Friday Worksheet **Name: …….**
Analytical chemistry revision 6

1) A mixture of 6 compounds was run through a GLC. Three different chromatograms were obtained under different temperatures. All other conditions were kept constant.
a) Which one of the chromatograms was developed using very high temperatures? Explain

b) Which one of the chromatograms was developed using low temperatures? Explain

c) If all compounds belong to the same homologous group, what can you say about the molar mass of compounds 1, 2 and 3 compared to 4, 5 and 6? Explain

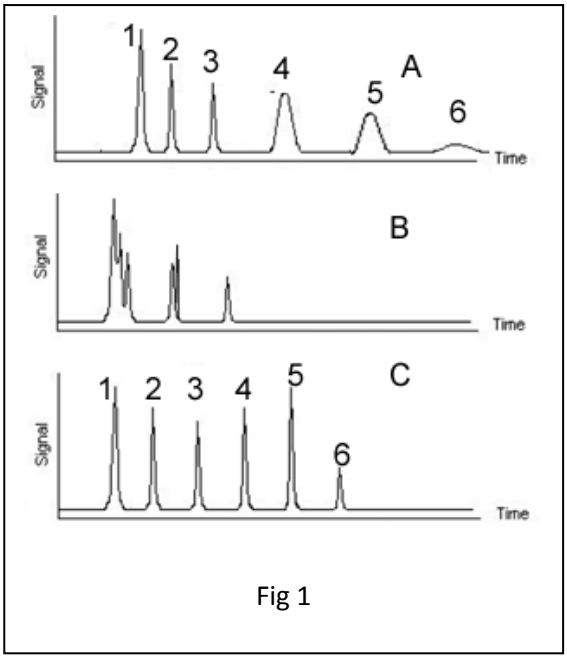
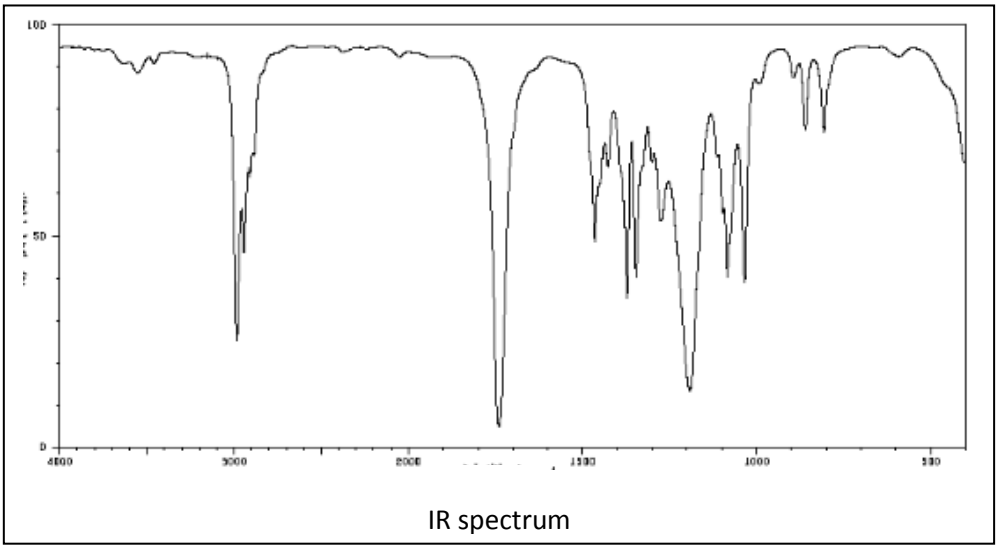
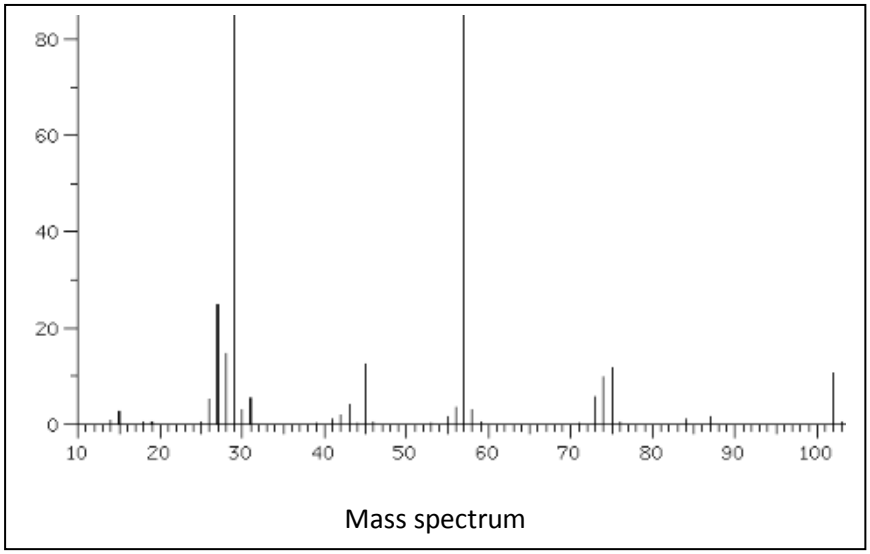


Fig 1

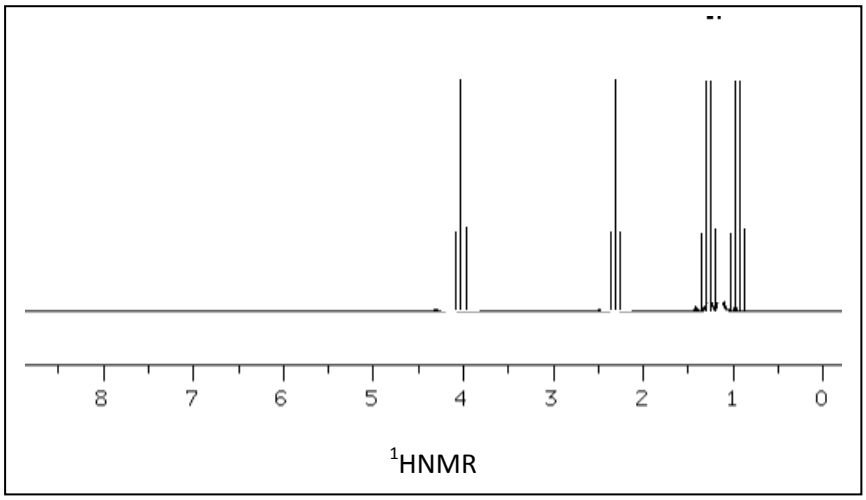
2) Compound 6, shown in fig 1, has the empirical formula $C_5H_{10}O_2$. Its IR, Mass and ^{1}HNMR spectra are shown below.



IR spectrum



Mass spectrum



^{1}HNMR

a) What information can the mass spectrum provide?

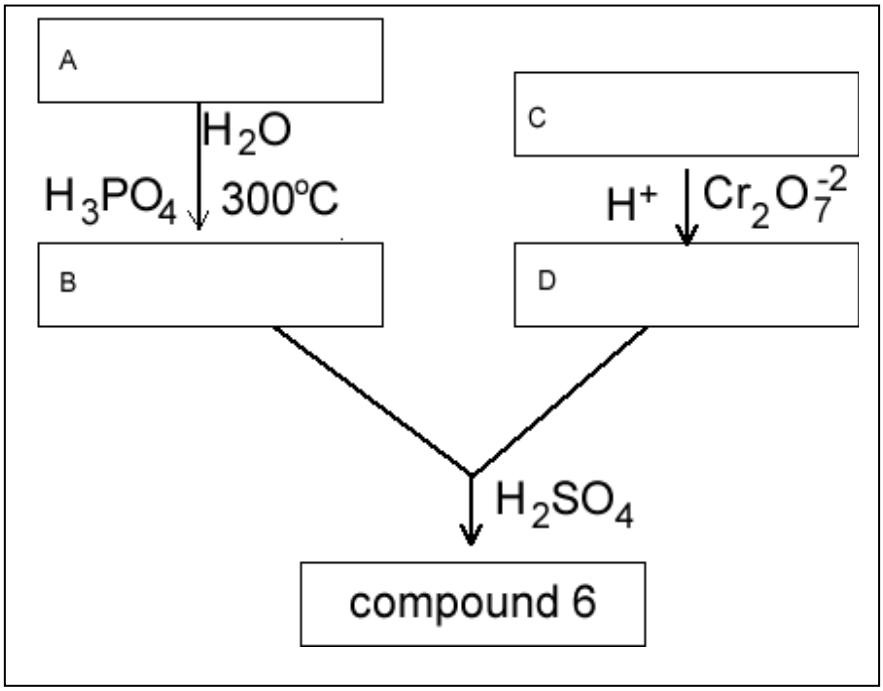
b) What fragment formed the peak at m/z 57?

c) What is the molecular formula of compound 6?

d) Draw the structural formula of compound 6.

e) What type of reaction forms compound 6?

f) Label the diagram below.



g) What can you say about the difference between the boiling temperature of compound 6 when compared to compound 1? Give a reason for your conclusion.

What factors contribute to this difference?