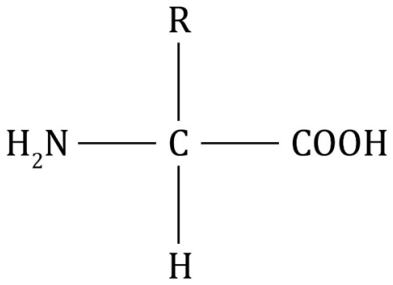
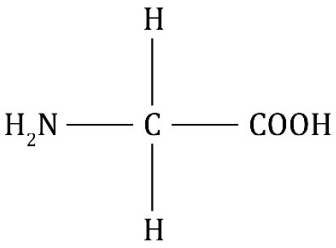
Amino acids: knowledge check

1.1 Amino acids contain two different functional groups. The image below shows the general structural formula of an amino acid.

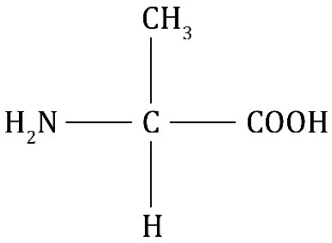
Circle the two functional groups and label them with their correct names.



1.2 The images show the structure of two amino acids – glycine and alanine.



glycine



alanine

Use these images, along with the image shown in **question 1.1**, to complete each of the sentences. Add your answer in the box provided for each sentence.

(a) The 'R' in the general structure represents a…

(b) All amino acids have the same general structure but…

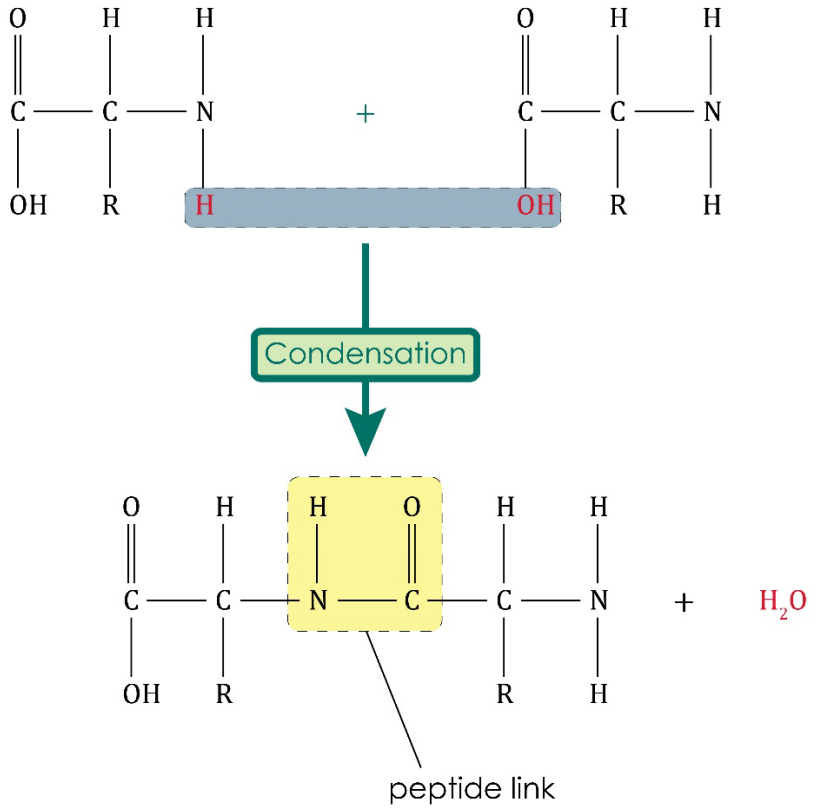
(c) The acidic functional group of the amino acid is the…

(d) The NH_2 group of the amino acid is…

(e) The 'R' in glycine represents the…

(f) The 'R' in alanine represents the…

1.3 The diagram shows the polymerisation reaction that occurs when two amino acids join together.



Using the diagram, complete the sentences describing this reaction.

Proteins, or polypeptides, are biological _____ produced when many amino acid _____ join together in a _____ polymerisation reaction.

A molecule of _____ is also produced in the reaction.

Different amino acids make different _____ .

The link between two amino acid monomers is a _____ link where the carbon atom of the _____ group joins with the _____ atom of the amine group.

Amino acids: test myself

2.1 Which statement is correct? Circle the correct answer.

A Amino acid have only acidic properties.

B Amino acid have only basic properties.

C Amino acids have both acidic and basic properties.

D Amino acids have neither acidic nor basic properties.

2.2 Which statement is correct? Circle the correct answer.

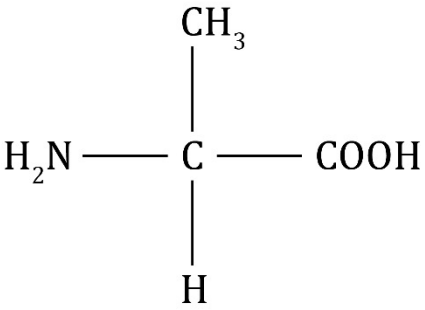
A All proteins have $COOH$ groups.

B All proteins have NH_2 groups.

C All proteins have OH groups.

D All proteins have peptide links.

2.3 The image shows the amino acid alanine.



What is the structural formula for alanine?

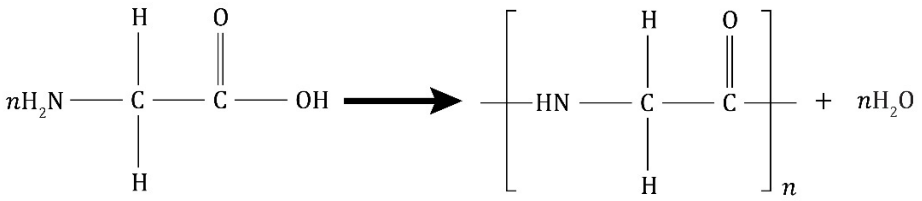
_____

2.4 What is produced when amino acids polymerise?

_____

2.5 Why is the polymerisation of amino acids described as a condensation reaction?

2.6 The equation represents the polymerisation of an amino acid.



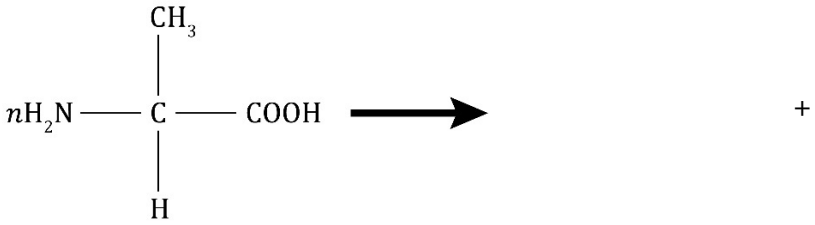
glycine polypeptide water

What does '*n*' represent?

2.7 Draw the repeating unit in **question 2.6**.

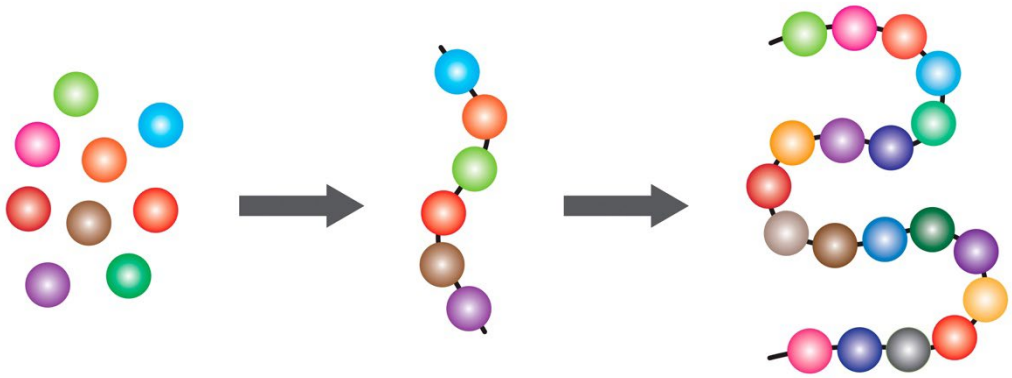
Amino acids: feeling confident?

3.1 (a) Complete the equation to represent the polymerisation of alanine.



(b) Label the monomer and the repeating unit.

3.2 The image represents the polymerisation of amino acids to form a protein.



Complete the table describing the image:

Part of image	What does it represent?
individual spheres	
different shaded spheres	
the chain of six spheres	
the twisted chain of spheres	
the lines connecting the spheres	

Amino acids: what do I understand?

Think about your answers and confidence level for each mini-topic. Decide whether you understand it well, are unsure or need more help. Tick the appropriate column.

Mini-topic	I understand this well	I think I understand this	I need more help
I can describe the general structure of amino acids.			
I can interpret the structure of glycine and alanine.			
I can describe the polymerisation of amino acids to form polypeptides and proteins.			
I can use equations to represent the polymerisation of amino acids.			
Feeling confident? topics	**I understand this well**	**I think I understand this**	**I need more help**
I can complete equations to represent the polymerisation of amino acids.			
I can understand diagrams that explain protein formation.			