explain how endocrine glands are controlled. STA: UT.BIO.3.2.a
BLM: application

45. ANS: T PTS: 1 DIF: L2
REF: p. 988 OBJ: 34.3.1 Describe the effects the sex hormones have on development.
TOP: Foundation Edition BLM: comprehension

46. ANS: T, seminal fluid

PTS: 1 DIF: L2 REF: p. 990
OBJ: 34.3.2 Name and discuss the structures of the male reproductive system.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b TOP: Foundation Edition
BLM: knowledge

47. ANS: F, first

PTS: 1 DIF: L2 REF: p. 993
OBJ: 34.3.3 Name and discuss the structures of the female reproductive system.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b BLM: comprehension

48. ANS: F, an increase

PTS: 1 DIF: L3 REF: p. 993
OBJ: 34.3.3 Name and discuss the structures of the female reproductive system.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b BLM: comprehension

49. ANS: F, before

PTS: 1 DIF: L1 REF: p. 994
OBJ: 34.3.4 Describe some of the most common sexually transmitted diseases.
TOP: Foundation Edition BLM: comprehension

50. ANS: F, implantation

PTS: 1 DIF: L2 REF: p. 995
OBJ: 34.4.1 Describe fertilization and the early stages of development.
TOP: Foundation Edition BLM: knowledge

51. ANS: F, Fallopian tubes

PTS: 1 DIF: L2 REF: p. 995
OBJ: 34.4.1 Describe fertilization and the early stages of development.
TOP: Foundation Edition BLM: comprehension

52. ANS: T PTS: 1 DIF: L2

- PTS: 1 DIF: L1 REF: p. 865 OBJ: 30.1.2 Explain homeostasis.
STA: UT.BIO.3.2.b BLM: knowledge
63. ANS: ATP
- PTS: 1 DIF: L1 REF: p. 865
OBJ: 30.2.1 Explain how food provides energy. BLM: knowledge
64. ANS: minerals
- PTS: 1 DIF: L1 REF: p. 872
OBJ: 30.2.2 Identify the essential nutrients your body needs and tell how each is important to the body.
STA: UT.BIO.2.1.b BLM: comprehension
65. ANS: Food labels
- PTS: 1 DIF: L2 REF: p. 873
OBJ: 30.2.3 Explain how to plan a balanced diet. BLM: application
66. ANS: chyme
- PTS: 1 DIF: L2 REF: p. 877
OBJ: 30.3.1 Describe the organs of the digestive system and explain their functions. | 30.3.2 Explain what happens during digestion. STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c
BLM: comprehension
67. ANS: mechanical
- PTS: 1 DIF: L2 REF: p. 876
OBJ: 30.3.1 Describe the organs of the digestive system and explain their functions. | 30.3.2 Explain what happens during digestion. STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c
BLM: comprehension
68. ANS: sodium bicarbonate
- PTS: 1 DIF: L2 REF: p. 878
OBJ: 30.3.1 Describe the organs of the digestive system and explain their functions. | 30.3.2 Explain what happens during digestion. STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c
BLM: knowledge
69. ANS: surface area
- PTS: 1 DIF: L3 REF: p. 880
OBJ: 30.3.2 Explain what happens during digestion.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c BLM: comprehension
70. ANS: urine
- PTS: 1 DIF: L1 REF: p. 886
OBJ: 30.4.1 Describe the structures of the excretory system and explain their functions. | 30.4.3 Describe how the kidneys maintain homeostasis.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c | UT.BIO.3.2.b
BLM: application
71. ANS: kidney transplantation
- PTS: 1 DIF: L1 REF: p. 887
OBJ: 30.4.3 Describe how the kidneys maintain homeostasis. STA: UT.BIO.3.2.b

- BLM: knowledge
72. ANS: nodes
- PTS: 1 DIF: L2 REF: p. 897
OBJ: 31.1.2 Describe the function of neurons. TOP: Foundation Edition
BLM: knowledge
73. ANS: brain stem
- PTS: 1 DIF: L2 REF: p. 903
OBJ: 31.2.1 Discuss the functions of the brain and spinal cord. STA: UT.BIO.3.1.b | UT.BIO.3.1.c
TOP: Foundation Edition BLM: application
74. ANS: dopamine
- PTS: 1 DIF: L2 REF: p. 904
OBJ: 31.2.2 Describe the effects of drugs on the brain. TOP: Foundation Edition
BLM: knowledge
75. ANS: somatic
- PTS: 1 DIF: L2 REF: p. 907
OBJ: 31.3.2 Describe the functions of the motor division of the peripheral nervous system.
STA: UT.BIO.3.1.b | UT.BIO.3.1.c TOP: Foundation Edition
BLM: application
76. ANS: hypothalamus
- PTS: 1 DIF: L3 REF: p. 909
OBJ: 31.4.1 Discuss the sense of touch and identify the various types of sensory receptors in the skin.
STA: UT.BIO.3.1.c TOP: Foundation Edition
BLM: knowledge
77. ANS: taste buds
- PTS: 1 DIF: L1 REF: p. 910
OBJ: 31.4.2 Explain the relationship between smell and taste. STA: UT.BIO.3.1.c
TOP: Foundation Edition BLM: knowledge
78. ANS: ears
- PTS: 1 DIF: L1 REF: p. 911
OBJ: 31.4.3 Identify the parts of the ears that make hearing and balance possible.
STA: UT.BIO.3.1.c TOP: Foundation Edition
BLM: comprehension
79. ANS: lens
- PTS: 1 DIF: L2 REF: p. 912
OBJ: 31.4.4 Describe the major parts of the eye and explain how the eye enables us to see.
STA: UT.BIO.3.1.c TOP: Foundation Edition
BLM: comprehension
80. ANS: cones
- PTS: 1 DIF: L2 REF: p. 913
OBJ: 31.4.4 Describe the major parts of the eye and explain how the eye enables us to see.
STA: UT.BIO.3.1.c TOP: Foundation Edition

- BLM: application
81. ANS: cytoskeletons
- PTS: 1 DIF: L3 REF: p. 922
OBJ: 32.1.1 List the structures and functions of the skeletal system.
STA: UT.BIO.3.2.b BLM: knowledge
82. ANS: immovable
- PTS: 1 DIF: L1 REF: p. 926
OBJ: 32.1.3 List the different kinds of joints and describe the range of motion of each.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: comprehension
83. ANS: sliding-filament model
- PTS: 1 DIF: L2 REF: p. 930
OBJ: 32.2.2 Describe the mechanism of muscle contraction. STA: UT.BIO.3.2.d
TOP: Foundation Edition BLM: knowledge
84. ANS: neuromuscular junction
- PTS: 1 DIF: L2 REF: p. 931
OBJ: 32.2.2 Describe the mechanism of muscle contraction. STA: UT.BIO.3.2.d
BLM: knowledge
85. ANS: triceps
- PTS: 1 DIF: L2 REF: p. 932
OBJ: 32.2.3 Describe the interaction of muscles, bones, and tendons to produce movement.
STA: UT.BIO.3.2.c TOP: Foundation Edition
BLM: application
86. ANS: integumentary
- PTS: 1 DIF: L1 REF: p. 935
OBJ: 32.3.1 State the functions of the integumentary system. STA: UT.BIO.3.2.a
TOP: Foundation Edition BLM: knowledge
87. ANS: melanin
- PTS: 1 DIF: L1 REF: p. 936
OBJ: 32.3.2 Identify the structures of the integumentary system.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: application
88. ANS: dermis
- PTS: 1 DIF: L1 REF: p. 937
OBJ: 32.3.2 Identify the structures of the integumentary system.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: knowledge
89. ANS: histamine
- PTS: 1 DIF: L2 REF: p. 938
OBJ: 32.3.3 Describe some of the problems that affect the skin.
BLM: application

90. ANS: oxygen

PTS: 1 DIF: L2 REF: p. 948
OBJ: 33.1.1 Identify the functions of the human circulatory system.
STA: UT.BIO.3.2.b BLM: comprehension

91. ANS: systemic

PTS: 1 DIF: L2 REF: p. 950
OBJ: 33.1.2 Describe the structure of the heart and explain how it pumps blood through the body.
STA: UT.BIO.3.1.a | UT.BIO.3.1.b | UT.BIO.3.1.c BLM: comprehension

92. ANS: blood pressure

PTS: 1 DIF: L1 REF: p. 953
OBJ: 33.1.3 Name three types of blood vessels in the circulatory system.
BLM: knowledge

93. ANS: 120/80

PTS: 1 DIF: L1 REF: p. 953
OBJ: 33.1.3 Name three types of blood vessels in the circulatory system.
BLM: knowledge

94. ANS: hemoglobin

PTS: 1 DIF: L2 REF: p. 954
OBJ: 33.2.1 Explain the functions of blood plasma, red blood cells, white blood cells, and platelets.
BLM: knowledge

95. ANS: water

PTS: 1 DIF: L1 REF: p. 954
OBJ: 33.2.1 Explain the functions of blood plasma, red blood cells, white blood cells, and platelets.
BLM: comprehension

96. ANS: lymph nodes

PTS: 1 DIF: L1 REF: p. 957
OBJ: 33.2.2 Describe the role of the lymphatic system. STA: UT.BIO.3.2.b | UT.BIO.3.2.c
BLM: application

97. ANS: atherosclerosis

PTS: 1 DIF: L1 REF: p. 958
OBJ: 33.2.3 List three common circulatory diseases. BLM: knowledge

98. ANS: statins

PTS: 1 DIF: L3 REF: p. 961
OBJ: 33.2.4 Describe the connection between cholesterol and circulatory disease.
BLM: knowledge

99. ANS: larynx

PTS: 1 DIF: L1 REF: p. 964
OBJ: 33.3.1 Identify the structures of the respiratory system and describe their functions.
STA: UT.BIO.3.1.b | UT.BIO.3.1.c | UT.BIO.3.2.a BLM: application

100. ANS: nervous

- PTS: 1 DIF: L1 REF: p. 967
 OBJ: 33.3.3 Describe how breathing is controlled.
 STA: UT.BIO.3.1.b | UT.BIO.3.1.c | UT.BIO.3.2.a BLM: comprehension
 101. ANS: endocrine, blood
- PTS: 1 DIF: L1 REF: p. 979
 OBJ: 34.1.1 Describe the structure and function of the endocrine system.
 STA: UT.BIO.3.2.b TOP: Foundation Edition
 BLM: knowledge
 102. ANS: lipids
- PTS: 1 DIF: L2 REF: p. 980
 OBJ: 34.1.2 Explain how hormones work. TOP: Foundation Edition
 BLM: comprehension
 103. ANS: hypothalamus, anterior pituitary gland
- PTS: 1 DIF: L2 REF: p. 987
 OBJ: 34.2.2 Explain how endocrine glands are controlled. STA: UT.BIO.3.2.a
 BLM: comprehension
 104. ANS: Puberty
- PTS: 1 DIF: L1 REF: p. 988
 OBJ: 34.3.1 Describe the effects the sex hormones have on development.
 TOP: Foundation Edition BLM: knowledge
 105. ANS: scrotum
- PTS: 1 DIF: L1 REF: p. 989
 OBJ: 34.3.2 Name and discuss the structures of the male reproductive system.
 STA: UT.BIO.3.2.a | UT.BIO.3.2.b TOP: Foundation Edition
 BLM: application
 106. ANS: follicle
- PTS: 1 DIF: L1 REF: p. 993
 OBJ: 34.3.3 Name and discuss the structures of the female reproductive system.
 STA: UT.BIO.3.2.a | UT.BIO.3.2.b TOP: Foundation Edition
 BLM: comprehension
 107. ANS:
 fertilization
 pregnancy
- PTS: 1 DIF: L2 REF: p. 995
 OBJ: 34.4.1 Describe fertilization and the early stages of development.
 TOP: Foundation Edition BLM: analysis
 108. ANS: gastrulation, endoderm
- PTS: 1 DIF: L2 REF: p. 997
 OBJ: 34.4.1 Describe fertilization and the early stages of development.
 TOP: Foundation Edition BLM: comprehension
 109. ANS: placenta

- PTS: 1 DIF: L2 REF: p. 998 | p. 1001
OBJ: 34.4.1 Describe fertilization and the early stages of development. | 34.4.2 Identify the major events of later stages of development. BLM: comprehension
110. ANS: infectious
- PTS: 1 DIF: L1 REF: p. 1010
OBJ: 35.1.1 Identify the causes of infectious disease. TOP: Foundation Edition
BLM: knowledge
111. ANS: vectors
- PTS: 1 DIF: L1 REF: p. 1013
OBJ: 35.1.2 Explain how infectious diseases are spread. TOP: Foundation Edition
BLM: application
112. ANS: pathogens
- PTS: 1 DIF: L1 REF: p. 1014
OBJ: 35.2.1 Describe the body's nonspecific defenses against invading pathogens.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: comprehension
113. ANS: histamines
- PTS: 1 DIF: L2 REF: p. 1014
OBJ: 35.2.1 Describe the body's nonspecific defenses against invading pathogens.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: knowledge
114. ANS: antigens
- PTS: 1 DIF: L1 REF: p. 1016
OBJ: 35.2.2 Describe the function of the immune system's specific defenses.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: application
115. ANS: helper
- PTS: 1 DIF: L1 REF: p. 1018 | p. 1019
OBJ: 35.2.3 List the body's specific defenses against pathogens.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: comprehension
116. ANS: antibodies
- PTS: 1 DIF: L1 REF: p. 1016
OBJ: 35.2.3 List the body's specific defenses against pathogens.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: comprehension
117. ANS: Edward Jenner
- PTS: 1 DIF: L2 REF: p. 1020
OBJ: 35.3.1 Distinguish between active immunity and passive immunity.
TOP: Foundation Edition BLM: knowledge
118. ANS: bacteria

PTS: 1 DIF: L1 REF: p. 1021
OBJ: 35.3.2 Describe how public health measures and medications fight disease.
TOP: Foundation Edition BLM: knowledge

119. ANS: autoimmune

PTS: 1 DIF: L2 REF: p. 1024
OBJ: 35.4.1 Explain what happens when the immune system overreacts to harmless pathogens.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: application

120. ANS: AIDS

PTS: 1 DIF: L1 REF: p. 1026
OBJ: 35.4.2 Describe how HIV is transmitted and how it affects the immune system.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: comprehension

SHORT ANSWER

121. ANS:

A tissue is a group of similar cells that perform a single function. An organ is a group of tissues that work together to perform a complex function.

PTS: 1 DIF: L2 REF: p. 862 | p. 863
OBJ: 30.1.1 Describe how the human body is organized.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c BLM: analysis

122. ANS:

Molecules in food contain chemical energy that cells use to produce ATP. Food also supplies raw materials your body needs to build and repair tissue.

PTS: 1 DIF: L1 REF: p. 868
OBJ: 30.2.1 Explain how food provides energy. BLM: comprehension

123. ANS:

Structure A is unsaturated fat and **Structure B** is saturated fat. Saturated fat is solid at room temperature and is associated with heart problems. An example is butter. Unsaturated fat is liquid at room temperature and is not associated with heart problems. An example is olive oil.

PTS: 1 DIF: L2 REF: p. 870
OBJ: 30.2.2 Identify the essential nutrients your body needs and tell how each is important to the body.
STA: UT.BIO.2.1.b BLM: synthesis

124. ANS:

Fiber is a complex carbohydrate called cellulose. It is important because it helps muscles move food and wastes through your digestive system.

PTS: 1 DIF: L2 REF: p. 869
OBJ: 30.2.2 Identify the essential nutrients your body needs and tell how each is important to the body.
STA: UT.BIO.2.1.b BLM: comprehension

125. ANS:

The process is known as peristalsis. During peristalsis, smooth muscles contract in waves pushing the chewed clump of food through the esophagus and into the stomach.

PTS: 1 DIF: L2 REF: p. 877
OBJ: 30.3.1 Describe the organs of the digestive system and explain their functions. | 30.3.2 Explain what happens during digestion. STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c
BLM: comprehension

126. ANS:

The flow chart should show an understanding that waste-filled blood enters the kidney through the renal artery into the nephron. Inside the nephron it is filtered in the glomerulus. Cleaned blood leaves the kidney through the renal vein. Waste products leave the kidney through the collecting duct, then the ureter.

PTS: 1 DIF: L3 REF: p. 885
OBJ: 30.4.1 Describe the structures of the excretory system and explain their functions. | 30.4.2 Explain how the kidneys clean the blood.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c | UT.BIO.3.1.b | UT.BIO.3.1.c
BLM: synthesis

127. ANS:

The doctor might recommend that you drink more fluids because the water level in your blood is low.

PTS: 1 DIF: L2 REF: p. 886
OBJ: 30.4.3 Describe how the kidneys maintain homeostasis. STA: UT.BIO.3.2.b
BLM: application

128. ANS:

Her brother is able to survive after donating his kidney because he has two and he can still survive with only one.

PTS: 1 DIF: L2 REF: p. 887
OBJ: 30.4.3 Describe how the kidneys maintain homeostasis. STA: UT.BIO.3.2.b
BLM: evaluation

129. ANS:

They maintain homeostasis by removing waste products from the blood, maintaining blood pH, and regulating water content.

PTS: 1 DIF: L2 REF: p. 886
OBJ: 30.4.3 Describe how the kidneys maintain homeostasis. STA: UT.BIO.3.2.b
BLM: comprehension

130. ANS:

Impulses travel faster down axons that have myelin sheaths than they travel down axons without them.

PTS: 1 DIF: L2 REF: p. 897
OBJ: 31.1.2 Describe the function of neurons. TOP: Foundation Edition
BLM: evaluation

131. ANS:

An impulse will not be able to pass from one cell to another.

PTS: 1 DIF: L2 REF: p. 900
OBJ: 31.1.3 Describe how a nerve impulse is transmitted. TOP: Foundation Edition
BLM: analysis

132. ANS:

The neuron is at rest because the gated sodium and potassium channels are closed. Also, the concentration of K^+ ions is higher inside the cell than it is outside the cell.

PTS: 1 DIF: L3 REF: p. 898
OBJ: 31.1.3 Describe how a nerve impulse is transmitted. BLM: analysis

133. ANS:

Impulses are always transmitted in one direction across the synapse because axons, not dendrites, release neurotransmitters.

PTS: 1 DIF: L2 REF: p. 900
OBJ: 31.1.3 Describe how a nerve impulse is transmitted. TOP: Foundation Edition
BLM: analysis

134. ANS:

The brain stem controls or is involved in some of the body's most important functions, including breathing, heart rate, and blood pressure regulation. These involuntary processes are essential to life, so the disruption of any of these processes can cause death.

PTS: 1 DIF: L3 REF: p. 903
OBJ: 31.2.1 Discuss the functions of the brain and spinal cord. STA: UT.BIO.3.1.b | UT.BIO.3.1.c
BLM: analysis

135. ANS:

A drug user's brain reacts to excessive dopamine by reducing the number of receptors for the neurotransmitter. Because there are fewer receptors, larger amounts of the drug are required to produce the same high.

PTS: 1 DIF: L3 REF: p. 904
OBJ: 31.2.2 Describe the effects of drugs on the brain. BLM: analysis

136. ANS:

Smells from food activate the chemoreceptors. Going on amusement rides activates mechanoreceptors. Photoreceptors are stimulated by the sunshine or flashing lights.

PTS: 1 DIF: L2 REF: p. 906
OBJ: 31.3.1 Describe the functions of the sensory division of the peripheral nervous system.
STA: UT.BIO.3.1.b | UT.BIO.3.1.c TOP: Foundation Edition
BLM: analysis

137. ANS:

The chemical substances that make jalapeno peppers taste "hot" actually bind to thermoreceptors in the mouth.

PTS: 1 DIF: L2 REF: p. 909
OBJ: 31.4.1 Discuss the sense of touch and identify the various types of sensory receptors in the skin.
STA: UT.BIO.3.1.c BLM: analysis

138. ANS:

It is incorrect because technically most of what we perceive as "taste" is actually the smell of food.

PTS: 1 DIF: L2 REF: p. 910
OBJ: 31.4.2 Explain the relationship between smell and taste. STA: UT.BIO.3.1.c
TOP: Foundation Edition BLM: evaluation

139. ANS:

Vibrations from the oval window cause waves in the fluid-filled cochlea. The waves cause the movement of hair cells that line the cochlea. These hair cells send nerve impulses to the brain.

PTS: 1 DIF: L3 REF: p. 911
OBJ: 31.4.3 Identify the parts of the ears that make hearing and balance possible.
STA: UT.BIO.3.1.c BLM: synthesis

140. ANS:

Both rods and cones are photoreceptors in the retina. Rods are sensitive to light but do not distinguish colors. Cones are less sensitive to light than rods, but cones respond to light of different colors.

PTS: 1 DIF: L2 REF: p. 913
OBJ: 31.4.4 Describe the major parts of the eye and explain how the eye enables us to see.
STA: UT.BIO.3.1.c TOP: Foundation Edition
BLM: analysis

141. ANS:

In osteoporosis, osteoclasts break down bone faster than osteoblasts rebuild it. This leads to a decrease in bone density and therefore makes bones weaker.

PTS: 1 DIF: L2 REF: p. 925
OBJ: 32.1.2 Describe the structure of a typical bone. STA: UT.BIO.3.2.b
TOP: Foundation Edition BLM: application

142. ANS:

If spongy bone had a solid structure rather than a latticework structure, it would be more dense, and therefore it would have more mass. This would make the body heavier.

PTS: 1 DIF: L3 REF: p. 924
OBJ: 32.1.2 Describe the structure of a typical bone. STA: UT.BIO.3.2.b
BLM: synthesis

143. ANS:

Without bursae, there would be an increase in friction between the bones of a joint and any tissue in which they come in contact. This would make motion painful and in some cases difficult.

PTS: 1 DIF: L2 REF: p. 927
OBJ: 32.1.3 List the different kinds of joints and describe the range of motion of each.
STA: UT.BIO.3.2.b BLM: synthesis

144. ANS:

Tying shoelaces requires moving the arms and the fingers. This type of movement is done by skeletal muscles.

PTS: 1 DIF: L2 REF: p. 929
OBJ: 32.2.1 Describe the structure and function of each of the three types of muscle tissue.
STA: UT.BIO.3.2.b | UT.BIO.3.2.d TOP: Foundation Edition
BLM: application

145. ANS:

A muscle is made up of many muscle fibers. The strength of a muscle contraction varies depending upon the total number of individual muscle fibers that contract.

PTS: 1 DIF: L3 REF: p. 930 | p. 931
OBJ: 32.2.2 Describe the mechanism of muscle contraction. STA: UT.BIO.3.2.d
BLM: analysis

146. ANS:

The left hand would probably be stronger because the person would use it much more than the right hand, and exercising muscles causes them to grow stronger.

PTS: 1 DIF: L2 REF: p. 933
OBJ: 32.2.3 Describe the interaction of muscles, bones, and tendons to produce movement.
STA: UT.BIO.3.2.c TOP: Foundation Edition
BLM: analysis

147. ANS:

This statement is true. Any type of controlled movement requires muscles to work in opposing pairs. In order to hold a violin, strum a guitar, or play the piano the brain must learn how to work muscle groups in just the right ways to make the involved joints move precisely.

PTS: 1 DIF: L2 REF: p. 932
OBJ: 32.2.3 Describe the interaction of muscles, bones, and tendons to produce movement.
STA: UT.BIO.3.2.c TOP: Foundation Edition
BLM: evaluation

148. ANS:

The skin has many different functions. They include acting as a barrier against infection and injury, helping to regulate body temperature, removing waste products from the body, and providing protection against ultraviolet radiation from the sun. The skin also produces vitamin D and gathers sensory information from the environment.

PTS: 1 DIF: L2 REF: p. 935
OBJ: 32.3.1 State the functions of the integumentary system. STA: UT.BIO.3.2.a
TOP: Foundation Edition BLM: evaluation

149. ANS:

The epidermis is made up of layers of epithelial cells and contains pigment-producing melanocytes. The dermis contains nerve endings, blood vessels, smooth muscle, sweat glands, sebaceous glands, and hair follicles.

PTS: 1 DIF: L2 REF: p. 936 | p. 937
OBJ: 32.3.2 Identify the structures of the integumentary system.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: analysis

150. ANS:

Answers should show an understanding that acne develops when sebum and dead skin cells form plugs in hair follicles, which leads to infection and inflammation. Answers could also address the fact that high hormone levels during puberty lead to increased sebum production or that acne can be caused by bacteria.

PTS: 1 DIF: L2 REF: p. 938
OBJ: 32.3.3 Describe some of the problems that affect the skin.
TOP: Foundation Edition BLM: synthesis

151. ANS:

It is important to do these things because they protect you from excessive exposure to ultraviolet radiation, which causes melanoma and other types of skin cancer.

PTS: 1 DIF: L1 REF: p. 939
OBJ: 32.3.3 Describe some of the problems that affect the skin.
TOP: Foundation Edition BLM: evaluation

152. ANS:

Larger organisms need a circulatory system because their cells are not in direct contact with the environment. They require delivery of nutrients and oxygen. In addition, the circulatory system transports substances that are made in one part of the organism to another part of the organism where they may be needed.

PTS: 1 DIF: L2 REF: p. 948
OBJ: 33.1.1 Identify the functions of the human circulatory system.
STA: UT.BIO.3.2.b BLM: comprehension

153. ANS:

The heart is involved in both circuits of circulation. In pulmonary circulation, the right side of the heart pumps oxygen-poor blood to the lungs, where it is oxygenated and returned to the heart. In systemic circulation, the left side of the heart pumps oxygen-rich blood to the rest of the body. The cells absorb oxygen and load the blood with carbon dioxide, which is returned to the right side of the heart.

PTS: 1 DIF: L2 REF: p. 950
OBJ: 33.1.1 Identify the functions of the human circulatory system. | 33.1.2 Describe the structure of the heart and explain how it pumps blood through the body.
STA: UT.BIO.3.2.b | UT.BIO.3.1.a | UT.BIO.3.1.b | UT.BIO.3.1.c
BLM: analysis

154. ANS:

Arteries carry blood from the heart to the tissues of the body. Capillaries bring nutrients and oxygen to the tissues and absorb carbon dioxide and waste products. Veins return blood from the tissues of the body to the heart.

PTS: 1 DIF: L2 REF: p. 952
OBJ: 33.1.3 Name three types of blood vessels in the circulatory system.
BLM: analysis

155. ANS:

The body would swell with fluid, a condition called edema.

PTS: 1 DIF: L2 REF: p. 956
OBJ: 33.2.2 Describe the role of the lymphatic system. STA: UT.BIO.3.2.b | UT.BIO.3.2.c
BLM: analysis

156. ANS:

LDL is the cholesterol carrier that is most likely to cause trouble in the circulatory system because it becomes part of plaque. HDL is the cholesterol carrier that generally carries excess cholesterol from tissues and arteries to the liver for removal from the body.

PTS: 1 DIF: L2 REF: p. 959
OBJ: 33.2.4 Describe the connection between cholesterol and circulatory disease.
BLM: evaluation

157. ANS:

When the atmospheric pressure is higher than the air pressure in the chest cavity, air rushes into the lungs. When the atmospheric pressure is lower than the air pressure inside the chest cavity, air rushes out of the lungs.

PTS: 1 DIF: L3 REF: p. 967
OBJ: 33.3.3 Describe how breathing is controlled.
STA: UT.BIO.3.1.b | UT.BIO.3.1.c | UT.BIO.3.2.a BLM: synthesis

158. ANS:

The statement is true. Secondhand smoke exposes people to cancer-causing chemicals such as formaldehyde, arsenic, and ammonia. It also aggravates asthma and causes an increase in ear infections in children. In addition, secondhand smoke causes sticky platelets and damage to blood vessels, in some cases leading to death from heart disease.

PTS: 1 DIF: L2 REF: p. 969
OBJ: 33.3.4 Describe the effects of smoking on the respiratory system.
BLM: evaluation

159. ANS:

A target cell is a cell that has receptors for a particular hormone. If a cell does not have receptors for a particular hormone, the hormone has no effect on it. Since only certain cells have receptors for specific hormones, all cells are not target cells for all hormones.

PTS: 1 DIF: L2 REF: p. 978
OBJ: 34.1.1 Describe the structure and function of the endocrine system.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: comprehension

160. ANS:

Steroid hormones can enter the nucleus of a cell and change the pattern of gene expression in a target cell. Nonsteroid hormones bind to receptors on cell membranes and cause the release of secondary messengers that affect cell activities.

PTS: 1 DIF: L2 REF: p. 980 | p. 981
OBJ: 34.1.2 Explain how hormones work. TOP: Foundation Edition
BLM: comprehension

161. ANS:

hypothyroidism, G (thyroid)

PTS: 1 DIF: L2 REF: p. 985
OBJ: 34.2.1 Identify the functions of the major endocrine glands.
STA: UT.BIO.3.2.a BLM: evaluation

162. ANS:

Home heating systems are controlled by thermostats. This system is an example of a feedback loop. In a feedback loop, an increase in something such as heat “feeds back” and inhibits the process that produced the heat in the first place. The actions of glands and hormones are biological examples of feedback loops.

PTS: 1 DIF: L2 REF: p. 986
OBJ: 34.2.2 Explain how endocrine glands are controlled. STA: UT.BIO.3.2.a
TOP: Foundation Edition BLM: analysis

163. ANS:

Answer should show that sperm are produced in the seminiferous tubules. From there, they travel through the epididymis, vas deferens, and urethra (in the penis).

PTS: 1 DIF: L2 REF: p. 989
OBJ: 34.3.2 Name and discuss the structures of the male reproductive system.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b TOP: Foundation Edition
BLM: synthesis

164. ANS:

Sample Answer:

Bacterial STD: caused by bacteria, treated by antibiotics, include chlamydia, gonorrhea, and syphilis

Overlap: spread by sexual contact

Viral STD: caused by viruses, vaccine has been developed for one, includes HPV and AIDS

PTS: 1 DIF: L1 REF: p. 994

OBJ: 34.3.4 Describe some of the most common sexually transmitted diseases.

TOP: Foundation Edition BLM: analysis

165. ANS:

Once a sperm nucleus has entered the egg, the cell membrane of the egg cell changes, preventing other sperm from entering the cell.

PTS: 1 DIF: L2 REF: p. 996

OBJ: 34.4.1 Describe fertilization and the early stages of development.

BLM: comprehension

166. ANS:

Sample answer: If the placenta completely covers the cervix, it is blocking the way the baby would exit the uterus.

PTS: 1 DIF: L3 REF: p. 995 | p. 998 | p. 1000

OBJ: 34.4.1 Describe fertilization and the early stages of development. | 34.4.2 Identify the major events of later stages of development.

BLM: analysis

167. ANS:

Oxytocin affects a group of large involuntary muscles in the uterine wall. As these muscles are stimulated, they begin a series of rhythmic contractions collectively known as labor.

PTS: 1 DIF: L2 REF: p. 1000

OBJ: 34.4.2 Identify the major events of later stages of development.

TOP: Foundation Edition BLM: comprehension

168. ANS:

The answer should include:

viruses: invade and replicate within living cells by inserting their DNA into a host cell; cause chickenpox, influenza, warts, and common cold

bacteria: break down the tissues of an infected organism for food or release toxins that harm the body; cause streptococcus, diphtheria, botulism, and anthrax

fungi: infect the skin, mouth, throat, fingernails and toenails; cause thrush and ringworm

“protists”: single-celled eukaryotes that infect people through contaminated water or insect bites; take nutrients from the host; cause African sleeping sickness and various intestinal diseases

parasitic worms: enter body through the mouth, nose, anus, or skin; most reside in the intestinal tract; cause trichinosis and hookworm

PTS: 1 DIF: L2 REF: p. 1010

OBJ: 35.1.1 Identify the causes of infectious disease.

TOP: Foundation Edition

BLM: synthesis

169. ANS:

Sample answer: Cover your mouth when you cough or sneeze. Wash your hands and the surfaces that come in contact with your hands often. Avoid sexual activity. Wash fruits and vegetables thoroughly. Cook seafood thoroughly.

PTS: 1 DIF: L1 REF: p. 1012 | p. 1013

OBJ: 35.1.2 Explain how infectious diseases are spread.

TOP: Foundation Edition

BLM: application

170. ANS:

Answer should include the following:

Nonspecific defense

First Line of Defense: physical barrier called skin, saliva, mucus, tears with lysozyme

Second Line of Defense: inflammatory response (infected areas become red and painful or inflamed, begins when pathogens stimulate cells called mast cells to release histamines), interferons (proteins that inhibit synthesis of viral proteins blocking their replication), fever (chemicals increase body temperature to slow down or stop the growth of pathogens)

PTS: 1 DIF: L2 REF: p. 1014 | p. 1015

OBJ: 35.2.1 Describe the body's nonspecific defenses against invading pathogens.

STA: UT.BIO.3.2.b TOP: Foundation Edition

BLM: synthesis

171. ANS:

Interferons, which interrupt viral replication, are produced by virus-infected cells and help slow down viral infections; thus, they are not effective at stopping nonviral pathogens.

PTS: 1 DIF: L2 REF: p. 1015

OBJ: 35.2.1 Describe the body's nonspecific defenses against invading pathogens.

STA: UT.BIO.3.2.b TOP: Foundation Edition

BLM: analysis

172. ANS:

No, your body is not protected against infection with rubella because the two diseases are caused by two different viruses carrying two different antigens.

PTS: 1 DIF: L3 REF: p. 1016

OBJ: 35.2.2 Describe the function of the immune system's specific defenses.

STA: UT.BIO.3.2.b BLM: analysis

173. ANS:

Humoral immunity depends on the action of antibodies that are found embedded in B cells. When an antigen binds to antibodies, helper T cells activate B cells to grow and divide rapidly. Without helper T cells, B cells would not be stimulated to grow and divide.

PTS: 1 DIF: L2 REF: p. 1017

OBJ: 35.2.3 List the body's specific defenses against pathogens. | 35.4.2 Describe how HIV is transmitted and how it affects the immune system. STA: UT.BIO.3.2.b

TOP: Foundation Edition BLM: synthesis

174. ANS:

A primary response occurs when the body is first exposed to a pathogen. A secondary response occurs when the body is exposed to the same pathogen for a second time. Memory B cells and T cells, which survived after the first infection, react quickly when the same pathogen enters the body again.

PTS: 1 DIF: L2 REF: p. 1017

OBJ: 35.2.3 List the body's specific defenses against pathogens.

STA: UT.BIO.3.2.b TOP: Foundation Edition

BLM: analysis

175. ANS:

Active immunity is the kind of immunity that develops as a result of exposure to an antigen. Passive immunity occurs when externally produced antibodies are introduced to a person's blood. A vaccination is the injection of a weakened or less dangerous form of a pathogen to produce immunity. It is an example of active immunity because the immune system produces B cells and T cells in response to the antigens in the vaccine.

PTS: 1 DIF: L2 REF: p. 1020
OBJ: 35.3.1 Distinguish between active immunity and passive immunity.
TOP: Foundation Edition BLM: application

176. ANS:

No, acyclovir is not an antibiotic because antibiotics are compounds that inhibit bacterial growth and are used to treat bacterial infections; acyclovir is an antiviral drug, which is used to treat some viral infections.

PTS: 1 DIF: L2 REF: p. 1021
OBJ: 35.3.2 Describe how public health measures and medications fight disease.
TOP: Foundation Edition BLM: synthesis

177. ANS:

If an immune system overreacts to harmless antigens, allergies, asthma, and autoimmune disease can occur.

PTS: 1 DIF: L2 REF: p. 1024
OBJ: 35.4.1 Explain what happens when the immune system overreacts to harmless pathogens.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: comprehension

178. ANS:

Lupus is classified as an autoimmune disease because antibodies attack organs and tissues causing areas of chronic inflammation throughout the body.

PTS: 1 DIF: L3 REF: p. 1024
OBJ: 35.4.1 Explain what happens when the immune system overreacts to harmless pathogens.
STA: UT.BIO.3.2.b BLM: comprehension

179. ANS:

The drug should lead to an increase in the number of T cells in the blood and boost the person's immune system.

PTS: 1 DIF: L2 REF: p. 1026 | p. 1027
OBJ: 35.4.2 Describe how HIV is transmitted and how it affects the immune system.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: application

180. ANS:

Sample answer:

box 1: Virus attaches to host cell membrane by recognizing specific molecules on the cell surface.

box 2: Viral coat fuses with cell membrane and viral RNA enters the cell.

box 3: Reverse transcriptase uses viral RNA as a template to make viral DNA.

box 4: Viral DNA enters nucleus and begins inserting itself into host DNA. There it may begin to direct the synthesis of viral RNA and mRNA.

box 5: Viral mRNA directs the host cell to assemble viral proteins.

box 6: The new viruses bud off from the cell membrane.

PTS: 1 DIF: L3 REF: p. 1026
OBJ: 35.4.2 Describe how HIV is transmitted and how it affects the immune system.
STA: UT.BIO.3.2.b BLM: synthesis

OTHER

181. ANS:
The figure indicates that you should try to get at least 30 minutes of exercise each day.
- PTS: 1 DIF: L2 REF: p. 872 | p. 873
OBJ: 30.2.3 Explain how to plan a balanced diet. BLM: evaluation
182. ANS:
The function of the small intestine is to absorb nutrients from food through its walls.
- PTS: 1 DIF: L2 REF: p. 880
OBJ: 30.3.1 Describe the organs of the digestive system and explain their functions. | 30.3.3 Describe how nutrients are absorbed into the bloodstream and wastes are eliminated from the body.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c BLM: comprehension
183. ANS:
Villi
- PTS: 1 DIF: L2 REF: p. 880
OBJ: 30.3.3 Describe how nutrients are absorbed into the bloodstream and wastes are eliminated from the body. STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c
BLM: knowledge
184. ANS:
Microvilli
- PTS: 1 DIF: L2 REF: p. 880
OBJ: 30.3.3 Describe how nutrients are absorbed into the bloodstream and wastes are eliminated from the body. STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c
BLM: knowledge
185. ANS:
Epithelial tissue would be found inside the lining of the small intestine because one of the functions of epithelial tissue is absorption and excretion of materials.
- PTS: 1 DIF: L3 REF: p. 863 | p. 880
OBJ: 30.1.1 Describe how the human body is organized. | 30.3.1 Describe the organs of the digestive system and explain their functions. | 30.3.3 Describe how nutrients are absorbed into the bloodstream and wastes are eliminated from the body. STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c
BLM: evaluation
186. ANS:
hydrochloric acid; protein; fat
- PTS: 1 DIF: L2 REF: p. 878
OBJ: 30.3.1 Describe the organs of the digestive system and explain their functions.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c BLM: analysis
187. ANS:
the percent of bicarbonate and digestive enzymes in pancreatic juice
- PTS: 1 DIF: L2 REF: p. 878
OBJ: 30.3.1 Describe the organs of the digestive system and explain their functions.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c BLM: analysis

- OBJ: 31.2.2 Describe the effects of drugs on the brain. TOP: Foundation Edition
BLM: analysis
196. ANS:
one hour
- PTS: 1 DIF: L2 REF: p. 904
OBJ: 31.2.2 Describe the effects of drugs on the brain. TOP: Foundation Edition
BLM: evaluation
197. ANS:
structure D, hypothalamus
- PTS: 1 DIF: L2 REF: p. 903
OBJ: 31.2.1 Discuss the functions of the brain and spinal cord. STA: UT.BIO.3.1.b | UT.BIO.3.1.c
TOP: Foundation Edition BLM: comprehension
198. ANS:
axial skeleton
- PTS: 1 DIF: L2 REF: p. 922 | p. 923
OBJ: 32.1.1 List the structures and functions of the skeletal system.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: analysis
199. ANS:
hands and feet
- PTS: 1 DIF: L2 REF: p. 922 | p. 923
OBJ: 32.1.1 List the structures and functions of the skeletal system.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: application
200. ANS:
Structure B is spongy bone and Structure D is compact bone. Compact bone is found beneath the periosteum. It is a dense bone, although not solid. Running through compact bone is a network of blood vessels and nerves. Spongy bone is less dense than compact bone and is found in long bones and in the middle of short, flat bones. It is strong and organized in a latticework structure, which adds strength to the bone without adding mass.
- PTS: 1 DIF: L2 REF: p. 924 | p. 925
OBJ: 32.1.2 Describe the structure of a typical bone. STA: UT.BIO.3.2.b
TOP: Foundation Edition BLM: analysis
201. ANS:
C, yellow bone marrow
- PTS: 1 DIF: L2 REF: p. 924 | p. 925
OBJ: 32.1.2 Describe the structure of a typical bone. STA: UT.BIO.3.2.b
TOP: Foundation Edition BLM: comprehension
202. ANS:
The Haversian canal contains blood vessels and nerves.
- PTS: 1 DIF: L2 REF: p. 924 | p. 925
OBJ: 32.1.2 Describe the structure of a typical bone. STA: UT.BIO.3.2.b
TOP: Foundation Edition BLM: comprehension

203. ANS:
B, dermis
- PTS: 1 DIF: L2 REF: p. 936
OBJ: 32.3.2 Identify the structures of the integumentary system.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: comprehension
204. ANS:
This sebaceous gland produces oil, called sebum, that can clog hair follicles. Bacteria, trapped in the clog, can lead to infection and inflammation.
- PTS: 1 DIF: L2 REF: p. 938
OBJ: 32.3.3 Describe some of the problems that affect the skin.
TOP: Foundation Edition BLM: application
205. ANS:
Structure D is a sweat gland. Sweat glands produce perspiration, or sweat. When sweat evaporates, it takes heat away from the body.
- PTS: 1 DIF: L3 REF: p. 937
OBJ: 32.3.2 Identify the structures of the integumentary system.
STA: UT.BIO.3.2.b BLM: analysis
206. ANS:
The figure shows that there are no blood vessels in the outer layer of the skin, so a slight scratch will probably not be deep enough to break blood vessels.
- PTS: 1 DIF: L3 REF: p. 936
OBJ: 32.3.2 Identify the structures of the integumentary system.
STA: UT.BIO.3.2.b BLM: analysis
207. ANS:
The heart is made of cardiac muscle. The left ventricle (F) is more muscular than the right ventricle (G) because the right ventricle only pumps blood to the lungs, while the left ventricle pumps blood throughout the entire body.
- PTS: 1 DIF: L2 REF: p. 949
OBJ: 33.1.2 Describe the structure of the heart and explain how it pumps blood through the body.
STA: UT.BIO.3.1.a | UT.BIO.3.1.b | UT.BIO.3.1.c BLM: application
208. ANS:
Structure L is the superior vena cava and it brings oxygen-poor blood from the upper body to the heart. Structure I is the inferior vena cava and it brings oxygen-poor blood from the lower body to the heart.
- PTS: 1 DIF: L2 REF: p. 949
OBJ: 33.1.2 Describe the structure of the heart and explain how it pumps blood through the body.
STA: UT.BIO.3.1.a | UT.BIO.3.1.b | UT.BIO.3.1.c BLM: analysis
209. ANS:
D, bronchi
Each bronchus leads to a lung.
- PTS: 1 DIF: L2 REF: p. 964 | p. 965
OBJ: 33.3.1 Identify the structures of the respiratory system and describe their functions.
STA: UT.BIO.3.1.b | UT.BIO.3.1.c | UT.BIO.3.2.a BLM: application

210. ANS:
Structure A are the alveoli. They are covered by capillaries because the capillaries are the sites at which carbon dioxide and oxygen diffuse in and out of the blood.
- PTS: 1 DIF: L2 REF: p. 964 | p. 965
OBJ: 33.3.1 Identify the structures of the respiratory system and describe their functions.
STA: UT.BIO.3.1.b | UT.BIO.3.1.c | UT.BIO.3.2.a BLM: analysis
211. ANS:
High thyroxine levels inhibit the hypothalamus and the anterior pituitary. Less TRH and TSH are released.
- PTS: 1 DIF: L3 REF: p. 987
OBJ: 34.2.1 Identify the functions of the major endocrine glands. | 34.2.2 Explain how endocrine glands are controlled. STA: UT.BIO.3.2.a BLM: analysis
212. ANS:
Sperm are formed in the testis, structure K.
- PTS: 1 DIF: L2 REF: p. 989
OBJ: 34.3.2 Name and discuss the structures of the male reproductive system.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b TOP: Foundation Edition
BLM: comprehension
213. ANS:
Fertilization is most likely to occur on the first two days following ovulation, which would be days 15 and 16 in the cycle shown.
- PTS: 1 DIF: L2 REF: p. 992 | p. 993
OBJ: 34.3.3 Name and discuss the structures of the female reproductive system.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b TOP: Foundation Edition
BLM: comprehension
214. ANS:
A woman menstruates during phase A, days 1–5.
- PTS: 1 DIF: L2 REF: p. 992 | p. 993
OBJ: 34.3.3 Name and discuss the structures of the female reproductive system.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b TOP: Foundation Edition
BLM: application
215. ANS:
The curve showing the level of progesterone in the blood would remain high if the egg were fertilized.
- PTS: 1 DIF: L2 REF: p. 992 | p. 993
OBJ: 34.3.3 Name and discuss the structures of the female reproductive system.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b TOP: Foundation Edition
BLM: synthesis
216. ANS:
Sample answer: The microorganisms isolated in A are the cause of the cow's (as well as the mouse's) disease.
- PTS: 1 DIF: L3 REF: p. 1011
OBJ: 35.1.1 Identify the causes of infectious disease. BLM: synthesis
217. ANS:
The shapes of the antigen-binding sites enable an antibody to recognize a specific antigen with a complementary shape.

PTS: 1 DIF: L2 REF: p. 1017
OBJ: 35.2.2 Describe the function of the immune system's specific defenses.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: comprehension

218. ANS:

When antibodies bind to free-floating antigens or antigens on the surface of pathogens, they signal other types of cells and proteins to respond by attacking and destroying the pathogens.

PTS: 1 DIF: L2 REF: p. 1017
OBJ: 35.2.2 Describe the function of the immune system's specific defenses.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: comprehension

219. ANS:

The dotted line shows the T-cell concentration in patients starting at 800 days after infection with HIV. The solid line shows the T-cell concentration in patients starting at 1200 days after infection with HIV.

PTS: 1 DIF: L2 REF: p. 1026 | p. 1027
OBJ: 35.4.2 Describe how HIV is transmitted and how it affects the immune system.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: analysis

220. ANS:

The T cell concentration decreases between days 800 and 1200 during an HIV infection. Students should compare the dotted line and the solid line on each graph at 0 days to answer this question.

PTS: 1 DIF: L2 REF: p. 1026 | p. 1027
OBJ: 35.4.2 Describe how HIV is transmitted and how it affects the immune system.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: analysis

ESSAY

221. ANS:

Answer should include six of the following systems. The nervous system coordinates the body's response to changes in its internal and external environment. The integumentary system serves as a barrier against infection and injury, helps to regulate body temperature, and provides protection against ultraviolet radiation from the sun. The skeletal system supports the body, protects internal organs, allows movement, stores mineral reserves, and provides a site for blood cell formation. The muscular system works with the skeletal system to provide voluntary movement and helps to circulate blood and move food through the digestive system. The circulatory system brings oxygen, nutrients, and hormones to cells; fights infection; removes cell wastes; and helps regulate body temperature. The respiratory system provides oxygen needed for cellular respiration and removes excess carbon dioxide from the body. The digestive system converts foods into simpler molecules that can be used by the cells of the body. The excretory system eliminates waste products from the body. The endocrine system controls growth, development, and metabolism. The reproductive system produces reproductive cells and, in the female, nurtures and protects the developing embryo. The lymphatic system helps protect the body from disease, collects fluid lost from blood vessels, and returns the fluid to the circulatory system.

PTS: 1 DIF: L2 REF: p. 864
OBJ: 30.1.1 Describe how the human body is organized.

STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c

BLM: comprehension

222. ANS:

During feedback inhibition, a stimulus produces a response that opposes the original stimulus. In this example, nerve cells sense an irritation on the skin. The nerve cells send a message to the brain and the brain causes your body to respond by opposing it, or scratching. Once the itch stops, your nerve cells send a new message to your brain. Your brain causes your body to stop scratching.

PTS: 1

DIF: L2

REF: p. 865

OBJ: 30.1.2 Explain homeostasis.

STA: UT.BIO.3.2.b

BLM: application

223. ANS:

Answers should show an understanding that a balanced diet should include a combination of carbohydrates, proteins, fats, vitamins and minerals.

PTS: 1

DIF: L3

REF: p. 869 | p. 870 | p. 871 | p. 872

OBJ: 30.2.2 Identify the essential nutrients your body needs and tell how each is important to the body. |

30.2.3 Explain how to plan a balanced diet.

STA: UT.BIO.2.1.b

BLM: evaluation

224. ANS:

The glomerulus is a dense network of capillaries found in the nephrons of kidneys. If their walls were damaged blood would enter Bowman's capsule and it would appear in the waste products. This would cause blood to appear in the urine.

PTS: 1

DIF: L3

REF: p. 884

OBJ: 30.4.2 Explain how the kidneys clean the blood.

STA: UT.BIO.3.1.b | UT.BIO.3.1.c

BLM: analysis

225. ANS:

An increased intake of water causes the concentration of water in the blood to increase. As the amount of water in the blood increases, the rate of water reabsorption in the kidneys decreases. Thus, less water is returned to the blood, and the excess water is excreted as urine. An increased intake of salt causes the level of salt in the blood to rise. The kidneys respond by returning less salt to the blood by reabsorption. The excess salt is excreted in urine.

PTS: 1

DIF: L2

REF: p. 886

OBJ: 30.4.3 Describe how the kidneys maintain homeostasis. STA: UT.BIO.3.2.b

BLM: analysis

226. ANS:

The first category is the *nervous system*. *Central nervous system* (consists of brain and spinal cord, processes information and creates a response that is delivered to the appropriate part of the body by the peripheral nervous system) and *peripheral nervous system* (consists of nerves and supporting cells, collects information about the body's environment) branch off nervous system. *Sensory division* (transmits impulses from sense organs to central nervous system) and *motor division* (transmits impulses from the central nervous system to muscles or glands) then branch off peripheral nervous system. The motor division is then divided into *somatic nervous system* (regulates body activities that are under conscious control) and *autonomic system* (regulates body activities that are involuntary).

PTS: 1

DIF: L3

REF: p. 896 | p. 906 | p. 907 | p. 908

OBJ: 31.1.1 Identify the functions of the nervous system. | 31.2.1 Discuss the functions of the brain and spinal cord. | 31.3.1 Describe the functions of the sensory division of the peripheral nervous system. | 31.3.2 Describe the functions of the motor division of the peripheral nervous system.

STA: UT.BIO.3.2.a | UT.BIO.3.2.b | UT.BIO.3.2.c | UT.BIO.3.1.b | UT.BIO.3.1.c | UT.BIO.3.1.b |

UT.BIO.3.1.c | UT.BIO.3.1.b | UT.BIO.3.1.c

BLM: synthesis

227. ANS:

Nerve impulses begin when sensory neurons pick up stimuli in the environment. In this case the stimulus is the ringing phone. The nerve impulses pass to interneurons in the brain. The brain interprets the impulses from many neurons, making you realize that the phone is ringing. Your brain decides that you should answer the phone. The impulses then travel to motor neurons, which send impulses to muscles. The muscles carry out the response, and you pick up the phone.

PTS: 1 DIF: L3 REF: p. 897

OBJ: 31.1.2 Describe the function of neurons.

BLM: application

228. ANS:

Frontal lobe: located at the front of the skull, responsible for evaluating consequences, making judgments, and forming plans

Parietal lobe: located behind the frontal lobe towards the back of the skull, responsible for reading and speech

Temporal lobe: located beneath the frontal lobe and parietal lobe, responsible for hearing and smelling

Occipital lobe: located at the back base of the skull, responsible for vision

PTS: 1 DIF: L2 REF: p. 903

OBJ: 31.2.1 Discuss the functions of the brain and spinal cord. STA: UT.BIO.3.1.b | UT.BIO.3.1.c

TOP: Foundation Edition

BLM: analysis

229. ANS:

Fingertips most likely have a greater concentration of sensory receptors than the palms of a hand because fingertips are more sensitive to touch.

PTS: 1 DIF: L2 REF: p. 909

OBJ: 31.4.1 Discuss the sense of touch and identify the various types of sensory receptors in the skin.

STA: UT.BIO.3.1.c

TOP: Foundation Edition

BLM: evaluation

230. ANS:

In the ears, the semicircular canals and the sacs are filled with fluid and lined with hairs. As a gymnast's head changes position, the fluid in her canals also changes position. This causes the hair on her hair cells to bend. This action, in turn, sends impulses to her brain that enable it to determine her body motion and position.

PTS: 1 DIF: L3 REF: p. 911

OBJ: 31.4.3 Identify the parts of the ears that make hearing and balance possible.

STA: UT.BIO.3.1.c

TOP: Foundation Edition

BLM: application

231. ANS:

An eye is like a camera in many ways. Both a camera and an eye have a lens through which light enters. The function of both lenses is to adjust the focus on distant and on near objects. In an eye, the pupil opens or closes to regulate the amount of light that enters. This is similar to the adjustable lens of a camera. The eye is different from a camera in that the brain processes and interprets visual information, causing images to be detailed. If an eye merely took photographs like a camera, the images would be blurry.

PTS: 1 DIF: L3 REF: p. 912 | p. 913

OBJ: 31.4.4 Describe the major parts of the eye and explain how the eye enables us to see.

STA: UT.BIO.3.1.c

BLM: analysis

232. ANS:

The statement is false. The skeletal system is made up of bones that are living tissues. In addition to providing support for the rest of the body, the skeletal system provides protection and a system of levers on which muscles act to produce movement. Bones also contain reserves of minerals that are important to many body processes. Finally, many types of blood cells are produced in the soft tissue that fills the internal cavities in some bones.

PTS: 1 DIF: L2 REF: p. 922 | p. 923
OBJ: 32.1.1 List the structures and functions of the skeletal system.
STA: UT.BIO.3.2.b TOP: Foundation Edition
BLM: evaluation

233.

ANS:

Many long bones, such as the arms, have growth plates at either end in which the growth of cartilage causes the bones to lengthen. Gradually, the cartilage ossifies until the growth plates disappear—during late adolescence or early adulthood. A doctor might X-ray the elbow to see if growth plates are still present or if the boy is no longer capable of much further growth.

PTS: 1 DIF: L3 REF: p. 925
OBJ: 32.1.2 Describe the structure of a typical bone. STA: UT.BIO.3.2.b
BLM: evaluation

234.

ANS:

Possible answers include: Pivot joints in the elbow and ball-and-socket joints in the shoulder allow you to brush your teeth or comb your hair. Hinge joints in the knees allow you to stand up after getting out of bed and walk. Saddle joints in the hand allow you to hold clothes, shoes, toothbrushes, or combs. Pivot joints in the neck allow you to look both ways as you cross the street to get to the bus stop.

PTS: 1 DIF: L3 REF: p. 926
OBJ: 32.1.3 List the different kinds of joints and describe the range of motion of each.
STA: UT.BIO.3.2.b BLM: analysis

235.

ANS:

Skeletal muscle tissue is striated, generally attached to the bones of the skeleton, and under voluntary control. Skeletal muscle cells are long and have many nuclei. Cardiac muscle tissue is striated and not under direct control of the central nervous system. Cardiac muscle cells are smaller than skeletal muscle cells and usually have one nucleus. Smooth muscle tissue has spindle-shaped cells that have a single nucleus and are not striated. Smooth muscle is generally not under control of the central nervous system.

PTS: 1 DIF: L3 REF: p. 929
OBJ: 32.2.1 Describe the structure and function of each of the three types of muscle tissue.
STA: UT.BIO.3.2.b | UT.BIO.3.2.d TOP: Foundation Edition
BLM: analysis

236.

ANS:

When the biceps muscle contracts, it flexes the elbow joint. When the triceps muscle contracts, it extends the elbow joint. A controlled movement, such as playing the violin, requires coordinated contraction and relaxation of both muscles. The brain must learn how to work opposing muscle groups to just the right degree, or contract in balance, to get the joint to move precisely.

PTS: 1 DIF: L3 REF: p. 932
OBJ: 32.2.3 Describe the interaction of muscles, bones, and tendons to produce movement.
STA: UT.BIO.3.2.c BLM: analysis

237.

ANS:

A city's transportation system is a network of streets, highways, and subway or train lines that deliver food and goods to the city and remove wastes from it. The human body's major transportation system is a closed circulatory system made up of a heart, blood vessels, and blood. Like people in a city, the body's cells need food and goods that are produced elsewhere. They also need to get rid of their garbage and other wastes. Some cells, such as blood cells, also need a way to move around the body similar to people moving around a city.

PTS: 1 DIF: L3 REF: p. 948
OBJ: 33.1.1 Identify the functions of the human circulatory system.
STA: UT.BIO.3.2.b BLM: analysis

238. ANS:

The teenage boy suffers from low blood pressure. When blood pressure is too low, sensory neurons in blood vessels send impulses to the medulla oblongata stimulating the autonomic nervous system to increase the heart rate. In addition, hormones produced by the heart and other organs trigger the kidneys to conserve water, increasing the volume of the blood.

PTS: 1 DIF: L3 REF: p. 953
OBJ: 33.1.1 Identify the functions of the human circulatory system. | 33.1.3 Name three types of blood vessels in the circulatory system. STA: UT.BIO.3.2.b
BLM: evaluation

239. ANS:

Thromboplastin is a protein involved in the blood-clotting process. When a blood vessel is injured by a cut or scrape, platelets clump at the site and release the clotting factor thromboplastin. Thromboplastin then triggers a series of reactions. First, thromboplastin converts the protein prothrombin into the enzyme thrombin. Thrombin then converts the soluble plasma protein fibrinogen into insoluble, sticky fibrin filaments, which form a clot. The clot seals the damaged area and prevents further blood loss. Without thromboplastin, the clotting process would not take place normally.

PTS: 1 DIF: L3 REF: p. 955
OBJ: 33.2.1 Explain the functions of blood plasma, red blood cells, white blood cells, and platelets.
BLM: evaluation

240. ANS:

The table should include the following:

Circulation: The lymphatic system is a network of vessels that collects fluid, called lymph, leaking from the bloodstream and returns it to the circulatory system.

Immunity: Lymph nodes act as filters, trapping bacteria and other microorganisms that cause disease. They also house white blood cells, which protect the body from infection. In addition, the spleen cleanses the blood of microorganisms and debris, and the thymus is the place in which T lymphocytes mature.

Nutrient absorption: Lymph vessels absorb fats and fat-soluble vitamins from the digestive tract.

PTS: 1 DIF: L2 REF: p. 956 | p. 957
OBJ: 33.2.2 Describe the role of the lymphatic system. STA: UT.BIO.3.2.b | UT.BIO.3.2.c
BLM: analysis

241. ANS:

Steroid hormones, which are made of lipids, move across the cell membranes of target cells. Once inside, a steroid hormone binds to a steroid receptor protein, forming a hormone-receptor complex. This hormone-receptor complex enters the cell's nucleus and binds to a DNA control sequence, which initiates transcription of specific genes. Protein synthesis of the specific sequences then occurs in the cytoplasm. In contrast, nonsteroid hormones cannot pass through the cell membranes of their target cells. Nonsteroid hormones bind to receptors on the cell membranes, activating an enzyme on the inner surface of the cell membranes. This enzyme activates a second messenger. The second messenger then activates or inhibits cell activities.

PTS: 1 DIF: L2 REF: p. 980 | p. 981
OBJ: 34.1.2 Explain how hormones work. BLM: analysis

242. ANS:

The hypothalamus contains the cell bodies of cells that extend into the posterior pituitary. It sends nervous signals to the posterior pituitary stimulating it to release hormones. The hypothalamus regulates the activities of the anterior pituitary by producing releasing hormones.

PTS: 1 DIF: L2 REF: p. 982
OBJ: 34.2.1 Identify the functions of the major endocrine glands.
STA: UT.BIO.3.2.a TOP: Foundation Edition
BLM: comprehension

243. ANS:

The hypothalamus contains cells that are sensitive to the concentration of water in the blood. When my body loses water as sweat, the concentration of dissolved materials in the blood rises. The hypothalamus responds by first signaling the posterior pituitary gland to release a hormone called ADH (antidiuretic hormone). ADH molecules are carried by the blood to the kidneys, where the removal of water from the blood is quickly slowed down. The hypothalamus also causes a thirst sensation. When I drink water, the water is absorbed into the blood. To avoid the water diluting the blood, the hypothalamus causes the pituitary to release less ADH. They kidneys respond by removing water from the blood.

PTS: 1 DIF: L2 REF: p. 986
OBJ: 34.2.2 Explain how endocrine glands are controlled. STA: UT.BIO.3.2.a
TOP: Foundation Edition BLM: application

244. ANS:

An egg is first released from its follicle and is swept away from the ovary into the Fallopian tube. If the egg is fertilized in the Fallopian tube, it will travel into the uterus, become implanted in the uterine wall, and develop into a fetus. An unfertilized egg will pass through the uterus, the cervix, and the vagina. It will exit the body through the vagina during menstruation.

PTS: 1 DIF: L2 REF: p. 992 | p. 993
OBJ: 34.3.3 Name and discuss the structures of the female reproductive system.
STA: UT.BIO.3.2.a | UT.BIO.3.2.b TOP: Foundation Edition
BLM: synthesis

245. ANS:

Answer should include the following information:

The most common bacterial STD is chlamydia. Other bacterial STDs include gonorrhea and syphilis. STDs caused by viruses include AIDS, genital warts, genital herpes, and hepatitis B. STDs are spread by sexual contact with someone who has an STD. They can cause infertility, and in some cases death. Bacterial STDs can be treated with antibiotics. For genital warts, which is caused by a virus, a vaccine has been developed. The best way to avoid sexually transmitted diseases is to abstain from sexual contact before marriage and for both partners to remain faithful in their relationship.

PTS: 1 DIF: L2 REF: p. 994
OBJ: 34.3.4 Describe some of the most common sexually transmitted diseases.
TOP: Foundation Edition BLM: synthesis

246. ANS:

During months 4–6, the fetus becomes more complex and specialized. The heart becomes large enough to be heard with a stethoscope. Bone continues to replace the cartilage forming the early skeleton. A layer of soft hair grows over the skin of the fetus. As the fetus increases in size, the mother’s abdomen swells to accommodate it. The mother begins to feel it moving. During months 7–9, the organ systems of the fetus mature and the fetus grows in size and mass. The lungs and other organs undergo a series of changes that prepare them for life outside the uterus. The fetus is now able to regulate its body temperature. In addition, the central nervous system and lungs complete their development.

PTS: 1 DIF: L3 REF: p. 999
OBJ: 34.4.2 Identify the major events of later stages of development.
TOP: Foundation Edition BLM: analysis

247. ANS:

Sample answer: The germ theory of disease is the idea that infectious diseases are changes to body physiology that disrupt normal body functions by microorganisms. It is incorrect to use the word “germ” because it has no scientific meaning. A better name for the theory might be the microorganism theory of disease.

PTS: 1 DIF: L2 REF: p. 1010
OBJ: 35.1.1 Identify the causes of infectious disease. TOP: Foundation Edition
BLM: evaluation

248. ANS:

Lysozyme is an enzyme that is present in many secretions of the body, such as mucus and saliva. This enzyme kills many bacteria. In addition, the secretions of oil and sweat glands are acidic, and many bacteria are killed by an acidic environment. Stomach acid and digestive enzymes destroy many pathogens. Fever, which elevates heart rate and creates an environment hostile to pathogens, is also caused by the release of enzymes.

PTS: 1 DIF: L3 REF: p. 1014 | p. 1015
OBJ: 35.2.1 Describe the body's nonspecific defenses against invading pathogens.
STA: UT.BIO.3.2.b BLM: application

249. ANS:

The two main factors are public health measures and the development of medication. Public health measures help prevent disease by monitoring and regulating food and water supplies. They also promote childhood vaccination and behaviors that avoid infection. Medications such as antibiotics and antiviral drugs work to slow down and kill bacteria and viruses that cause infections.

PTS: 1 DIF: L2 REF: p. 1021
OBJ: 35.3.2 Describe how public health measures and medications fight disease.
TOP: Foundation Edition BLM: analysis

250. ANS:

The increase in global trade means that people from around the world can easily get products and services from people in other countries. This increase leads to greater destruction of the environment as a result of clearing land for factories and other development as well as for obtaining natural resources. This also causes people to come in contact with different animals and pathogens. In addition, there has been an increase in the exotic animal trade for pets and for food. This gives pathogens new opportunities to jump from humans to animals. Furthermore, an increase in the transport of materials from one country to another causes people to come in contact with products that may have been produced in, and shipped from, countries that have fewer restrictions and regulations.

PTS: 1

DIF: L3

REF: p. 1022

OBJ: 35.3.3 Describe why patterns of infectious disease have changed.

BLM: synthesis