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

   ☐ a lipid

   ☐ starch

   ☐ a reducing sugar

   ☐ a protein

2. Which is a monosaccharide?

   ☐ starch

   ☐ glycogen

   ☐ sucrose

   ☐ glucose

3. A triglyceride is made from:

   ☐ one glycerol and three fatty acids joined by ester bonds

   ☐ glucose units joined by glycosidic bonds

   ☐ three glycerols and one fatty acid

   ☐ amino acids joined by peptide bonds

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

   ☐ ester bond

   ☐ peptide bond

   ☐ hydrogen bond

   ☐ glycosidic bond

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

   ☐ True ☐ False

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

   ☐ a reducing sugar

   ☐ a lipid

   ☐ starch

   ☐ a protein

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☐ 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. The weak attractions between water molecules, caused by its polarity, are called _____ bonds.

    _____

1. **a reducing sugar**

   Heating with Benedict's detects reducing sugars. A green, yellow, orange or brick-red precipitate can be positive; brick-red is not required for every positive result.

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**

   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. **hydrogen**

    Each $\delta+$ hydrogen is attracted to a $\delta-$ oxygen of a neighbour – a hydrogen bond. Many of these give water its special properties.

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