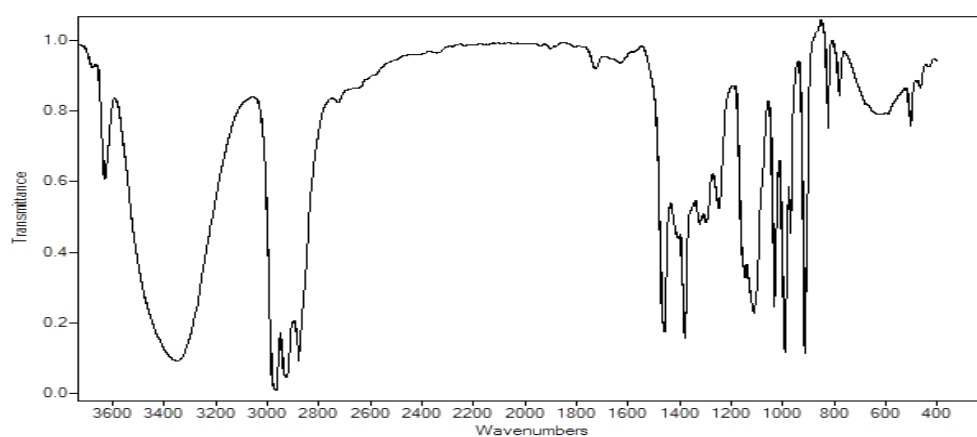


VCE Chemistry: Unit 3

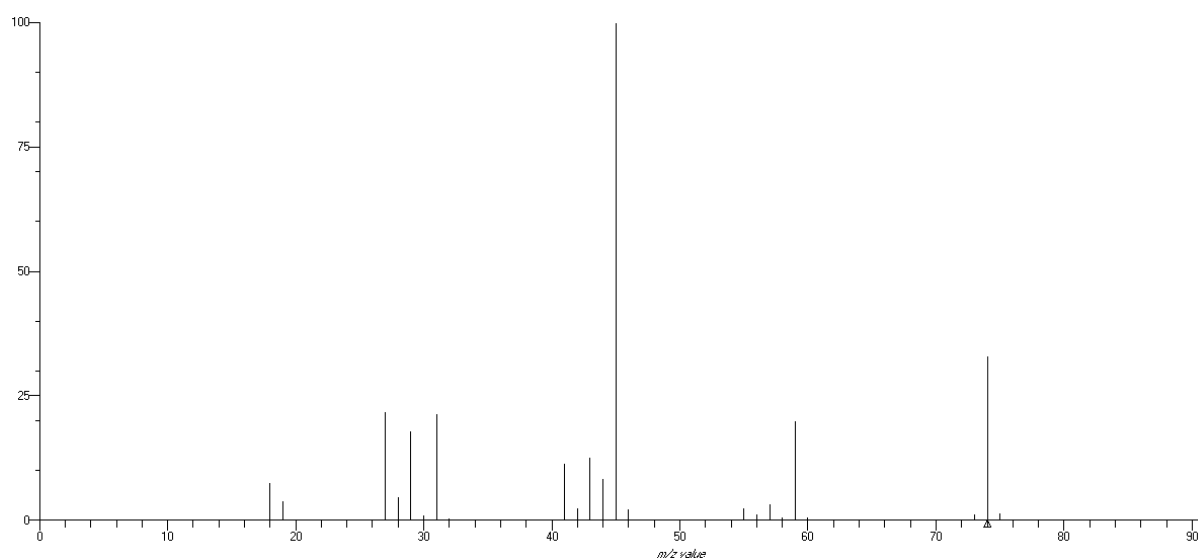
Worksheet 7 MS/IR Spectroscopy

A hydrocarbon containing carbon, hydrogen and oxygen was analysed using IR spectroscopy and mass spectroscopy. The following spectrums were obtained from the analysis. In this question assume that the functional group is present on the second carbon.

Infrared Spectrum of unknown molecule



Mass Spectrum of unknown molecule



a) Identify the absorption band between 3000 cm^{-1} and 3400 cm^{-1} ___/ 1 mark

b) Explain what the significance of the base peak is, ensure that you identify the formula of the back peak in this analysis and label clearly on the mass spectrum provided. ___/ 3 marks

c) Write an equation for the generation of the molecular peak. ___/ 2 marks

d) Explain why there is a small peak at a mass to charge ratio of 75. ___/ 1 mark

e) Using the mass and infrared spectrum identify the organic compound in this analysis. Give the systematic name of the compound. ___/ 3 marks

f) In mass spectrometry, explain the significance of the: (i) ionizer (ii) magnet ___/ 2 marks