# CHAPTER REVIEW

## Carbohydrates and Lipids

### SECTION 1 REVIEW

1. Describe the general chemical formula of carbohydrates.
2. Name two examples from each of the following classes of carbohydrates: monosaccharides, disaccharides, and polysaccharides.
3. What different roles do the polysaccharides starch and cellulose play in plant systems?
4. What word is used to describe fatty acids that contain at least one double bond?
5. Why are some triglycerides liquid, while others are solid?
6. What reagents are used to make soaps?

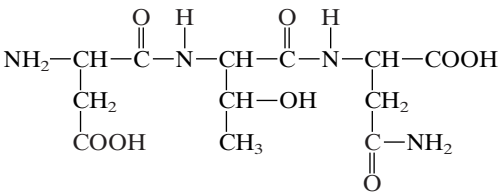
### PRACTICE PROBLEMS

7. Draw the structural formula for glucose.
8. Using structural formulas, write the equation showing the formation of maltose, which is the disaccharide made of two glucose units.
9. Write the equation representing the formation of a soap molecule from stearic acid, $C_{17}H_{35}COOH$, and sodium hydroxide.

## Amino Acids and Proteins

### SECTION 2 REVIEW

10. Describe the structure of an amino acid. Then, explain how amino acids become linked together to form a protein.
11. Circle and identify the carboxylic acid groups and the amino groups in the following molecule:



12. Can two types of enzymes contain the same number and kinds of amino acids? Explain.
13. What happens when a protein is denatured?
14. Explain the cause of the genetic disease sickle cell anemia.
15. Why is the water solubility of fibrous proteins so different from that of globular proteins?

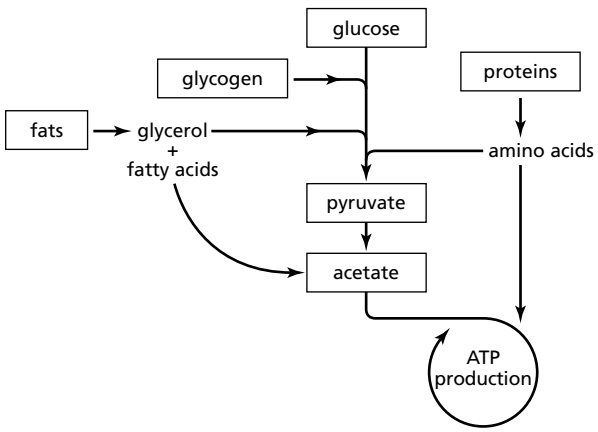
### PRACTICE PROBLEMS

16. Draw the structures of two dipeptides made up of glycine and valine.
17. How many different tripeptides can be formed from two molecules of glycine and one molecule of cysteine? Write all of the structures by using the three-letter codes Gly and Cys.

## Metabolism

### SECTION 3 REVIEW

18. What chemical gains the metabolic energy that is released as glucose is broken down in the body?
19. What does *ATP* stand for? What is the role of ATP in living things?
20. Describe the steps that occur in the digestion of fats.
21. Review the following diagram of catabolism.




According to the diagram, what could happen in the cell when glucose and glycogen reserves are nearly gone?

### PRACTICE PROBLEMS

22. Draw the structure of ATP. Circle the bond that breaks when ADP forms.