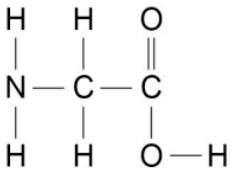
# ( Amino acids and proteins )

Q1. a). ( 2020 )

**Figure 6** shows the displayed structural formula of an amino acid called glycine.

**Figure 6**



How many functional groups are there in the molecule in **Figure 6**?

**[1 mark]**

Tick (✓) **one** box.

1 ☐ 2 ☐ 3 ☐ 4 ☐

Q1. b). ( 2020 )

Glycine reacts by condensation polymerisation to produce a polypeptide and one other substance.

Name the other substance produced.

**[1 mark]**

Q1. c). ( 2020 )

Scientists think that algae may have used gases in Earth's early atmosphere.

Algae need an element to produce the molecule in **Figure 6** which is **not** present in water or carbon dioxide.

Which **two** gases from Earth's early atmosphere could have provided this element?

**[2 marks]**

_____ and _____

Q2. ( 2023 )

The amino acid beta-alanine has the formula

$H_2NCH_2CH_2COOH$

Beta-alanine polymerises to produce a polypeptide and a small molecule.

Name the small molecule produced when beta-alanine polymerises.

**[1 mark]**

_____

Q3. ( 2023 )

An amino acid can be represented as:

The relative formula mass ($M_r$) of this amino acid is 75

Calculate the relative formula mass of the section of this amino acid molecule represented by

Relative atomic masses ($A_r$): H = 1 C = 12 N = 14 O = 16

**[2 marks]**

Relative formula mass = _____