DNA Natural Polymers

GCSE Chemistry · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Name the monomers that make up proteins, starch and DNA. (3 marks)

Step 1 · Proteins

Amino acids.

Step 2 · Starch (and cellulose)

Sugars (glucose).

Step 3 · DNA

Nucleotides.

Answer: Amino acids; sugars; nucleotides

Check: All three are natural polymers made by condensation.

2. Now try one with the steps

Describe the structure of DNA. (3 marks)

Step 1 · Chains

Step 2 · Monomers

Step 3 · Shape

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Name the monomers that make up proteins. [1]

2. Name the type of monomer that makes up starch and cellulose. [1]

3. Name the monomers that make up DNA. [1]

4. State the number of different nucleotides in DNA. [1]

5. Describe the structure of DNA. [2]

6. State the function of DNA. [1]

7. Give three examples of naturally occurring polymers. [3]

8. Calculate the relative formula mass of glycine, H_2NCH_2COOH. (C = 12, H = 1, N = 14, O = 16) [1]

9. Calculate the relative formula mass of glucose, $C_6H_{12}O_6$. (C = 12, H = 1, O = 16) [1]

10. Name the two functional groups in an amino acid. [2]

11. Explain why the formation of proteins is described polymerisation. [2]

12. Calculate the M_r of the dipeptide formed from two glycine molecules (M_r 75 each). [2]

13. 150 g of glycine (2 mol) forms the dipeptide. Calculate the mass of water released, in g. (H = 1, O = 16) [2]

14. Name the type of polymer formed when many glycine molecules join together. [1]

4. Before you hand it in

"DNA is a single strand."
DNA has two polymer chains twisted into a double helix.

"Proteins are made of glucose."
Proteins are made of amino acids.

Forgetting to subtract water in condensation
M_r of a dipeptide = 2 × M_r of amino acid − 18.