

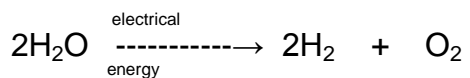
1.1-1.2 General Chemistry

4. Fill in the chart below. The first six elements are the most common (most important) to living organisms. (periodic table Appendix 799, lecture)

Element	Symbol	Number and location of protons	Number and location of neutrons	Number and location of electrons	Atomic number	Atomic mass	Charge of the atom
Hydrogen							
Carbon							
Oxygen							
Nitrogen							
Phosphorus							
Sulfur							
Sodium							
Chlorine							

1.3-1.5 Reactions in Living Cells

5. The balanced equation for the breakdown of two water molecules looks like this:



Write a balanced equation for the breakdown of six water molecules. (26)

6. Give a brief explanation of are ions formed. (29-30)
7. Explain how an ionic compound is formed. (30, lecture)

8. Explain how covalent bonds differ from ionic bonds. (30)

9. What type of bond is found in a single water molecule?

10. Explain the polar nature of a water molecule. (30-31)

11. Understand why this is biologically important. (30-32)

12. Explain why water molecules are attracted to each other. 30-31, lecture). Note: without this type of attraction water would not form a liquid.

13. Why is it important that water ionize? (32)

14. What is pH? (32)

15. Why is pH important in biology? (32)

1.6-1.10 Biochemistry

16. Most compounds that contain carbon are considered organic compounds. What other atoms are frequently found in organic compounds? (33)

17. Reactions occur that can build up macromolecules. Define the term synthesis reaction and explain why it can also be called a condensation or dehydration reaction. (lecture)

18. Reactions occur that can break down macromolecules. Define the term decomposition reaction and explain why it can also be a hydrolysis reaction. (lecture)

18. What is molecular formula of all monosaccharides? (34-6, lecture)

19. Explain how disaccharides and polysaccharides (complex carbohydrates) are formed from monosaccharides. (34-6, lecture) Include the by product of this reaction in your answer.

20. List two polysaccharides that are found in plants and one found in humans. Give the function of each of these polysaccharides. (35)

Plants

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Humans

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21. Explain the difference between saturated and unsaturated fatty acids. (36)

22. What are the subunits of a triglyceride macromolecule? (36-7)

23. What type of reaction occurs between the subunits (in the above question) so that a triglyceride is formed? (37, lecture) How do you know?

24. List differences between saturated and unsaturated fatty acids. Be able to recognize the bonding differences between the two. (36-7, lecture)

	Saturated	Unsaturated
Source		
bonding		

25. List and give the function of the three groups of lipids that are important in cells (saturated and unsaturated are not correct answers). (36-8)

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26. Draw and label a portion of a lipid bi-layer cell membrane. Include a cholesterol molecule in your diagram. (38)

27. List the six functions of the macromolecules know as proteins. (37-8)

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28. What are the subunits of a protein molecule? (38)

29. Draw and label an amino acid. (38-9)

30. 30. What type of reaction occurs between each two amino acids when a polypeptide chain is formed? How do you know? (38-39)

31. What is the importance of the "R" group on an amino acid? (38-9)

32. Describe the four levels of organization/structure of a protein molecule. (39-40)

33. What are the functions of nucleic acids? (40)

34. List the components of a nucleotide. (40-41)

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35. List the four bases that are found in nucleotides. (41)

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36. Compare and contrast DNA and RNA. (40-42)

Nucleic Acid	Bases (list)	Number of strands	Shape of molecule
DNA			
RNA			

1.11 – 1.12 Genetic Coding in Cells

37. List the four people credited with discovering the structure of the DNA molecule. (43)

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38. What holds the two strands of DNA together? (43)

39. What direction do the two strands of DNA run? (43-45)

40. Describe the base pairing found in a DNA molecule. (43-44)

41. What determines the function of a protein? (47)

42. What determines the shape of a protein? (45)

43. What determines the sequence of amino acids of a protein? (45)

44. Who determines the sequence of nucleotides in a protein? (think about it)