Chapter 2: Chemistry of Living Things

TRUE/FALSE

1. Hydrogen is an example of an atom.

   ANS: T PTS: 1

2. Medical imaging refers to invasive techniques and processes.

   ANS: F
   Medical imaging is noninvasive, such as a CT scan or MRI.

   PTS: 1

3. Electrolytes are responsible for the acidity or alkalinity of solutions and can conduct an electrical charge.

   ANS: T PTS: 1

4. Fructose found in fruit and honey is an example of a disaccharide.

   ANS: F
   Fructose is a monosaccharide.

   PTS: 1

5. Phospholipids are lipids that contain cholesterol.

   ANS: F
   Steroids are lipids that contain cholesterol.

   PTS: 1

6. Enzymes are specialized protein molecules found in all living cells.

   ANS: T PTS: 1

7. RNA structures are unique for each person and so are usable as a means of identification.

   ANS: F
   DNA structures are unique and used for identification, not RNA.

   PTS: 1

8. Another name for a base is alkali.

   ANS: T PTS: 1

9. Buffers help a living organism to maintain a constant pH value.

   ANS: T PTS: 1

10. Nuclear medicine is a branch of medicine that uses radioactive isotopes to prevent, diagnose, and treat disease.

    ANS: T PTS: 1

MULTIPLE CHOICE

1. The study of the chemical reactions of living things is called _____.
   a. anatomy
   b. biochemistry
   c. physiology
   d. physics

   ANS: B

	Feedback
A	Anatomy is the study of the shape and structure of an organism's body and the relationship of one body part to another.
B	
C	Physiology is the study of the function of each body part and how the functions of the various body parts coordinate to form a complete living organism.
D	The branch of science that treats the laws and properties of matter and the forces acting upon it is physics.

   PTS: 1

2. Sitting is a chair is an example of _____ energy
   a. potential
   b. kinetic
   c. ongoing

   ANS: A

	Feedback
A	
B	Getting up from the chair to walk would be kinetic energy.
C	Ongoing is not a type of energy.

   PTS: 1

3. Atoms that are alike combine to form the next stage of matter, which is a(n) _____.
   a. compound
   b. molecule
   c. element

   ANS: C

	Feedback
A	Atoms combine to form elements; elements combine to form compounds.
B	A molecule is the smallest unit of a compound.
C	

   PTS: 1

4. Water makes up what percentage of our body weight?
   a. 35% to 40%
   c. 75% to 80%

b. 55%to 65%
d. greater than 90%

ANS: B

	Feedback
A	Our body is 55% to 65% water.
B	
C	Our body is 55% to 65% water.
D	Our body is 55% to 65% water.

PTS: 1

5. Which of the following is an example of a lipid?
a. carbohydrate
b. protein
c. fat
d. enzyme

ANS: C

	Feedback
A	A lipid is a fat, not a carbohydrate.
B	A lipid is a fat, not a protein.
C	
D	A lipid is a fat; an enzyme is a specialized protein molecule.

PTS: 1

6. Triglycerides are a type of _____.
a. protein
b. fat
c. carbohydrate
d. glycogen

ANS: B

	Feedback
A	Triglycerides are fats.
B	
C	Triglycerides are fats.
D	Triglycerides are fats; glycogen is a carbohydrate.

PTS: 1

7. The nucleus of every human cell contains how many chromosomes?
a. 23
b. 46
c. 69
d. 92

ANS: B

	Feedback
A	There are 46 chromosomes in the nucleus of every human cell.
B	
C	There are 46 chromosomes in the nucleus of every human cell.
D	There are 46 chromosomes in the nucleus of every human cell.

PTS: 1

8. The sour taste of lemons is due to the presence of a compound called a(n) _____.
   a. acid
   b. base
   c. salt
   d. pH

   ANS: A

	Feedback
A	
B	The sour taste is from the presence of an acid.
C	The sour taste if form the presence of an acid; a base has a bitter taste.
D	pH is not a compound, it is the measure of acidity or alkalinity.

   PTS: 1

9. When an acid and a base are combined, they form a salt and water. This type of reaction is called a(n) _____.
   a. negatively charged hydroxide ion
   b. neutralization
   c. ionization

   ANS: B

	Feedback
A	A base, when dissolved in water, ionizes into negatively charged hydroxide ions and positively charged ions of a metal
B	
C	An acid, when dissolved in water, will ionize into positively charged hydrogen ions and negatively charged ions of some other element

   PTS: 1

10. A solution with a pH of 5 would tell you it is _____.
    a. acidic
    b. alkaline
    c. neutral

    ANS: A

	Feedback
A	
B	Alkaline would have value of 7.1 to 14.0.
C	A neutral pH is 7.0.

    PTS: 1

11. Milk of magnesia is an example of a(n) _____ liquid.
    a. acid
    b. base
    c. neutral

    ANS: B

	Feedback
A	It is an alkali, or base.
B	
C	It is an alkali, or base

PTS: 1

12. Which of the following is required for the body to function at an optimum level of health?
    a. highly acidic level
    b. highly alkaline level
    c. state of homeostasis
    d. none of the above

ANS: C

	Feedback
A	A high acidic body level would cause death; a state of homeostasis is required for the body to function at an optimum level of health.
B	A high alkaline body level would cause death; a state of homeostasis is required for the body to function at an optimum level of health.
C	
D	A state of homeostasis is required for the body to function at an optimum level of health.

PTS: 1

13. Which of the following is an example of an extracellular fluid?
    a. tears
    b. blood
    c. fluid within the cell
    d. urine

ANS: B

	Feedback
A	Tears are not an extracellular fluid; extracellular fluid bathes the cell and transports nutrients into and out of the cell.
B	
C	Fluid within the cell is called intracellular fluid, not extracellular.
D	Urine is not an extracellular fluid; extracellular fluid bathes the cell and transports nutrients into and out of the cell.

PTS: 1

14. Which of the following means many?
    a. poly
    b. uni
    c. intra
    d. di

ANS: A

	Feedback
A	
B	Uni means one.
C	Intra means inside.
D	Di means two.

PTS: 1

15. Which of the following would best be described as a scanning procedure that provides visualization of fluid, soft tissue, and body structures without the use of radiation?
    a. computed axial tomography (CAT, or CT, scan)
    b. magnetic resonance imaging (MRI)

c. positron emission tomography (PET) scan
d. bone scan

ANS: B

	Feedback
A	A CT is an x-ray procedure using ionizing radiation absorption and the variation in tissue density.
B	
C	With a PET scan, the patient is given a short-lived radioactive isotope.
D	A bone scan is a procedure that scans the body parts with a gamma camera after an intravenous injection of a radionuclide material.

PTS: 1

COMPLETION

1. Molecules that contain carbon, hydrogen, and oxygen are known as _____ _____.

   ANS: organic compounds

   PTS: 1

2. Molecules known as _____ _____ are the building blocks of protein.

   ANS: amino acids

   PTS: 1

3. The smallest particles of elements that enter into chemical reactions are _____.

   ANS: atoms

   PTS: 1

4. The number of protons in an atom is equal to the number of _____.

   ANS: electrons

   PTS: 1

5. The number of elements found naturally in our world is _____.

   ANS:
   92
   ninety-two

   PTS: 1

6. The smallest unit of a compound is a(n) _____.

   ANS: molecule

PTS: 1

7. A positively or negatively charged particle is called a(n) _____.

   ANS: ion

   PTS: 1

8. The four groups of organic compounds are _____, _____, _____, and _____ _____.

   ANS:
   carbohydrates, lipids, proteins, nucleic acids
   carbohydrates, proteins, nucleic acids, lipids
   carbohydrates, proteins, lipids, nucleic acids
   carbohydrates, nucleic acids, lipids, proteins
   lipids, proteins, nucleic acids, carbohydrates
   proteins, nucleic acids, lipids, carbohydrates
   proteins, lipids, nucleic acids, carbohydrates
   nucleic acids, lipids, proteins, carbohydrates

   PTS: 1

9. _____ _____ is involved in the process of heredity.

   ANS:
   DNA
   Deoxyribonucleic acid

   PTS: 1

10. Compounds can be classified into the following three groups: _____, _____, and _____.

    ANS:
    acids, bases, salts
    acids, salts, bases
    bases, salts, acids
    bases, acids, salts
    salts, acids, bases
    salts, bases, acids

    PTS: 1

MATCHING

Match the element name with its symbol.

a. calcium
b. carbon
c. hydrogen
d. iron
e. oxygen
f. sodium
g. potassium
h. nitrogen
i. magnesium
j. phosphorus

1. Na
2. Mg
3. O
4. K
5. N
6. Ca
7. P
8. Fe
9. C
10. H

1. ANS: F PTS: 1
2. ANS: I PTS: 1
3. ANS: E PTS: 1
4. ANS: G PTS: 1
5. ANS: H PTS: 1
6. ANS: A PTS: 1
7. ANS: J PTS: 1
8. ANS: D PTS: 1
9. ANS: B PTS: 1
10. ANS: C PTS: 1