

Name_____

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

- 1) _____ is the capacity to do work—the capacity to cause some change in matter.
A) Energy B) Atom C) Molecule D) Matter

1) _____

Answer: A
Explanation: A)
B)
C)
D)

- 2) Which of the following is true regarding electrons, shells, and energy?
A) As an electron moves to a shell further from the nucleus, it loses energy.
B) In order for an electron to move closer to the nucleus, it must absorb energy.
C) Electrons are located in shells around the nucleus.
D) The innermost electron shell has the most potential energy.
E) Electrons are attracted to each other because they have the same charge.

2) _____

Answer: C
Explanation: A)
B)
C)
D)
E)

- 3) Which of the following is true regarding enzymes?
A) Enzymes convert products into reactants.
B) Enzymes are consumed in a chemical reaction, so an organism must constantly replace these enzymes.
C) Each enzyme catalyzes one specific reaction or group of reactions.
D) Enzyme function is not affected by changes in temperature or pH.
E) Enzymes slow the rate of chemical reactions in living systems.

3) _____

Answer: C
Explanation: A)
B)
C)
D)
E)

- 4) A molecule of water forms when one oxygen binds with two hydrogen atoms, completely filling the outer shell of the hydrogens and oxygen. The type of bond linking the atoms together is
A) polar. B) disulfide. C) hydrogen. D) ionic. E) covalent.

4) _____

Answer: E
Explanation: A)
B)
C)
D)
E)

5) Carbohydrates are characterized by

5) _____

- A) being composed of carbon, hydrogen, and nitrogen.
- B) possessing a carbon backbone that is hydrated.
- C) being indigestible by most organisms.
- D) releasing energy when their peptide bonds are broken.

Answer: B

Explanation: A)

- B)
- C)
- D)

6) Which of the following is true regarding carbon?

6) _____

- A) It is capable of forming strong hydrogen bonds with other elements
- B) It is found in inorganic molecules
- C) It can form molecules that branch in many directions
- D) It is an ideal solvent in living systems
- E) It is most stable when its outermost shell is filled with eight electrons

Answer: C

Explanation: A)

- B)
- C)
- D)
- E)

7) Which of the following is needed to synthesize a new strand of DNA?

7) _____

- A) nucleotides
- B) GTP
- C) RNA
- D) amino acids
- E) lipids

Answer: A

Explanation: A)

- B)
- C)
- D)
- E)

8) Which of the following molecules is stored in adipose tissue and serves as an important source of energy for the human body?

8) _____

- A) triglycerides
- B) glucose
- C) steroids
- D) phospholipids
- E) glycogen

Answer: A

Explanation: A)

- B)
- C)
- D)
- E)

9) Which of the following occurs when a phosphate is removed from an ATP molecule? 9) _____

- A) Energy is released for cell work.
- B) Chemical reactions stop in a cell due to lack of an energy source.
- C) Fat is converted to protein.
- D) Energy is added to the ATP molecule to form ATP4.
- E) Oxygen produced in the reaction causes the molecule to explode.

Answer: A

Explanation: A)

- B)
- C)
- D)
- E)

10) Proteins that function as a catalyst 10) _____

- A) maintain primary structure.
- B) facilitate chemical reactions by altering the final products formed.
- C) can only participate in reactions that synthesize new products.
- D) slow down the speed at which chemical reactions occur, but do not alter the final products formed.
- E) are referred to as enzymes.

Answer: E

Explanation: A)

- B)
- C)
- D)
- E)

11) Which of the following is true regarding the structure of the atom? 11) _____

- A) In small elements, such as carbon, electrons have a positive charge; in larger elements, such as barium, electrons have a negative charge.
- B) Most of the mass of an atom is due to its protons and neutrons.
- C) Neutrons carry a negative charge.
- D) All electrons are located at the same distance from the nucleus.
- E) The nucleus is composed of equal numbers of positively charged particles and negatively charged particles.

Answer: B

Explanation: A)

- B)
- C)
- D)
- E)

12) A solution with a pH of 6 has _____ times as many hydrogen ions as a solution with a pH of 7. 12) _____

- A) 100,000
- B) 100
- C) 1,000
- D) 10
- E) 10,000

Answer: D

Explanation: A)

- B)
- C)
- D)
- E)

13) Which of the following is true concerning hydrogen bonds?

13) _____

- A) They are weak bonds that form between water molecules in liquid form.
- B) Hydrogen bonds hold strands of DNA together.
- C) The bonds break when water enters a vapor state and remain broken as long as water molecules remain in the gas phase.
- D) All of the above are correct.

Answer: D

Explanation: A)

- B)
- C)
- D)

14) Isotopes of an element have the same atomic number as the more common atoms, but different atomic mass because

14) _____

- A) isotopes absorb water from the surrounding environment.
- B) isotopes contain more electrons than the more common atoms.
- C) isotopes contain more neutrons than the more common atoms.
- D) isotopes contain more protons than the more common atoms.

Answer: C

Explanation: A)

- B)
- C)
- D)

15) _____ is the study of matter and the energy that causes matter to combine, break apart and recombine in everything living and non-living.

15) _____

- A) Chemistry
- B) Biology
- C) Geology
- D) Physics

Answer: A

Explanation: A)

- B)
- C)
- D)

16) Which of the following is a very important source of energy for cells?

16) _____

- A) starch
- B) glucose
- C) cellulose
- D) ribose
- E) deoxyribose

Answer: B

Explanation: A)

- B)
- C)
- D)
- E)

17) Students seeking a "boost" of energy to pull an all-nighter should consider a caffeine tablet instead of "energy shot" because 17) _____

- A) all of the ingredients in an energy shot are not provided by the manufacturer, so you really are not entirely sure what you are drinking.
- B) energy shots are generally bad tasting by comparison to a caffeine tablet.
- C) the tablets are much cheaper to purchase.
- D) caffeine tablets usually contain more caffeine.
- E) All of the above are correct.

Answer: E

Explanation: A)

- B)
- C)
- D)
- E)

18) Investigators at the National Institutes of Health examined the sales trends of five dietary supplements before and after the publication of negative research results. There were no significant declines in sales of four of five of the dietary supplements after published reports that the supplements were ineffective. However, sales of a fifth supplement, vitamin E, dropped by more than 33%. Researchers speculated that the drop in sales of only one of the five supplements could be due to 18) _____

- A) the report simply not being heard or read by the public as a whole.
- B) the higher cost of vitamin E in relation to the other dietary supplements examined.
- C) supplements like vitamin E are recommended more frequently by physicians to their patients.
- D) vitamin E serves less useful purposes than the other supplements.
- E) vitamin E has more negative side effects than the other supplements.

Answer: C

Explanation: A)

- B)
- C)
- D)
- E)

19) Each amino acid is composed of a central carbon that forms covalent bonds with four other atoms/molecules. These atoms/molecules include all but a(n) 19) _____

- A) hydrogen atom.
- B) R group.
- C) A group.
- D) carboxyl group.
- E) amino group.

Answer: C

Explanation: A)

- B)
- C)
- D)
- E)

20) Which of the following is a function of a protein?

20) _____

- A) is a major subunit of cellulose
- B) acts as a catalyst
- C) provides energy for a muscle contraction
- D) stores genetic material
- E) primary structural component of a cell membrane

Answer: B

Explanation: A)

- B)
- C)
- D)
- E)

21) Radioisotopes have a number of uses in science and medicine. These uses include

21) _____

- A) providing the power supply in heart pacemakers.
- B) dating fossils and treating cancer.
- C) curing diabetes.
- D) treating asthma and regulating nerve transmission.
- E) repairing damaged heart tissue.

Answer: B

Explanation: A)

- B)
- C)
- D)
- E)

22) Which of the following is a lipid?

22) _____

- A) Maltose.
- B) Cholesterol.
- C) Alanine.
- D) Glycogen.

Answer: A

Explanation: A)

- B)
- C)
- D)

23) The total number of protons and neutrons in an atom can best be determined by

23) _____

- A) the subscript number following the chemical symbol
- B) atomic number
- C) atomic mass
- D) the charge of the atom
- E) the chemical symbol

Answer: C

Explanation: A)

- B)
- C)
- D)
- E)

24) Body fluids in humans have a high buffering capacity because

24) _____

- A) even modest shifts in pH can severely alter the physiology of cells.
- B) it is the natural result of water as a solvent.
- C) shifts in blood pH are required to maintain homeostasis.
- D) it promotes hydrogen bonding between water molecules in biological fluids.

Answer: A

Explanation: A)

- B)
- C)
- D)

25) Which of the following is true regarding macromolecules?

25) _____

- A) Cells use certain macromolecules to store energy.
- B) Cells cannot use macromolecules to signal other cells.
- C) Macromolecules are produced by hydration synthesis.
- D) Cells produce macromolecules by the process of hydrolysis.
- E) An example of a macromolecule is H₂O.

Answer: A

Explanation: A)

- B)
- C)
- D)
- E)

26) Hydrolysis reactions are important in biological systems

26) _____

- A) because they promote the release of energy when covalent bonds are broken.
- B) due to their role in the breakdown of food molecules during digestion.
- C) since these reactions are associated with recycling of materials and elimination of substances from the body.
- D) All of the above are correct.

Answer: D

Explanation: A)

- B)
- C)
- D)

27) Sucrose is an oligosaccharide made up of which of the following sugars?

27) _____

- A) glucose and fructose
- B) starch and glycogen
- C) maltose and glucose
- D) glucose and glucose
- E) deoxyribose and ribose

Answer: A

Explanation: A)

- B)
- C)
- D)
- E)

28) A research student is analyzing the nucleic acid of a virus. He finds that the nucleic acid contains thymine. From this it can be concluded that the nucleic acid

28)

- A) is double stranded.
- B) contains glucose.
- C) contains ribose.
- D) is a strand of DNA.
- E) is actually a protein.

Answer: A

Explanation: A)
B)
C)
D)
E)

29) Which of the following characteristics applies to both living organisms and nonliving things?

29)

- A) are capable of growth
- B) are capable of reproduction
- C) have the ability to store energy for later use
- D) are made up of matter
- E) are made up of cells

Answer: D

Explanation: A)
B)
C)
D)
E)

30) Which of the following is a molecule?

30)

- A) O
- B) N
- C) Lead
- D) NaCl
- E) C

Answer: D

Explanation: A)
B)
C)
D)
E)

31) Pancreatic cells make insulin, which is a type of protein. These cells use _____ in order to synthesize insulin by the process of _____.

31)

- A) oligosaccharides, hydrolysis.
- B) monosaccharides, dehydration synthesis.
- C) nucleotides, condensation.
- D) fatty acids and glycerol, hydrolysis.
- E) amino acids, dehydration synthesis.

Answer: E

Explanation: A)
B)
C)
D)
E)

32) Disulfide bonds are most characteristic of which of the following levels of protein structure?

32) _____

- A) quaternary
- B) enzymatic
- C) primary
- D) tertiary
- E) secondary

Answer: D

Explanation: A)

- B)
- C)
- D)
- E)

33) Which of the following is true regarding water?

33) _____

- A) Electrons are shared equally between the atoms of water.
- B) Water molecules are attracted to each other by ionic bonds.
- C) Each molecule of water consists of two atoms of hydrogen and one atom of oxygen covalently bonded to each other.
- D) The oxygen side of the water molecule is partially positive.
- E) Water is a type of ion.

Answer: C

Explanation: A)

- B)
- C)
- D)
- E)

34) Molecules such as water that are electrically neutral overall but still have partially charged regions are referred to as

34) _____

- A) electrolytes.
- B) covalently charged.
- C) isotopes.
- D) ions.
- E) polar molecules.

Answer: E

Explanation: A)

- B)
- C)
- D)
- E)

35) Lipids are important to biological systems because

35) _____

- A) some lipid types are potentially large sources of energy to perform cellular work.
- B) they are solid at body temperature so they stabilize membranes.
- C) most help to buffer aqueous solutions in the body.
- D) all lipids are very soluble in water.

Answer: A

Explanation: A)

- B)
- C)
- D)

36) DNA differs from RNA in that DNA

36) _____

- A) contains deoxyribose.
- B) is made up of nucleotides.
- C) is single stranded.
- D) contains phosphates.
- E) contains cytosine.

Answer: A

Explanation: A)

- B)
- C)
- D)
- E)

37) Which of the following is true regarding nucleotides?

37) _____

- A) DNA nucleotides contain deoxyribose; RNA nucleotides contain sucrose.
- B) There are three different DNA nucleotides.
- C) Nucleotides are bonded together by covalent bonds between the sugars and the phosphates.
- D) A DNA nucleotide could be made up of ribose, a phosphate, and cytosine.
- E) DNA nucleotides are assembled into RNA by the process of dehydration synthesis.

Answer: C

Explanation: A)

- B)
- C)
- D)
- E)

38) A student measuring the pH of the water in a fish tank found it to have a pH of 8. Which of the following statements is true regarding that solution?

38) _____

- A) The water does not contain hydrogen ions.
- B) The water is more alkaline than a solution with a pH of 10.
- C) The water is alkaline.
- D) The water is highly acidic.
- E) The water contains equal numbers of hydrogen ions and hydroxyl ions.

Answer: C

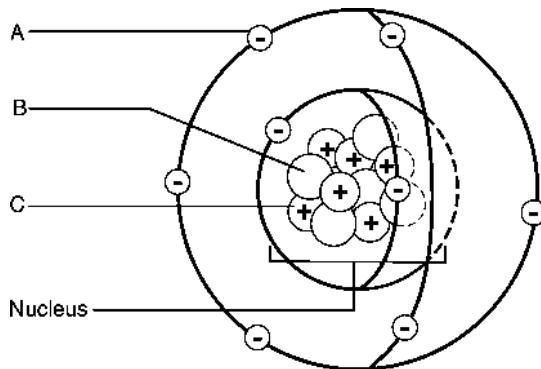
Explanation: A)

- B)
- C)
- D)
- E)

- 39) A mad scientist has ripped apart an atom and collected all the subatomic particles located in the nucleus of the atom. Which of the following has he collected? 39) _____
- A) protons and neutrons
 - B) electrons and protons
 - C) neutrons and electrons
 - D) electrons
 - E) protons
- Answer: A
- Explanation: A)
B)
C)
D)
E)
- 40) The most important physical characteristic of lipids with regard to living organisms is that they 40) _____
- A) dissolve easily in water.
 - B) are more dense than water.
 - C) are hydrophobic.
 - D) are typically a form of waste product that is difficult to eliminate.
 - E) are very large and therefore difficult to store.
- Answer: C
- Explanation: A)
B)
C)
D)
E)
- 41) Ions in body fluids of a human are referred to as 41) _____
- A) osmolytes.
 - B) isotopes.
 - C) electrolytes.
 - D) atoms.
- Answer: C
- Explanation: A)
B)
C)
D)
- 42) Water is an excellent solvent for biological systems because 42) _____
- A) it can maintain a relatively unstable temperature for chemical reactions to occur.
 - B) the polar nature of water prevents reassociation of ions once dissolved.
 - C) it can form covalent bonds with molecules once dissolved.
 - D) water is a semi-solid at body temperature preventing it from flowing freely through the human body.
- Answer: B
- Explanation: A)
B)
C)
D)

- 43) Carbon has an atomic number of 6 and an atomic mass of 12. Therefore, carbon has _____ electrons and _____ neutrons. 43) _____
- A) 6, 12 B) 6, 6 C) 2, 10 D) 12, 12 E) 12, 6
- Answer: B
Explanation: A)
B)
C)
D)
E)
- 44) Which of the following is an oligosaccharide? 44) _____
- A) maltose B) ribose C) DNA D) starch E) glucose
- Answer: A
Explanation: A)
B)
C)
D)
E)
- 45) Isotopes of an element have the same _____, but different _____. 45) _____
- A) number of neutrons, numbers of protons
B) atomic number, atomic masses
C) number of electron shells, numbers of protons
D) name, chemical symbols
E) atomic mass, atomic numbers
- Answer: B
Explanation: A)
B)
C)
D)
E)
- SHORT ANSWER.** Write the word or phrase that best completes each statement or answers the question.
- 46) The universal energy source for cells is _____. 46) _____
- Answer: ATP
Explanation:
- 47) In the atom, electrons are located in "clouds" with negative charges around the nucleus; these are called _____. 47) _____
- Answer: shells
Explanation:
- 48) Molecules that are polar and attracted to water are _____; molecules that are nonpolar and therefore not attracted to water are _____. 48) _____
- Answer: hydrophilic, hydrophobic
Explanation:
- 49) There are _____ different deoxynucleotides found in the human genome. 49) _____
- Answer: four
Explanation:

Figure 2.3



Use the letters from Figure 2.3 to answer the following questions.

- 50) Isotopes of this element would differ in the number of _____.

50) _____

Answer: B

Explanation:

- 51) Plants produce a polysaccharide made glucose known as _____ which is virtually undigestable by most animals.

51) _____

Answer: cellulose

Explanation:

- 52) The molecule with which an enzyme reacts is a(n) _____.

52) _____

Answer: substrate (reactant)

Explanation:

- 53) A substance that helps to maintain a stable pH is a(n) _____.

53) _____

Answer: buffer

Explanation:

- 54) Evaporation of water from the skin results in a(n) _____ in body temperature.

54) _____

Answer: decrease

Explanation:

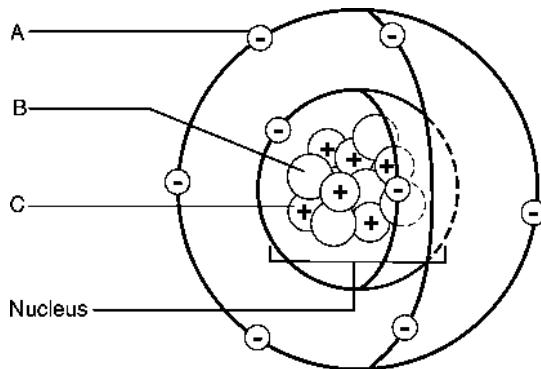
- 55) The normal pH of human blood falls within a range that is near a _____ pH.

55) _____

Answer: neutral

Explanation:

Figure 2.3



Use the letters from Figure 2.3 to answer the following questions.

- 56) The subatomic particles, _____ and _____, have approximately the same mass.

56) _____

Answer: B, C

Explanation:

- 57) An electrically charged molecule or atom is a(n) _____.

57) _____

Answer: ion

Explanation:

- 58) The structure of a cell membrane includes a modified form of lipid called a _____.

58) _____

Answer: phospholipid

Explanation:

- 59) Which solution has more free hydrogen ions: pH = 9 or pH = 3?

59) _____

Answer: pH = 3

Explanation:

- 60) The acidity or alkalinity of a solution can be measured in terms of _____.

60) _____

Answer: pH

Explanation:

- 61) The pure form of matter that cannot be broken down into a simpler form is a(n) _____.

61) _____

Answer: element

Explanation:

- 62) All things on earth are made up of _____, which is defined as anything that has mass and occupies space.

62) _____

Answer: matter

Explanation:

- 63) In order for a cell to produce a fat, it must have one molecule of _____ and three _____.

63) _____

Answer: glycerol, fatty acids

Explanation:

64) Foods and drinks that provide benefits beyond typically expected for nutrients are called _____.

64) _____

Answer: nutraceuticals

Explanation:

65) Molecules that give up or donate hydrogen ions are _____.

65) _____

Answer: acids

Explanation:

66) Certain nutrients and enzymes known as _____ are the body's natural defense against oxygen free radicals.

66) _____

Answer: antioxidants

Explanation:

67) The molecule that stores the set of instructions of a cell and directs everything a cell does is _____.

67) _____

Answer: DNA

Explanation:

68) Dietary supplements are not regulated by the U.S. Food and Drug Agency until the supplement is proven _____.

68) _____

Answer: unsafe

Explanation:

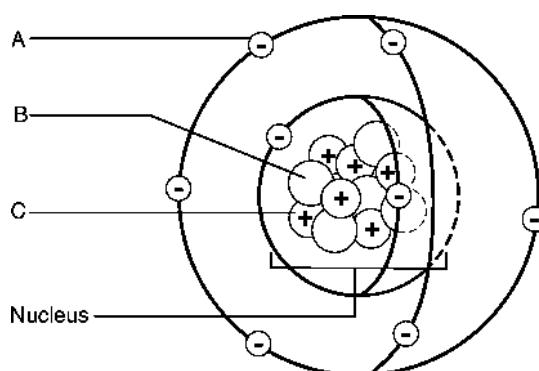
69) Protons and neutrons are located in the _____ of an atom.

69) _____

Answer: nucleus

Explanation:

Figure 2.3



Use the letters from Figure 2.3 to answer the following questions.

70) In order for this atom to develop a positive charge, it would have to lose _____.

70) _____

Answer: A

Explanation:

71) The process by which cells break down organic macromolecules into their subunits is _____.

71) _____

Answer: hydrolysis

Explanation:

72) A diet rich in _____ fat is believed to contribute to the development of cardiovascular disease.

72) _____

Answer: saturated

Explanation:

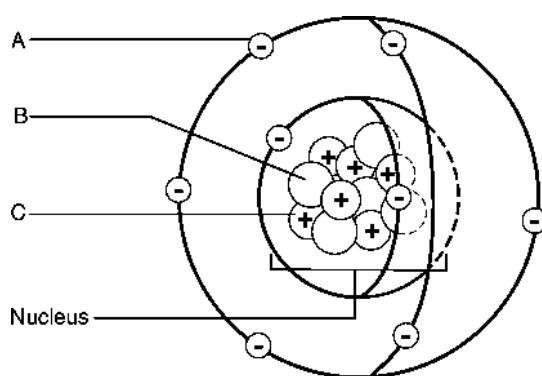
73) Isotopes that give off energy and emit particles are known as _____.

73) _____

Answer: radioisotopes

Explanation:

Figure 2.3



Use the letters from Figure 2.3 to answer the following questions.

74) The label _____ points to a neutron.

74) _____

Answer: B

Explanation:

75) Large organic molecules that are composed of thousands of smaller molecules bonded to one another are known as _____.

75) _____

Answer: macromolecules

Explanation:

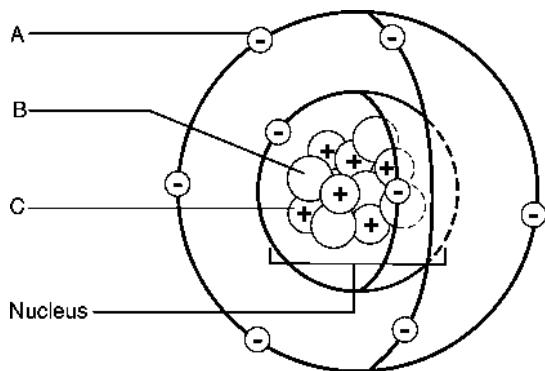
76) Water held behind a dam has a large amount of _____ energy.

76) _____

Answer: potential

Explanation:

Figure 2.3



Use the letters from Figure 2.3 to answer the following questions.

- 77) The number of subatomic particles _____ is the atomic number of that atom.

77) _____

Answer: C

Explanation:

- 78) In order for this atom to be electrically neutral, the number of subatomic particles labeled "A" in the diagram would have to equal the number of _____.

78) _____

Answer: C

Explanation:

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

- 79) One of the most important buffer pairs in blood is carbonic acid and bicarbonate because they regulate the pH of blood by absorbing and releasing hydrogen ions as needed.

79) _____

Answer: True False

Explanation:

- 80) Because carbon requires four additional electrons to fill its outermost shell, it has a natural tendency to form four covalent bonds with other atoms, making it an ideal element for forming structures in living cells.

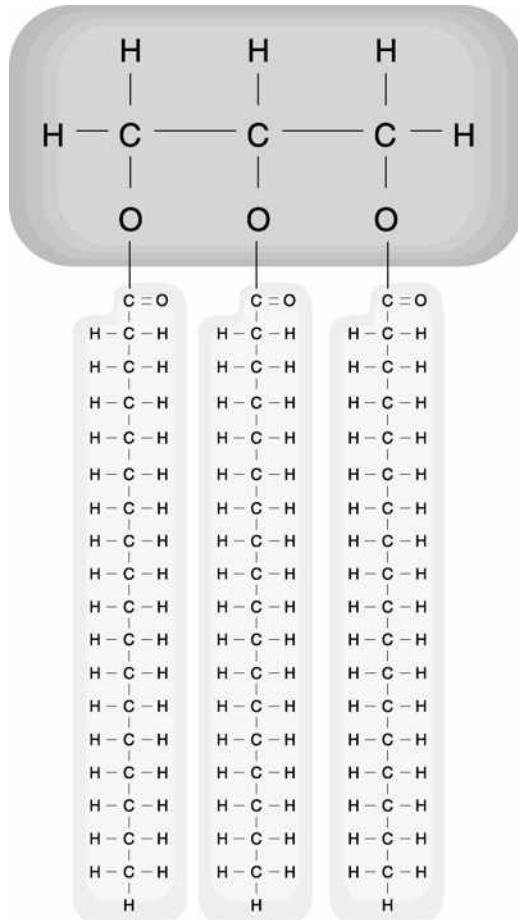
80) _____

Answer: True False

Explanation:

Use Figure 2.2 to answer the following questions.

Figure 2.2



- 81) The diagram shows a triglyceride with fatty acid tails representing a fat that is liquid at room temperature.

81) _____

Answer: True False

Explanation:

- 82) All matter is made up of atoms.

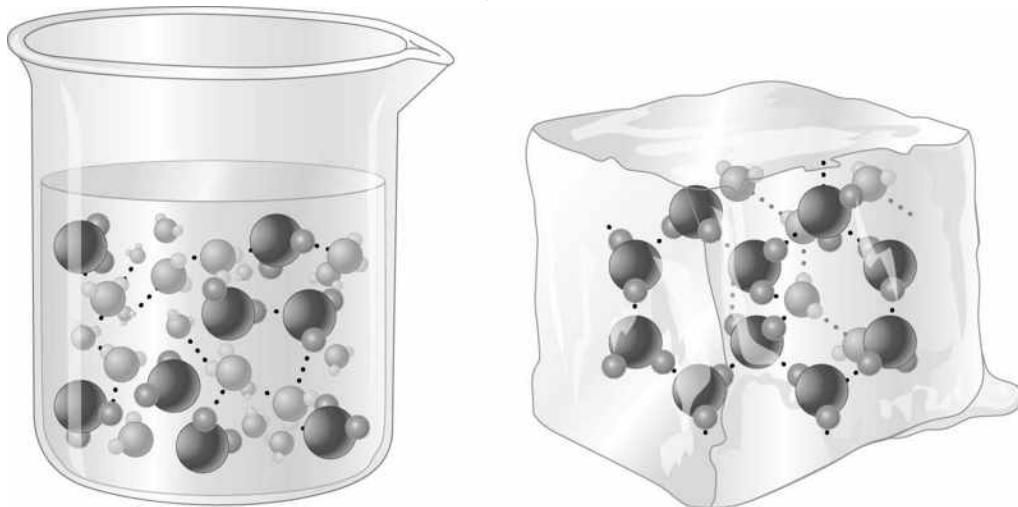
82) _____

Answer: True False

Explanation:

Figure 2.1 shows water molecules in close proximity to one another. Use this figure to answer the following questions.

Figure 2.1



- 83) The type of bond indicated by the dotted lines is a hydrogen bond.

83) _____

Answer: True False

Explanation:

- 84) The more buffers present in a body fluid, the more likely that your blood pH will change after absorbing nutrients during digestion.

84) _____

Answer: True False

Explanation:

- 85) Potential energy is energy that has not been used yet, but has the potential to do work.

85) _____

Answer: True False

Explanation:

- 86) During intense exercise, you produce a lot of heat energy yet your body temperature rises only in small increments. This temperature stability is because water in body fluids releases the heat very quickly.

86) _____

Answer: True False

Explanation:

- 87) Atoms with either more or fewer neutrons than the usual number for an element are referred to as isotopes.

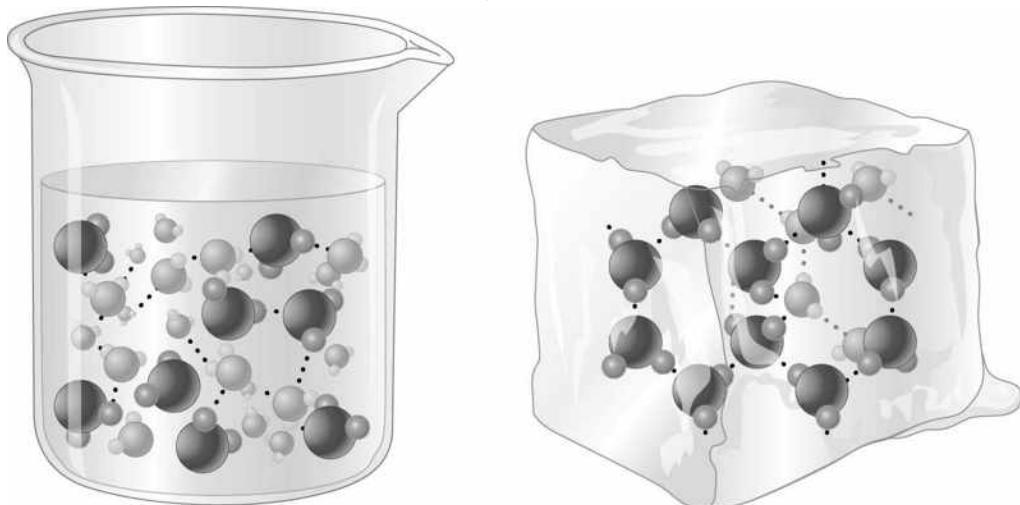
87) _____

Answer: True False

Explanation:

Figure 2.1 shows water molecules in close proximity to one another. Use this figure to answer the following questions.

Figure 2.1



- 88) The difference between water molecules in liquid water versus water molecules in ice is in the number of covalent bonds that form.

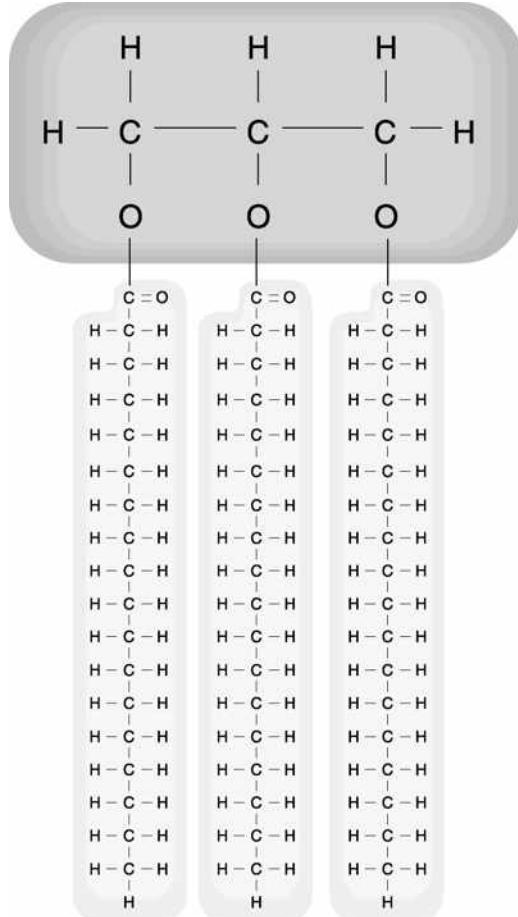
88) _____

Answer: True False

Explanation:

Use Figure 2.2 to answer the following questions.

Figure 2.2



- 89) The figure above shows a triglyceride that contains unsaturated fatty acids.

89) _____

Answer: True False

Explanation:

- 90) If the number of protons in an atom equals the number of electrons in the atom, the atom is electrically neutral.

90) _____

Answer: True False

Explanation:

- 91) When water is released from a dam, potential energy is converted to kinetic energy.

91) _____

Answer: True False

Explanation:

- 92) Electrons are smaller than protons, negatively charged, and orbit the nucleus.

92) _____

Answer: True False

Explanation:

- 93) If the pH of your blood is lowered significantly, many proteins will not be able to fold correctly. 93) _____
The result will be decreased enzyme function throughout the body.

Answer: True False

Explanation:

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

Match each of the following descriptions to the appropriate term.

Match the following:

- 95) a strand of 3 to 100 amino acids A) polypeptide 95) _____
Answer: A

Match each of the following descriptions to the appropriate term.

that differ in

Matthew S. Hwang

- 100) a polysaccharide composed of a long chain of glucose molecules A) starch 100) _____

Match each of the following descriptions to the appropriate term

- 101) formed by chemical reactions between atoms A) molecule 101) _____

Answer: A B) atom

- 102) the smallest unit of matter that can take part in a chemical reaction 102) _____

Match the following:

- 103) major structural polysaccharide produced by plants

A) cellulose

103) _____

Answer: A

Match each of the following descriptions to the appropriate term.

- 104) alanine, glycine, cysteine

A) elements

104) _____

Answer: B

B) amino acids

- 105) matter that cannot be broken down

105) _____

Answer: A

Match the following:

- 106) lipid that stabilizes membranes and is a precursor to many hormones

A) saturated fat

106) _____

Answer: C

B) glucose

- 107) dominant energy source used by cells

C) cholesterol

107) _____

Answer: B

- 108) a molecule consisting of glycerol plus fatty acid chains with two hydrogen atoms per carbon atom; solid at room temperature

108) _____

Answer: A

Match each of the following descriptions to the appropriate term.

- 109) water, sodium chloride, carbon dioxide

A) molecules

109) _____

Answer: A

B) matter

- 110) anything that has mass and occupies space

110) _____

Answer: B

Match the following:

- 111) a double strand of nucleotides; stores genetic information

A) DNA

111) _____

Answer: A

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

- 112) In the human body, bicarbonate and carbonate ions work together to stabilize or buffer the pH of body fluids. What would happen to your blood if these buffering agents were removed?

Answer: Blood pH could not be regulated in the absence of this buffering pair. Anything absorbed or released from those fluids that altered the hydrogen or hydroxyl ion content of blood would cause a pH change. For humans that tightly regulate homeostasis, even relatively modest changes in blood pH can have devastating consequences.

- 113) Describe how denaturing a protein alters the function of that protein.

Answer: Denaturing a protein permanently disrupts protein structure. Ordinarily, if the protein shape is altered so is the function of that protein. This can be seen with denatured enzymes that lose the ability to bind the substrate and thus no chemical reaction can occur.

- 114) Explain how water in your body helps to regulate body temperature following a long-distance bike ride.

Answer: Water in body fluids is able to absorb heat without experiencing large temperature shifts. Water is also able to "hold" the heat, so that when the warm fluid moves to the periphery of the body, the heat can be exchanged or released into the environment. Perspiration is one means for the heat to be released from the body, which in turn allows you to maintain a relatively constant body temperature.

Answer Key
Testname: C2

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

Answer Key

Testname: C2

- 51) cellulose
- 52) substrate (reactant)
- 53) buffer
- 54) decrease
- 55) neutral
- 56) B, C
- 57) ion
- 58) phospholipid
- 59) pH = 3
- 60) pH
- 61) element
- 62) matter
- 63) glycerol, fatty acids
- 64) nutraceuticals
- 65) acids
- 66) antioxidants
- 67) DNA
- 68) unsafe
- 69) nucleus
- 70) A
- 71) hydrolysis
- 72) saturated
- 73) radioisotopes
- 74) B
- 75) macromolecules
- 76) potential
- 77) C
- 78) C
- 79) TRUE
- 80) TRUE
- 81) FALSE
- 82) FALSE
- 83) TRUE
- 84) FALSE
- 85) TRUE
- 86) FALSE
- 87) TRUE
- 88) FALSE
- 89) FALSE
- 90) TRUE
- 91) TRUE
- 92) TRUE
- 93) TRUE
- 94) A
- 95) A
- 96) A
- 97) C
- 98) D
- 99) B
- 100) A

Answer Key
Testname: C2

- 101) A
- 102) B
- 103) A
- 104) B
- 105) A
- 106) C
- 107) B
- 108) A
- 109) A
- 110) B
- 111) A

- 112) Blood pH could not be regulated in the absence of this buffering pair. Anything absorbed or released from those fluids that altered the hydrogen or hydroxyl ion content of blood would cause a pH change. For humans that tightly regulate homeostasis, even relatively modest changes in blood pH can have devastating consequences.
- 113) Denaturing a protein permanently disrupts protein structure. Ordinarily, if the protein shape is altered so is the function of that protein. This can be seen with denatured enzymes that lose the ability to bind the substrate and thus no chemical reaction can occur.
- 114) Water in body fluids is able to absorb heat without experiencing large temperature shifts. Water is also able to "hold" the heat, so that when the warm fluid moves to the periphery of the body, the heat can be exchanged or released into the environment. Perspiration is one means for the heat to be released from the body, which in turn allows you to maintain a relatively constant body temperature.