

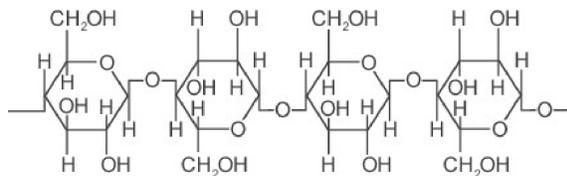
## Organic Compounds

Name: \_\_\_\_\_

Date: \_\_\_\_\_

- All living things contain which element?
  - helium
  - sodium
  - copper
  - carbon
- Plants and animals are composed of organic compounds. Which of the following are the common elements found in organic compounds?
  - iron, oxygen, nickel, copper
  - sodium, potassium, gold, hydrogen
  - helium, neon, argon, krypton
  - carbon, hydrogen, oxygen, nitrogen
- Which of the following compounds is *most* likely to be part of living organisms?
  - $C_6H_{12}O_6$
  - $BF_3$
  - $MoCl_2$
  - $CsI$
- There are many different enzymes located in the cytoplasm of a single cell. How is a specific enzyme able to catalyze a specific reaction?
  - Different enzymes are synthesized in specific areas of the cytoplasm.
  - Most enzymes can catalyze many different reactions.
  - An enzyme binds to a specific substrate (reactant) for the reaction catalyzed.
  - Enzymes are transported to specific substrates (reactants) by ribosomes.
- Although there are a limited number of amino acids, many different types of proteins exist because the
  - size of a given amino acid can vary.
  - chemical composition of a given amino acid can vary.
  - sequence and number of amino acids is different.
  - same amino acid can have many different properties.

6. The structural formula of cellulose is shown.



Which phrase correctly describes cellulose?

- A. A polymer made of glucose
- B. A branched form of sucrose
- C. A disaccharide
- D. A simple sugar

7. Carbohydrates are macromolecules used for energy in living organisms. Large carbohydrate molecules are made of smaller building blocks called monosaccharides.

The arrangement of which three components is used to distinguish one monosaccharide from another?

- A. Carbon, hydrogen, and oxygen
- B. Glucose, fructose, and ribose
- C. Peptide, fatty acid, and purine
- D. Water, carbon dioxide, and nitrogen

8. Which of the following is a primary function of carbohydrates?

- A. storage of energy
- B. transmission of genetic material
- C. acceleration of chemical reactions
- D. transport of molecules across membranes

9. Many aquatic birds secrete waxy organic substances that repel water. The birds use these substances to coat their feathers. An analysis of these substances would reveal that they are composed mostly of

- A. lipids.
- B. proteins.
- C. carbohydrates.
- D. nucleic acids.

10. In red blood cells, the compound carbonic anhydrase increases the rate at which carbon dioxide is converted to bicarbonate ions for transport in the blood. In red blood cells, carbonic anhydrase acts as which of the following?

- A. an enzyme
- B. a hormone
- C. a lipid
- D. a sugar

11. One category of organic compounds contains molecules composed of long hydrocarbon chains. The hydrocarbon chains may be saturated or unsaturated.

Which of the following categories of organic compounds contains these molecules?

- A. carbohydrates            B. lipids  
C. nucleic acids            D. proteins

12. Which of the following categories of organic molecules is correctly paired with one of its functions?

- A. nucleic acids—digest dead cells  
B. lipids—give quick energy to cells  
C. carbohydrates—store genetic information  
D. proteins—provide structure in skin, hair, and nails

13. Energy for most chemical reactions in cells is supplied by which of the following molecules?

- A. ATP                            B. DNA  
C. adrenaline                D. hemoglobin

14. Which of the following *best* describes the composition of a nucleotide?

- A. a pair of six-carbon rings attached to each other  
B. a carbon atom joined to hydrogen and three functional groups  
C. a chain of carbon atoms with a carboxyl group bonded to one end  
D. a five-carbon sugar attached to a phosphate group and a nitrogenous base

15. Which of the following *best* explains why enzymes are necessary for many cellular reactions?

- A. Enzymes supply the oxygen necessary for the reactions.  
B. Enzymes change reactants from solid to liquid during the reactions.  
C. The reactions take up too much space in the cell if enzymes are missing.  
D. The reactions are too slow to meet the needs of the cell if enzymes are missing.

The following section focuses on different lemur species of Madagascar.

Madagascar is an island located off the east coast of Africa, as shown on the map below.



Madagascar has a unique animal community. Lemurs are one of the animal groups that have diversified extensively on Madagascar. Lemurs are primates, which is an order of mammals that also includes monkeys and apes. Lemur species vary widely in habitat, diet, size, and color. Lemurs only live on the island of Madagascar. However, fossil evidence shows that lemur ancestors existed on Africa's mainland. Scientists hypothesize that lemur ancestors reached Madagascar by floating across the Mozambique Channel on matted clumps of vegetation.

Four different lemur species are shown in figures 1–4 below.

**Figure 1. Mouse lemur**

Length: 12.5 cm

Habitat: Rain forest and deciduous forest



**Figure 2. Verreaux's sifaka**

Length: 45 cm–55 cm

Habitat: Spiny deciduous forest and evergreen forest



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**Figure 3. Ring-tailed lemur**

Length: 38 cm–46 cm

Habitat: Deciduous forest and scrub forest



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**Figure 4. Red-bellied lemur**

Length: 36 cm–54 cm

Habitat: Rain forest



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16. Lemurs' bodies are adapted to efficiently store energy for times when food is scarce. This adaptation may help to explain how lemur ancestors survived the trip across the Mozambique Channel from mainland Africa to Madagascar.

Which of the following types of molecules are primarily used for long-term energy storage in the lemur?

- A. lipids                      B. monosaccharides  
C. nucleic acids              D. proteins

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1.  
Answer:      D
2.  
Answer:      D
3.  
Answer:      A
4.  
Answer:      C
5.  
Answer:      C
6.  
Answer:      A
7.  
Answer:      A
8.  
Answer:      A
9.  
Answer:      A
10.  
Answer:      A
11.  
Answer:      B
12.  
Answer:      D
13.  
Answer:      A
14.  
Answer:      D
15.  
Answer:      D
16.  
Answer:      A