

2. Biological molecules

Starter Quiz · 课前小测

A-Level Biology

Name: _____ Score: _____

1. A sample is heated with Benedict's solution and turns brick-red. This shows the presence of:

- ☐ a reducing sugar
- ☐ starch
- ☐ a lipid
- ☐ a protein

2. Which is a monosaccharide?

- ☐ glucose
- ☐ starch
- ☐ sucrose
- ☐ glycogen

3. A triglyceride is made from:

- ☐ one glycerol and three fatty acids joined by ester bonds
- ☐ three glycerols and one fatty acid
- ☐ amino acids joined by peptide bonds
- ☐ glucose units joined by glycosidic bonds

4. The bond that joins two amino acids is a:

- ☐ peptide bond, formed by condensation (water removed)
- ☐ glycosidic bond
- ☐ ester bond
- ☐ hydrogen bond

5. Water is a polar molecule that forms hydrogen bonds.

- ☐ True
- ☐ False

6. Orange-brown iodine solution turns blue-black. This detects:

- ☐ starch
- ☐ a reducing sugar
- ☐ a lipid
- ☐ a protein

7. Sucrose is a non-reducing sugar, so it gives a negative Benedict's test unless it is first hydrolysed.

- ☐ True
- ☐ False

8. Glycerol joins each fatty acid by an _____ bond, formed by condensation.

9. A protein made of two or more polypeptide chains joined together has a _____ structure.

10. In the biuret test, a positive result for protein turns the solution from blue to _____.

A-Level Biology

1. a reducing sugar

Benedict's test (with heat) detects reducing sugars; a positive result goes blue → green → orange → brick-red.

2. glucose

Glucose is a single sugar unit (monosaccharide); sucrose is a disaccharide; starch and glycogen are polysaccharides.

3. one glycerol and three fatty acids joined by ester bonds

A triglyceride = 1 glycerol + 3 fatty acids, joined by ester bonds (each forms by condensation).

4. peptide bond, formed by condensation (water removed)

Amino acids join by peptide bonds, formed by condensation with the loss of one water molecule.

5. True

Polarity (a slightly negative oxygen and slightly positive hydrogens) lets neighbouring molecules form hydrogen bonds, which explain water's properties.

6. starch

The iodine test detects starch — the orange-brown solution turns blue-black.

7. True

Glucose and maltose are reducing sugars (positive Benedict's); sucrose is non-reducing, so you must hydrolyse it (acid + heat) first.

8. ester

Three ester bonds form, removing three water molecules in total.

9. quaternary

Quaternary structure is two or more chains in one protein — e.g. haemoglobin (four chains).

10. purple

Biuret solution turns blue → purple when protein is present (no heating needed).