Solutions

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

2.1

- FC = (valence e^-) − (nonbonding e^-) − $\frac{1}{2}$(bonding e^-)

2.2

- FC = $5 - 0 - \frac{1}{2}(8) = 5 - 4 = +1$

2.3

- The molecule is a blend (hybrid) of the equivalent structures, not switching between them

3.1 B

- formal charges as close to zero as possible

3.2

(a)

- FC = $6 - 6 - \frac{1}{2}(2) = 6 - 6 - 1 = -1$

(b)

- The real ion is a resonance hybrid — the extra bond and charge are spread equally over all three oxygens

3.3

- Resonance spreads the double-bond character equally over all three N–O positions, so each bond is identical (an average of single and double), giving equal lengths