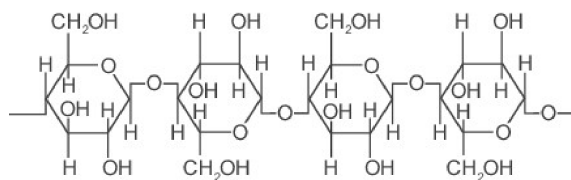


## Carbohydrate/CHNOPS MCAS Practice

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

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

- All living things contain which element?
  - helium
  - sodium
  - copper
  - carbon
- What characteristic of carbon (C) makes it essential to living organisms?
  - Carbon forms crystal structures under certain conditions.
  - Carbon can exist as a solid, liquid, or gas.
  - Carbon bonds in many ways with itself to form chains.
  - Carbon exists in radioactive forms.
- Which of the following compounds is *most* likely to be part of living organisms?
  - $C_6H_{12}O_6$
  - $BF_3$
  - $MoCl_2$
  - $CsI$
- The structural formula of cellulose is shown.



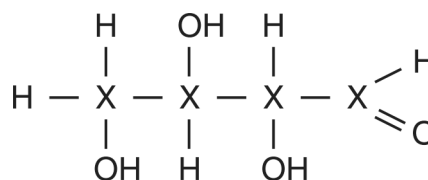
Which phrase correctly describes cellulose?

- A polymer made of glucose
- A branched form of sucrose
- A disaccharide
- A simple sugar

- 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?

- Carbon, hydrogen, and oxygen
  - Glucose, fructose, and ribose
  - Peptide, fatty acid, and purine
  - Water, carbon dioxide, and nitrogen
- Which of the following is a primary function of carbohydrates?
    - storage of energy
    - transmission of genetic material
    - acceleration of chemical reactions
    - transport of molecules across membranes
  - The structure of an organic molecule is represented below.



In this organic molecule, which element is identified by each X?

- iron
- carbon
- sodium
- phosphorus

8. Which of the following is the main reason that humans need to include carbohydrates in their diet?
- Carbohydrates are broken down in cells for energy.
  - Carbohydrates combine to form many different proteins.
  - Carbohydrates act as catalysts to speed up chemical reactions.
  - Carbohydrates are the building blocks for cell growth and repair.
9. A student is preparing to run in a school track competition. For the quickest source of energy, the student should eat a food that contains a high percentage of
- carbohydrates.
  - fat.
  - proteins.
  - sodium.
10. What do disaccharides, such as sucrose, and polysaccharides, such as starch, have in common?
- They are lipids made of fatty acids.
  - They are proteins made of amino acids.
  - They are nucleic acids made of nucleotides.
  - They are carbohydrates made of simple sugars.
11. The table below provides information about the composition and function of four important molecules in living organisms.

Molecule	Composition	Function
1	amino acids	reaction catalyst
2	fatty acids	membrane component
3	monosaccharides	energy source
4	nucleotides	genetic information

Which of the molecules in this table is a carbohydrate?

- 1
- 2
- 3
- 4

12. Starch from food is a source of energy for organisms. Starch is a type of
- protein
  - vitamin
  - nucleotide
  - carbohydrate
13. Cell walls are made of cellulose, a complex carbohydrate. Which of the following compounds is the basic unit of the cell wall?
- Amino acids
  - Sugars
  - Lipids
  - Nucleic acids
14. The glucose produced during photosynthesis is an example of a—
- lipid.
  - monosaccharide.
  - protein.
  - nucleic acid.
15. Energy is passed from a potato to the person eating it primarily by the energy stored in—
- starch molecules.
  - DNA.
  - minerals.
  - vitamins.
16. The enzyme lactase will break down the sugar lactose into which of the following components?
- Monosaccharides
  - Nucleic acids
  - Amino acids
  - Phospholipids
17. Which *best* represents a long-term energy storage molecule in animals?
- cellulose
  - cholesterol
  - glycogen

1.  
Answer: D
2.  
Answer: C
3.  
Answer: A
4.  
Answer: A
5.  
Answer: A
6.  
Answer: A
7.  
Answer: B
8.  
Answer: A
9.  
Answer: A
10.  
Answer: D
11.  
Answer: C
12.  
Answer:
13.  
Answer: B
14.  
Answer: B
15.  
Answer: A
16.  
Answer: A
17.  
Answer: C