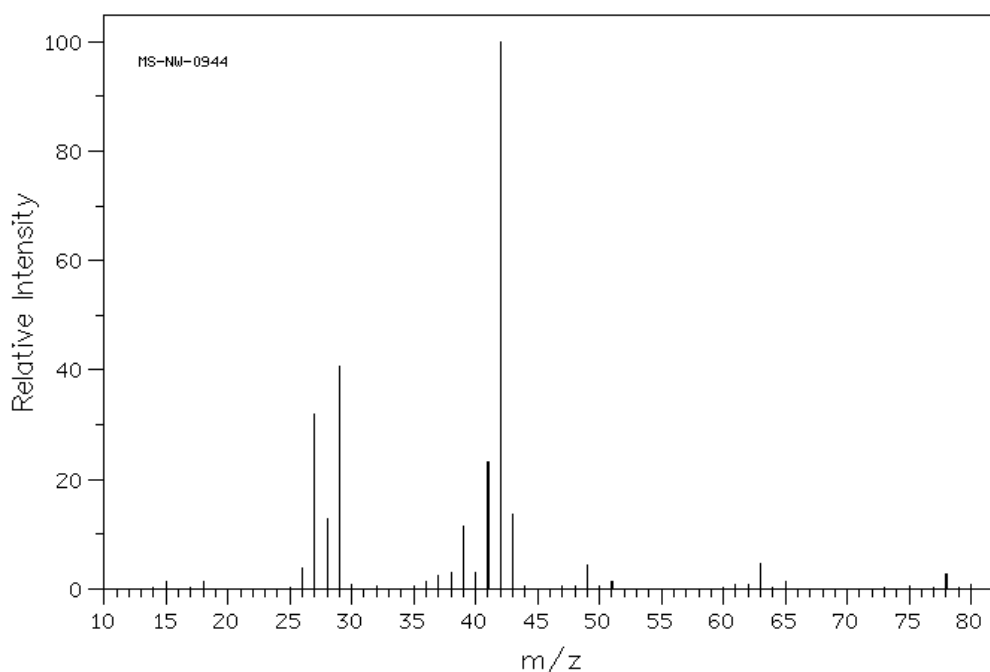


# MASS SPECTROMETRY QUESTIONS

## EXERCISE 1

The following mass spectrum is for a compound determined to have an empirical formula of  $C_3H_7X$ .



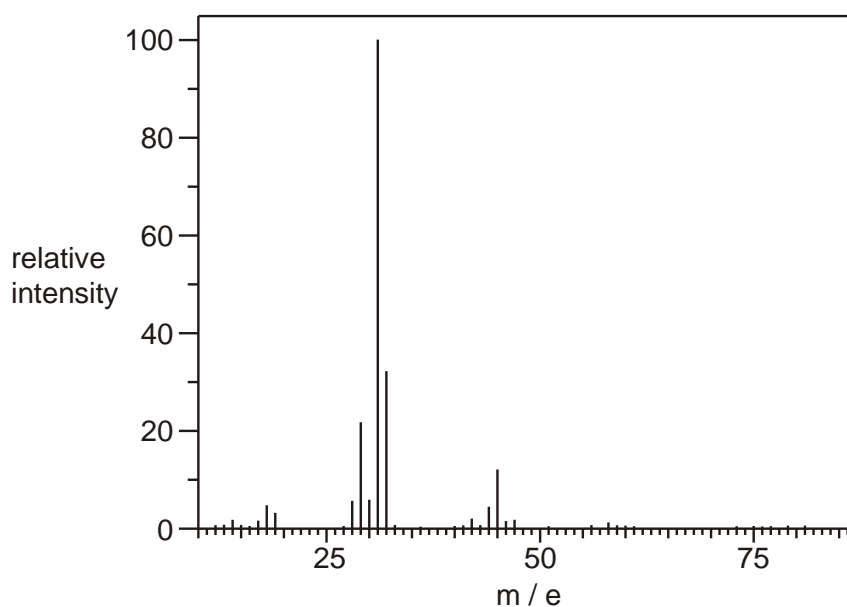
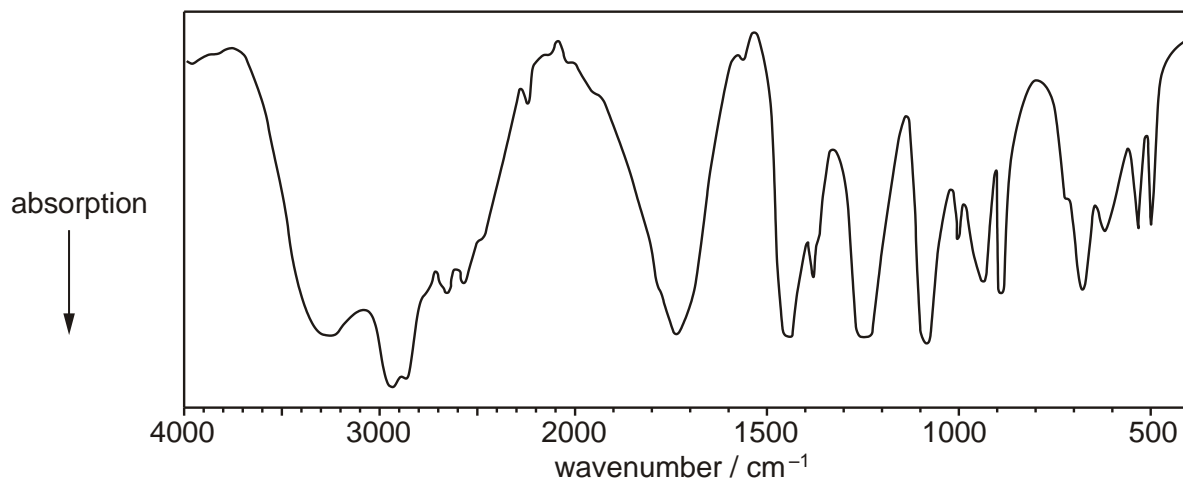
- Work out the molecular mass (molar mass) of this compound and therefore the identity of the halogen.
- Identify the peak with a  $m/z$  ratio of 43

## Exercise 2

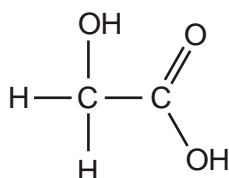
Compound **G** can be extracted from sugar-cane and is commonly used in 'rejuvenating' skin creams because it helps to remove some of the dead cells from the skin surface.

The molecular formula of **G** is  $C_2O_3H_4$  and the compound contains **two different** functional groups containing oxygen atoms.

The infra-red and mass spectra of **G** are shown below.



The structure of compound **G** is shown below.



- a) There is a peak missing from the mass spectra. What value would you expect it to have?

b) Explain how the infra-red and mass spectra confirm this structure. In your answer, you should suggest a possible structure for the ion that gives the base peak at  $m/e = 31$  in the mass spectrum.