# Answers to end-of-chapter questions Chapter 4: The chemicals of life

1 a monosaccharide, found in both plants and animals, used as fuel in respiration

b polysaccharide, found in plants only, used as an energy store in plant cells

c polysaccharide, found in plants only, used to make cell walls

d polysaccharide, found in animals only, used as an energy stores in (liver) cells

2 a nitrogen (or sulfur)

b amino acids

c Benedict's

d lipid (fat)

e sucrose

f metabolism

3 Measure equal volumes of each solution into two identical test tubes.
Add equal volumes of Benedict's solution to each one.
Place both tubes into a water bath at about 80 °C.
Do this at exactly the same time.
Watch carefully. The one that changes to green or orange first, or the one that is the darkest orange after a set length of time, is the one that has the most concentrated solution of reducing sugar.

4

| Substance | Elements it contains | Carbohydrate, fat or protein? | How to test for it | One function |
|---|---|---|---|---|
| haemoglobin | C, H, O, N | protein | biuret test | carries oxygen in the blood |
| glucose | C, H, O | carbohydrate | Benedict's test | to provide energy |
| cellulose | C, H, O | carbohydrate | | to make plant cell walls |
| starch | C, H, O | carbohydrate | iodine test | stores energy in plant cells |
| enzyme | C, H, O, N | protein | biuret test | speeds up reactions |

one mark per correct row. [5]

5 a 30 %;
because every T base will be paired with an A base (so their percentages will be the same); [2]

b 20 %;
because the remaining 40% must be G and C, which will each be in equal amounts; [2]

c the sequence of bases determines the sequence of amino acids;
used to build proteins.
a different base sequence will result in different proteins;
with different effects on the organism; [2]