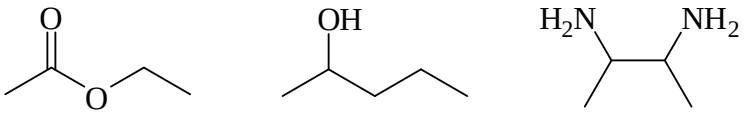
Marks
3

- Suppose a molecule has been isolated from a natural source. When a sample of the molecule is analysed by low resolution mass spectrometry, it shows a molecular ion peak that implies the molecule has a molecular weight of 88. You determine that the molecule might be one of the following three possibilities, all of which have a molecular weight of 88.



A **B** **C**

Further data are acquired for the compound as follows:

- Elemental analysis data: C, 68.13%; H, 13.72% (another element is also present)
- High resolution mass spectrum suggests the molecular weight is actually 88.0888.

Explain how ***either*** high resolution mass spectrometry ***or*** the elemental analysis data allows you to distinguish between these three possibilities and hence identify which of **A**, **B** or **C** is in the sample.

Information you may need:

Average atomic masses:	C: 12.0107,	H: 1.0079,	O: 15.9994,	N: 14.0067
Exact isotopic masses:	^{12}C: 12.0000,	^{1}H: 1.0078,	^{16}O: 15.9949,	^{14}N: 14.0031

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