

1. **Identify** which function group monosaccharides have in the *greatest* abundance.

1 pt – they have multiple hydroxyl groups

2. **Describe** what properties this functional group gives monosaccharides

1 pt – the molecules are hydrophilic allowing sugars to dissolve in water easily.

3. **Identify** the two “types” of monosaccharides and **discuss** how they differ in structure.

½ pt each – Aldose and Ketose

1 pt – in the position of the carbonyl group. (or diagram showing this).

One macromolecule isolated from an organism has a formula of $C_{22}H_{24}O_2$ and another has a formula of $C_{22}H_{24}O_{22}$. Based on the formulas alone, **speculate** and **justify** the likely identity of each macromolecule.

1pt (0.5 each for identification & reasoning) – the first molecule has a low C:O ratio and is a lipid.

1 pt (0.5 each for identification & reasoning)– the second molecule has a 1:1 C:O ratio, typical of a carbohydrate

4. Cellulose and starch are both made of repeating units of glucose. **Discuss** what is different about their *structure* that gives them such different chemical properties and uses.

2pt – Starch is made of α glucose and cellulose is made of β glucose. They are molecules that differ in the position of the $-OH$ on carbon 1. This changes the linkage of the polymers and the properties of the chains.

Total = 8 points.