

AP Biology

Name: _____ Score: _____

1. Why is a water molecule **polar**?

- ☐ It contains two hydrogen atoms
- ☐ Oxygen pulls the shared electrons more strongly than hydrogen
- ☐ It is a very small molecule
- ☐ It is a liquid at room temperature

2. Four elements make up about **96%** of a living body. Which are they?

- ☐ Gold, silver, copper, zinc
- ☐ Carbon, hydrogen, oxygen, nitrogen
- ☐ Helium, neon, argon, xenon
- ☐ Iron, calcium, sodium, potassium

3. A **polymer** is best described as...

- ☐ a type of water
- ☐ a long chain built from repeating monomer units
- ☐ a single small molecule
- ☐ an atom of carbon

4. A **monosaccharide** is...

- ☐ a type of protein
- ☐ a fat
- ☐ a single sugar unit, like glucose
- ☐ a chain of hundreds of sugars

5. A **triglyceride** is made of one glycerol joined to...

- ☐ three sugars
- ☐ three nucleotides
- ☐ three fatty acids
- ☐ three amino acids

6. The twisted-ladder shape of DNA is called a double _____.

7. The bond that joins two amino acids is a _____ bond.

8. A single hydrogen bond is stronger than the bond holding an O and H together inside a water molecule.

☐ True ☐ False

9. How many covalent bonds can one carbon atom form?

10. A **condensation reaction** uses up a molecule of water each time it joins two monomers.

☐ True ☐ False

AP Biology

1. Oxygen pulls the shared electrons more strongly than hydrogen

Oxygen has a higher **electronegativity**, so the electrons sit closer to it – giving oxygen a partial negative and the hydrogens a partial positive charge.

2. Carbon, hydrogen, oxygen, nitrogen

Carbon, hydrogen, oxygen and nitrogen (CHON) make up about 96% of living matter.

3. a long chain built from repeating monomer units

A **polymer** is a large molecule made by linking many small **monomer** subunits into a chain.

4. a single sugar unit, like glucose

A **monosaccharide** ("one sugar") is a single sugar unit – glucose and fructose are examples.

5. three fatty acids

A triglyceride is a glycerol backbone with **three fatty acid** tails attached.

6. helix

DNA is a **double helix** – two strands wound around each other like a spiral staircase.

7. peptide

A **peptide bond** links amino acids into a chain called a polypeptide.

8. False

A single hydrogen bond is **weak**. Water is powerful because it has an enormous *number* of them.

9. 4

Carbon has **four** outer electrons, so it forms four bonds – letting it build long chains, branches and rings.

10. False

False. Condensation joins monomers and releases one water molecule per bond formed. Hydrolysis is the reaction that uses water to split a polymer.