

Biochemistry Review

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Part A: True & False

1. T An acid is a substance that releases *hydrogen ions* when dissolved in water.
2. T Carbon atoms can bond together in *straight chains, branched chains, or rings*.
3. F Large molecules containing carbon atoms are called *micromolecules*.
4. F Polymers are molecules made from repeating units of *identical* organic compounds.
5. T *Carbon* is a component of all biological substances.

Part B: Matching

- | | |
|------------------------------|---|
| 6. <u>F</u> organic compound | A. made of amino acids |
| 7. <u>D</u> carbohydrate | B. form ionic bonds |
| 8. <u>C</u> lipid | C. makes up fats, oils, and waxes |
| 9. <u>A</u> protein | D. monosaccharide building blocks |
| 10. <u>E</u> nucleic acid | E. stores coded genetic information |
| | F. molecule that is composed mainly of carbon |

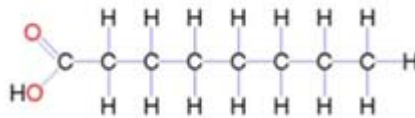
Part C: Multiple Choice

11. C Which is true in a covalent bond?
 - A. The bond forms between ions
 - B. The bond holds atoms weakly
 - C. The bond forms when electrons are shared
 - D. The bond is caused by van der Waals forces
12. D Which is involved in nearly every function in the human body?
 - A. carbohydrate
 - B. lipid
 - C. nucleotide
 - D. protein
13. B Which stores energy for future use by an organism?
 - A. carbohydrate
 - B. lipid
 - C. nucleotide
 - D. protein
14. A DNA and RNA are **similar** because they...
 - A. are polymers of nucleotides
 - B. have uracil
 - C. have ribose sugar
 - D. are double stranded
15. B What level of protein organization results in a beta-pleated sheet?
 - A. primary
 - B. secondary
 - C. tertiary
 - D. quaternary

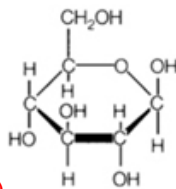
Part D: Completion

16. Positively charged particles in an atom are called PROTONS
17. Hydrogen, oxygen, and carbon atoms in a glucose molecule are held together by COVALENT bonds
18. Because ammonia releases hydroxide ions, it is called a(n) BASE
19. HYDROLYSIS is the process of breaking down polymers into monomers.
20. Amino acids differ by their R group.

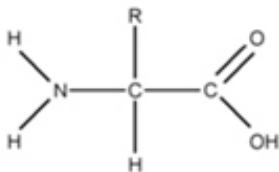
Part E: Diagrams



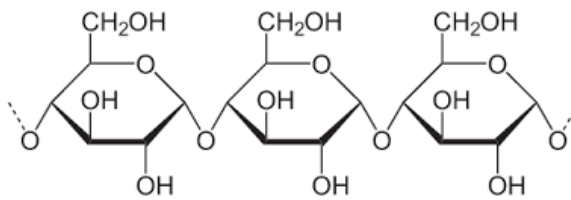
21. SATURATED FATTY ACID



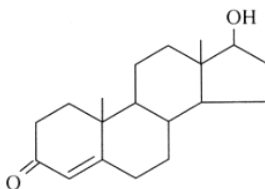
22. MONOSACCHARIDE (GLUCOSE)



23. AMINO ACID



24. POLYSACCHARIDE (STARCH)



25. STEROID

Part F: Short Answer

26. Explain why water molecules are polar (2 marks)

Unequal sharing of electrons. (1 mark)

Oxygen has a stronger pull on the electrons resulting in a slightly negative charge, while the hydrogen ends up with a slight positive charge as a result.

27. Discuss the importance of buffers in biology. Use an example to clarify. (1 mark)

Organisms need to maintain internal conditions within a safe range (homeostasis). For example, blood pH needs to stay within 7.35-7.45. Buffers will maintain this pH so acidosis or alkalosis does not occur.

28. Explain why small amounts of fats are a necessary part of a healthy diet (2 marks)

Give two reasons why lipids are important.

- Good sources of energy (more energy, long-term storage)
- Phospholipids form the cell membrane
- Steroids include cholesterol needed to maintain cell membrane integrity, hormones for endocrine system responses
- Cushions organs
- Insulates body aiding in maintaining body temperature