

Solutions

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

2.1

- the number of different carbon (chemical) environments in the molecule

2.2

- 2 peaks (the two CH_3 carbons are equivalent; the $\text{C}=\text{O}$ is the second)

3.1 B

- Equivalent carbons in the same environment give a single peak

3.2 C

- Propan-1-ol has three different carbon environments
- 3 peaks

3.3

(a)

- propanone, CH_3COCH_3 — the $\text{C}=\text{O}$ gives the downfield peak and the two equivalent CH_3 give the other

(b)

- the two equivalent methyl carbons share one peak and the $\text{C}=\text{O}$ gives the second, so two peaks fit

3.4

- ethanoic acid has two different carbon environments — the CH_3 carbon and the COOH carbon; each gives one peak, so there are two peaks