Chapter Summary Worksheet

Chapter 9 Spectroscopy and chromatography

Print out and complete this worksheet to generate a summary for Chapter 9.

1 When a water molecule absorbs microwaves:

- ☐ **A** there is an increase in O–H bond stretching
- ☐ **B** there is an increase in O–H bond bending
- ☐ **C** there is an increase in the rotation of the H_2O molecule
- ☐ **D** an O–H bond breaks

2 The number of peaks in the low-resolution NMR spectrum of pentan-3-one, $CH_3CH_2COCH_2CH_3$ is:

- ☐ **A** 1
- ☐ **B** 2
- ☐ **C** 3
- ☐ **D** 4

3 The peak due to the hydrogen nuclei in the CH_2 group in the high-resolution NMR spectrum of propanal, CH_3CH_2CHO, is split into which of the following number of peaks?

- ☐ **A** 3
- ☐ **B** 4
- ☐ **C** 5
- ☐ **D** 6

4 Using IR spectroscopy, the progress of the oxidation of a primary alcohol by aqueous acidified potassium dichromate could be followed by the change in the height of the peak due to:

- ☐ **A** O–H
- ☐ **B** C–H
- ☐ **C** C–C
- ☐ **D** C=O

5 In the mass spectrometry, the peak at $m/e = 29$ in propanal, C_2H_5CHO, could be caused by:

- ☐ **A** CHO
- ☐ **B** CHO^+
- ☐ **C** C_2H_5
- ☐ **D** $C_2H_5^-$

6 Gas–liquid chromatography can be used to separate a mixture of:

- ☐ **A** volatile liquids
- ☐ **B** soluble solids
- ☐ **C** amino acids
- ☐ **D** salts

7 The retention time in HPLC is **not** dependent on:

- ☐ **A** the pressure
- ☐ **B** the nature of the eluent
- ☐ **C** the length of the column
- ☐ **D** the number of substances in the mixture

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