SAMPLE QUESTIONS

1. A single carbon atom can form a maximum of __________ covalent bond(s).
   (a) none; carbon only participates in ionic bonds
   (b) 1
   (c) 2
   (d) 3
   (e) 4

2. __________ is a hydroxyl group.
   (a) —SH
   (b) —NH₂
   (c) —OH
   (d) —COOH
   (e) —H

3. What name is given to the following reaction?
   Galactose (monosaccharide) + glucose (monosaccharide) → lactose (disaccharide) + water
   (a) hydrolysis
   (b) hydrogenation
   (c) glycolysis
   (d) dehydration reaction
   (e) gluconeogenesis

4. Carbohydrates typically include __________.
   (a) an NH₂ group
   (b) C, H, and O atoms
   (c) a hydrocarbon chain
   (d) a 5-carbon ring
   (e) a PO₄ group

5. Complete the equation: monosaccharide + monosaccharide → __________ + water
   (a) disaccharide
   (b) polypeptide
   (c) nucleic acid
   (d) polysaccharide
   (e) fat

6. Table sugar is __________.
   (a) glucose
   (b) maltose
   (c) lactose
   (d) sucrose
   (e) fructose

7. Which of the following is an example of a polysaccharide?
(a) glucose
(b) starch
(c) maltose
(d) fructose
(e) sucrose

8. Cellulose is an example of _________.
   (a) a polypeptide
   (b) a steroid
   (c) fiber
   (d) fat
   (e) a nucleic acid

9. Sometimes when I have my morning coffee, which I drink black with no sugar, I notice a thin film floating on top of the coffee. Since I have just read Chapter 3 of the text, I now realize the nature of this substance and so I run to my friend screaming, "Look at this ________ in my coffee!"
   (a) hydrophilic substance
   (b) hydrophobic substance
   (c) glucose
   (d) nucleotide
   (e) enzyme

10. What name is given to the following reaction?

    glycerol + 3 fatty acids → triglyceride + 3 water molecules

    (a) denaturation
    (b) hydrolysis
    (c) hydrogenation
    (d) catabolism
    (e) dehydration reaction

11. By definition, what type of fatty acid has double bonds?
    (a) steroid
    (b) triglyceride
    (c) unsaturated
    (d) monoglyceride
    (e) saturated

12. A fat that is hydrogenated is _________.
    (a) more unsaturated
    (b) easier to digest
    (c) more solid
    (d) less likely to cause strokes
    (e) likely to go bad faster

13. ________ is a steroid.
    (a) Unsaturated fat
    (b) Butter
    (c) Sucrose
    (d) Amino acid
(e) Estrogen

14. Enzymes are ________.
   (a) fats
   (b) steroids
   (c) monosaccharides
   (d) phospholipids
   (e) proteins

15. Amino acids include a side group as well as ________.
   (a) a central carbon, a hydrogen atom, an amino group, and a carboxyl group
   (b) a central carbon, a hydrogen atom, a hydroxyl group, and a carbonyl group
   (c) a central hydrogen, a nitrogen atom, an amino group, and a carboxyl group
   (d) a central hydrogen, a nitrogen atom, a hydroxyl group, and a carbonyl group
   (e) a central nitrogen, a carbon atom, an amino group, and a carbonyl group

16. The linear sequence of amino acids in a polypeptide chain is referred to as its ________ structure.
   (a) tertiary
   (b) quaternary
   (c) secondary
   (d) pentamerous
   (e) primary

17. Destruction of a protein's shape is called ________.
   (a) anabolism
   (b) hydrolysis
   (c) denaturation
   (d) a dehydration reaction
   (e) hydrogenation

18. A specific stretch of DNA that programs the amino acid sequence of a polypeptide is a ________.
   (a) gene
   (b) protein
   (c) nucleotide
   (d) nucleic acid
   (e) enzyme

19. Which of the following is true with regard to a DNA molecule?
   (a) The amount of adenine is equal to the amount of guanine, and the amount of thymine is equal to the amount of cytosine.
   (b) The amount of adenine is equal to the amount of guanine, and the amount of thymine is equal to the amount of uracil.
   (c) The amount of adenine is equal to the amount of cytosine, and the amount of guanine is equal to the amount of thymine.
   (d) The amount of adenine is equal to the amount of thymine, and the amount of guanine is equal to the amount of uracil.
   (e) The amount of adenine is equal to the amount of thymine, and the amount of guanine is equal to the amount of cytosine.
20. How does RNA differ from DNA?
   (a) RNA is double-stranded; DNA is single-stranded.
   (b) RNA is a polymer of amino acids; DNA is a polymer of nucleotides.
   (c) RNA contains uracil; DNA contains thymine.
   (d) In RNA G pairs with T, while in DNA, G pairs with C.
   (e) RNA contains one less —OH than does DNA.

21. Examine the two sugars in the following figure. How do these two sugars compare?
   (a) Glucose has more hydrogen.
   (b) Fructose has more hydrogen.
   (c) Glucose has more double bonds.
   (d) They have the same formula but different structures.
   (e) They are structurally identical in every way.

22. The figure below shows __________.
   (a) a single strand of RNA
   (b) double-stranded RNA
   (c) a single strand of DNA
   (d) double-stranded DNA
   (e) none of the above
Please read the following scenario to answer the following question(s).

23. The manufacturer of the chocolate mint cookies changed the ingredients of its cookies. Each serving now has 1 gram of saturated fat (4 fewer grams), 4 grams of trans fat (4 more grams), 21 grams of carbohydrates (1 fewer gram), and 11 grams of protein (no change). Do you think that the manufacturer made these cookies healthier?

(a) No, because they now have less saturated fat.
(b) Yes, because they now have less saturated fat.
(c) Yes, because they now have fewer grams of carbohydrates.
(d) No, because the number of proteins was not changed.
(e) No, because they now have more grams of trans fat.