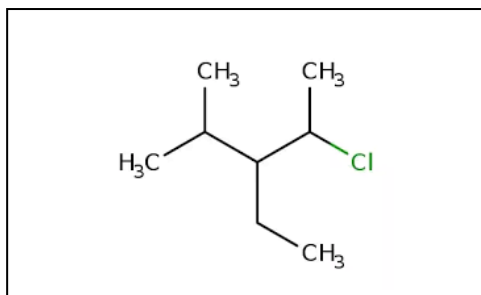
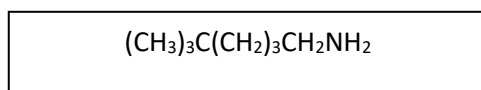
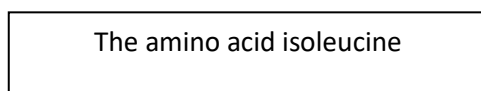
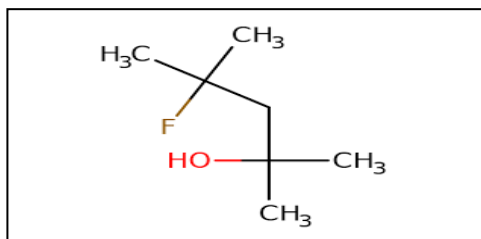
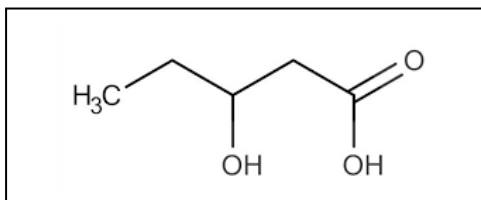
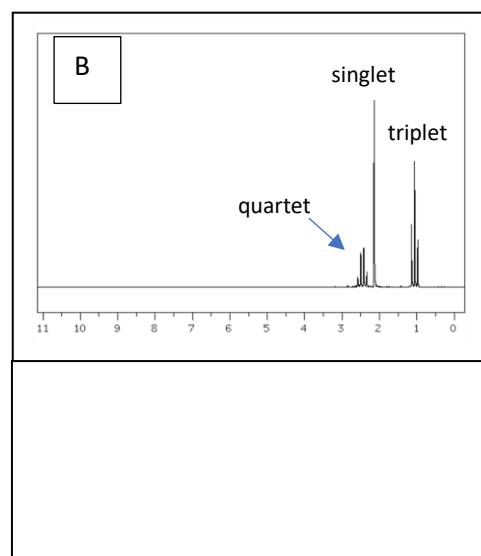
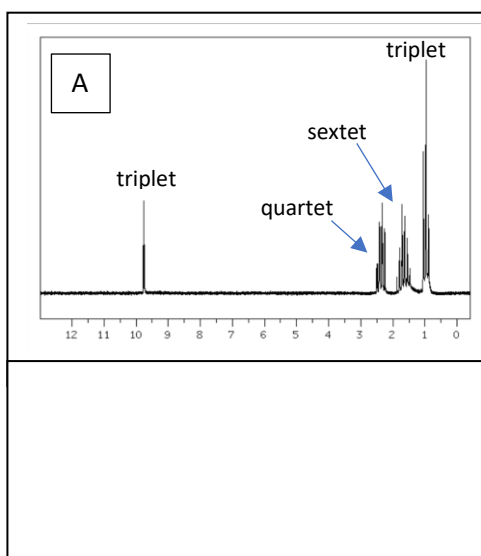


Revision – organic, analytical and green chemistry.

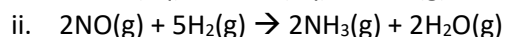
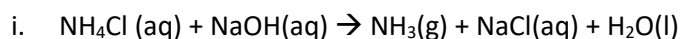
1. Give the IUPAC names of the following organic molecules.



2. Draw the structural formula for the two compounds A and B with the molecular formula $\text{C}_4\text{H}_8\text{O}$ and the ^1H NMR shown below



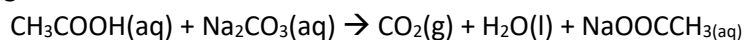
3. Below are two possible chemical reactions for the formation of ammonia.



a. Using atom economy, select the reaction producing less waste? Show all working out.

b. Calculate the %yield of reaction ii. above, if 4.00 grams of H_2 gas reacted completely with excess NO to produces 4.50 grams of NH_3 .

4. A sample of commercial vinegar is analysed using volumetric analysis to calculate its acetic acid concentration in mol/litre. An aliquot of 20.00 mL was taken from the original bottle and placed into a 200 mL volumetric flask and made to the mark with distilled water. A 25.00 mL aliquot was taken from the volumetric flask and titrated against a standardised 0.100 M Na_2CO_3 . An average titre of 27.89 mL was obtained using phenolphthalein as an indicator. Calculate the concentration, in mol/litre, of the acetic acid present in the vinegar. The reaction is given below.



5. Ethyl propanoate is a food additive in candy that gives the confectionary a fruity flavour and aroma. Give a set of valid reaction pathways for the formation of ethyl propanoate given the organic starting compounds propane and ethene. Clearly show all reagents and their state in the reaction pathway.