

12 Nitrogen and its compounds – Part 1

—Answers

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Work through these after trying the questions yourself.

12.1 It has a very strong triple bond (high bond energy) that is hard to break; the molecule is symmetrical and non-polar.

12.2 The lone pair of electrons on the nitrogen atom.

12.3 $\text{NH}_3 + \text{H}^+ \rightarrow \text{NH}_4^+$.

12.4 Both of the shared electrons in that bond came from the same atom (the nitrogen).

12.5 Warm the salt with sodium hydroxide; ammonia gas is given off (sharp smell), turning damp red litmus paper blue.

12.6 Ammonia has a lone pair on its nitrogen that can accept an H^+ ion, so it acts as a base. In the ammonium ion that lone pair has already been used to form the fourth N–H bond, so there is no lone pair left to accept another proton.