**Amino acid as acid and bases**

When an amino acid is dissolved in water, it exists in solution as the dipolar ion, or **zwitterion.**

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A zwitterion can act as either an acid (proton donor):



or a base (proton acceptor):



Substances having this dual nature are **amphoteric** and are often called **ampholytes** (from “amphotericelectrolytes”). A simple monoamino monocarboxylic α-amino acid, such as alanine, is a diprotic acid when fullyprotonated—it has two groups, the -COOH group andthe -NH3 + group, that can yield protons:

