Using the terms and phrases provided below, complete the concept map showing the characteristics of organic compounds.

- carbohydrates
- lipids
- phospholipids
- DNA
- monosaccharides
- polysaccharides
- enzymes
- nucleic acids
- proteins
- fats
- nucleotides
- RNA

**Organic compounds**

1. __________
2. __________
3. __________
4. __________

which include

5. __________

which are made of

6. __________

amino acids

which are made of

7. __________

which include

8. __________
disaccharides

and include

9. __________

and include

10. __________

and include

11. __________

12. __________
water and soap molecules and becomes separated from the dirt. The dirt is released and can be rinsed away. The oil molecules can also be rinsed away.

2. The hydrogen bonds between water molecules cause surface tension. This prevents the surface of the water from stretching or breaking easily. The needle is light enough that it does not overcome the surface tension.

3. The polar ends of the soap molecules point downward in the water because of their attraction to the polar water molecules. The nonpolar ends point upward and disrupt the surface of the water. This disruption frees water molecules to adhere to the needle, which becomes wet and sinks.

4. pepsin
5. trypsin
6. Something must be added to the liquid to raise its pH close to 7 so trypsin can be activated.

7. Enzymes typically function within a range of pH values, although enzymes are most efficient at a specific pH.

8. Yes, both pepsin and trypsin can function in a liquid with a pH value between 4 and 5, but neither enzyme will function optimally.

**Concept Mapping**

1. carbohydrates
2. lipids
3. proteins
4. nucleic acids
5. fats or phospholipids
6. phospholipids or fats
7. monosaccharides or disaccharides
8. disaccharides or monosaccharides
9. enzymes
10. nucleotides
11. DNA, RNA
12. RNA, DNA

**Critical Thinking**

1. b
2. d
3. a
4. f
5. c
6. e
7. d
8. a
9. f
10. b
11. e
12. c
13. e
14. c
15. b
16. d
17. a
18. g, b
19. i, a
20. h, d
21. j, e
22. l, k
23. f, c
24. d
25. c
26. b
27. d
28. a

**Test Prep Pretest**

1. b
2. a
3. a
4. d
5. c
6. c
7. e
8. a
9. d
10. b
11. polar, nonpolar
12. hydrogen, covalent
13. ion
14. acid, base
15. carbohydrates
16. nucleic acids
17. sodium chloride, products
18. catalyst
19. active site
20. pH
21. A—carbohydrate; B—lipid; C—protein
22. Carbohydrates such as the monosaccharide glucose shown here are found in cells as a source of energy (glucose), as energy storage molecules (glycogen and starch), or as structural molecules (cellulose). Lipids such as the fatty acids shown here are found in cells as energy storage molecules (fats) or in cell membranes as structural molecules (phospholipids). Proteins are found in cells as enzymes and hemoglobin, as structural proteins in the body (collagen, hair, muscles), or in blood as part of blood clot fibers.