

## **A level Chemistry A**

**H432/02** Synthesis and analytical techniques

### **Question Set 15**

1. The general formula of an  $\alpha$ -amino acid is  $\text{RCH}(\text{NH}_2)\text{COOH}$ .

(a) The  $\alpha$ -amino acid cysteine ( $\text{R} = \text{CH}_2\text{SH}$ ) shows optical isomerism.

Draw 3-D diagrams to show the optical isomers of cysteine.

[2]

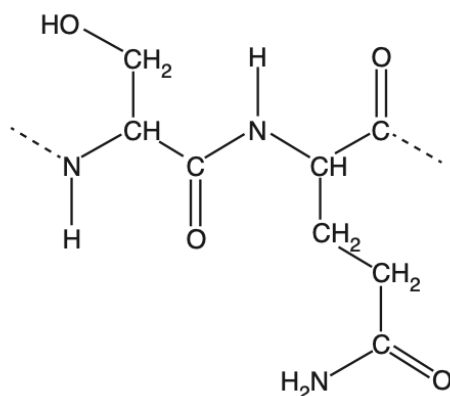
(b) The  $\alpha$ -amino acid lysine ( $\text{R} = (\text{CH}_2)_4\text{NH}_2$ ) reacts with an excess of dilute hydrochloric acid to form a salt.

Draw the structure of the salt formed in this reaction.

[2]

(c)  $\alpha$ -Amino acids can react to form proteins.

A short section of a protein chain is shown below.



A student hydrolyses the protein with hot  $\text{NaOH}(\text{aq})$ .

Draw the structures of the organic products formed from this section of the protein.

[3]

**Total Marks for Question Set 15: 7**

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