Answers toUnit 3 Exercises

Exercise 1

1. a) $C_3H_2O_3$, $C_5H_{10}O$, C_6H_{14}
   b) $C_3H_2O_3$

2. a) O-H (alcohol)
   b) C=O (carbonyl)
   c) C=O and O-H (acid) so carboxylic acid
   d) C=O (carbonyl)

3. All have a carbonyl group (1700)
   A is a carboxylic acid (2500 – 3000 broad) – butanoic or methylpropanoic acid.
   B has no broad peaks so is either a carbonyl ether or an ester
   C is an alcohol (3000 – 3000 broad) so is a carbonyl alcohol

4. The fingerprint region (1500 – 3500 cm^{-1}) is different for every molecule
   So compare the fingerprint region of the molecule with a database of IR spectra of known carbonyl molecules until an exact match is found.