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SKU: 9780323320924-TEST-BANK

MULTIPLE CHOICE

1. The atomic number equals the number of
   a. protons.
   b. neutrons.
   c. electrons.
   d. protons and neutrons.

   ANS: A REF: p. 20

2. The atomic weight is equal to the sum of
   a. neutrons.
   b. protons and neutrons.
   c. neutrons and electrons.
   d. electrons.

   ANS: B REF: p. 20

3. The smallest units of matter are
   a. molecules.
   b. atoms.
   c. protons.
   d. compounds.

   ANS: B REF: p. 20

4. Protons are
   a. located in the shells.
   b. part of the atomic nucleus.
   c. negatively charged.
   d. uncharged particles.

   ANS: B REF: p. 20

5. Particles of an atom located in the outermost shell and available for chemical bonding are called
   a. valence electrons.
   b. isotopes.
   c. excess electrons.
   d. neutrons.

   ANS: A REF: p. 21

6. Isotopes are atoms with
   a. the same number of electrons and protons.
   b. different numbers of protons and electrons.
   c. the same numbers of protons but a different number of neutrons.
   d. different numbers of electrons.

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ANS: C REF: p. 21

7. A chemical bond in which electrons are equally shared is a(n)
   a. ionic bond.
   b. polar covalent bond.
   c. nonpolar covalent bond.
   d. hydrogen bond.

   ANS: C REF: p. 23

8. The transfer of electrons in a chemical bond represents a(n)
   a. ionic bond.
   b. polar covalent bond.
   c. nonpolar covalent bond.
   d. hydrogen bond.

   ANS: A REF: p. 24

9. The bond of oxygen and hydrogen between water molecules is a(n)
   a. ionic bond.
   b. polar covalent bond.
   c. nonpolar covalent bond.
   d. hydrogen bond.

   ANS: D REF: p. 24

10. The isotope deuterium has
    a. one proton.
    b. one proton and one neutron.
    c. one proton and two neutrons.
    d. one proton and three neutrons.

    ANS: B REF: p. 21

11. After filling the first shell, the outermost shell of an atom can hold up to _____ electrons.
    a. 2
    b. 6
    c. 8
    d. 10

    ANS: C REF: p. 23

12. The bond between sodium and chlorine atoms in sodium chloride is a(n)
    a. hydrogen bond.
    b. ionic bond.
    c. polar covalent bond.
    d. nonpolar covalent bond.

    ANS: B REF: p. 24

13. Sucrose is composed of

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a. glucose and galactose.
b. glucose and fructose.
c. fructose and maltose.
d. glucose and maltose.

ANS: B REF: p. 31

14. The unit molecules (monomers) of carbohydrates are
a. monosaccharides.
b. amino acids.
c. nucleic acids.
d. fatty acids.

ANS: A REF: p. 31

15. The bond between amino acids is a(n)
a. ionic bond.
b. peptide bond.
c. hydrogen bond.
d. covalent bond.

ANS: B REF: p. 32

16. Glucose and fructose are examples of
a. monosaccharides.
b. disaccharides.
c. polysaccharides.
d. lipids.

ANS: A REF: p. 31

17. Two glucose molecules form
a. galactose.
b. lactose.
c. maltose.
d. fructose.

ANS: C REF: p. 31

18. Starch is an example of a
a. monosaccharide.
b. polysaccharide.
c. peptide.
d. protein.

ANS: B REF: p. 31

19. Cytosine always undergoes complementary base pairing with
a. adenine.
b. guanine.
c. thymine.
d. uracil.

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ANS: B REF: p. 36

20. The RNA nucleotide base that pairs with adenine of DNA is
    a. cytosine.
    b. guanine.
    c. thymine.
    d. uracil.

    ANS: D REF: p. 36

COMPLETION

1. Neutrons are _____ charged particles.

   ANS: not

   REF: p. 20

2. An atom with the same number of protons but a different number of neutrons is called a(n) _____.

   ANS: isotope

   REF: p. 21

3. A positively charged ion is a(n) _____.

   ANS: cation

   REF: p. 22

4. The breakdown of large molecules into smaller ones in the presence of water is called _____.

   ANS: hydrolysis

   REF: p. 25

5. Molecules that can absorb hydrogen ions and not change the pH of the substance are _____.

   ANS: buffers

   REF: p. 28

6. The formation of polymers from simpler substances is referred to as _____.

   ANS: synthesis

   REF: p. 25

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7. When the solute concentration outside a cell is the same as the concentration inside the cell, the solution is called _____.

   ANS: isotonic

   REF: p. 29

8. The monomers of triglycerides are _____ and fatty acids.

   ANS: glycerol

   REF: p. 31

9. Lactose is composed of glucose and _____.

   ANS: galactose

   REF: p. 31

10. Chemically, ATP is a(n) _____.

    ANS: nucleic acid

    REF: p. 38

MATCHING

Match the description below with the correct item from this list.

a. Redox
b. Electron
c. Neutron
d. Acid
e. Base
f. Salt
g. Glucose
h. Protein
i. Polysaccharide
j. Nucleic acid
k. Lipid
l. Tritium

1. Radioactive isotope
2. Negatively charged particle
3. Reduction–oxidation reactions
4. Hydrogen ion donor
5. Ammonium chloride
6. Monomer
7. Cellulose
8. Particle with no charge
9. Prostaglandin

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10. Amino acid chain

1. ANS: L REF: p. 22
2. ANS: B REF: p. 20
3. ANS: A REF: p. 25
4. ANS: D REF: p. 27
5. ANS: F REF: p. 28
6. ANS: G REF: p. 31
7. ANS: I REF: p. 31
8. ANS: C REF: p. 20
9. ANS: K REF: p. 33
10. ANS: H REF: p. 32

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