Test Bank for Human Anatomy and Physiology 11th Edition by Marieb

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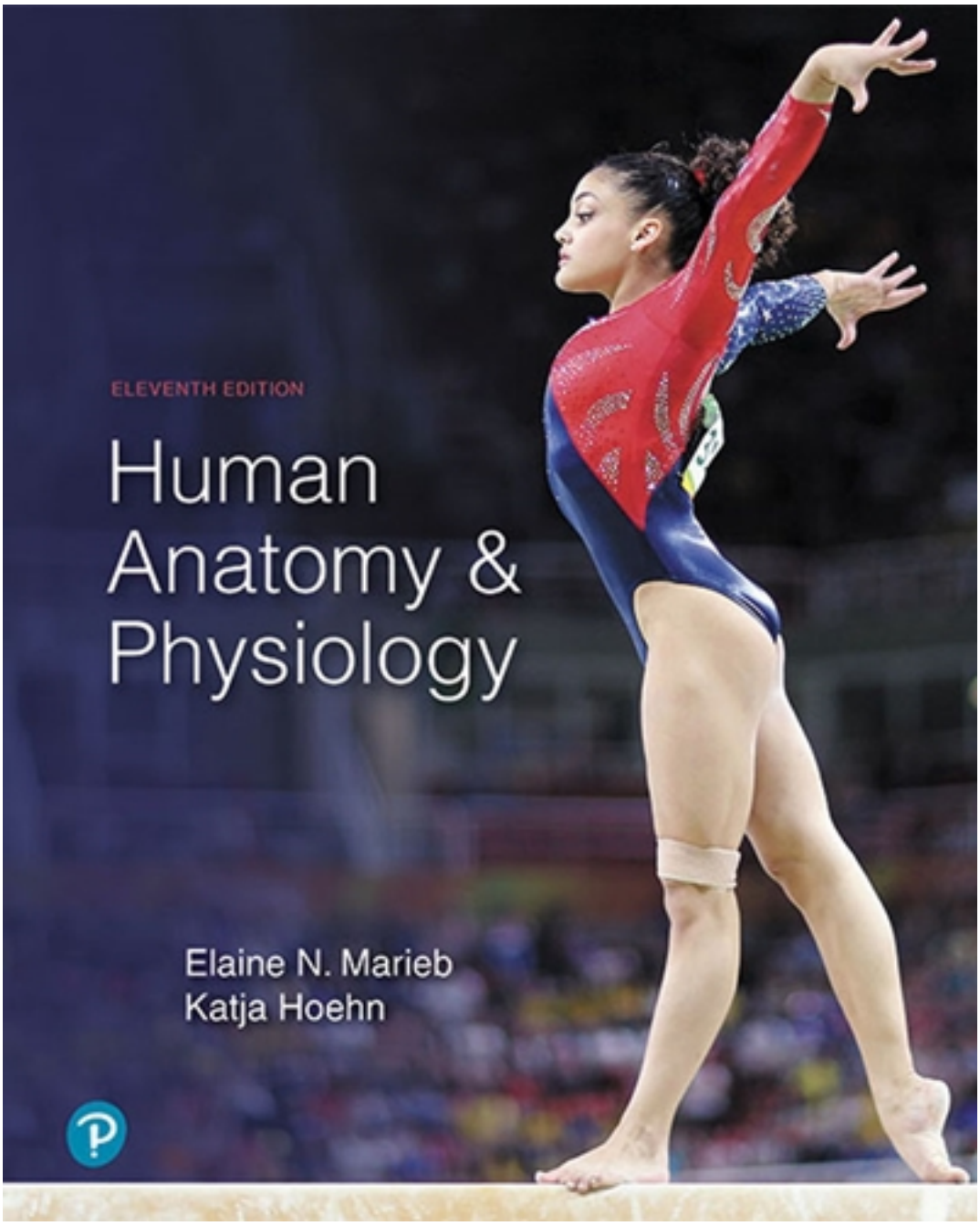

Test Bank

Exam

Name_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

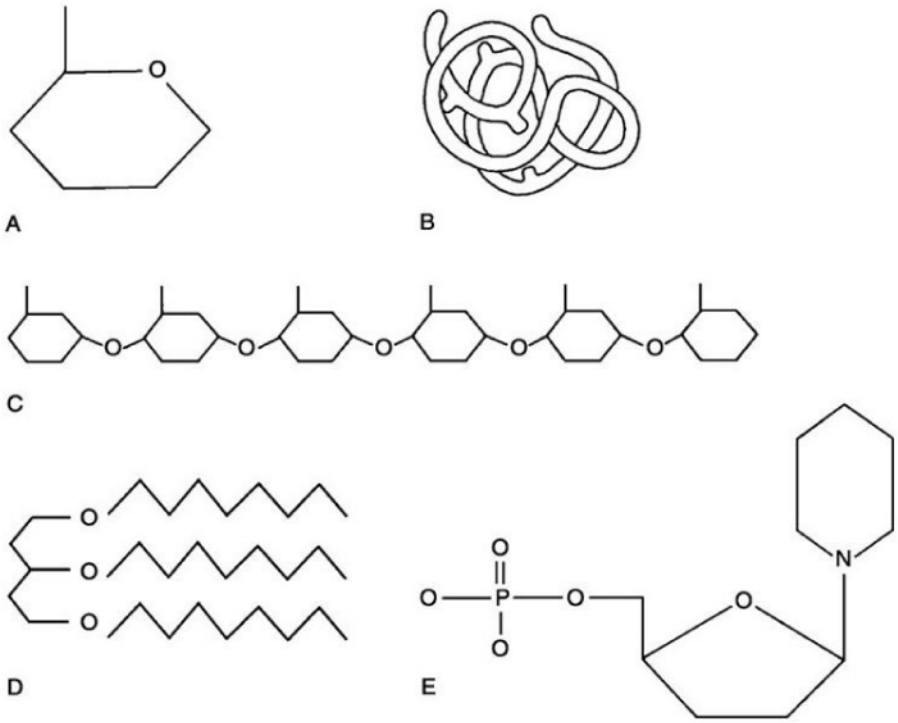

Figure 2.1

Using Figure 2.1, match the following:

1) Lipid. 1) _____

2) Functional protein. 2) _____

3) Nucleotide. 3) _____

4) Polysaccharide. 4) _____

5) Monosaccharide. 5) _____

6) Polymer. 6) _____

7) Tertiary (protein) structure. 7) _____

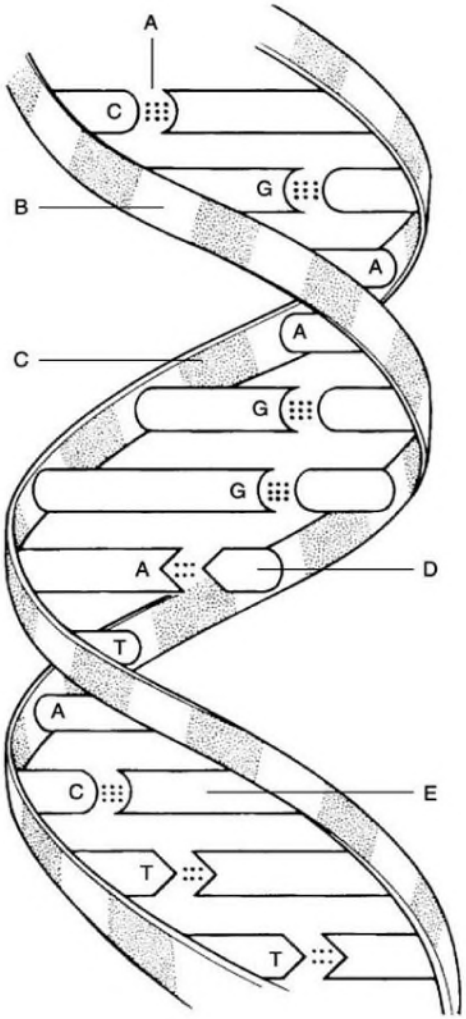

Figure 2.2

Using Figure 2.2, match the following:

8) Deoxyribose sugar. 8) _____

9) Thymine. 9) _____

10) Guanine. 10) _____

11) Phosphate. 11) _____

12) Hydrogen bonds. 12) _____

MATCHING. Choose the item in column 2 that best matches each item in column 1.

Match the following chemical bonds to the correct description:

13) A bond in which electrons are shared unequally.	A) Polar covalent bond	13) _____
14) A bond in which electrons are completely lost or gained by the atoms involved.	B) Hydrogen bond	14) _____
15) A bond in which electrons are shared equally.	C) Nonpolar covalent bond	15) _____
16) A type of bond important in tying different parts of the same molecule together into a three-dimensional structure.	D) Ionic bond	16) _____

Match the following particles to the correct description:

17) Negatively charged subatomic particle.	A) Atom	17) _____
18) Neutral subatomic particle.	B) Electron	18) _____
19) Smallest particle of an element that retains its properties.	C) Proton	19) _____
20) Positively charged subatomic particle.	D) Neutron	20) _____
21) Subatomic particle having an AMU (Atomic Mass Unit) of zero.		21) _____

Match the following:

22) Water.	A) Solution	22) _____
23) Saline.	B) Compound	23) _____
24) Dry ice (frozen carbon dioxide).	C) Suspension	24) _____
25) Blood.		25) _____

Match the following:

26) Can be measured only by its effects on matter. 26) _____

27) Anything that occupies space and has mass. 27) _____

28) Although a man who weighs 175 pounds on Earth would be lighter on the moon and heavier on Jupiter, his _____ would not be different. 28) _____

29) Is a function of, and varies with, gravity. 29) _____

A) Mass

B) Matter

C) Weight

D) Energy

Match the following:

30) Legs moving the pedals of a bicycle. 30) _____

31) When the bonds of ATP are broken, energy is released to do cellular work. 31) _____

32) Energy that travels in waves. Part of the electromagnetic spectrum. 32) _____

33) Represented by the flow of charged particles along a conductor, or the flow of ions across a membrane. 33) _____

A) Electrical energy

B) Chemical energy

C) Radiant energy

D) Mechanical energy

Match the following:

34) Protein structure achieved when alpha–helical or beta–pleated regions of the polypeptide chain fold upon one another to produce a compact ball–like, or *globular*, molecule. 34) _____

35) The sequence of amino acids that form the polypeptide chain. 35) _____

36) Protein structure represented by alpha–helices and beta–sheets. 36) _____

37) Two or more polypeptide chains, each with its own tertiary structure. 37) _____

A) Quaternary

B) Primary

C) Secondary

D) Tertiary

Match the following:

38) Usually, the first one or two letters of an element's name. 38) _____

39) Number of protons in an atom. 39) _____

40) Combined number of protons and neutrons in an atom. 40) _____

A) Mass number of an element

B) Atomic number

C) Atomic symbol

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

41) The atomic number of any atom is equal to the number of electrons in its nucleus and is written as a subscript to the left of its atomic symbol. 41) _____

42) It is the difference in the R group that makes each amino acid chemically unique. 42) _____

43) Chemical properties are determined primarily by neutrons. 43) _____

44) A charged particle is generally called an ion or electrolyte. 44) _____

45) Isotopes differ from each other only in the number of electrons the atom contains. 45) _____

46) About 60% to 80% of the volume of most living cells consists of organic compounds. 46) _____

47) Triglycerides are a poor source of stored energy. 47) _____

48) Omega–3 fatty acids appear to decrease the risk of heart disease. 48) _____

49) Glucose is an example of a monosaccharide. 49) _____

50) Glycogen, the storage form of glucose, is primarily stored in skeletal muscle and liver cells. 50) _____

51) The lower the pH, the higher the hydrogen ion concentration. 51) _____

52) The sharing of electrons in covalent bonds makes them stronger than ionic and hydrogen bonds. 52) _____

53) Hydrogen bonds are too weak to bind atoms together to form molecules, but they do hold different parts of a single large molecule in a specific three–dimensional shape. 53) _____

54) The fact that no chemical bonding occurs between the components of a mixture is the chief difference between mixtures and compounds. 54) _____

55) The acidity of a solution reflects the concentration of free hydrogen ions in the solution. 55) _____

56) A chemical bond is an energy relationship between outer electrons and neighboring atoms. 56) _____

57) All organic compounds contain carbon except CO_2 and CO. 57) _____

58) A dipeptide can be broken into two amino acids by dehydration synthesis. 58) _____

59) The pH of body fluids must remain fairly constant for the body to maintain homeostasis. 59) _____

60) Mixtures are combinations of elements or compounds that are physically blended together but are not bound by chemical bonds. 60) _____

61) Buffers resist abrupt and large changes in the pH of body fluids by releasing or binding ions. 61) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

62) Which of the following elements is necessary for proper conduction of nerve impulses? 62) _____
A) P B) Fe C) Na D) I

63) The basic structural material of the body consists of _____. 63) _____
A) carbohydrates B) nucleic acids C) lipids D) proteins

64) In general, the lipids that we refer to as oils at room temperature have _____. 64) _____
A) long fatty acid chains B) saturated fatty acids
C) a high water content D) unsaturated fatty acids

65) The genetic information is coded in DNA by the _____. 65) _____
A) regular alteration of sugar and phosphate molecules
B) three–dimensional structure of the double helix
C) arrangement of the histones
D) sequence of the nucleotides

66) Which of the following does NOT characterize proteins? 66) _____
A) They have both functional and structural roles in the body.
B) They may be denatured or coagulated by heat or acidity.
C) Their function depends on their three–dimensional shape.
D) They appear to be the molecular carriers of coded hereditary information.

67) The single most abundant protein in the body is _____. 67) _____
A) DNA B) collagen C) glucose D) hemoglobin

68) Carbohydrates are stored in the liver and skeletal muscles in the form of _____. 68) _____
A) glycogen B) cholesterol C) glucose D) triglycerides

69) Which of the following does NOT describe enzymes? 69) _____
A) Some enzymes are purely protein.
B) Enzymes work by raising the energy of activation.
C) Each enzyme is chemically specific.
D) Some enzymes are protein plus a cofactor.

70) Which of the following is a general function for a fibrous protein? 70) _____
A) catalysis
B) transport
C) structural framework
D) protein management
E) body defense

71) A chemical reaction in which bonds are created is usually associated with _____. 71) _____
A) degradation
B) the consumption of energy
C) the release of energy
D) forming a smaller molecule

72) Salts are always _____. 72) _____
A) double covalent compounds
B) ionic compounds
C) single covalent compounds
D) hydrogen bonded

73) The numbers listed represent the number of electrons in the first, second, and third energy levels, respectively. On this basis, which of the following is an unstable or reactive atom? 73) _____
A) 2, 8, 8 B) 2, 8, 1 C) 2, 8 D) 2

74) Which of the following statements is FALSE? 74) _____
A) The more hydrogen ions in a solution, the more acidic the solution.
B) The pH of blood is slightly basic.
C) When acids and bases are mixed, they react with each other to form water and a salt.
D) When the hydrogen ion concentration decreases, the hydroxyl ion concentration also decreases.

75) Which of the following is the major positive ion outside cells? 75) _____
A) potassium B) magnesium C) hydrogen D) sodium

76) Which of the following would be regarded as an organic molecule? 76) _____
A) CO_2 B) H_2O C) NaOH D) CH_4

77) What is a chain of more than 50 amino acids called? 77) _____
A) polysaccharide B) protein C) nucleic acid D) triglyceride

78) What structural level is represented by the sequence of amino acids in a polypeptide chain? 78) _____
A) primary structure
B) secondary structure
C) tertiary structure
D) quaternary structure

79) Carbohydrates and proteins are built up from their basic building blocks by the _____. 79) _____
A) removal of a water molecule between each two units
B) addition of a carbon atom between each two units
C) removal of a carbon atom between each two units
D) addition of a water molecule between each two units

80) Which statement about enzymes is FALSE? 80) _____
A) Most enzymes can catalyze millions of reactions per minute.
B) Enzymes require contact with substrate in order to assume their active form.
C) Enzymes may use coenzymes derived from vitamins or cofactors from metallic elements.
D) Enzymes may be damaged by high temperature.

81) Which of the following statements is FALSE? 81) _____
A) Chemical reactions progress at a faster rate when the reacting particles are present in higher numbers.
B) Larger particles move faster than smaller ones and thus collide more frequently and more forcefully.
C) Catalysts increase the rate of chemical reactions, sometimes while undergoing reversible changes in shape.
D) Chemical reactions proceed more quickly at higher temperatures.

82) Choose the answer that best describes HCO_3^-. 82) _____
A) a weak acid
B) common in the liver
C) a proton donor
D) a bicarbonate ion

83) Select which reactions will usually be irreversible regarding chemical equilibrium in human bodies. 83) _____
A) glucose to CO_2 and H_2O
B) glucose molecules joined to make glycogen
C) $H_2O + CO_2$ to make H_2CO_3
D) ADP + Pi to make ATP

84) What happens in redox reactions? 84) _____
A) both decomposition and electron exchange occur
B) the reaction is uniformly reversible
C) the electron acceptor is oxidized
D) the organic substance that loses hydrogen is usually reduced

85) Which type of proteins can function as chemical messengers or as receptors in the plasma membrane? 85) _____
A) defensive B) enzyme C) transport D) communication

86) Which of the following does NOT describe uses for the ATP molecule? 86) _____
A) transport down their concentration gradient
B) chemical work
C) pigment structure
D) mechanical work

87) Select the most correct statement regarding nucleic acids. 87) _____
A) Three forms exist: DNA, RNA, and tDNA.
B) tDNA is considered a "molecular slave" of DNA during protein synthesis.
C) DNA is a long, double–stranded molecule made up of A, T, G, and C bases.
D) RNA is a long, single–stranded molecule made up of the bases A, T, G, and C.

88) Which of the following is an example of a suspension? 88) _____
A) blood B) cytosol C) rubbing alcohol D) salt water

89) If the atomic mass of an element is 14 and the atomic number is 6, which of the following would describe this element? 89) _____
A) ion B) isotope C) neutral D) atom

90) The four elements that make up about 96% of body weight are _____. 90) _____
A) sodium, potassium, hydrogen, oxygen
B) carbon, oxygen, phosphorus, calcium
C) nitrogen, hydrogen, calcium, sodium
D) carbon, oxygen, hydrogen, nitrogen

91) _____ is fat soluble, produced in the skin on exposure to UV radiation, and necessary for normal bone growth and function. 91) _____
A) Vitamin A
B) Vitamin K
C) Cortisol
D) Vitamin D

92) You notice that you cannot read your book through a test tube of patient fluid held against the print, making it so blurred as to be unreadable. There is no precipitant in the bottom of the beaker, though it has been sitting for several days in a rack. What type of liquid is this? 92) _____
A) solution
B) suspension
C) mixture
D) colloid

93) Atom X has 17 protons. How many electrons are in its valence shell (outermost energy level)? 93) _____
A) 7
B) 3
C) 5
D) 10

94) A high fever causes an enzyme to lose its three-dimensional structure and function. Which bonds are broken when a protein denatures? 94) _____
A) hydrogen bonds
B) polar covalent bonds
C) ionic bonds
D) non-polar covalent bonds

95) If atom X has an atomic number of 74 it would have which of the following? 95) _____
A) 74 protons
B) 37 protons and 37 electrons
C) 37 protons and 37 neutrons
D) 37 electrons

96) What does the formula $C_6H_{12}O_6$ mean? 96) _____
A) The molecular weight is 24.
B) There are 6 calcium, 12 hydrogen, and 6 oxygen atoms.
C) There are 6 carbon, 12 hydrogen, and 6 oxygen atoms.
D) The substance is a colloid.

97) An atom with 3 electrons in its outermost (valence) shell may have a total of _____ electrons altogether. 97) _____
A) 13
B) 3
C) 17
D) 8

98) Which of the following is a neutralization reaction? 98) _____
A) $NH_3 + H^+ \rightarrow NH_4^{+2}$
B) $HCl + NaOH \rightarrow NaCl + H_2O$
C) $NaOH \rightarrow Na^+ + OH^-$
D) $HCl \rightarrow H^+ + Cl^-$

99) The chemical symbol O=O means _____. 99) _____
A) zero equals zero
B) the atoms are double bonded
C) this is an ionic bond with two shared electrons
D) both atoms are bonded and have zero electrons in the outer orbit

100) What is a cation? 100) _____
A) an atom that shares its valence electrons
B) a molecule that has both positive and negative charges
C) an atom that gains one or more electrons and acquires a net negative charge
D) an atom that loses one or more electrons and acquires a net positive charge

101) What does CH_4 mean? 101) _____
A) There is one carbon and four hydrogen atoms.
B) This is an inorganic molecule.
C) There are four carbon and four hydrogen atoms.
D) This was involved in a redox reaction.

102) Amino acids joining together to make a peptide is a good example of a(n) _____ reaction. 102) _____
A) decomposition B) synthesis C) reversible D) exchange

103) Which of the following is NOT considered a factor in influencing a reaction rate? 103) _____
A) time B) concentration of reactants
C) particle size D) temperature

104) Which property of water is demonstrated when we sweat? 104) _____
A) reactivity
B) cushioning
C) high heat capacity
D) high heat of vaporization
E) polar solvent properties

105) Starch is a _____. 105) _____
A) monosaccharide B) polysaccharide
C) triglyceride D) disaccharide

106) What is the ratio of fatty acids to glycerol in triglycerides (neutral fats)? 106) _____
A) 2:1 B) 3:1 C) 1:1 D) 4:1

107) In a DNA molecule, the phosphate serves _____. 107) _____
A) as nucleotides B) to bind the sugars to their bases
C) as a code D) to hold the molecular backbone together

108) When frying an egg, the protein albumin denatures and maintains only its _____ structure. 108) _____
A) primary B) quaternary C) tertiary D) secondary

109) Which of the following is chemically inert (unreactive)? 109) _____
A) sodium (atomic number 11) B) neon (atomic number 10)
C) oxygen (atomic number 8) D) carbon (atomic number 6)

110) An atom with an atomic number of 10 and a mass number of 24 would have _____. 110) _____
A) 24 protons B) 14 electrons C) 10 neutrons D) 14 neutrons

111) When DNA is replicated, it is necessary for the two strands to "unzip" temporarily. Choose which bonding type is most appropriate for holding the strands together in this way. 111) _____
A) polar covalent bonding B) hydrogen bonding
C) ionic bonding D) non–polar covalent bonding

112) Lithium has an atomic number of 3. How many electrons are there in the outermost (valence) shell? 112) _____
A) one B) two C) three D) zero

113) ATP → ADP + Pi is an example of a(n) _____ reaction. 113) _____
A) decomposition B) exchange C) reversible D) synthesis

114) An acid with a pH of 6 has _____ hydrogen ions than pure water. 114) _____
A) 10–fold more B) 100–fold more C) 100–fold fewer D) 10–fold fewer

115) A patient is hyperventilating. The "blowing off" of excessive carbon dioxide causes a decrease in blood H^+ concentration. How can the carbonic acid–bicarbonate buffer system function to correct th imbalance? 115) _____

$CO_2 + H_2O \leftrightarrow H_2CO_3 \leftrightarrow H^+ + HCO_3^-$

A) H_2CO_3 dissociates to form more H^+ and lower pH
B) HCO_3^- binds with H^+ to form H_2CO_3 and raise pH
C) H_2CO_3 dissociates to form more H^+ and raise pH
D) HCO_3^- binds with H^+ to form H_2CO_3 and lower pH

116) Forming glycogen as energy storage in the liver is an example of _____. 116) _____
A) catabolism B) exergonic C) oxidation D) anabolism

117) Salivary amylase is an enzyme produced by the salivary glands that breaks down carbohydrates. What will happen to this enzyme as it follows the food into the stomach where the pH drops to 2.5? 117) _____
A) The enzyme will continue to function as it remains unchanged in chemical reactions.
B) The enzyme will denature and become inactive.
C) The enzyme will assume an alternate form and catalyze additional reactions.
D) The enzyme will denature but retain its function.

118) With a family history of cardiovascular disease, which toast spread would be considered the most "heart healthy"? 118) _____
A) olive oil B) lard (pig fat)
C) margarine containing trans fats D) butter containing butterfat

119) Which of the following is *incorrectly* matched? 119) _____
A) nucleotide; nucleic acid B) monosaccharide; carbohydrate
C) eicosanoid; triglyceride D) amino acid; protein

120) Starch is the stored carbohydrate in plants, while _____ is the stored carbohydrate in animals. 120) _____
A) triglyceride B) glucose C) glycogen D) cellulose

121) How many phosphates would ADP have attached to it? 121) _____
A) three B) one C) none D) two

122) Tendons are strong, rope–like structures that connect skeletal muscle to bone. Which of the following proteins would provide strength to a tendon? 122) _____

A) actin
B) collagen
C) albumin
D) molecular chaperone

123) Phospholipids make up most of the lipid part of the cell membrane. Since water exists on both the outside and inside of a cell, which of the following phospholipid arrangements makes the most sense? 123) _____

A) two back–to–back phospholipid layers with the non–polar tails facing out on both sides
B) a single layer of phospholipids with the polar heads facing outside the cell
C) a single layer of phospholipids with the polar heads facing inside the cell
D) two back–to–back phospholipid layers with the polar heads facing out on both sides

124) What type of chemical bond can form between an atom with 11 protons and an atom with 17 protons? 124) _____

A) polar covalent
B) ionic
C) hydrogen
D) non–polar covalent

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

125) What happens when globular proteins are denatured? 125) _____

126) Explain the difference between potential and kinetic energy. 126) _____

127) How can phospholipids form a film when mixed in water? 127) _____

128) What properties does water have that make it a very versatile fluid? 128) _____

129) What advantages does ATP have in being the energy currency molecule? 129) _____

130) Explain why water is considered to have partial charges even though it is sharing electrons in a polar covalent bond. 130) _____

131) When a set of electrodes connected to a light bulb is placed in a solution of dextrose and a current is applied, the light bulb does not light up. When the same unit is placed in HCl, it does. Why? 131) _____

132) Describe the factors that affect chemical reaction rates. 132) _____

133) Protons and electrons exist in every atom nucleus except hydrogen. Is this statement true or false and why? 133) _____

134) A chemical bond never occurs between components of a mixture. Discuss this. 134) _____

135) All chemical reactions are theoretically reversible. Comment on this statement. 135) _____

136) What is the major difference between polar and nonpolar covalent bonds? 136) _____

137) An amino acid may act as a proton acceptor or donor. Explain. 137) _____

138) Name at least four things you know about enzymes. 138) _____

139) In the compound H_2CO_3, what do the numbers 2 and 3 represent? 139) _____

140) Are all chemical reactions reversible? If not, why aren't they all reversible? 140) _____

141) If all protons, electrons, and neutrons are alike, regardless of the atom considered, what determines the unique properties of each element? 141) _____

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

142) Mrs. Mulligan goes to her dentist and, after having a couple of cavities filled, her dentist strongly suggests that she reduce her intake of sodas and increase her intake of calcium phosphates in the foods she eats. Why?

143) Although his cholesterol levels were not high, Mr. Martinez read that cholesterol was bad for his health, so he eliminated all foods and food products containing this molecule. He later found that his cholesterol level dropped only 20%. Why did it not drop more?

144) How can DNA be used to "fingerprint" a suspect in a crime?

145) Why is it possible for us to drink a solution that contains a mixture of equal concentration of a strong acid and a strong base, either of which, separately, would be very caustic?

146) A 65–year–old patient came to the emergency room with complaints of severe heartburn unrelieved by taking a "large handful" of antacids. Would you expect the pH to be high or low? Explain why.

147) A 22–year-old female college student is stressed out due to final exams and begins to hyperventilate. This means she is exhaling too much carbon dioxide. As a result, the pH of the blood will become too basic creating a homeostatic imbalance. Her friend hands her a paper bag and instructs her to inhale and exhale into the bag. Breathing in the bag helps to replace the lost carbon dioxide lowering the pH back to normal levels. Which buffer system in the body will be involved in this reaction?

148) Brenda is a 26–year–old female who is being discharged from the hospital after a vaginal delivery of an 8–pound healthy infant. Brenda is instructed by the nurse to eat a diet high in fiber and to drink 8 glasses of water per day to prevent constipation. Explain the role of fiber and water to promote defecation.

Answer Key
Testname: UNTITLED49

1) D
2) B
3) E
4) C
5) A
6) C
7) B
8) B
9) D
10) E
11) C
12) A
13) A
14) D
15) C
16) B
17) B
18) D
19) A
20) C
21) B
22) B
23) A
24) B
25) C
26) D
27) B
28) A
29) C
30) D
31) B
32) C
33) A
34) D
35) B
36) C
37) A
38) C
39) B
40) A
41) FALSE
42) TRUE
43) FALSE
44) TRUE
45) FALSE
46) FALSE
47) FALSE
48) TRUE
49) TRUE
50) TRUE

Answer Key
Testname: UNTITLED49

51) TRUE
52) TRUE
53) TRUE
54) TRUE
55) TRUE
56) TRUE
57) TRUE
58) FALSE
59) TRUE
60) TRUE
61) TRUE
62) C
63) D
64) D
65) D
66) D
67) B
68) A
69) B
70) C
71) B
72) B
73) B
74) D
75) D
76) D
77) B
78) A
79) A
80) B
81) B
82) D
83) A
84) A
85) D
86) C
87) C
88) A
89) B
90) D
91) D
92) D
93) A
94) A
95) A
96) C
97) A
98) B
99) B
100) D

101) A
102) B
103) A
104) D
105) B
106) B
107) D
108) A
109) B
110) D
111) B
112) A
113) A
114) A
115) A
116) D
117) B
118) A
119) C
120) C
121) D
122) B
123) D
124) B
125) The active sites are destroyed.
126) Potential energy is inactive stored energy that has potential to do work. Kinetic energy is energy in action.
127) Phospholipids have both polar and nonpolar ends. The polar end interacts with water, leaving the nonpolar end oriented in the opposite direction.
128) High heat capacity, high heat of vaporization, polar solvent properties, reactivity, and cushioning.
129) Its energy is easy to capture and store; it releases just the right amount of energy for the cell's needs so it is protected from excessive energy release. A universal energy currency is efficient because a single system can be used by all the cells in the body.
130) Due to the electronegativity of oxygen, it pulls the shared electron more strongly than the hydrogen. As a result, the oxygen acquires a partial negative charge, and the hydrogens acquire a partial positive charge.
131) HCl ionizes to form current–conducting electrolytes. Dextrose does not ionize, and therefore does not conduct current.
132) Temperature increases kinetic energy and therefore the force of molecular collisions. Particle size: smaller particles move faster at the same temperature and therefore collide more frequently; also, smaller particles have more surface area given the same concentration of reactants. Concentration: the higher the concentration, the greater the chance of particles colliding. Catalysts increase the rate of the reaction at a given temperature. Enzymes are biological catalysts.
133) False. Hydrogen has one proton and one electron. It is the neutron, not the electron that can coexist in the nucleus and that hydrogen does not have.
134) Mixtures come in three forms–solutions, colloids, and suspensions. Components of these mixtures always retain their original makeup and can be separated into their individual components; therefore, no chemical bonding has taken place.
135) It is possible to reverse any reaction if the products are still present. Those that are only slightly exergonic are easily reversible. Some would require an enormous amount of energy to reverse. In the simple reaction $Na + Cl \rightarrow NaCl$ the amount of energy it takes to reverse table salt to chlorine gas and sodium metal is enormous. When glucose is oxidized the energy goes into bonds of ATP molecules which are then spent and thus the energy is not available to reform glucose.

136) Polar bonds have an unequal sharing of electrons resulting in a slight negative charge at one end of the molecule and a slight positive charge at the other end. Nonpolar bonds have an equal sharing of electrons, resulting in a balanced charge among the atoms.
137) Amino acids have two components–a base group (proton acceptor) and an organic acid part (a proton donor). Some have additional base or acid groups on the ends of their R groups as well.
138) 1. Most are proteins.
2. They have specific binding sites for specific substrates.
3. They lower the activation barrier for a specific reaction.
4. The names often end in "Suffix: –ase."
5. They can be denatured.
6. They can be used again and again.
139) The 2 indicates that there are two hydrogen atoms in the compound and the 3 indicates that there are three oxygen atoms in the compound.
140) All chemical reactions are theoretically reversible, but only if the products are not consumed and enough energy is available for the reaction.
141) Atoms of different elements are composed of different numbers of protons, electrons, and neutrons.
142) Sodas are strong acids that can reduce bone and tooth salts. Calcium phosphate makes teeth hard and therefore more resistant to tooth decay.
143) Cholesterol is produced by the liver, in addition to being ingested in foods.
144) The DNA of a person is unique to that individual. By obtaining the DNA from nucleated cells from the crime scene (e.g., blood, semen, other body tissues), enzymes may be used to break up the DNA into fragments. Because nearly everyone's DNA is different, it also breaks up into fragments differently. When the fragments are separated, they form patterns even more unique than fingerprint patterns. A match of suspect and crime scene DNA is strong evidence.
145) When an acid and base of equal strength are mixed, they undergo a displacement (neutralization) reaction to form water and a salt.
146) You would expect a high pH. Taking antacids will neutralize the acidic stomach. Taking a "handful" of antacids can cause an alkaloid state. Certain drugs, such as corticosteroids and antacids that contain baking soda, will lead to metabolic alkalosis.
147) The bicarbonate buffer system is going to be involved in this situation. In this buffer system, the weak acid is carbonic acid, which is formed from the reaction between carbon dioxide and water. The body responds to an increase in blood pH by shifting the equation to the left, causing carbonic acid to dissociate into bicarbonate and protons. These protons will bring the rising pH back to a normal level.
148) Cellulose is a polysaccharide found in all plant products that adds bulk to the diet to promote feces through the colon. Water acts as a lubricating liquid within the colon, which eases feces through the bowel.