Amides and Amino Acids Map

Cambridge International · Topic 34 Amides and amino acids

1 Making amides 34.3.1

- RCOCl + NH_3
- RCOCl + RNH_2
- Room temperature
- HCl is lost



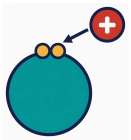
2 Amide reactions 34.3.2

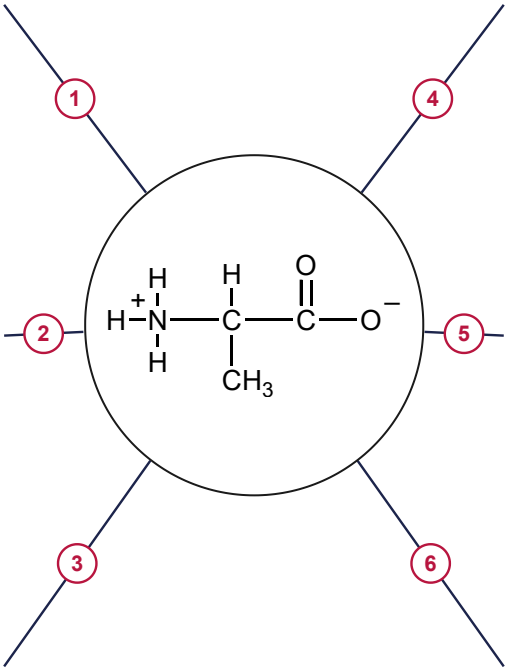
- Acid: RCOOH, NH_4^+
- Alkali: $RCOO^-$, NH_3
- $LiAlH_4$: C=O to CH_2
- Gives an amine



3 Weak bases 34.3.3

- N lone pair
- Delocalised over C=O
- Much less available
- **Weaker than amines**





4 Zwitterions 34.4.1

- Low pH: NH_3^+, COOH
- Isoelectric point: both ions
- High pH: NH_2, COO^-
- Acid and base



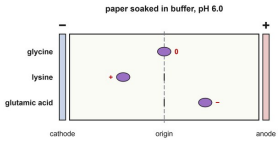
5 Peptides 34.4.2

- NH_2 + COOH
- Peptide link, –CONH–
- Water lost
- Di-, then tripeptides



6 Electrophoresis 34.4.3

- Buffer holds pH
- Cations to cathode
- Anions to anode
- Charge and size



Electrophoresis at pH 6

glycine isoelectric point 6.0

Amino acid	Charge	Moves to
Glycine	0	Stays at origin
Lysine	+	Cathode
Glutamic acid	−	Anode
Alanine	0	Stays at origin

Worked examples

Reducing an amide

- $C_3H_7CONH_2$ + 4[H]
- C=O to CH_2
- **$C_4H_9NH_2 + H_2O$**

Hydrolysis

- $CH_3CONHCH_3$ + HCl
- C–N breaks
- **CH_3COOH, $CH_3NH_3^+Cl^-$**

Moles

- 0.890 g alanine, Mr 89
- 0.890 ÷ 89
- **0.0100 mol**

 · © 2026 Online Learning System. All rights reserved. Not for redistribution.