Key

The Chemistry of Carbon (page 44)

1. How many valence electrons does each carbon atom have? four

2. What gives carbon the ability to form chains that are almost unlimited in length?
a carbon atom can bond to another

Macromolecules (page 45)

3. Many of the molecules in living cells are so large that they are known as
macromolecules.

4. What is the process called by which macromolecules are formed? polymerization

5. When monomers join together, what do they form? polymers

6. What are four groups of organic compounds found in living things?
   a. carbohydrates
   b. proteins
   c. lipids
   d. nucleic acids

Carbohydrates (pages 45–46)

7. What atoms make up carbohydrates? C, H, O

8. Circle the letter of each sentence that is true about carbohydrates.
   a. Starches and sugars are examples of carbohydrates.
   b. Living things use them as their main source of energy.
   c. The monomers in sugar polymers are starch molecules.
   d. Plants and some animals use them for strength and rigidity.

9. Single sugar molecules are also called monosaccharide

10. Circle the letter of each monosaccharide.
   a. galactose c. glucose
   b. glycogen d. fructose

11. What are polysaccharides? macromolecules formed from monosaccharides

12. How do plants and animals store excess sugar?
plants - starch animals - glycogen

Lipids (pages 46–47)

13. What kinds of atoms are lipids mostly made of? C, H

14. What are three common categories of lipids?
    a. oil b. waxes c. fat

15. Many lipids are formed when a glycerol molecule combines with compounds called fatty acids.

16. Circle the letter of each way that fats are used in living things.
    a. As parts of biological membranes
    b. To store energy
    c. To give plants rigidity
    d. As chemical messengers

17. Complete the table about lipids.

LIPIDS

Kind of Lipid	Description
saturated	Each carbon atom in a lipid's fatty acid chain is joined to another carbon atom by a single bond.
Unsaturated	at least one carbon double bond
polyun-saturated	A lipid's fatty acids contain more than one double bond.

Nucleic Acids (page 47)

18. Nucleic acids contain what kinds of atoms? H, O, N, C, P

19. The monomers that make up nucleic acids are known as nucleotides.

20. A nucleotide consists of what three parts? sugar, phosphate, base

21. What is the function of nucleic acids in living things? store + transmit genetic information

22. What are two kinds of nucleic acids?
    a. RNA
    b. DNA

Proteins (pages 47–48)

23. Proteins contain what kinds of atoms? N, C, H, O

24. Proteins are polymers of molecules called amino acids

25. What are four roles that proteins play in living things?
    a. control rate of reactions, regulate cell processes
    b. form structure (muscle, skin, hair)
    c. transport substances in/out cell
    d. fight disease