Solutions

Each answer shows the steps, then the **result**.

2.1

- a covalent bond in which both shared electrons come from the same atom

2.2

- 1 σ bond and 2 π bonds

3.1 B

- A double bond is one σ plus one π bond

3.2 C

- SF_6 has six bonds around sulfur — an expanded octet

3.3

(a)

- the lone pair on the nitrogen atom is donated to the H^+ ion; both electrons come from N, forming the fourth N–H (coordinate) bond

(b)

- a triple bond has more shared electron pairs, so a greater attraction pulling the nuclei closer; the shorter bond is harder to break — higher bond energy

3.4

- each C–H and the C–C σ bond form by direct (head-on) overlap; the C=C also has a π bond from sideways overlap of p orbitals above and below