

# 19 Amines – Part 1 — Answers

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## Answers

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Work through these after trying the questions yourself.

**19.1** The amino group,  $\text{-NH}_2$ .

**19.2** Its lone pair of electrons (on the nitrogen).

**19.3**  $\text{C}_2\text{H}_5\text{Br} + \text{NH}_3 \rightarrow \text{C}_2\text{H}_5\text{NH}_2 + \text{HBr}$ .

**19.4** Nucleophilic substitution.

**19.5** The amine product is also a nucleophile, so it can react further; excess ammonia makes the primary amine the main product (instead of secondary/tertiary amines).

**19.6** The alkyl (carbon) group pushes electron density towards the nitrogen, making its lone pair more available to accept an  $\text{H}^+$  ion. So ethylamine donates its lone pair (acts as a base) a little more readily than ammonia.